# Mariners WEATHER LOG

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http://www.nws.noaa.gov/om/marine/home.htm

U.S. Coast Guard Navigation Center
http://www.navcen.uscg.gov/marcomms/

See these Web pages for further links.

# From the Editor

Paula Rychtar

Hello and welcome back for another great issue of the Mariners Weather Log. We have some great articles that I know you will really enjoy as well as some informative articles to help the VOS program continue to be a vital program within NOAA's National Weather Service.

Our featured cover story, "Tear of Grief", has been submitted by our New York PMO, Jim Luciani. Since September is right around the corner, I thought this particular issue of the MWL would be suitable to present this article. Jim spotlights a beautiful gift from Russia to the United States following the 9/11 attacks. I myself, as I am sure many others, was not aware of this wonderful gift or the chosen site of which it is displayed, Cape Liberty. What a treasure this is and I am so glad that Jim recognized how important it would be to bring this to light for us all. In addition to this article, I would like to bring attention to yet another endeavor on Jim's part. Jim has been training for quite some time in preparation for the Unite Half Marathon at Rutgers University which took place this past April. Well, he did it; he finished in a time of 2:10:53. I threw in a small article on that as well as I think it is a big deal!

Hurricane season is upon us! Please keep that in mind, ***only YOU know the weather!*** So take the time to send in good quality observations so that the National Hurricane Center can have the best data available to provide you with the best forecasting possible. For all your hurricane needs, remember http://www.nhc.noaa.gov/ is your one stop shop.

Marine debris has become a big concern and VOS has become an intricate part in the effort towards monitoring and gathering information to assist the Marine Debris Program. The MWL will have an ongoing piece giving updates, news and addressing the overall concerns. It is estimated by the government of Japan that the tsunami swept about 5 million tons of debris into the Pacific Ocean and that about 70 percent sank right away, leaving 1.5 million tons floating off the coast of Japan. Larry Hubble, our Anchorage PMO, has submitted an article on how some of this debris has reached the Southern Alaska Coastlines and how NOAA is coordinating new interagency reporting and monitoring efforts that will provide critical information on the location of the marine debris generated by the tsunami. I am sure some of you have already been approached by our PMO's to provide sightings to the appropriate email address at DisasterDebris@noaa.gov. Please know that your input will provide critical information supporting this effort.

I know there are some questions out there on equipment issues, in particular the older marine barographs. In addition, I am sure there are some AMVER/SEAS vs. TURBOWIN questions and perhaps confusion. Inside this edition I will provide a little input from my desk trying to clear that up and provide some insight. Also….quality, quality, quality. I will touch on that as well.

In this issue you will see that our PMO's were busy presenting awards to our top performers. As always, it is wonderful to see all of the photos of our VOS fleet award winners and your smiling faces! Congratulations to you all!

~ Paula

**On the cover:**
Tear of Grief
*Photo Courtesy of Jim Luciani*

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## Departments:

### Marine Weather Review



### VOS Program

# PMO Corner: Tear of Grief

*By Jim Luciani, PMO NY/NJ*

Imagine this; you are a young Third Officer pulling into Global Terminal in Bayonne New Jersey for the first time. As you approach you notice a large sculpture, a gift to the U.S. from a foreign country, a symbol of hope for future generations. No, it's not the Statue of Liberty, it is a gift from Russia following the 9/11 attacks known as the "Tear of Grief".

The sculpture is a product of Russian artist Zurab Tsereteli. He took a large granite block with a jagged tear in it, from which hangs a 40 ft. stainless steel teardrop. At the base of the sculpture there are eleven granite pieces etched with the names of the victims of the twin tower collapse. As you approach the site you notice the pavers that surround the statue with names and messages from loved ones who lost family members in the attacks.

Finding an appropriate home for the sculpture was not an easy task. He looked for a suitable site from the Manhattan skyline and zeroed in on the Bayonne site almost in-line with the Statue of Liberty. The site chosen is at the tip of the old Navy base known as Marine Ocean Terminal, which has recently become home to Cruise Ships and Car Carriers and is now known as "Cape Liberty". The Peninsula is in the midst of redevelopment organized around the construction of residential and commercial districts to create a vibrant waterfront community. The two acre site itself is called Harbor View Park.

The site was dedicated on the sixth anniversary of the 9/11 attacks in a ceremony attended by former President Bill Clinton, the then governor of New Jersey Jon Corzine, New Jerseys two Senators, many other dignitaries and the family and friends of the victims. Few, really know this treasure exists, but it is a wonderful gift and should be better recognized. Perhaps this brief article can help in this regard. ⚓



Photo courtesy of brightroom.com


Bragging rights go to Jim Luciani PMO extraordinaire for completing the Unite Half Marathon at Rutgers University Campus this past April 22nd. Jim was one of nearly 4,500 runners and finished 1657th in a time of 2:10:53. This was his first ever such race. Pictured here you can see that Jim donned a VOS tee that he designed just for this particular race and his new VOS hat, so he really represented well. ⚓


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Photo courtesy of brightroom.com

# Topics

*By Paula Rychtar*

## MARINE BAROGRAPHS

The old style marine barographs that require the stylus (pens) and paper will be phased out. As they break, the PMO's will collect them and replace them with a digital style barograph rather than repair the existing older style. This is due to a couple of reasons; the cost of replacing the expensive chart drive that often breaks from over winding. Since this type of barograph is no longer manufactured, parts and labor on these can get quite pricey. The price of a new, high precision digital replacement costs less than the repairs/replacement for the older style marine barograph. Also, the paper (barograms) is no longer manufactured at the original location so we had to find someone who would print the barograms and the quality did not hold up…thus the "bleed-o-grams". There is a fine layer of wax on the barograms, this wax begins to deteriorate with time and that is when the paper becomes porous and will "draw" the ink right out of the stylus creating this dark thick blob. Usually, the pens will then run out of ink before the paper needs changed. Those pens are quite expensive as well and we just can't keep up with the demand due to this problem. So, the digitals will solve all of these problems. ⚓

## E-LOGBOOK SOFTWARE

AmverSEAS vs. TURBOWIN…. SEAS software is undergoing a major "tune-up". As you know, VOS is an international program and we have to adhere to strict guidelines set forth by the World Meteorological Organization (WMO). Under such guidelines, we must be compliant on the software that we use in regards to archival methods as well as metadata collection and how it is coded and transmitted. Sadly, our SEAS has become outdated over the last couple years. With that said, until our software updates are completed and compliant, VOS should begin incorporating the use of the foreign VOS software, TURBOWIN. TURBOWIN was developed by the Dutch and it is compliant. So it has been asked that the PMO's offer this software when a ship needs upgrading, becomes recruited, or just preference of the captain/crew. PMO's can install and train crew members on the use of TURBOWIN, as they are knowledgeable on the use of this e-logbook. Of course, if you insist and just want SEAS, we will be glad to keep the AMVER/SEAS on your ship for producing your observations. The main need for compliancy with the WMO is if your ship wants to participate in the VOSClim program, you must use TURBOWIN in that case. If you would like to download TURBOWIN and give it a go, http://www.knmi.nl/turbowin/download.html. ⚓

## QUALITY, QUALITY, QUALITY

Keeping in subject with compliancy issues, it must be noted and addressed that marine ship observations have specific guidelines for data collection. Temperatures are to be observed and recorded in ***whole degrees and tenths of degrees***. Sea Level Pressure (PPPP) is the atmospheric pressure reported in ***tenths* of a hectopascal (hPa)/millibar(mb).** We are seeing more and more ships sending in weather observations with these units rounded to the nearest whole number. This is incorrect and it has a profound and a direct effect on all products stemming from these data. This is becoming a real quality issue/problem, so please, report the correct format. ⚓



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# Storm Surges in New York Harbor During Hurricane Irene

*By.. Professor S. A. Hsu, Coastal Studies Institute, Louisiana State University*
*Email: sahsu@lsu.edu*

Abstract: During the passage of Hurricane Irene in 2011, New York Harbor experienced about 4 feet (above the normal astronomical tides) setup produced by persistent and strong easterly winds (up to 30 knots) and 6 ft set-down by even stronger westerly winds (up to 40 kts). It is found that approximately 92% of the setup and 72% of the set-down can be explained by the contribution of the wind stress, which can be represented by the wind speed squared. For rapid estimation of these wind stress tides, analytical formulas are also provided for operational use.

## 1. Introduction

According to Avila and Cangialosi (2011), Hurricane Irene (see Fig .1) produced a storm surge of 3 to 6 feet caused hundreds of millions of dollars in property damage in New York City and Long Island. Tropical-storm-force winds along with heavy rains resulted in power outages for up to 3 million residents that lasted to around 1 week, mainly across Connecticut and Long Island.

The purposes of this report are first to characterize the nature of the storm surge including positive surge or setup and negative surge or set-down in New York Harbor and then to provide analytical formulas to explain these water-level changes during Irene. Data employed in this study are based on National Data Buoy Center (NDBC) and National Ocean Service (NOS) Stations (see Fig.2) available online at www.ndbc.noaa,gov.

## 2. Met-Ocean Conditions at Sandy Hook, NJ

Since Sandy Hook, NJ, is located near the entrance of New York Harbor, the meteorological and oceanographic (met-ocean) conditions are presented first in Figs.3 through 5. As shown in Fig.3, the minimum sea level pressure at Sandy Hook (see Station SDHN4 in Fig.2) was 962.9 mb occurred at 7:36 AM LST on Aug 28. Fig.4 indicates that before 7:36 AM, the winds were persistently from the east. After the

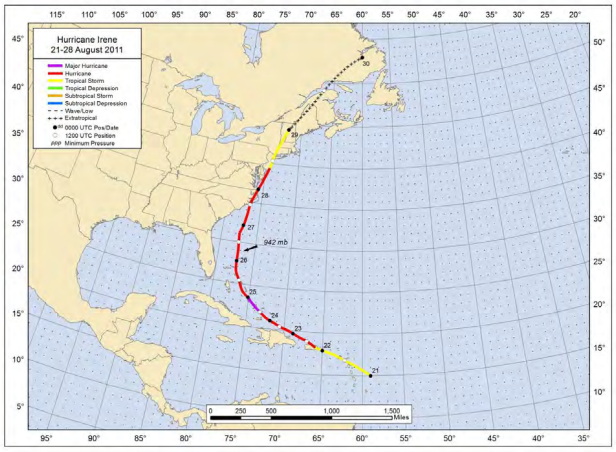
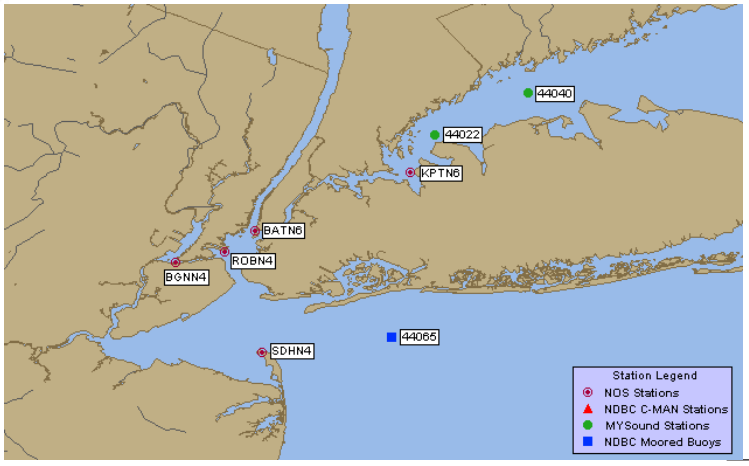



Fig.1. Storm track of Hurricane Irene in 2011. (See www.nhc.noaa.gov).

Fig.2. NOAA Stations in the Port of New York and New Jersey area during Irene.



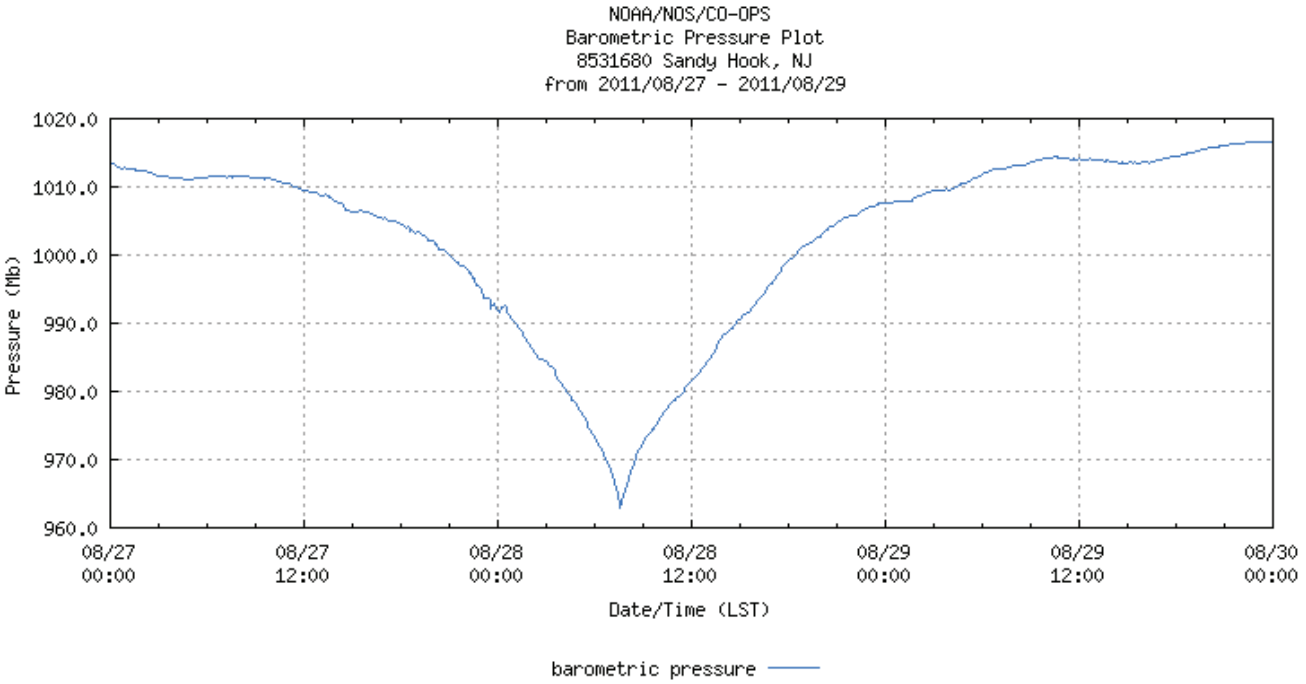



Fig.3. Barometric pressure measurement at Sandy Hook, NJ, during Irene.

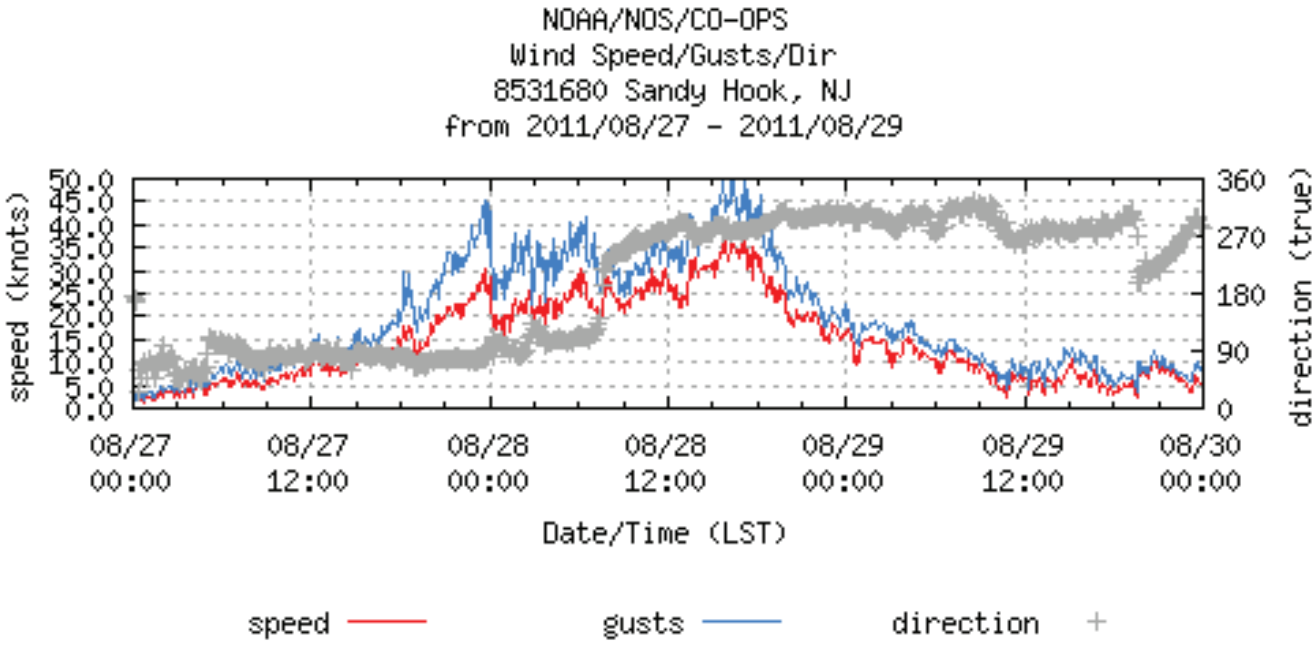



Fig.4. Wind speed, gust, and direction at Sandy Hook, NJ, during Irene.

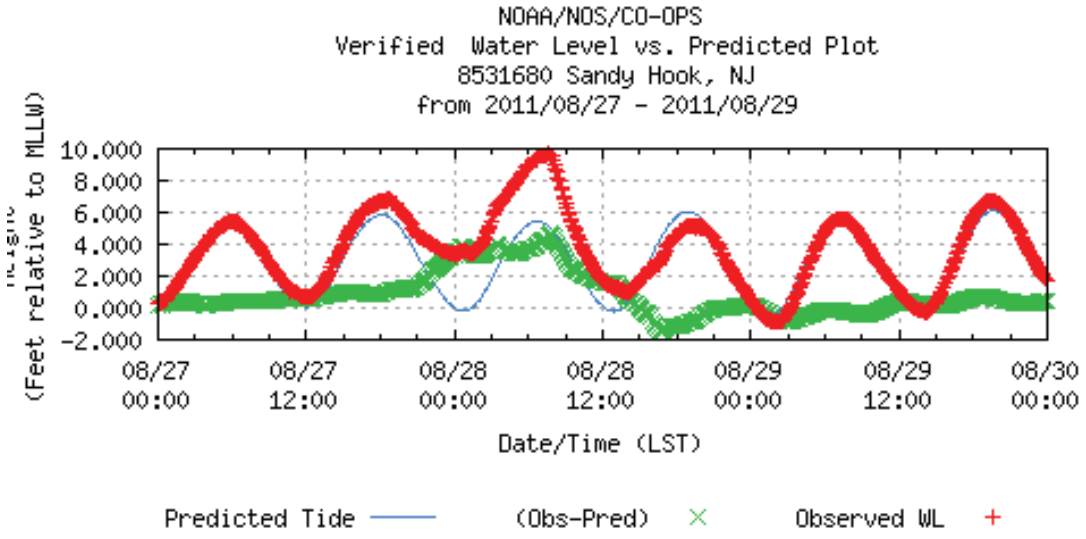



Fig.5. Storm surge in green and storm tide in red (both in ft) at Sandy Hook.

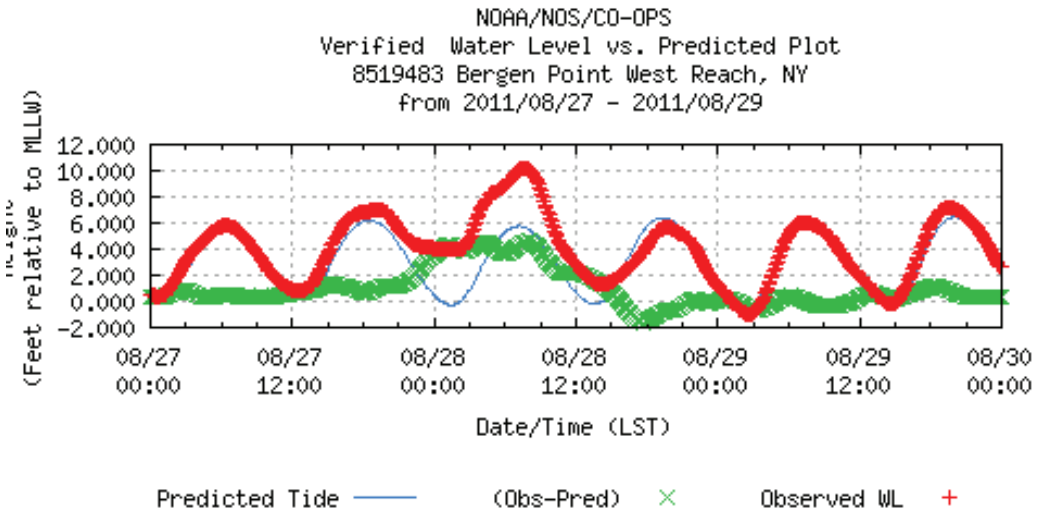



Fig.6. Same as Fig.5 but for Bergen Point Reach, NY

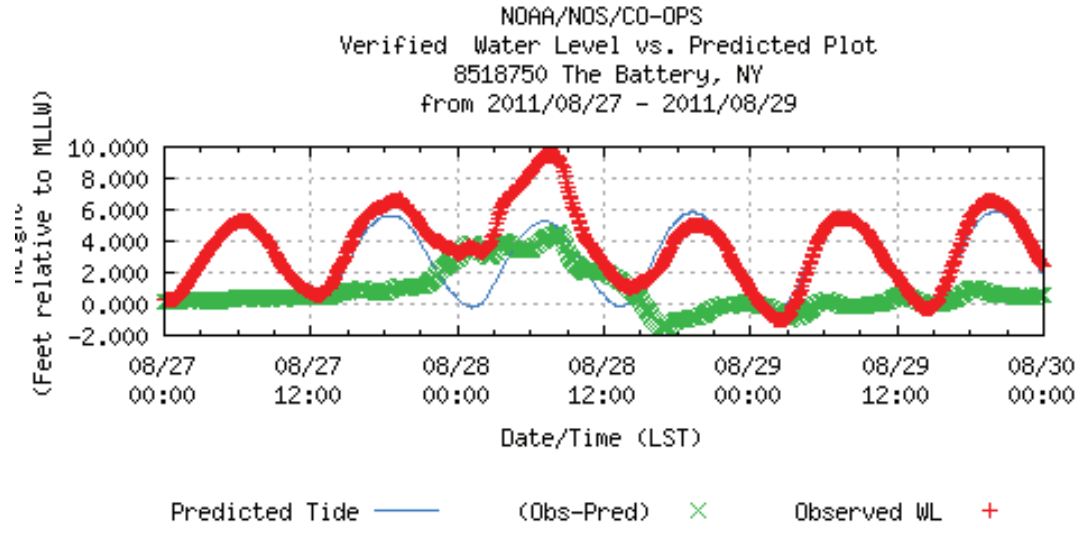



Fig.7. Same as Fig.5 but for The Battery, NY

occurrence of this minimum pressure, the wind direction switched very rapidly to the west with maximum sustained wind speed around 40 kts. The storm surge was 4.63 ft and storm tide 9.75 ft (Fig.5) (see also Avila and Cangialosi, 2011). From these Figures, it is clear that when the strong wind (up to 30 kts) blew from the east prior to the occurrence of minimum pressure, we have setup and when the wind direction switched to west with even stronger speed (up to 40 kts) after the occurrence of minimum pressure, we have set-down. The setup can reach 4 ft whereas the set-down can amount to 6 ft.

**3. Conditions at Upper Reaches**

Strom surge conditions at Bergen Point Reach and The Battery, NY (see Figs.5 and 6, respectively) are very similar to that at Sandy Hook, NJ. There were about 4 ft setup (positive storm surge) and 6 ft set-down (negative storm surge) in both places, indicating that the entire New York Harbor was experiencing the same effects of storm surge during the passage of Irene. Note that after the maximum set-down, the Harbor experienced some effects of seiches.

**4. Physical Explanations**

According to Hsu et al (1997), the setup (S) is related to wind stress, fetch along the wind direction, water depth along the fetch and others. They found that for rapid estimation of S, the most important contribution is the wind stress such that

$$S = K V^2 \quad (1)$$

Where K is a coefficient and V is the wind speed.

This physical explanation can also be applied to both setup and set-down in New York Harbor as analyzed in Figs. 8 and 9, respectively. Fig.8 shows that

For setup estimation in New York Harbor, for S in ft and V in kts, we have

$$S = 0.0028V^2 \quad (2)$$

With $R^2 = 0.92$

Or $R = 0.96$

Where R is the correlation coefficient and $R^2$ is the coefficient of determination.

In other words, since over 90% of the total variation in storm surge can be explained by the wind stress for setup, our physical explanation is acceptable.

Similarly, for set-down estimation, according to Fig.9, we have

$$S = - 0.0052 V^2 + 1.1 \quad (3)$$

With $R^2 = 0.72$

Or $R = 0.85$

Since the set-down is forced by the westerly winds which blew mainly from land to the sea, the lower value of $R^2$ may be affected by regional geography including urbanization. However, since 72% of the total variation in set-down can be explained by the wind stress, Equation (3) is a useful formula for operation application (for rapid estimation of negative storm surge or set-down).

**5. Conclusions**

Characteristics of the storm surge in New York Harbor during the passage Hurricane Irene in 2011 have been analyzed. It is shown that when strong and persistent winds (up to 30 kts) blew from the east, there were about 4 ft increase in water level (above the normal astronomical tides) over the entire harbor. On the other hand, when the wind direction switched to the west with even stronger winds (up to 40 kts), the entire harbor experienced about 6 ft water level decrease (above the astronomical tide). It is found that these positive surges or setups and negative surges or set-downs are related most importantly to the wind stress (as represented by the wind speed squared). For rapid estimations of these water level changes, analytical formulas are also provided in Eq. (2) for setup and Eq. (3) for set-down.⚓

ACKNOWLEDGMENTS:

Many thanks go to NDBC and NOS of NOAA for providing essential data needed for this study.

REFERENCES:

Avila, L.A., and J. Cangialosi, 2011: Tropical Cyclone Report, Hurricane Irene, 21-28 August, 2011 (see www.nhc.noaa.gov).

Hsu, S. A., J.M. Grymes, III, and Z. Yan, 1997: A simplified hydrodynamic formula for estimating the wind-driven flooding in the Lake Pontchartrain-Amite River Basin, National Weather Digest, Vol. 21, No.4, pp.18-22.

**Fig.8. Relationship between setup at Sandy Hook, NJ, and wind speed measuremnets at NDBC Buoy 44065.**

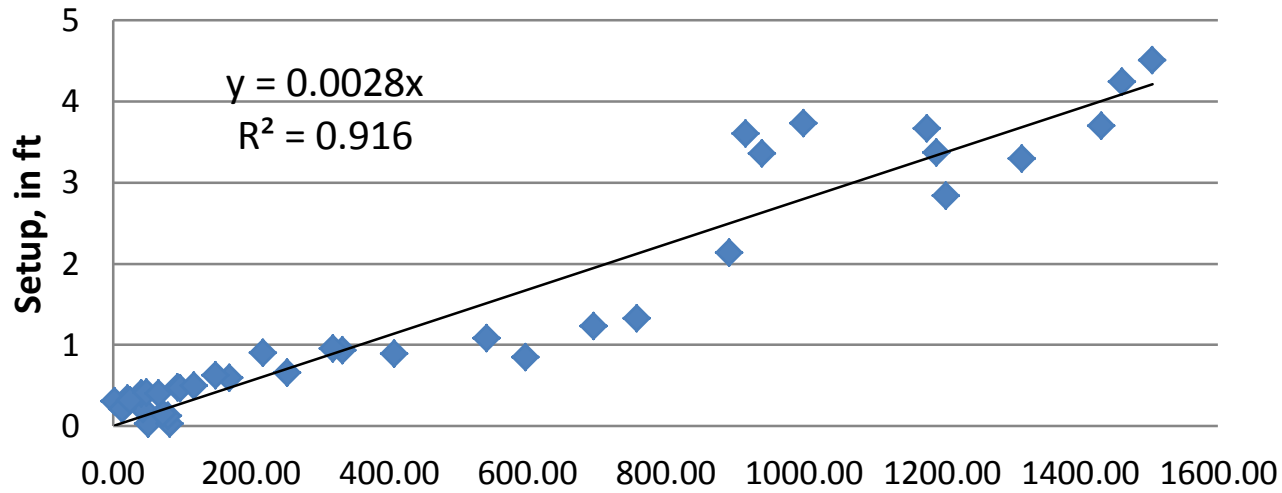
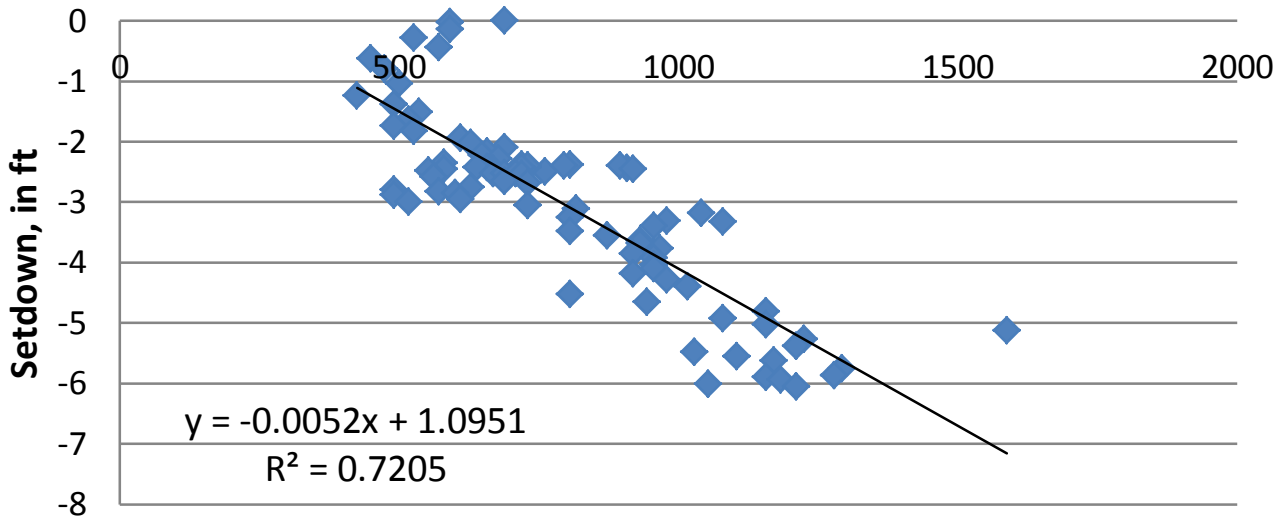



**Fig. 9. Relationship betwwen setdown at The Battery, NY, and wind speed squared at Sandy Hook, NJ.**



# Japan Tsunami Debris

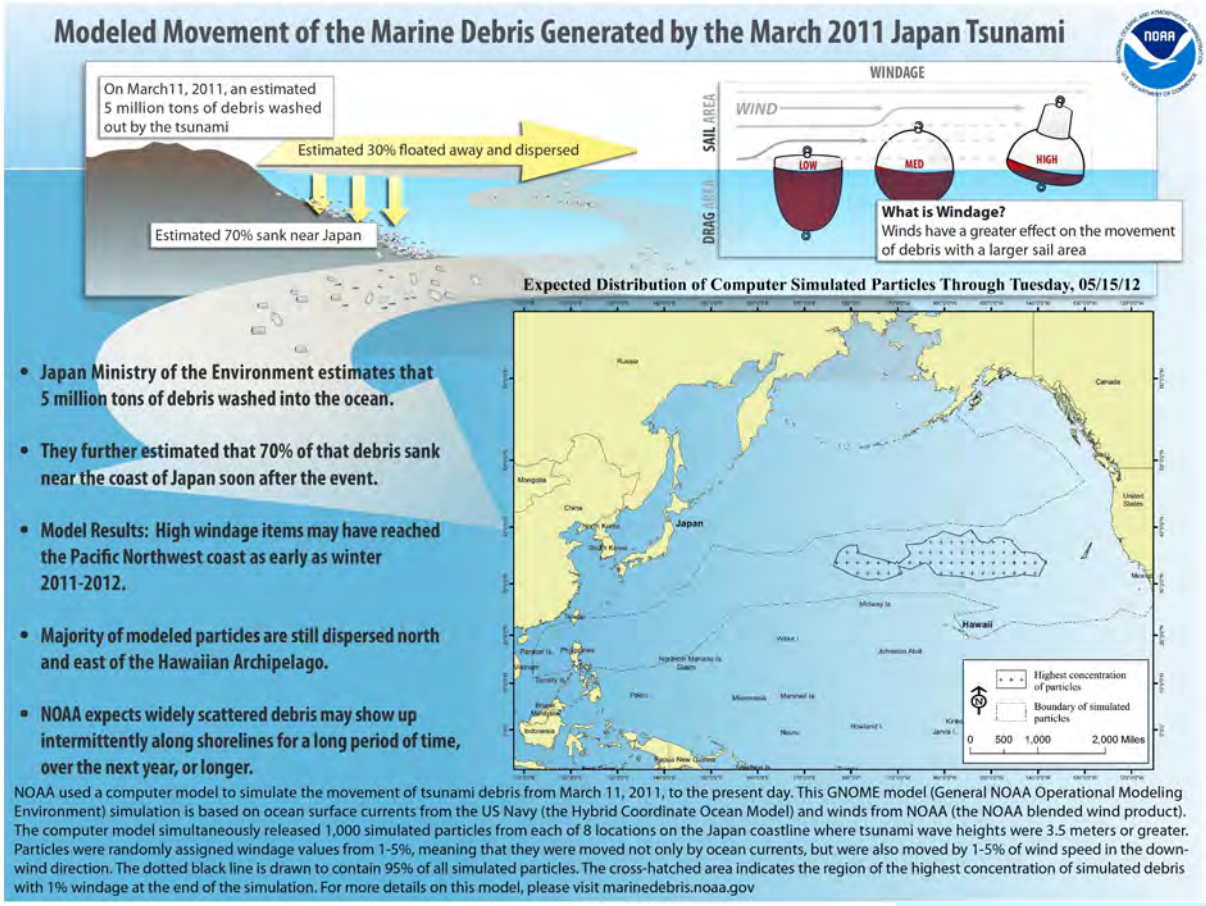
*Larry Hubble, Anchorage PMO*

As the tsunami that hit Japan in March 2011 receded from land, it washed much of what was in the coastal inundation zone into the ocean. Boats, pieces of smashed buildings, appliances, and plastic, metal, and rubber objects of all shapes and sizes washed into the water either sinking near the shore or floating out to sea. The refuse formed large debris fields captured by satellite imagery and aerial photos of the coastal waters. The Japanese government estimated that the tsunami generated 5 million tons of rubble, but there is no clear understanding of exactly how much debris was swept into the water or what remained afloat. Today, debris fields are no longer clearly visible. Winds and ocean currents scattered the items in the massive North Pacific Ocean.

The rust-streaked "ghost ship" Ryou-Un Maru ship which was set adrift by the Japan tsunami was sunk 180 miles off the Southeast Alaska coast when a smaller U.S. Coast Guard cutter blasted the vessel with cannon fire. It had been deemed a high seas hazard. The derelict fishing vessel sank at 6:15 p.m. on April 15 in 6,000 feet of water.

U.S. Pacific Navy Fleet. Debris off **the coast of Japan after the tsunami, March 12,2011**

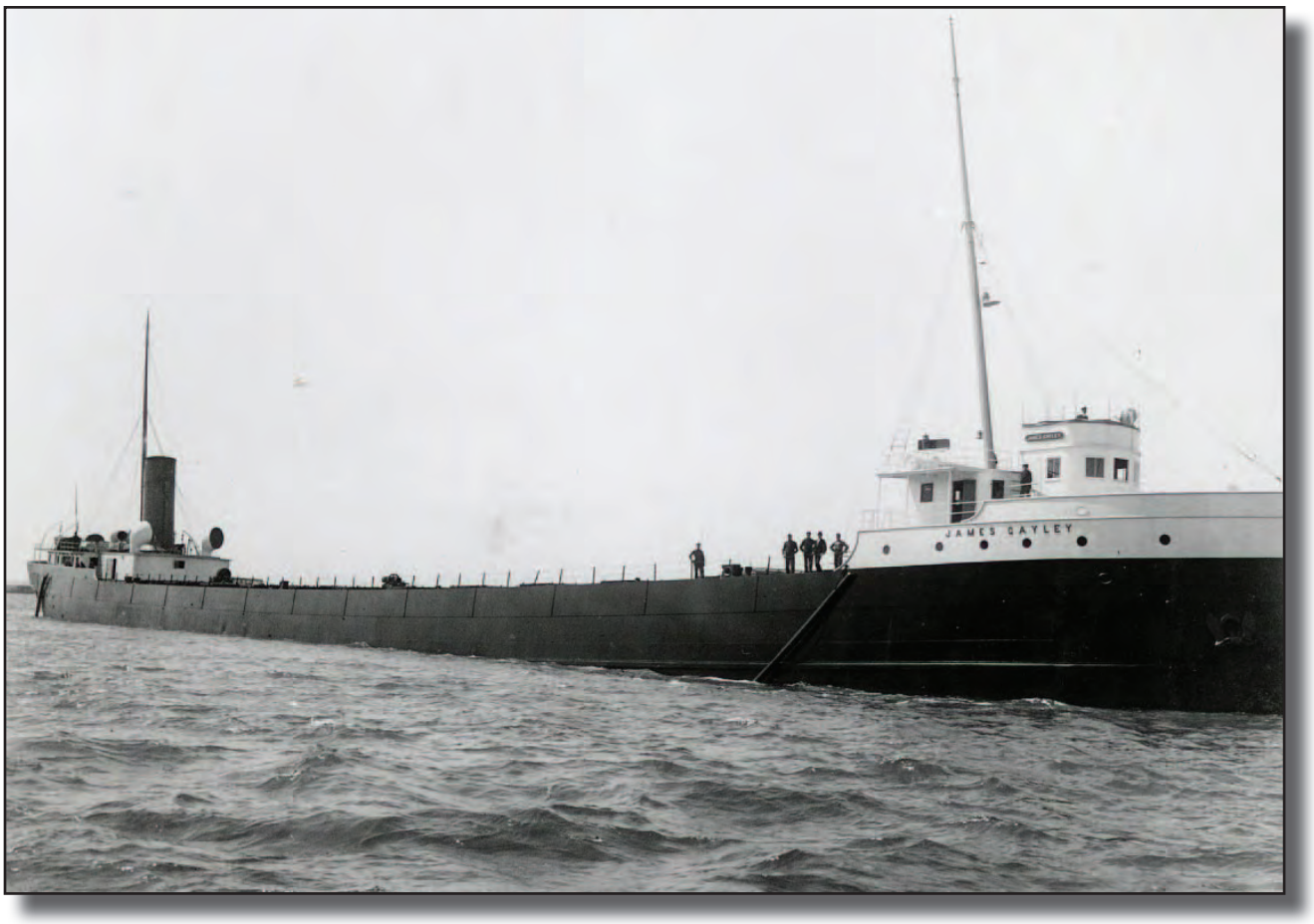
In the spring of 2012, certain southern Alaska Coastlines reported a significant increase in debris washing ashore such as buoys, drums, and Styrofoam. NOAA is coordinating new interagency reporting and monitoring efforts that will provide critical information on the location of the marine debris generated by the tsunami. Ships and beach-goers can report debris sightings and individuals or groups can request shoreline monitoring guides at DisasterDebris@noaa.gov. If possible include the LAT/LON of the sighting, date of sighting, debris description, and photos if possible. NOAA has convened experts to review available data and information from computer models and provide their perspectives on debris fate and transport. They are gathering information on significant sighting of marine debris in the North Pacific through NOAA's Office of Marine and Aviation Operation's Pacific fleet, the NOAA NWS Voluntary Observing Ship Program which includes industry long-haul transport vessels, as well as the NOAA Pacific Island Regional Observer Program and their work with the Hawaii longline fishing industry. NOAA is also working with the U.S. Fish and Wildlife Service and the State of Hawaii on shoreline debris monitoring in the Papahānaumokuākea Monument.




NOAA used a computer model to simulate the movement of tsunami debris from March 11, 2011, to the present day. This GNOME model (General NOAA Operational Modeling Environment) simulation is based on ocean surface currents from the US Navy (the Hybrid Coordinate Ocean Model) and winds from NOAA (the NOAA blended wind product). The computer model simultaneously released 1,000 simulated particles from each of 8 locations on the Japan coastline where tsunami wave heights were 3.5 meters or greater. Particles were randomly assigned windage values from 1-5%, meaning that they were moved not only by ocean currents, but were also moved by 1-5% of wind speed in the down-wind direction. The dotted black line is drawn to contain 95% of all simulated particles. The cross-hatched area indicates the region of the highest concentration of simulated debris with 1% windage at the end of the simulation. For more details on this model, please visit marinedebris.noaa.gov

# Shipwreck: James Gayley And Rensselaer

*By Skip Gillam*
*Vinland, Ontario, Canada*




James Gayley

Heavy fog persisted over Lake Superior on August 7, 1912, but, for the most part, navigation was proceeding as usual. Unfortunately, one ship lost its way and ended up in the wrong channel with tragic consequences.

The ore laden steamer RENSSELAER, part of the Pittsburgh Steamship Division of United States Steel, was downbound towing the barge GEORGE H. CORLISS when it collided with the JAMES GAYLEY, carrying a cargo of coal for the Cleveland Steamship Co.. The latter was struck on the port side, about 65 feet behind the bow and sank within about 16 minutes. The accident occurred at 0200 hours about 43 miles east of Manitou Light and there were no casualties. The loss of the ship and cargo were reported as $330,000.

The JAMES GAYLEY had been built by the Globe Iron Works at Cleveland, Ohio. This was one of the many excellent shipyards around the Great Lakes at the start of the 20th Century but it no longer exists. The ship was 436 feet in overall length by 50 feet at the beam and tonnage was registered at 4,777 gross. A steamship, it was active in the ore, grain and coal trades for a decade before being lost a century ago. It is shown in a photo from the collection of the Marine Historical Society of Detroit.

RENSSELAER had also been built at Cleveland only two years earlier. It was a product of the Cleveland Shipbuilding Company. This ship was launched on July 26, 1900, and completed for Andrew Carnegie and his Pittsburgh Steamship Company. Many of their ships honored prominent northeastern universities and the RENSSELAER was named for the school in Troy, NY.

This vessel was 474 feet long by 50 feet at the beam and was registered at 5,124 gross tons. It was powered

by a 2,000 horsepower quadruple expansion engine and was often used to tow consort barges of similar size and capacity. With the creation of United States Steel, via mergers in 1901, this bulk carrier joined their Pittsburgh Steamship Division, the largest fleet of vessels on the Great Lakes.

RENSSELAER had two other mishaps as well but of far less serious consequence. There was a minor collision with the big bulk freighter SHENANGO entering Ashtabula harbor on July 26, 1910, but the bill for this accident came to only about $1,000. Then, on June 4, 1912, the ship was in a collision with the WILLIAM H. GRATWICK in Lake Erie off Conneaut, Ohio. This time one a lifeboat was carried away and a cabin was damaged. RENSSELAER is shown in a photo courtesy of Ron Beaupre.

The collision of August 7, 1912, left RENSSELAER leaking with bow damage. Temporary repairs allowed the ship to sail safely to Marquette, MI. After permanent work on the hull damage, the vessel resumed service later in the year and remained active for U.S. Steel into World War Two.

The United States Maritime Commission built 16 new lakers during World War Two to accommodate the need for increased ore for making steel. These new ships were traded to existing fleets, for outdated tonnage but most of the older ships were chartered back to the previous owners for the duration of hostilities. As a result, title to RENSSELAER moved to the U.S.M.C. but it continued in the Pittsburgh SS Co. fleet. It was laid up at Erie, PA in 1946 and sold to the Steel Company of Canada for scrap. RENSSELAER arrived in Hamilton, ON, under tow, in December 1946 and was broken up in 1947 ⚓


Rensselaer

# "The Ships" featuring The Storm

## "Stolt Surf" in the North Pacific, 1977


"Stolt Surf" - in Texas City 1978 - (Photography by Karsten Petersen ©)


"Stolt Surf" - photographed in 1990 (Photography by Karsten Petersen ©)

***Stolt Surf Details***
Type: Chemical Tanker
Owners: Stolt-Nielsen Inc.
Builder: Eriksbergs, Gothenburg, Sweden, - 1970
Length Overall: 169,621 M (556' 6")
Breath Moulded: 24,766 M (81' 3")
Deadweight: 23,299 LT

A storm - - - -
All sailors have experienced storms at sea, which are quite different from the land based versions, mainly because another element is heavily involved, - water!

And on the open ocean, there is nothing to stop or deflect the howling wind. Also it makes a big difference, that your base is not solid ground,- but a moving platform,- a ship!

On the great oceans of the world, the height of the storm waves usually does not exceed 8 to 10 meters, which actually is quite impressive.

Image a "wall" of water at the same height as a two story house coming crashing towards you with an incredible speed! it can be quite awesome to experience!

But what happens if the waves are NOT just 10 meters tall, but more likely 20 meters??? Or more???

It is VERY seldom that huge waves over 20 meters are developed, - and normally sailors do not even see them, because ships nowadays will try to avoid such conditions by altering course in good time before the storm hits.

But not so with the good ship "Stolt Surf", - which on a voyage across the Pacific from Singapore to Portland -, headed straight into a very strong hurricane, - went through its center -, and was hit again on the other side of the "eye"!

"Stolt Surf" was a chemical tanker, and on October 4th. 1977, she left Singapore on a routine voyage across the Pacific ocean to Portland, USA.

Already in those days it was normal to obtain advice from a weather routing agency before such a voyage was commenced, and in this case the advice was to keep far to the north, in order to avoid the possibility of hitting a developing storm further south.

I clearly remember Captain Oddenes saying that going north at this time of the year is quite contrary to what his sailor experience would have recommended. But since the routing agency had all sorts of satellites and computers to help them to predict the weather, - Captain Oddenes decided to take their advice and go north, instead of following his own instincts and years of experience!

What a big mistake!

On October 18th. 1977, the barometer started to drop and the weather worsened.

This continued through Oct. 19, and by late that night the wind had increased to a force 9/10, - the sea was becoming rough, and the sea/air temperature had fallen to 8°C and 10°C, respectively.

The ships steering speed was at that time down to about 5 knots, and in the early hours of Oct. 20, - as the condition really started to worsen -, the auto pilot was switched off, and manual steering was introduced.

What happened next is best described in extracts from the log:

---

0700:
One life raft on forecastle taken overboard by heavy seas.

0930:
Heavy sea broke windows of the officers mess and bar, damaging furniture. Galley and electrical system were shut down due to short circuit. Crew's accomodation heavily damaged due to emergency doors broken. Two gangways broken, completely damaged.

1600:
Two steel doors on the forecastle broke down and washed overboard.

---

We had simply ended up right in the middle of the strongest storm I have ever experienced in my almost 40 years at sea! Also Captain Oddenes had never seen anything like it!

At this point I have to tell you, that taking photographs at the peak of a hurricane at sea is almost impossible. You simply cannot see anything! The howling wind tears off the top of the waves, and sends it as a horizontal spray across the ocean covering everything in a white mist. Also the portholes and windows on the ship are hit by this spray, and prevents all possibilities for having a clear look at what is going on! All shapes and forms are simply gone, and all you hear is a deafening noise from the sea and the wind! Also it is quite dark due to the dense clouds covering the sky. To go outside in order to have a better look is of course totally ruled out! You would fly away as a kite - - - -

However,- when the wind calms down, it is possible to take some fantastic wave pictures, because the waves usually first calm down long time after the wind has died.

The following pictures here are mostly taken from the bridge through a rotating window, that throws off the water, so that the visibility appears quite good!

During the storm, it soon became clear, that this one was NOT one of the usual storms with "only" 10 meter waves!
No,- on the "Stolt Surf" we experienced to our astonishment, that when the big waves came crashing towards us, we had to look UP in order to see the top of the waves! And that was from the bridge deck, which is already 22 meters above sea level!

22 meters!!! And still you had to look UP!!! Crazy!

Several times we also experienced huge waves coming crashing OVER the bridge,- more than 22 meters up -, and in some very, very long seconds we only saw sea water through the bridge windows, while tons of water ran off the bridge roof,- the so-called "monkey island"!

In those terrible moments we did not know if the ship was below the water or still floating! But like a miracle the windows cleared again, and "Stolt Surf" continued its brave battle against the waves.

Of course the ship suffered quite a lot of damage that showed the incredible force of the water. Three of the solid tank hatches on deck were simply torn off, and so was the door to the pump room, in spite of the fact that such a door is made of steel, and secured with 6 strong dogs! Straight pipelines on deck were now S-shaped, - and likewise the gangways, which was found as a mess of folded and twisted metal.

Steam pipes were torn off and electric cables found ripped apart. Inside the ship, all decks except the deck just below the bridge were filled with water through smashed windows and doors, and the crashing waves smashed furniture and wall paneling to pulp, so that only naked steel bulkheads were left at the crew's quarters down below!

After the storm the electricity supply to many parts of the accommodation was knocked out as well, so the cook had to prepare food for 35 men on a single portable cooking plate, but never had a meal tasted better on any ship!

Surprisingly enough nobody were seriously injured, so we were indeed very, very lucky with only 4 sailors injured, of which only one had to stay in hospital for some time, but a couple of weeks later he was able to join his ship again.

However, if we did not manage to keep the diesels running, so that we could control the ship, we would for sure have ended up sideways in the waves. If that happened, the ship would possibly have turned upside down.

In that case it is frightening to think about what could have happened, but I have good reasons to believe, that none of us might have survived, if we lost the engines!!

However,- the faithful and highly reliable B&W engine never let us down, and just kept running and running and running!

About one week later, - October 26th. -, the ship arrived in port, - crippled but safe -, and it is quite "fun" to think about the BIG problems the shore people now faced, when they wanted to get onboard!

All our gangways were totally smashed or lost in the storm, and apparently it was now considered to be the biggest problem in the world, that company people and U.S. Coast Guard representatives could not easily get onboard due to the missing gangways!

They simply did not understand, that the damaged gangways in fact was a VERY minor "problem" compared to the real problems the ship and its crew had experienced during and after this unusual strong storm!

The ship was heavily damaged, and could very easily have sunk, but to the shore people it was much more a concern, that the red carpet were NOT immediately laid out for them.

Well,- if any of those people see the following pictures, then maybe they will understand, that there really was far more important things in the world than the lack of a readily available gangway!

But for now,- please have a look at the following pages, and try to "feel" the tremendous power such extreme storm waves have.

However, photographs will never be able to create the true feeling of actually being there, right in the middle of an unusual strong storm.

What is missing is the extreme sounds of the ship, - the howling wind and crashing waves, the violent movements, the fatigue, and not at least the feeling of being very, very small and insignificant in this truly great, and awesome performance of "Mother Nature"!

1977-11-041
Party on the poop deck, Capt. Oddenes is entertained by the crew (Photography by Karsten Petersen ©

1977-11-051
"Stolt Surf" — Great harmony — From left to right: Motorman Olivar, our local Eric Clapton, Captain Guttorm Oddenes, 1st. Engineer Gunnar Eriksen (Photography by Karsten Petersen ©)

1977-11-044
"Stolt Surf" — the happiest of crews — party on the poop deck celebrating a successful turnaround in Asia, and preparing for a 3 week long Pacific crossing (Photography by Karsten Petersen ©)

1977-11-54
and the party goes on, nobody knows what is coming, only joy and happiness (Photography by Karsten Petersen ©

## A few days later, a storm coming up - - -

1977-11-049
My right hand, 1st. Engineer Gunnar Eriksen -, being entertained by Filipino sailor (Photography by Karsten Petersen ©

1977-11-066
"Stolt Surf" — into a storm, the wind picking up, like so many times before (Photography by Karsten Petersen ©)

1977-11-067
"Stolt Surf" — but just routine for a sailor, really nothing to worrry about, but of course all work on deck is impossible (Photography by Karsten Petersen ©)

1977-11-070
"Stolt Surf" — it's getting worse, waves getting bigger, but still absolutely nothing to worry about, NOT YET! (Photography by Karsten Petersen ©)

1977-11-071
"Stolt Surf" — quite a spectacular sight, and it's still possible to be outside to photograph the scenery (Photography by Karsten Petersen ©

"Stolt Surf" — but it gets worse and worse, the waves just grow and grow, it does not stop, and it's impossible to stay outside (Photography by Karsten Petersen ©

## - and the gates to hell opened -

1977-11-072
"Stolt Surf" — in the storm, some quite impressive waves ahead (Photography by Karsten Petersen ©

"Stolt Surf" — the ocean "boils" (Photography by Karsten Petersen ©)

1977-11-078
"Stolt Surf" — misty sea spray flying in the air (Photography by Karsten Petersen ©

1977-11-079
"Stolt Surf" — diving into a wall of water (Photography by Karsten Petersen ©)

"Stolt Surf" — it becomes quite obvious, that this is NOT one of those normal storms sailors often meet, this one means problems (Photography by Karsten Petersen ©)

"Stolt Surf" — big problems, a giant wall of water ahead (Photography by Karsten Petersen ©)

1977-11-082
"Stolt Surf" — crashing through huge mountains of water (Photography by Karsten Petersen ©)

"Stolt Surf" — and they keep coming and coming, bigger and bigger, certainly NOT like in a normal routine storm (Photography by Karsten Petersen ©)

"Stolt Surf" — "Stolt Surf" was like a toy ship in waves like this (Photography by Karsten Petersen ©)

"Stolt Surf" — crashing through another monster wave (photography by Karsten Petersen ©)

"Stolt Surf" — white ghost (Photography by Karsten Petersen ©)

"Stolt Surf" — in the storm (Photography by Karsten Petersen ©)

Eventually "Stolt Surf" managed to survive the first part of the storm.

Very sudden the wind died, and it became unusual quiet compared to the deafening roar of wind and waves we experienced during the period before . . .

But it was a false sense of security.

"Stolt Surf" had just entered the "eye" of the hurricane, giving us a short time of relative peace, then the hurricane came back again, and once again we entered the "Gates of Hell" as if the ocean would not let go its grip of us! But "Stolt Surf" won, and "Mother Nature" lost, at least for this time —

Now time to inspect the ship for damage - - -

## The Damage Done

"Stolt Surf" — the most important room, the Officer's Bar. The bar suffered relatively little damage because it is placed on the second highest deck. (Photography by Karsten Petersen ©)

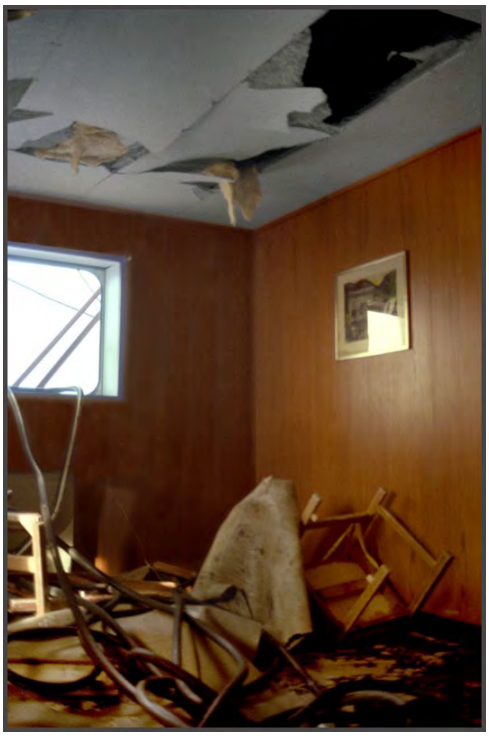
"Stolt Surf" — Another view of the Officer's Bar. (The "priceless" painting of "Madonna" by famous Norwegian artist Edward Munch has survived.) (Photography by Karsten Petersen ©)

"Stolt Surf" — However, the deck below with the Senior Officer's Mess was not spared — moments later the still intact chairs on the picture were totally smashed to bits and pieces (Photography by Karsten Petersen ©)

"Stolt Surf" — the Senior Officer's Mess again, furniture now turning into pulp (Photography by Karsten Petersen ©)

"Stolt Surf" — another shot of the Senior Officer's Mess (Photography by Karsten Petersen ©)

"Stolt Surf" — the Junior Officer's Mess, a depressing sight. Chief Steward Erik Schønnemann tries to save whatever can be saved (Photography by Karsten Petersen ©)



"Stolt Surf" — Junior Officer's Mess with damaged ceiling, the waves must have been quite violent here (Photography by Karsten Petersen ©)

"Stolt Surf" — alleyways inside she ship filled with water (Photography by Karsten Petersen ©)

"Stolt Surf" — a very depressing look into the Chief Engineer's Office, my office (Photography by Karsten Petersen ©)

"Stolt Surf" — water filled alleyways — Chief Steward Erik Schønnemann inspecting the crew's accommodation for damage (Photography by Karsten Petersen ©)

"Stolt Surf" — Chief Steward Erik Schønnemann tries to save the furniture in his cabin. (Photography by Karsten Petersen ©)

"Stolt Surf" — After the storm, Captain Guttorm Oddenes inspecting the damage. Here looking, deeply concerned, into the Officer's Bar (Photography by Karsten Petersen ©)

"Stolt Surf" — wreckage on the catwalk (Photography by Karsten Petersen ©)

"Stolt Surf" — the stairway down below to the crew's quarters. Take note of the damaged wall panels. (Photography by Karsten Petersen ©)

"Stolt Surf" — one of the gangways curled up on the catwalk (Photography by Karsten Petersen ©)

"Stolt Surf" — but "Stolt Surf" made it and could continue towards Portland, U.S.A. (Photography by Karsten Petersen ©)

"Stolt Surf" — over an ocean of extreme beauty (Photography by Karsten Petersen ©)

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## PRODUCT CHANGES FOR THE 2012 HURRICANE SEASON

The National Hurricane Center will implement the following changes to its text and graphical products for the 2012 hurricane season, effective May 15:

**Changes:**

**1) Saffir-Simpson Hurricane Wind Scale modification.**

A minor modification of the Saffir-Simpson Hurricane Wind Scale (SSHWS) will be made to resolve rounding issues associated with the conversion of units from knots to mph which are used for wind speed. This change follows a public comment period conducted in 2011.

Category 4 on the SSHWS will be broadened by one mph at each end of the range, yielding a new range of 130-156 mph. This will also result in a minor modification of the Category 3 and 5 wind speed thresholds. The SSHWS will change as follows:

From:
Category 3: 111-130 mph (96-113 kt, 178-209 km/h)
Category 4: 131-155 mph (114-135 kt, 210-249 km/h)
Category 5: 156 mph or higher (136 kt or higher, 250 km/h or higher)

To:
Category 3: 111-129 mph (96-112 kt, 178-208 km/h)
Category 4: 130-156 mph (113-136 kt, 209-251 km/h)
Category 5: 157 mph or higher (137 kt or higher, 252 km/h or higher)

There will be no change to the wind speeds currently assigned to Categories 1 and 2.

With this change, a 115-kt Category 4 hurricane will have its intensity properly converted to mph and rounded to the nearest 5 mph (130 mph) and remain within the Category 4 mph range.

Important note: Since intensities are assigned using 5-kt increments, neither storms in the historical record nor any future storms will have their SSHWS category changed as a result of this modification to the scale.

The NWS wishes to remind media, partners, and the public that the Saffir-Simpson Hurricane Wind Scale provides information on wind impacts only. The scale does not provide commentary or information on other impacts (i.e., storm surge, rainfall, and tornadoes) or characteristics of tropical cyclones.

Additional information on this change can be found at:
http://www.nhc.noaa.gov/aboutsshws.php

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# Mean Circulation Highlights and Climate Anomalies

## January through April 2012

*By Anthony Artusa, Meteorologist, Climate Operations Branch, Climate Prediction Center NCEP/NWS/NOAA*

***All anomalies reflect departures from the 1981-2010 base period.***

### January-February 2012

The 500 hPa circulation pattern over the Northern Hemisphere during January featured above average heights over the eastern North Pacific Ocean, the central North Atlantic, and northern Russia. Below average heights were observed over the western North Pacific, Alaska, western Canada, and the eastern Mediterranean Sea (Figure 1). The sea level pressure (SLP) pattern mirrored the mid tropospheric pattern fairly closely (Figure 2).

The mid tropospheric circulation pattern during February 2012 featured above average heights over the eastern North Pacific, much of western and central Canada, the eastern North Atlantic, and north central Russia. Below average heights were observed over the high latitudes of the North Pacific, northern Africa, southern Europe, southern Russia, and eastern Siberia (Figure 3). The SLP map again largely mirrored the mid tropospheric pattern, with the larger anomalies pole ward of 40N latitude (Figure 4).

### The Tropics

Mature La Nina conditions continued during January 2012 as sea surface temperature (SST) anomalies remained below -0.5C across much of the eastern and central equatorial Pacific Ocean. The monthly SST index for the El Nino 3.4 region was -1.1C. The oceanic thermocline, measured by the depth of the 20C isotherm, was shallower than average across this same area, with sub-surface temperatures 1-4C below average in January. Atmospheric convection was enhanced over Indonesia, and suppressed over the western and central Pacific. Equatorial low level easterly trade winds and upper level westerly winds remained stronger than average over the central and west central equatorial Pacific. In February, La Nina weakened as reflected by the development of positive SST anomalies in the eastern Equatorial Pacific, and by a decreased magnitude of the negative SST anomalies in the central Equatorial Pacific. The monthly El Nino index for the El Nino 3.4 region was -0.7C. The oceanic thermocline remained shallower than average in the east central Equatorial Pacific, although corresponding subsurface temperatures were only 1-3C below average. In addition, the equatorial low level easterly trade winds were stronger than average over the central and west central Equatorial Pacific. Convection remained suppressed in the western and central Equatorial Pacific and enhanced across the Indian Ocean and the Philippines.

### March-April 2012

The 500 hPa circulation pattern during March 2012 featured above average heights over the central North Pacific, eastern North America and Europe. Below average heights were observed from eastern Siberia and Alaska to western Canada and the US Pacific Northwest, and western Russia (Figure 5). The sea level pressure and anomaly map (Figure 6) resembled the 500 hPa circulation, especially in regard to its zonal wave-3 pattern over the Western Hemisphere.

The month of April was characterized by above average heights over the Arctic Ocean, northwestern and central North America, central North Atlantic, western and central Russia, and Kamchatka; below average heights over Europe (Figure 7). The SLP and anomaly field (Figure 8) largely mirrored the middle tropospheric circulation pattern, with SLP values as much as 8-10 hPa below average across northwestern Europe.

The March through April period was characterized by more extreme weather and climate conditions. Record and near record breaking temperatures dominated the eastern two-thirds of the contiguous United States and contributed to the warmest March since record keeping began in 1895 (Reference 1). Many areas in the north central United States reported temperatures 11-22 Celsius degrees above average. The March through April period was also very active in regard to multiple severe weather outbreaks (References 1, 2). A few of the more noteworthy episodes include tornadoes in the Dallas-Fort Worth area (April 3), localized hail drifts about a meter deep near Amarillo, Texas (April 11, Reference 3), and large damaging hail in Norfolk, Nebraska (April 14) as well as St. Louis, Missouri (April 28). Severe weather was not limited to the lower 48 states. On March 9 in Hawaii, a rare EF-0 tornado affected the towns of Lanikai and Kailua on Oahu, while in a separate storm, the largest hailstone on record for the state was reported (10.8 cm long, 5.7 cm tall, and 5.1 cm wide). On the flip side, Anchorage, Alaska reported its snowiest winter season on record, with 341.6 cm of snow. The previous record was 336.8 cm, during the winter of 1954-55.

### The Tropics

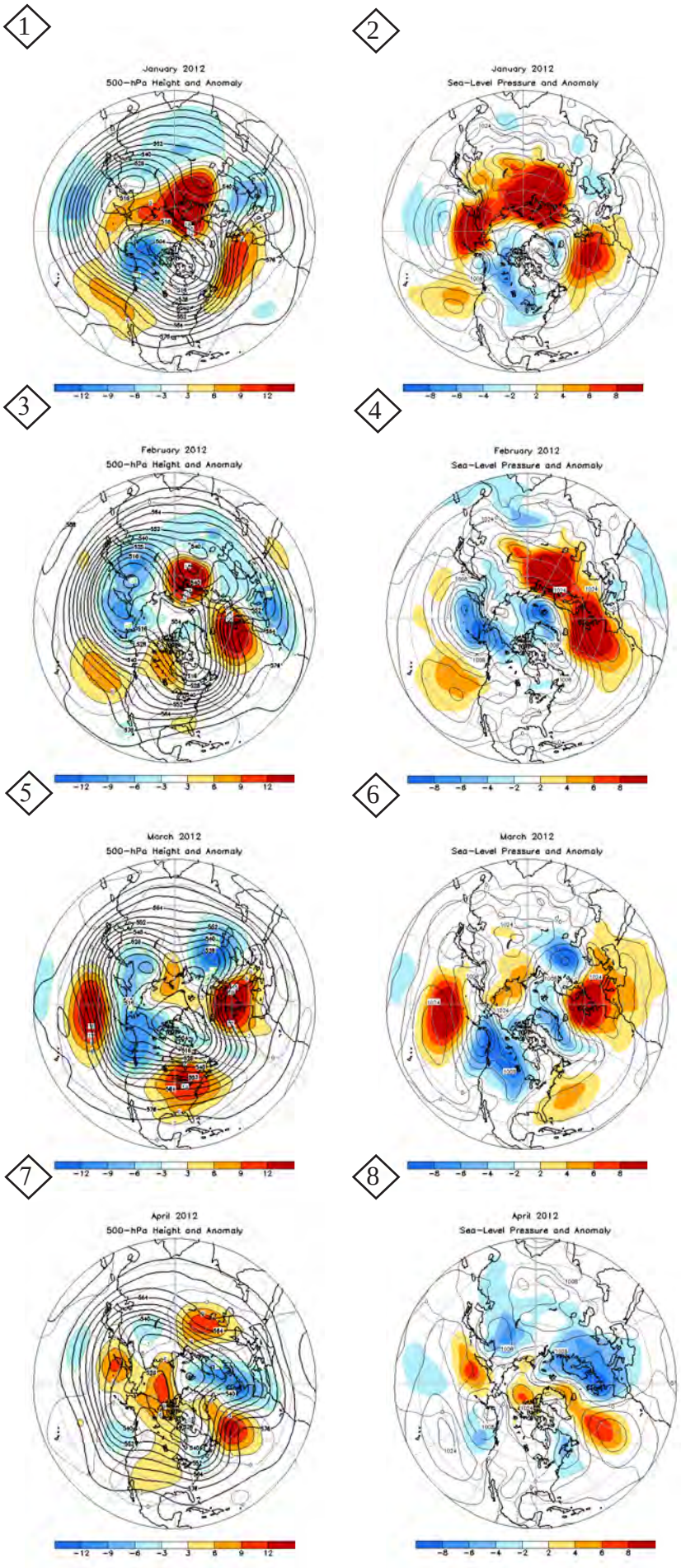
La Nina conditions continued to weaken during March, and transitioned

to ENSO-neutral conditions during April. Positive SST anomalies steadily increased in the eastern Equatorial Pacific during March and April, and the magnitude of negative SST anomalies in the central Equatorial Pacific decreased. The monthly El Nino index for the El Nino 3.4 region was -0.6C (March) and -0.4C (April). The depth of the oceanic thermocline became near average in the east central Pacific in April. The equatorial low level easterly trade winds weakened substantially during the course of the two month period. Convection remained suppressed in the western and central Pacific and enhanced across Indonesia and the Philippines in March. During April however, suppressed convection was observed across the equatorial Indian Ocean and Indonesia. Overall, these oceanic and atmospheric anomalies reflect a transition from La Nina to ENSO-neutral conditions. ⚓

## References


1. http://www.ncdc.noaa.gov/sotc/national/2012/3
2. http://www.ncdc.noaa.gov/sotc/national/2012/4
3. http://www.srh.noaa.gov/ama/?n=apr11survey


Much of the information used in this article originates from the Climate Diagnostics Bulletin archive: (http://www.cpc.ncep.noaa.gov/products/CDB/CDB_Archive_html/CDB_archive.shtml)




Figures 1,3,5,7
Northern Hemisphere mean and anomalous 500-hPa geopotential height (CDAS/Reanalysis). Mean heights are denoted by solid contours drawn at an interval of 6 dam. Anomaly contour interval is indicated by shading. Anomalies are calculated as departures from the 1981-2010 base period monthly means.

Figures 2,4,6,8
Northern Hemisphere mean and anomalous sea level pressure (CDAS/Reanalysis). Mean values are denoted by solid contours drawn at an interval of 4 hPa. Anomaly contour interval is indicated by shading. Anomalies are calculated as departures from the 1981-2010 base period monthly means.

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# Tropical Atlantic and Tropical East Pacific Areas

## January through April 2012

*Marshall Huffman and Scott Stripling*
*Tropical Analysis and Forecast Branch,*
*National Hurricane Center, Miami, Florida*
*NOAA National Center for Environmental Prediction*

During the four month period from January through April 2012, the National Hurricane Center's (NHC) Tropical Analysis and Forecast Branch (TAFB) issued a total of 27 warnings for gale or storm force winds within their area of responsibility. This was down from the five-year average of 40 warnings during the January through April period, with most of the difference attributed to a decrease in Atlantic warnings.

### Tropical North Atlantic Ocean including the Caribbean Sea and the Gulf of Mexico

The TAFB Atlantic High Seas area of responsibility (AOR) extends from 7°N to 31°N west of 35°W, including the Caribbean Sea and Gulf of Mexico. 14 warnings were issued for this area in 2012. This was down from the January through April five-year average of 23.4 warnings. The lower number of warnings was due to a dominant ridge centered over the eastern half of the United States that was responsible for record warm temperatures. ***Figure 1*** shows the 90-day mean temperature anomalies over the continental United States ending on 15 Apr 2012. Temperatures averaged between 2-7°F above normal along the Gulf coast during this period. The ridging over the eastern United States extended into the Gulf of Mexico and southwest North Atlantic Ocean and limited the intrusion of strong cold fronts into that portion of the TAFB AOR.

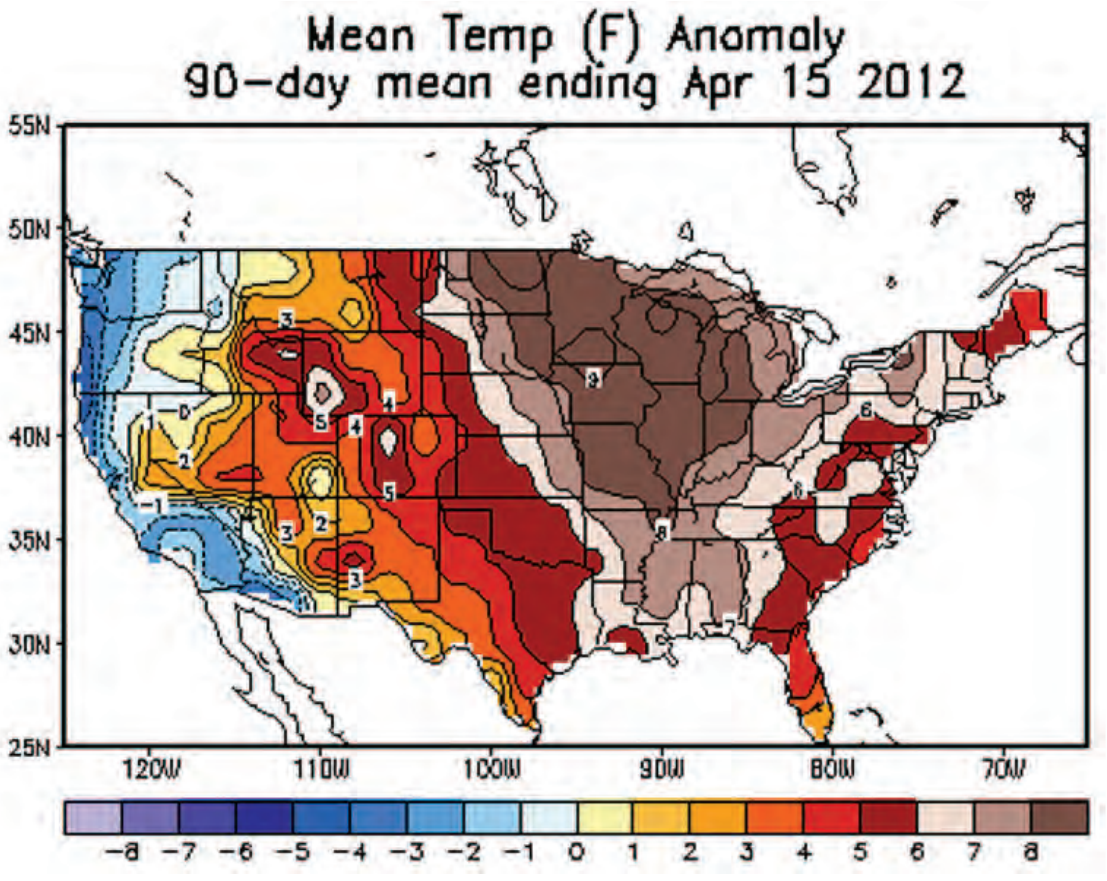


**Figure 1.** 90-day mean temperature anomalies in degrees Fahrenheit for the continental United States ending 15 Apr 2012 courtesy of the National Weather Service's (NWS) Climate Prediction Center.

**Table 1.** Non-tropical cyclone warnings issued for the Gulf of Mexico between 01 January 2012 and 30 April 2012.

| Onset | Region | Peak Wind Speed | Duration | Forcing |
|---|---|---|---|---|
| 0600 UTC 02 Jan | Western Gulf of Mexico | 40 kts | 24 hr | West of Cold Front |
| 1800 UTC 12 Jan | Western Gulf of Mexico | 35 kts | 06 hr | Cold Front |
| 1800 UTC 05 Feb | Western Gulf of Mexico | 35 kts | 12 hr | West of Cold Front |
| 0000 UTC 25 Feb | North-Central Gulf of Mexico | 45 kts | 36 hr | West of Cold Front |
| 2100 UTC 03 Mar | Southwest Gulf of Mexico | 40 kts | 15 hr | West of Cold Front |

## Gulf of Mexico Gale Warnings

***Table 1*** details the warnings issued in the Gulf of Mexico from January through April 2012. Only five warning events occurred during this period. They were all gale warnings that were initiated by cold fronts. The two longest-duration events are highlighted below.

The first gale warning of the period began 0600 UTC 02 Jan and lasted 24 hours. This was the second-longest event within the Gulf of Mexico. Several cruise ships transiting from New Orleans to the northwest Caribbean Sea, including the **Carnival Conquest** (3FPQ9), the **Carnival Magic** (3ETA9), and the **Norwegian Spirit** (C6TQ6) reported gale force winds north of the frontal boundary in the vicinity of 28.0N 90.0W between 0600 UTC 02 Jan and 1200 UTC 02 Jan as the cold front was moving off the Texas and Louisiana coastline. Furthermore, partial passes from the MetOp Advanced SCATterometer (ASCAT) that occurred within the 24 hour warning time-frame are highlighted in ***Figure 3.*** Gale force winds are noted on this 1630 UTC 02 Jan pass and are mostly confined to the area south of 23°N west of 94°W.

Of the five gale force events in the Gulf, this cold front was accompanied by the strongest surface high pressure, a 1045 hPa high centered near the northeastern portion of the Mexican state of Coahuila as noted on the 1800 UTC 02 Jan Unified Surface Analysis in ***Figure 2. Figure 2*** also shows the position of the cold front as it moved south and east into the southwest North Atlantic Ocean and northwest Caribbean Sea. The front went on to produce gale force conditions within the southwest North Atlantic offshore waters zone.

The longest duration gale force wind event in Gulf of Mexico waters during the first four months of 2012 lasted 36 hours. A strong cold front pushed off the Texas and Louisiana coast

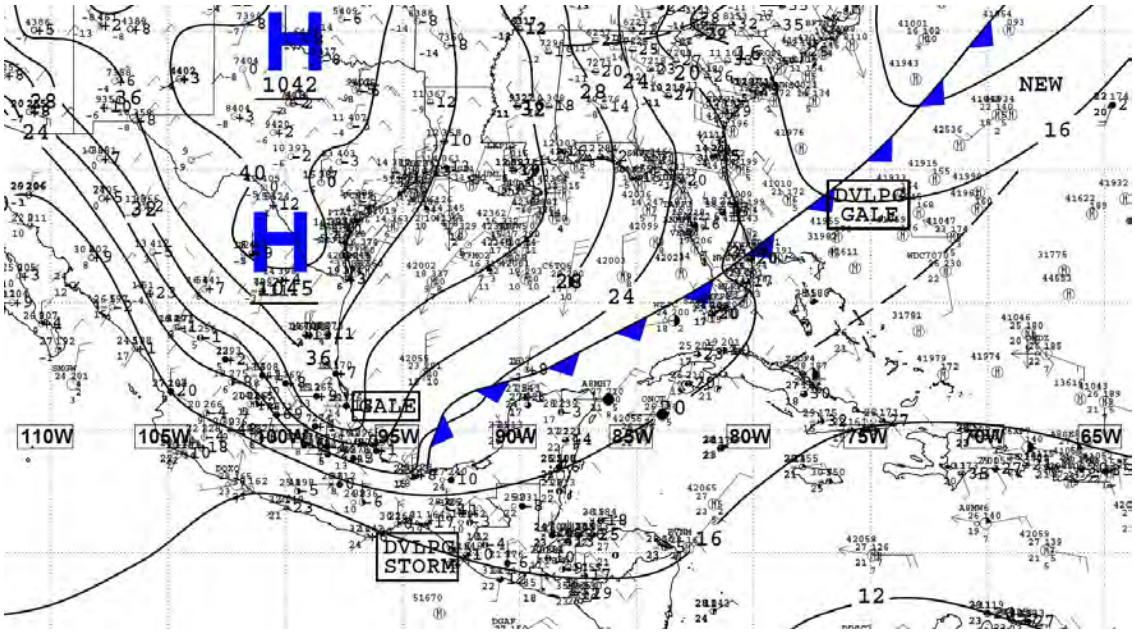


**Figure 2.** The NWS Unified Surface Analysis from 1800 UTC 02 Jan 2012. Strong high pressure centered over the Rio Grande river valley created a strong pressure gradient over portions of the northern and southwestern Gulf of Mexico north and west of the cold front progressing eastward across the Gulf of Mexico.

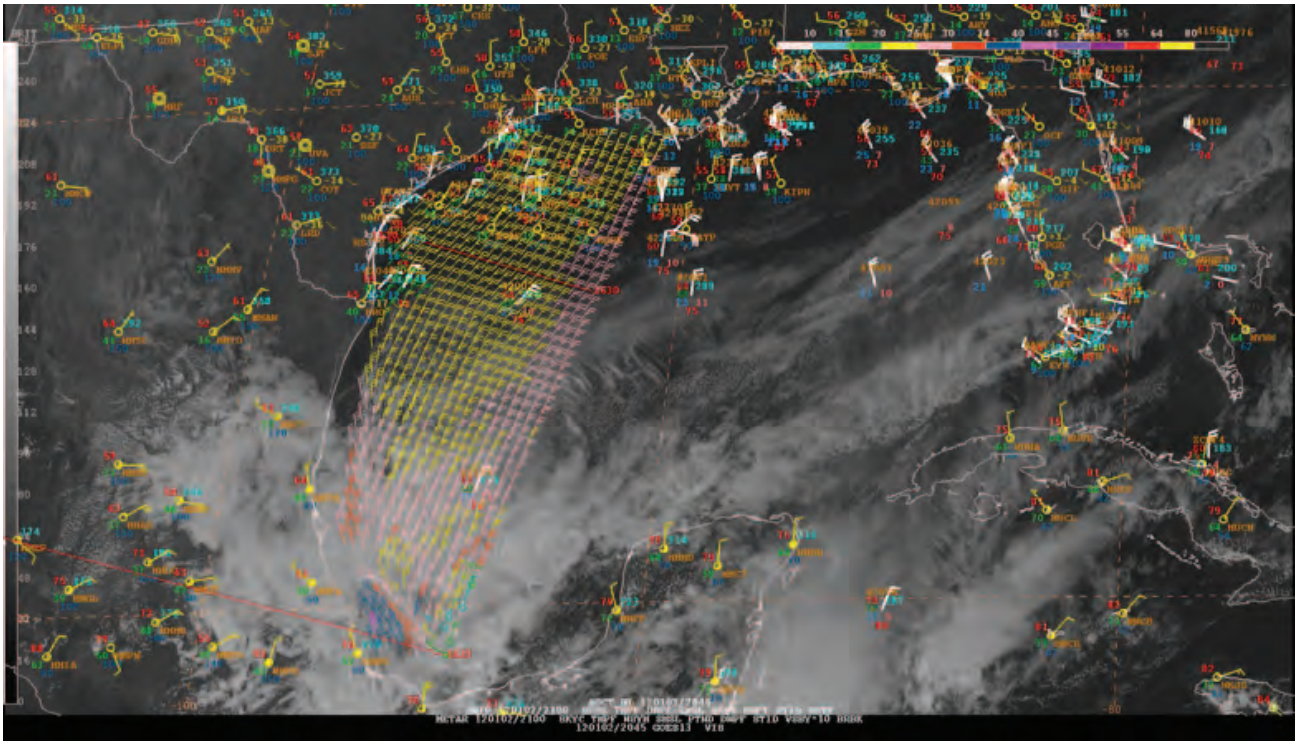

**Figure 3.** Geostationary Operational Environmental Satellite - East (GOES-E) visible imagery overlaid with ship and land-based observations valid at 2000 UTC 02 Jan as well as the MetOp Advanced SCATterometer (ASCAT) pass from 1630 UTC 02 Jan.

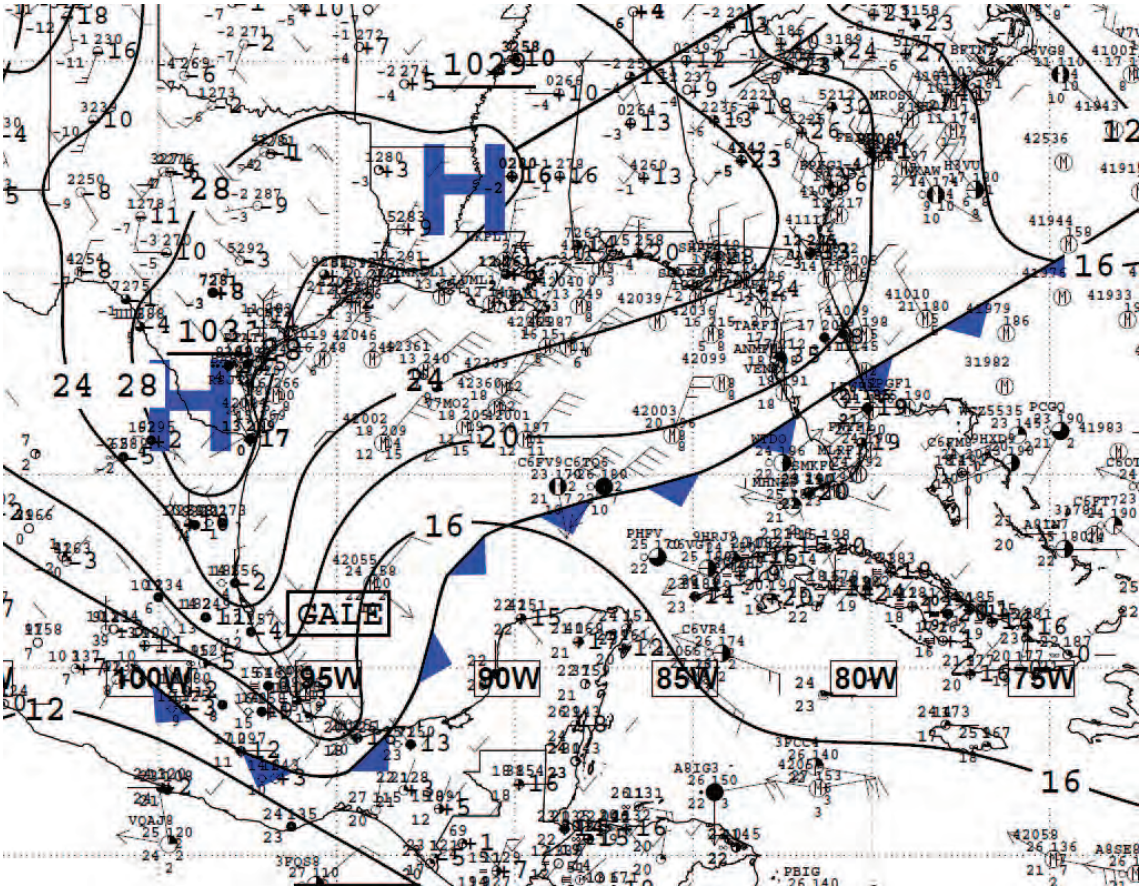


**Figure 4.** The NWS Unified Surface Analysis from 1200 UTC 25 Feb 2012. A strong cold front followed by surface ridging building into the basin from the northwest produced a large area of gale force winds with several ship and buoy observations above 30 kts.

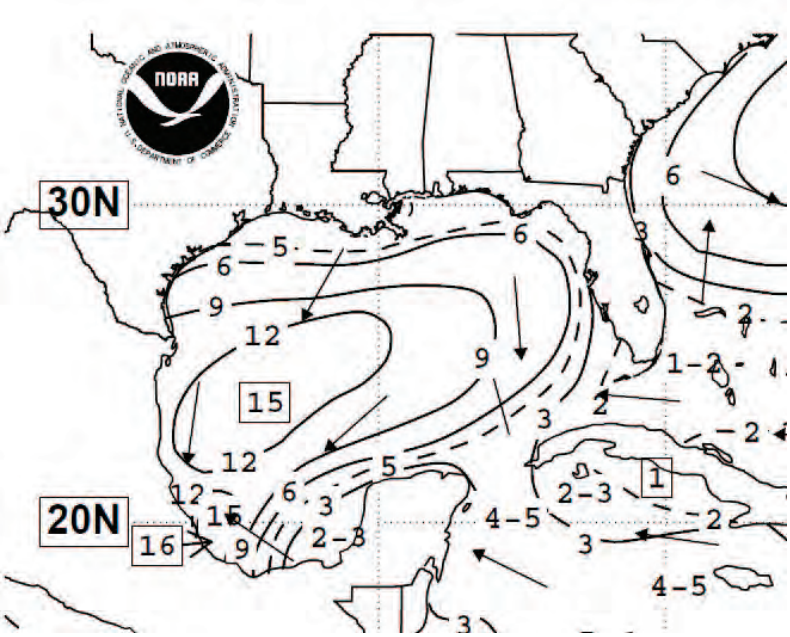


**Figure 5.** The TAFB Significant Wave Height Analysis for the Gulf of Mexico from 1200 UTC 25 Feb 2012. With a strong cold front extending from the southern Florida Peninsula to the eastern Bay of Campeche, significant wave heights reached 4.6 m (15 ft) over portions of the western Gulf of Mexico.

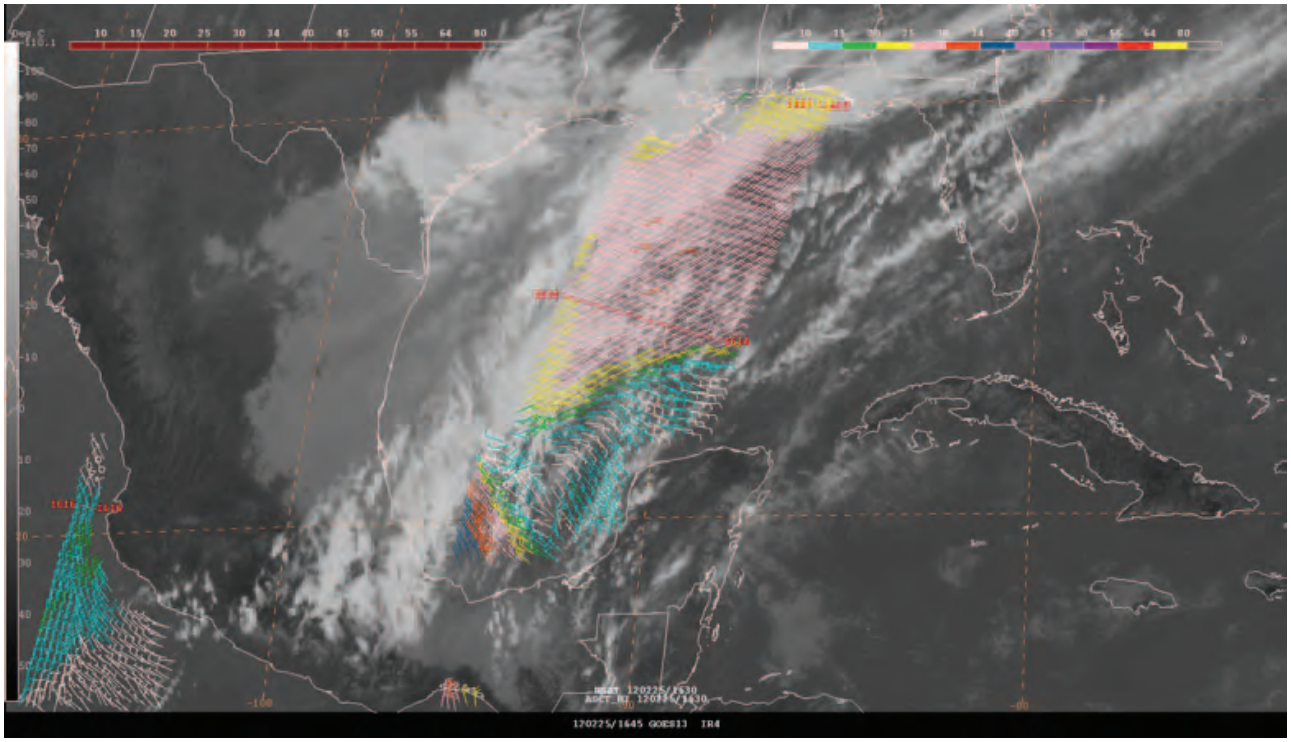


**Figure 6.** GOES-E infrared imagery valid at 1645 UTC 25 Feb overlaid with the ASCAT pass from 1614 UTC. Note the gale force winds in the western Bay of Campeche and winds to gale force over the north central Gulf of Mexico.

just prior to 1200 UTC 24 Feb and swiftly moved southeast over a majority of the basin as shown in the 1200 UTC 25 Feb Unified Surface Analysis in ***Figure 4.*** For the duration of the cold front's movement southeast, several ships reported gale force winds to the northwest of the frontal boundary that verified the warning: The **Virginian** (KSPH) reported 37 kts in the vicinity of 27.0°N 90.7°W between 1100 UTC 25 Feb and 1800 UTC 25 Feb, the **Mariner Of The Seas** (C6FV9) reported 44 kts near 24.7°N 88.8°W at 1200 UTC 25 Feb, the **Norwegian Spirit** (C6TQ6) reported 44 kts near 25.0°N 88.0°W between 1200 UTC and 1500 UTC 25 Feb, the **MSC Flaminia** (DHZR) reported 37 kts in the vicinity of 20.2°N 94.7°W between 2100 UTC 25 Feb and 0000 UTC 26 Feb, and the **Edamgracht** (PDWZ) saw 44 kts at 0000 UTC 26 Feb. Reported sea heights from these ships generally fell within the range that was provided on the 1200 UTC 25 Feb Significant

**Table 2.** Non-tropical cyclone warnings issued for the Atlantic Ocean between 01 January 2012 and 30 April 2012.

| Onset | Region | Peak Wind Speed | Duration | Forcing |
|---|---|---|---|---|
| 0600 UTC 03 Jan | Southwest North Atlantic | 40 kts | 30 hr | West of Cold Front |
| 1200 UTC 11 Feb | Southwest North Atlantic | 35 kts | 42 hr | West of Cold Front |
| 0000 UTC 20 Feb | Southwest North Atlantic | 35 kts | 54 hr | NE of Developing Low |
| 1200 UTC 04 Mar | Southwest North Atlantic | 35 kts | 18 hr | West of Cold Front |
| 0000 UTC 03 Apr | South-Central North Atlantic | 40 kts | 36 hr | Cold Front |

Wave Height Analysis as seen in ***Figure 5***, with a maximum of 4.6 m (15 ft) noted over the western Gulf of Mexico. In addition, ASCAT wind retrievals on 25 Feb saw winds in the 25-34 kts range across the central Gulf of Mexico north of the cold front and in the 34-40 kts rage in the southwestern Gulf as seen in ***Figure 6***. Of note, NOAA Buoy 42002 moored near 25.8°N 93.7°W reported nearly continuous 15-minute interval 30-34 kts wind speeds during the warning period between 0000 UTC 25 Feb and 1000 UTC 25 Feb.

## Atlantic Ocean Gale Warnings

***Table 2*** describes the five non-tropical warnings issued for the Atlantic Ocean between 01 Jan 2012 and 30 April 2012. Two of those warnings were attributed to cold fronts that moved eastward from the Gulf of Mexico into the Atlantic Ocean and had prior gale force warnings associated with them in the Gulf of Mexico.

The strongest of two cold fronts that progressed eastward from the Gulf of Mexico into the southwest North Atlantic generated gale force conditions that began on 0600 UTC 03 Jan and lasted for 30 hours. The 0600 UTC 03 Jan Unified Surface Analysis in ***Figure 7*** shows a cold front extending into the TAFB Atlantic High Seas forecast area west of Bermuda near 31°N 70°W then southwest to western Cuba near 23°N 80°W.

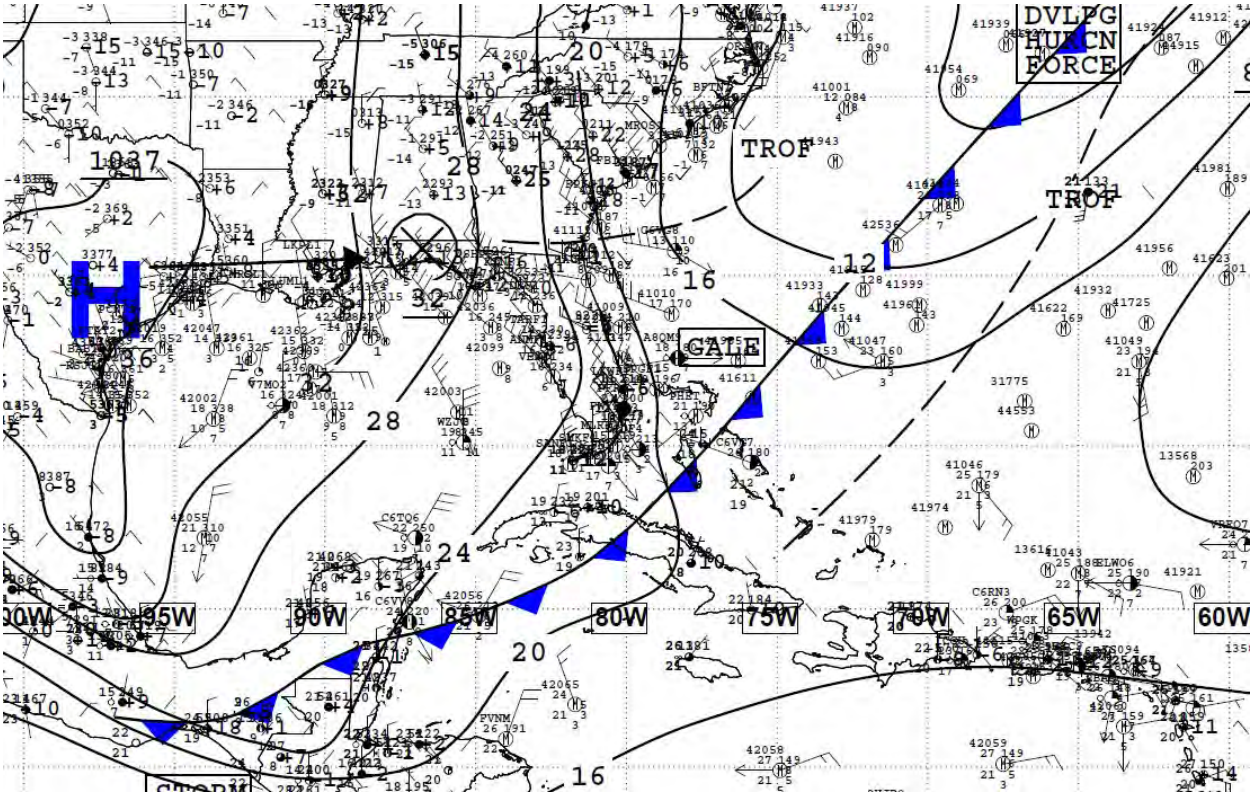


**Figure 7.** The NWS Unified Surface Analysis from 0600 UTC 03 Jan 2012. A cold front progressed across the Gulf of Mexico and the Florida peninsula into the southwestern North Atlantic waters producing gale force wind conditions north of 27°N west of the front.

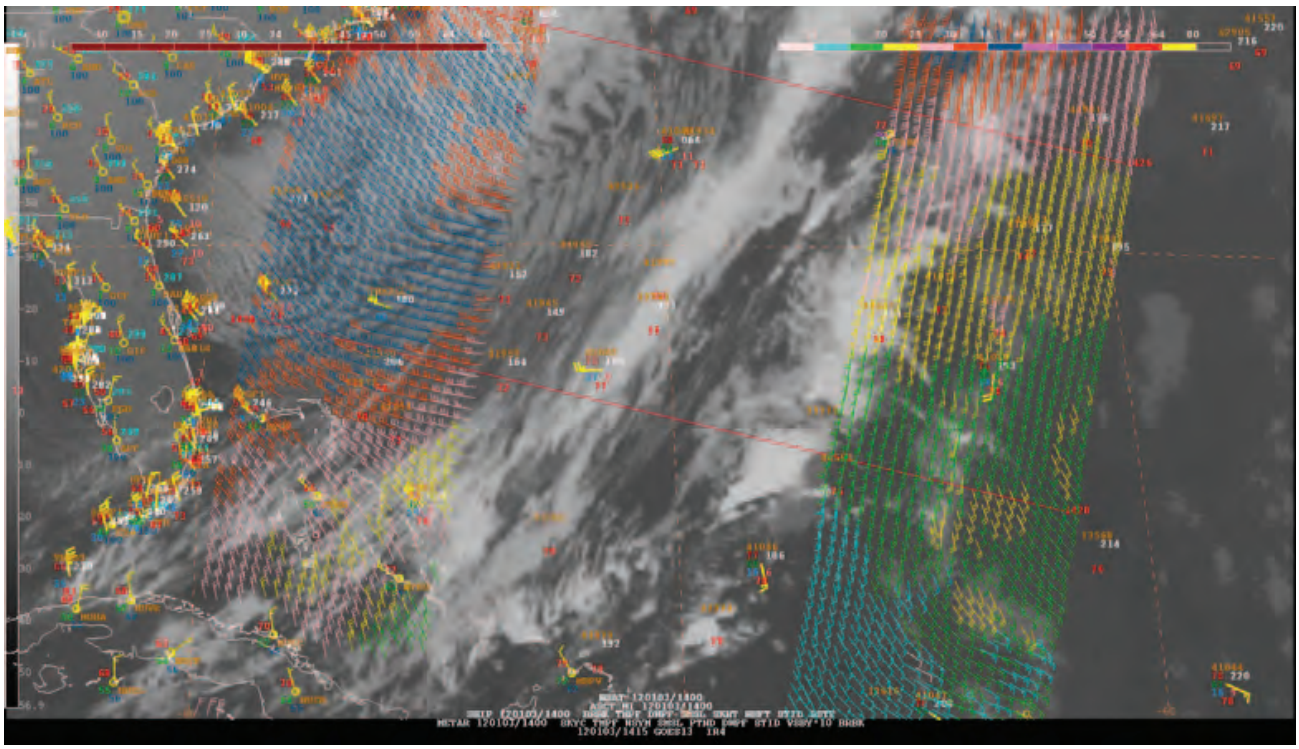

**Figure 8.** GOES-E infrared imagery overlaid with ship and land-based observations valid at 1400 UTC 03 Jan as well as the ASCAT pass from 1428 UTC 03 Jan. Note the large area of gale force winds off the coast of North Florida.

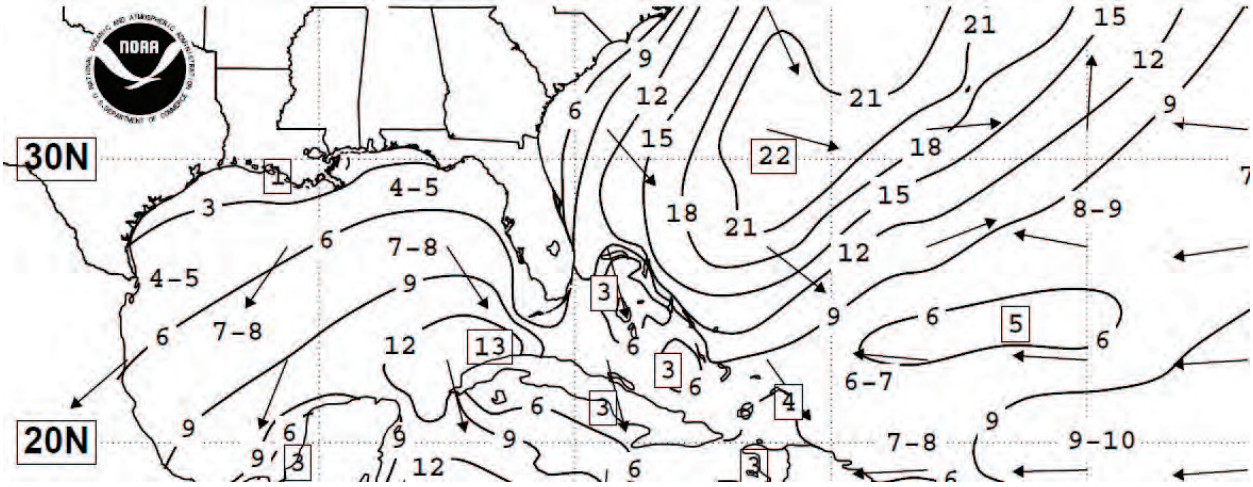


**Figure 9.** The TAFB Significant Wave Height Analysis for the Southwest North Atlantic from 0000 UTC 04 Jan 2012. A strong cold front extended across the southwest North Atlantic to eastern Cuba. With a large wave generation region extending from the eastern United States coast to near 30°N 70°W, significant wave heights reached a maximum of 6.7 m (22 ft).

The warning area was primarily confined to north of 27°N and west of the cold front. By the end of the warning period, the warning area had begun to slowly drift northeastward and eventually north of the High Seas area as the low-pressure system associated with the front intensified over the western North Atlantic Ocean. Several ships reported gale-force winds within the warning area including the **Norwegian Gem** (C6VG8) for several hours between 0500 UTC 03 Jan and 1400 UTC 03 Jan, the Henry (9HA258) in the vicinity of 29.2°N 75.9°W between 1100 UTC 03 Jan and 2300 UTC 03 Jan, the **Fantasy** (H3GS) which reported 40 kts in the vicinity of 27.3°N 79.8°W between 1200 UTC 03 Jan and 1500 UTC 03 Jan, the **Conti Greenland** (A8QM9) near 27.6°N 78.6°W at 1800 UTC 03 Jan, and the **Ha Sklanar** (C6CL6) near 28.0°N 70.6°W at 0300 UTC 04 Jan. The ASCAT pass around 1429 UTC 03 Jan captured wind retrievals in the range of 35-45 kts west of the cold front as seen in ***Figure 8***. The TAFB Significant Wave Height Analysis for 0000 UTC 04 Jan (***Figure 9***) indicated a maximum of 6.7 m (22 ft) over the southwestern Atlantic Ocean near 30°N 72°W, with observations supporting the highest seas near the front over the northwestern waters.

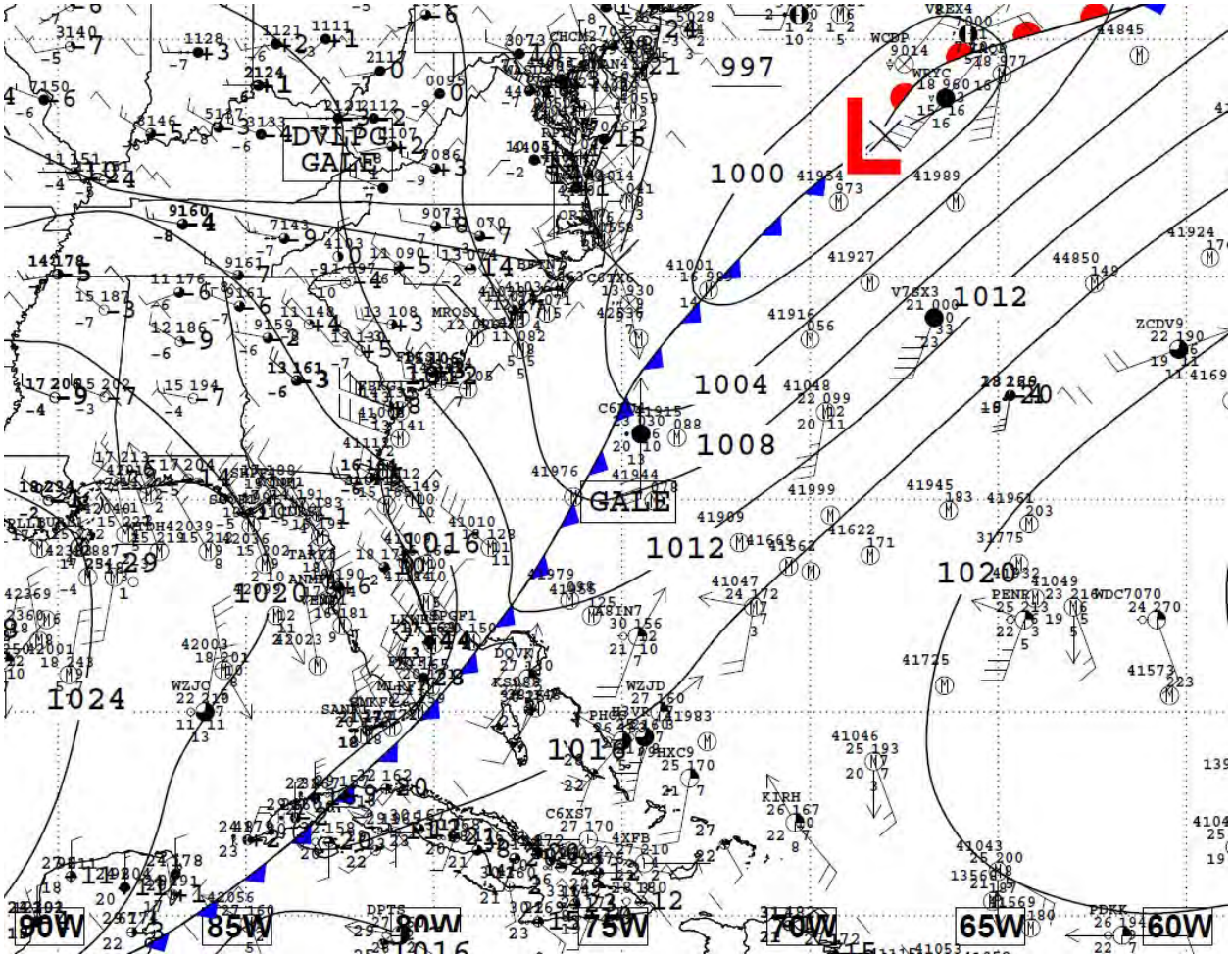


**Figure 10.** The NWS Unified Surface Analysis from 1800 UTC 04 Mar 2012 shoes a developing low pressure area east of the Mid-Atlantic United States coast with an associated cold front extending southwestward to the Florida Straits. Southwesterly gale force winds first occurred east of the front and then northwesterly gale force winds followed in wake of the front as it moved across the forecast waters of the Southwest North Atlantic.

The shortest-duration gale warning in the Atlantic Ocean forecast area began on 1200 UTC 04 Mar and lasted 18 hours. A developing area of low pressure and its associated cold front moved off the eastern United States coast and provided minimal gale force winds on both sides of the cold front. The NWS Unified Surface Analysis from 1800 UTC 04 Mar is shown in ***Figure 10***. One ship, the **Benguela Stream** (BENR), reported southwest winds of 37 kts east of the front near 27.2°N 64.3°W at 1800 UTC 04 Mar. West of the front, five ships located across the southwest North Atlantic reported northerly gale winds: The **Monarch Of The Seas** (C6FZ9) near 26.2°N 78.8°W at 1900 UTC 04 Mar, the **Celebrity Equinox** (9HXD9) in the vicinity of 25.8°N 77.3°W between 2300 UTC 04 Mar and 0300 UTC 05 Mar, the **Norwegian Sky** (C6PZ8) near 26.0°N 78.1°W between 0200 UTC 05 Mar and 0400 UTC 05 Mar, the **Nieuw Amsterdam** (PBWQ) near 26.1°N 78.7°W at 0300 UTC 05 Mar, and the **Norwegian Jewel** (C6TX6) near 30.9°N 77.5°W at 0500 UTC 05 Mar. Also, partial ASCAT wind retrievals reached the 25-30 kts range in a 1507 UTC 04 Mar pass as seen in ***Figure 11***.

## Caribbean Sea Gale Warnings

Two winter season gale warning events persisted for over 100 hours across the Caribbean Sea. Both of these warning periods were synoptically driven by an increased pressure gradient across the southwest and south-central Caribbean Sea.

The second longest event of the January through April 2012 period lasted 102 hours and began at 0600 UTC on the 31st of January. ***Figure 12*** shows the Unified Surface Analysis from 1800 UTC on 31 Jan with the designated gale warning area at its greatest extent from 11N to 14N between 73W and 78W. Winds reached minimal gale force during this event with several ships in the vicinity of the area that verified the warning. These ships included the **Island Princess** (ZCDG4), the **Statendam** (PHSG), and the **Coral Princess** (ZCDF4). Seas observed by these ships spanned from 2.1 to 3.7 m (7 to 12 ft).

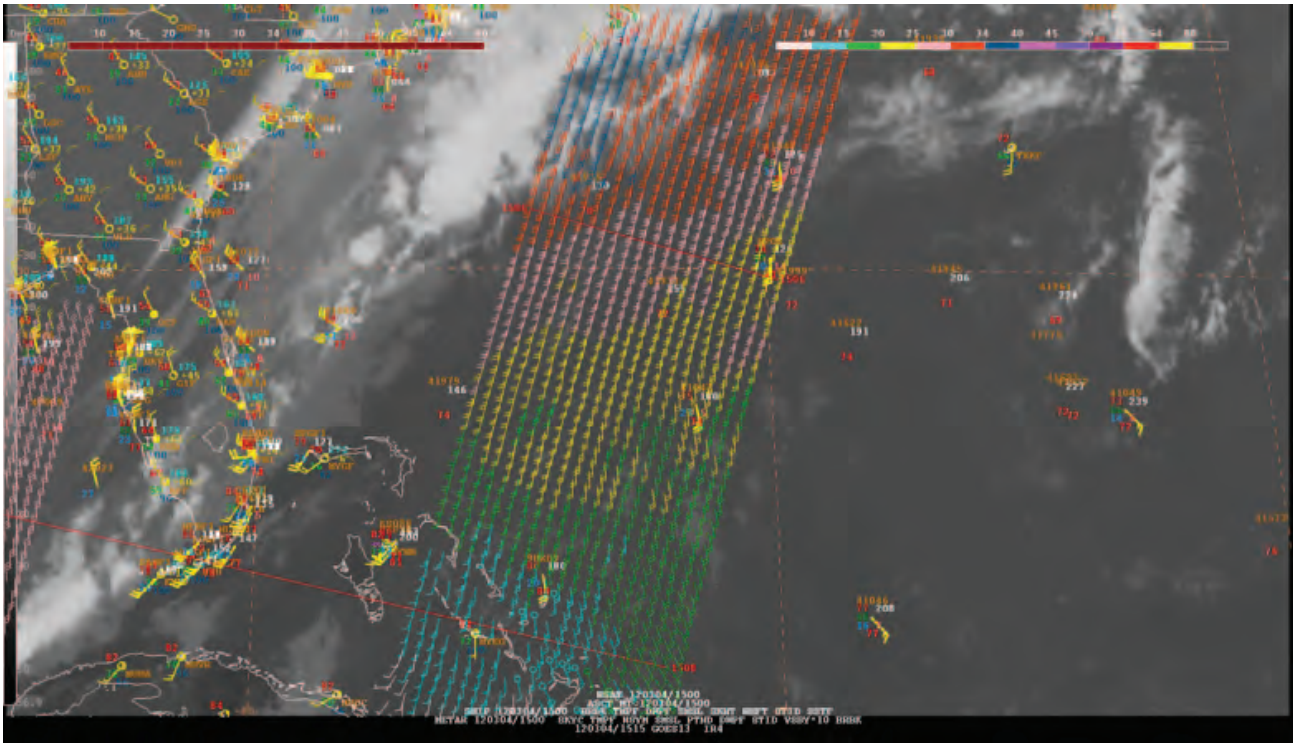

**Figure 11.** GOES-E infrared imagery overlaid with ship and land-based observations valid around 1500 UTC 04 Mar as well as the ASCAT pass valid 1507 UTC 04 Mar.

**Table 3.** Non-tropical warnings issued for the Caribbean Sea between 01 January 2012 and 30 April 2012.

| Onset | Region | Peak Wind Speed | Duration | Forcing |
|---|---|---|---|---|
| 1800 UTC 16 Jan | Southwest Caribbean | 35 kts | 42 hr | West of Cold Front |
| 0600 UTC 31 Jan | Southwest Caribbean | 35 kts | 102 hr | Pressure Gradient |
| 0600 UTC 25 Feb | Southwest Caribbean | 35 kts | 138 hr | Pressure Gradient |
| 0600 UTC 06 Mar | Southwest Caribbean | 35 kts | 84 hr | Pressure Gradient |
| 0000 UTC 03 Apr | South-Central North Atlantic | 40 kts | 36 hr | Cold Front |

A few weeks later, the longest duration gale warning within TAFB's Area of Responsibility (AOR) was issued. Gale winds were generated off the coast of Colombia due to the strong pressure gradient between a stationary ridge ahead of a stalled frontal boundary over the southwest North Atlantic Ocean and southern Gulf of Mexico and lower pressure over northern South America. This pattern enhanced easterly trade winds across the southwest and south-central Caribbean Sea. The gale warning covered the area from 11°N to 13°N between 73°W and 77°W as noted on the 1800 UTC 26 Feb Unified Surface Analysis in ***Figure 13***. During the warning period, numerous partial ASCAT passes traversed over the warning area with wind retrievals reaching 25 to 35 kts. ***Figure 14*** gives a sample of these passes. Ships reporting gale force winds included the **Grandeur Of The Seas** (C6SE3) near 11.1°N 75.9°W at 0400 UTC 28 Feb, the **Bahia** (A8SF7) near 11.0°N 75.7°W at 1800 UTC 28 Feb, and the **Conti Daphne** (A8OZ6) between 0600 UTC 01 Mar and 1500 UTC 01 Mar.

## Tropical Eastern North Pacific Ocean

The TAFB eastern North Pacific AOR extends equatorward of 30°N and east of 140°W. Thirteen warnings were issued from January through April 2012. This is below the five-year average of 16.6 warnings issued during the January through April period. All thirteen warning events in the eastern North Pacific are cataloged in Table 4.

## Gulf of Tehuantepec Gale and Storm Warnings

All but three of the eastern North Pacific warning events were in the Gulf of Tehuantepec. These events were driven by cold frontal passages through the narrow Isthmus of Tehuantepec into the Pacific. During such events, a strong north to south pressure gradient between high pressure over the western Gulf

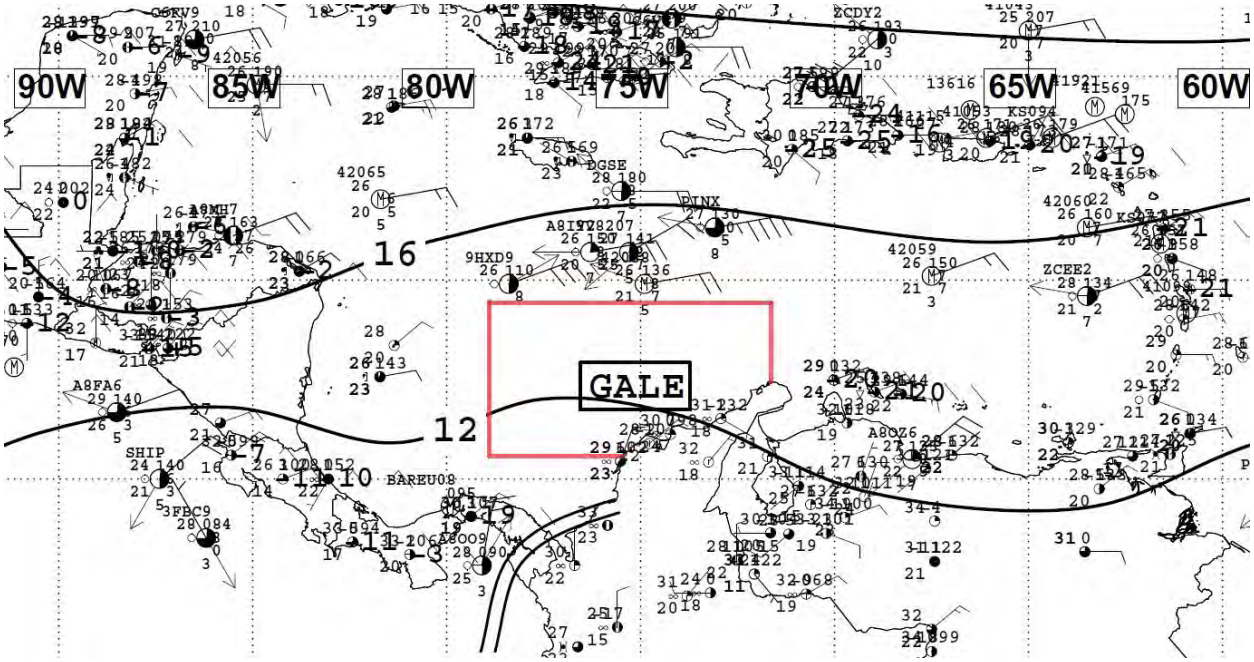


**Figure 12.** The NWS Unified Surface Analysis from 1800 UTC 31 Jan 2012. Outlined area in red denotes greatest areal extent of the gale warning issued by TAFB across the southwestern Caribbean Sea.

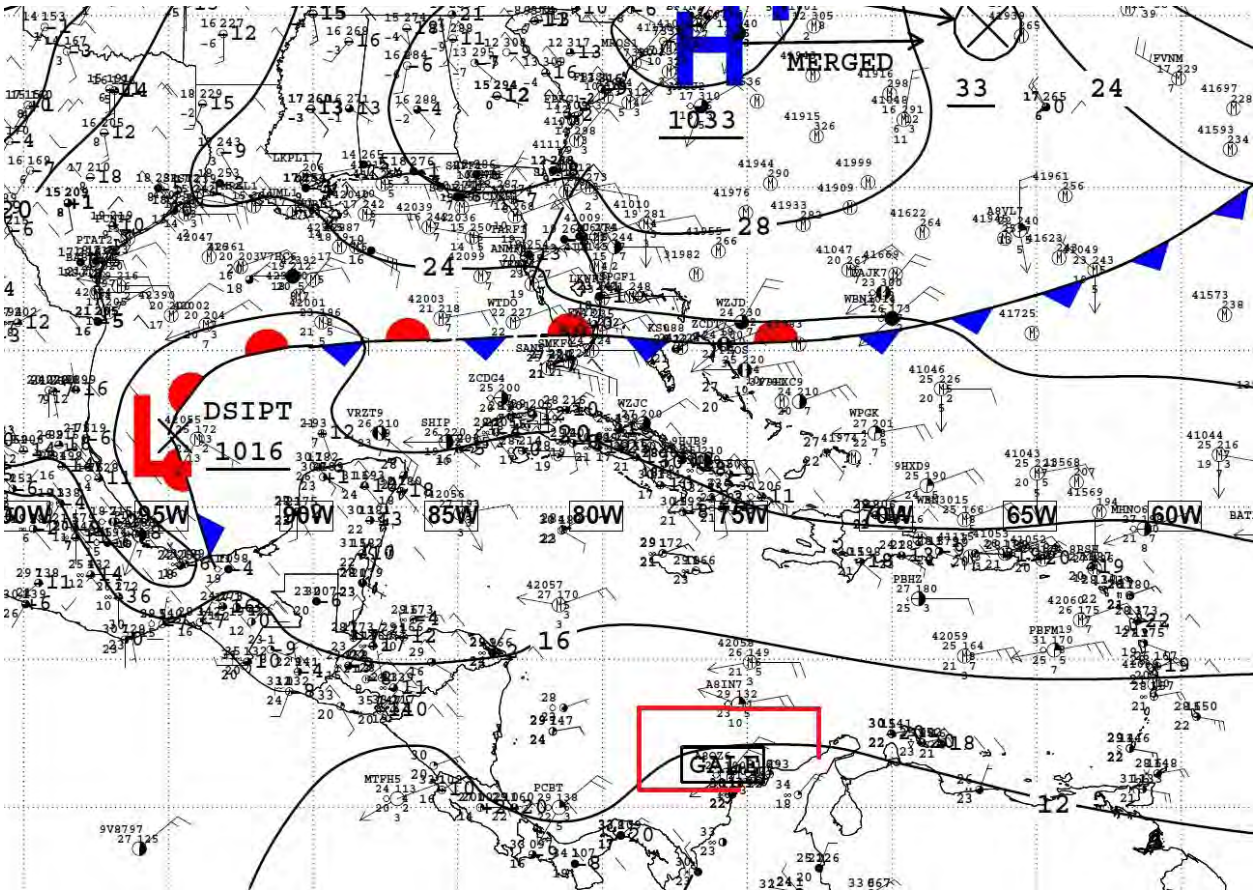


**Figure 13.** The NWS Unified Surface Analysis from 1800 UTC 26 Feb 2012. With a stationary front draped along 25N, strong surface ridging persisted for several days over the southwestern North Atlantic producing a tight pressure gradient across the western Caribbean Sea. The outlined area in red denotes the greatest areal extent of the gale warning issued by TAFB across the southwestern Caribbean Sea.

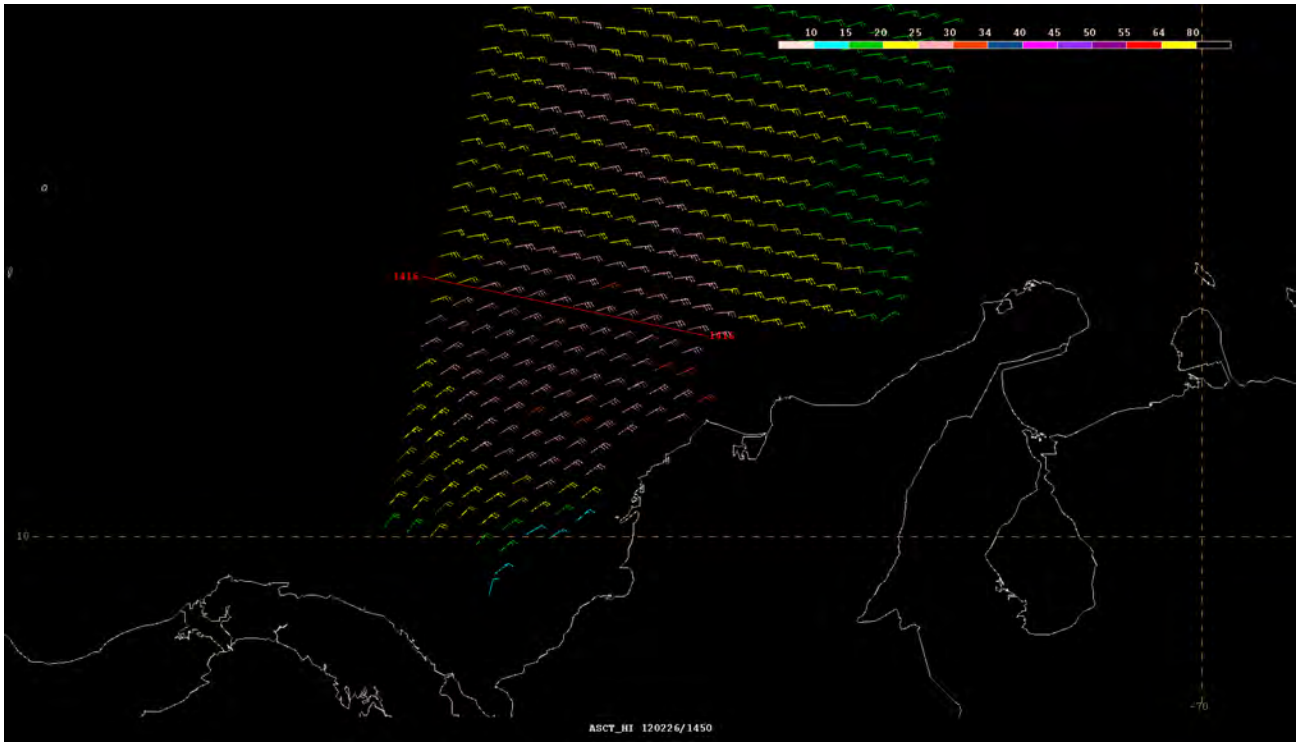


**Figure 14.** ASCAT pass valid 1416 UTC 26 Feb. Note the retrievals to gale force along the coast of Colombia.

**Table 4.** Non-tropical cyclone warnings issued for the subtropical and tropical eastern North Pacific between 01 January 2012 and 30 April 2012.

| Onset | Region | Peak Wind Speed | Gale / Storm Duration | Forcing |
|---|---|---|---|---|
| 02 Jan 00 UTC | Gulf of Tehuantepec | 55 kts | 78 hr / 36 hr | Gap Wind Event |
| 04 Jan 12 UTC | Gulf of Papagayo | 35 kts | 42 hr | Gap Wind Event |
| 13 Jan 12 UTC | Gulf of Tehuantepec | 40 kts | 66 hr | Gap Wind Event |
| 27 Jan 06 UTC | Gulf of Tehuantepec | 40 kts | 84 hr | Gap Wind Event |
| 05 Feb 00 UTC | North of 25N West of 125W | 35 kts | 54 hr | Low Pressure System/Front |
| 06 Feb 06 UTC | Gulf of Tehuantepec | 40 kts | 36 hr | Gap Wind Event |
| 08 Feb 18 UTC | North of 27N West of 135W | 35 kts | 24 hr | Cold Front |
| 11 Feb 18 UTC | Gulf of Tehuantepec | 40 kts | 60 hr | Gap Wind Event |
| 20 Feb 00 UTC | Gulf of Tehuantepec | 35 kts | 12 hr | Gap Wind Event |
| 25 Feb 18 UTC | Gulf of Tehuantepec | 45 kts | 24 hr | Gap Wind Event |
| 04 Mar 12 UTC | Gulf of Tehuantepec | 55 kts | 72 hr / 18 hr | Gap Wind Event |
| 10 Mar 06 UTC | Gulf of Tehuantepec | 35 kts | 12 hr | Gap Wind Event |
| 22 Apr 06 UTC | Gulf of Tehuantepec | 40 kts | 66 hr | Gap Wind Event |

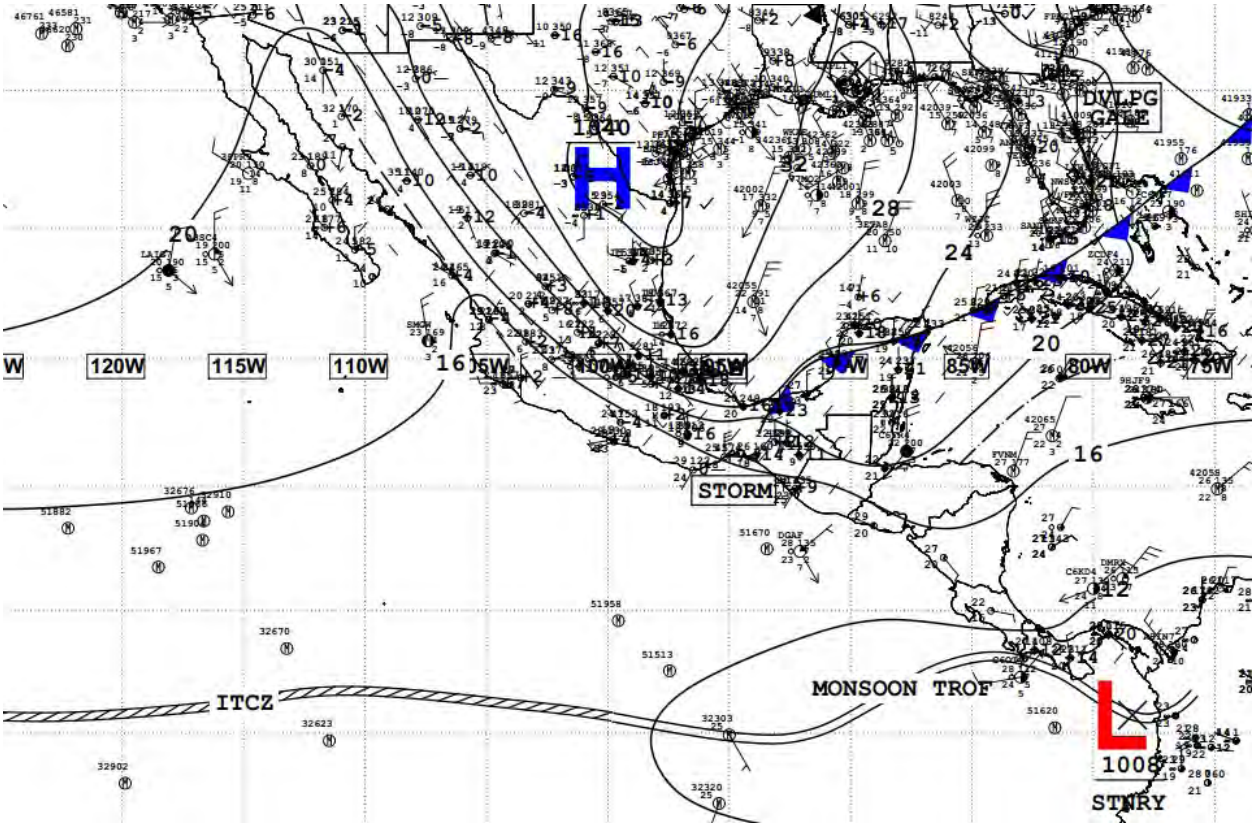


**Figure 15.** The NWS Unified Surface Analysis from 1000 UTC 03 Jan 2012. Note the pressure gradient between the monsoon trough to the south of the Gulf of Tehuantepec and the 1040 hPa high pressure system near the border of Texas and Mexico.

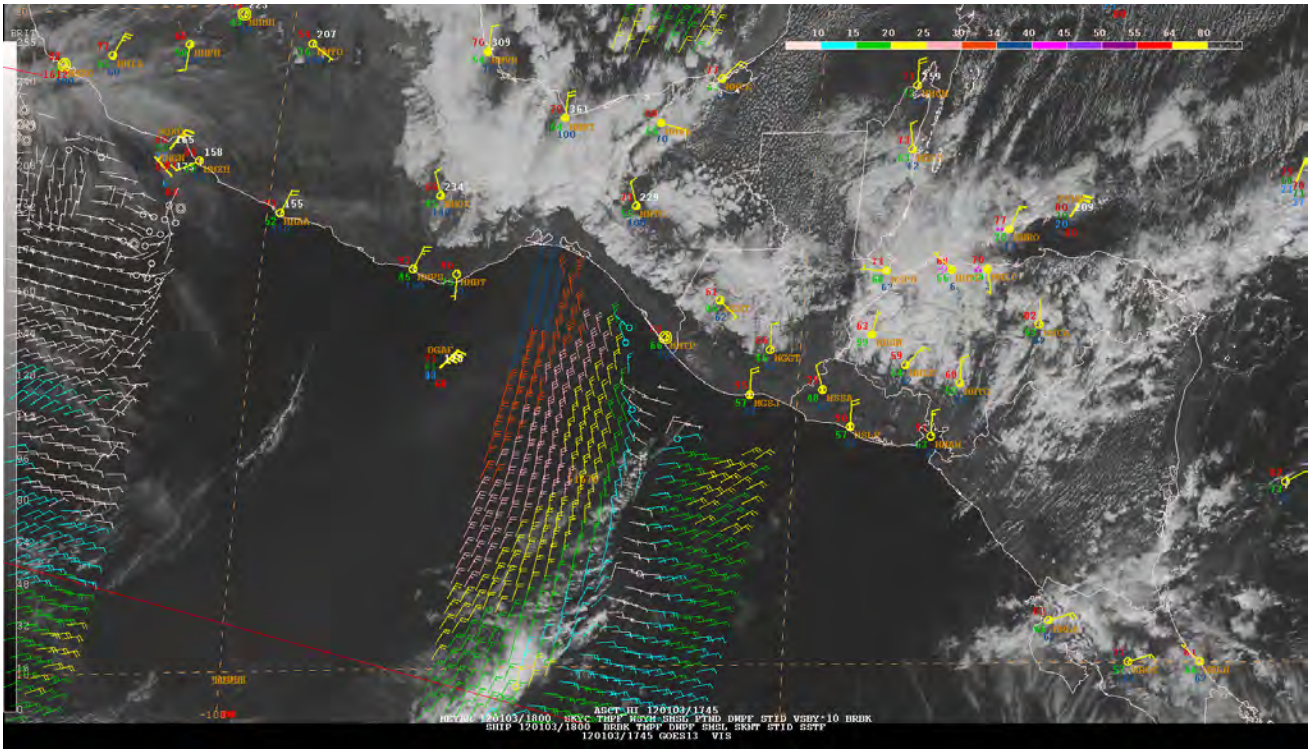

**Figure 16.** Conditions in the Gulf of Tehuantepec around 1800 UTC on 03 January 2012 including GOES-E visible satellite imagery, an ASCAT pass, and surface observation from ships and land-based stations.

of Mexico behind the front and lower pressure to the south of Tehuantepec drives the northerly flow through the break in the Sierra Madres in southern Mexico (Brennan et al, 2010).

Of the ten occurrences of gale force winds in the Gulf of Tehuantepec from January through April, two events produced storm-force winds. Meanwhile, the period from October 2011 through April 2012 saw a total of 20 gale warnings and 3 storm warnings. The number of gale warnings is higher than the 10-year average of 11.9 gale events noted by Brennan et al, 2010. However, the number of storm warnings was lower than their 10-year average of 6.4 storm events. Mean ridging over the Gulf of Mexico described in the Tropical North Atlantic Section of this article likely weakened the cold fronts before they reached the Isthmus of Tehuantepec, leading to a lower number of storm-force events than average.

The first eastern North Pacific gap wind event of 2012 began on 02 Jan at 0000 UTC. The strong pressure gradient between continental high pressure over Texas and northeast Mexico and the monsoon trough found south of the area between the equator and 07°N generated storm force winds in the Gulf of Tehuantepec and gale force winds in the Gulf of Papagayo. ***Figure 15*** shows the NWS Unified Surface Analysis from 03 Jan at 0000 UTC while the storm event was ongoing in Tehuantepec, but winds had yet to increase to gale force in Papagayo. The cargo ship **Dallas Express** (DGAF) saw winds as strong as 43 kts as it tracked along 14°N in the area south of Tehuantepec on 03 Jan. ***Figure 16*** shows the ship and land-based observations and the ASCAT pass from approximately 1800 UTC on 03 Jan.

There was one other storm force gap wind event during the January through April 2012 period. This event began with the onset of storm-force winds in the Gulf of Tehuantepec on 04 Mar at 1200 UTC. Winds diminished to gale force by 0600 UTC the next day, and the gale warning was canceled at 1200 UTC on 07 Mar. ***Figure 17*** shows the ship and land-based observations valid at 0600 UTC 05 Mar as well as the 0358 UTC ASCAT pass. The tanker **California Voyager** (WDE538) reported 30 kts winds south of Tehuantepec at this time with seas to 4.3 m (14 ft) while the container ship **Cap Palliser (**A8OH4) showed only 10 kts of westerly wind with 3.0 m (10 ft) seas just west of the primary gap area downwind of the Gulf of Tehuantepec. The tanker **California Voyager** (WDE538) had previously reported winds as high as 35 kts near 11°N 98°W at 0000 UTC on 05 Mar.

The other eight events in the Gulf of Tehuantepec listed in ***Table 4*** saw gale force gap winds. A number of ships reported gale force winds during these events. The passenger cruise ship **Coral Princess** (ZCDF4) traveled south of the Gulf of Tehuantepec on 13 Jan as well as on 27 Jan and captured the onset of gale force winds during both voyages. The **Paris Express** (DIHE) and the **Overseas Joyce** (V7NV4) also saw gale force winds here on 27 Jan. The Tehuantepec gales in February were all observed by the ASCAT scatterometer rather than ships. In March, the cruise ship **Statendam** (PHSG) observed a short lived gale event that occurred

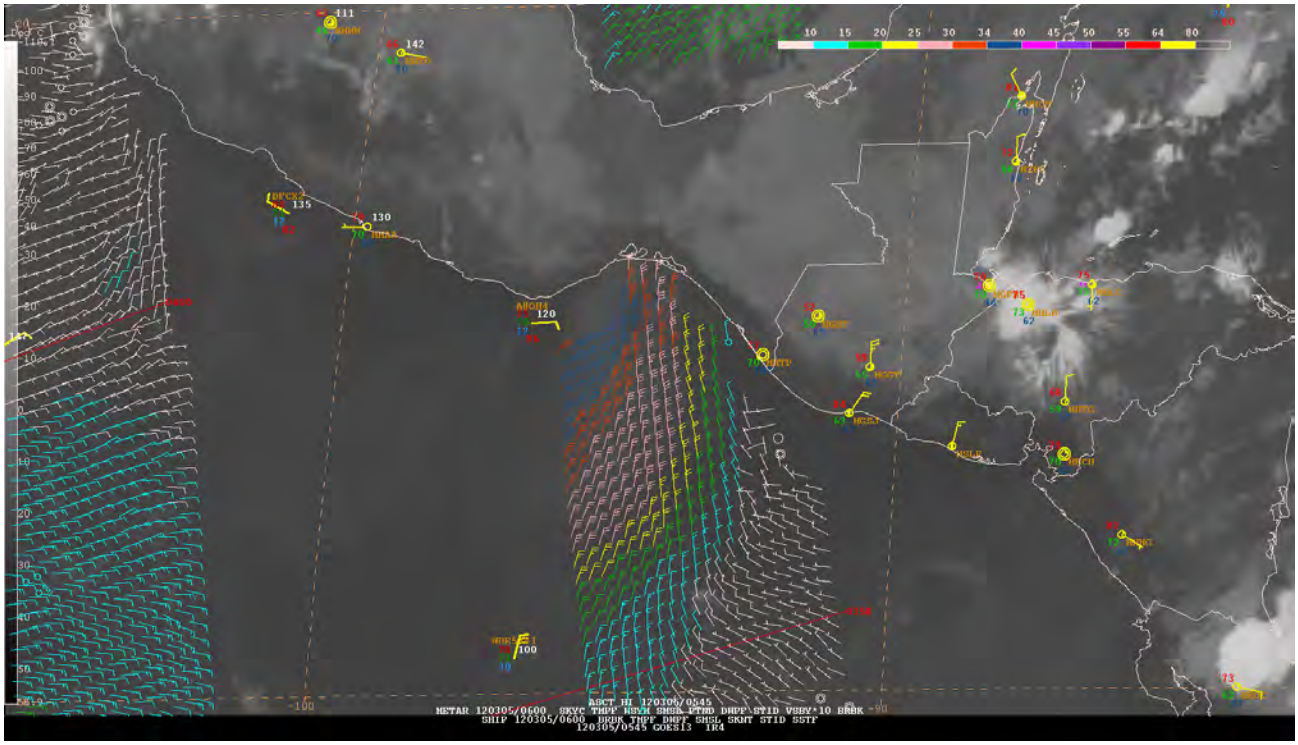


**Figure 17.** GOES-E infrared imagery overlaid with ship and land-based observations valid at 0600 UTC 05 Mar as well as the 0358 UTC ASCAT pass. The cargo ship California Voyager (WDE538) was reporting 30 kts north-northeasterly winds approximately 360 nmi south-southwest of the Gulf of Tehuantepec at this time.

after the storm-force event earlier in the month. The final observations of gale force winds in the Gulf of Tehuantepec for the season occurred during the event beginning 22 Apr. The cargo ships **Carmen** (SMGW) and **Cap Portland** (A8MQ9) and the cruise ship **Norwegian Pearl** all witnessed this late season event.

## Gales Associated with Cold Fronts near 30°N 140°W

On 05 February, a cut off low began to make its way into the northwestern portion of the TAFB forecast area bounded by 30°N to the north and 140°W to the west. Gale conditions began in the southerly flow ahead of the low beginning at 0000 UTC when the 994 hPa low pressure system was near 30°N 145°W, just west of the forecast area. The NWS Unified Surface Analysis from 0000 UTC on 05 Feb is shown in ***Figure 18***. Gale force winds and seas to 4.5 m (15 ft) were observed by the **Golden Princess** (ZCDA9) on 05 Feb as it traveled eastward from the Hawaiian Islands. This low was overtaken by another cold front around 0600 UTC on 06 Feb, but gale conditions continued in the southerly to southwesterly winds ahead of this front. As the front pushed eastward into the TAFB forecast area, a gale warning was also issued for the westerly to northwesterly winds behind the front. The cargo ships **Mokihana** (WRND) and **Horizon Reliance** (WFLH) and the cruise ship **Sapphire Princess** (ZCDG7) noted gale force winds ahead of the front on 06 Feb while the **Horizon Spirit** (WFLG) saw winds near gale force behind the front. The 0704 UTC ASCAT pass on 06 Feb shown in ***Figure 19*** confirmed the gale conditions behind the front. The gale warning was dropped at 06Z on 07 Feb.

Another strong cold front entered the northwest portion of the TAFB AOR on 09 Feb at 0000 UTC, but gale conditions were noted in the southerly flow ahead of the front six hours earlier. ***Figure 20*** shows the NWS Unified Surface Analysis at the onset of gales in the TAFB AOR at 1800 UTC 08 Feb. Gale warnings were also in effect in adjacent portions of the NWS Honolulu and NWS Ocean Prediction Center AORs as noted by the gale stamps in ***Figure 20***. The **Sapphire Princess** (ZCDG7) and the cargo ship **Brooklyn Bridge** (3FFI8) both saw gale force winds just west of the TAFB forecast area to as far south as 27°N. The 08 Feb 1848 UTC ASCAT pass showed winds to 33 kts within the TAFB forecast area and the **CMA CGM Orfeo** (A8NO6) recorded 34 kts winds just north of the TAFB area near 31°N135°W at 0600 UTC 09 Feb. Winds dropped below gale force within the TAFB AOR by 1800 UTC on 09 Feb.

### References

Brennan, M. J., H. D. Cobb III, and R. D. Knabb, 2010: Observations of Gulf of Tehuantepec Gap Wind Events from QuikSCAT: An Updated Event Climatology and Operational Model Evaluation. Wea. Forecasting, 25, 646-658.

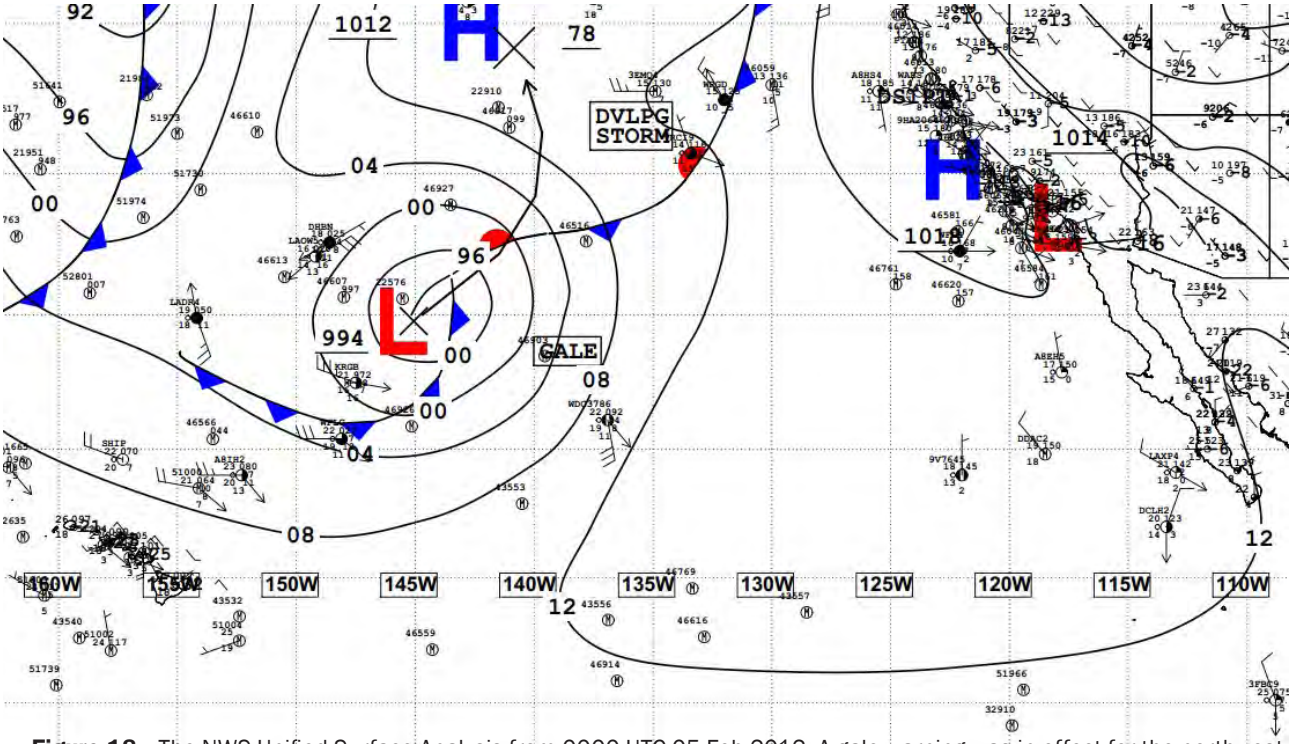


**Figure 18.** The NWS Unified Surface Analysis from 0000 UTC 05 Feb 2012. A gale warning was in effect for the northwest portion of the TAFB AOR at this time.

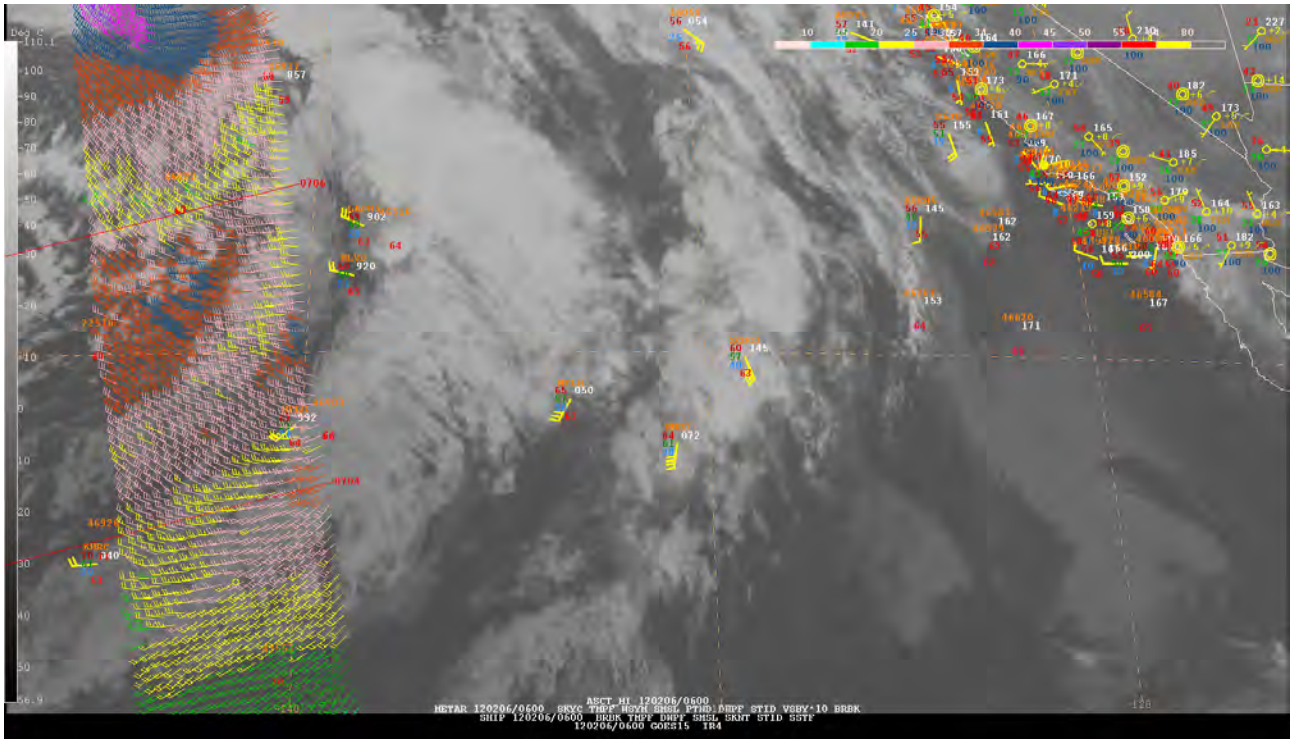

**Figure 19.** Geostationary Operational Environmental Satellite - West (GOES-W) infrared imagery overlaid with ship and land-based observations valid at 0600 UTC 06 Feb as well as the 0706 UTC ASCAT pass. Note the patch of gale force west-northwesterly winds in dark blue just south of 30°N and east of 140°W. Ships **Mokihana** (WNRD) and **Sapphire Princess** (ZCDG7) are reporting gale force southerly winds ahead of the front at this time.

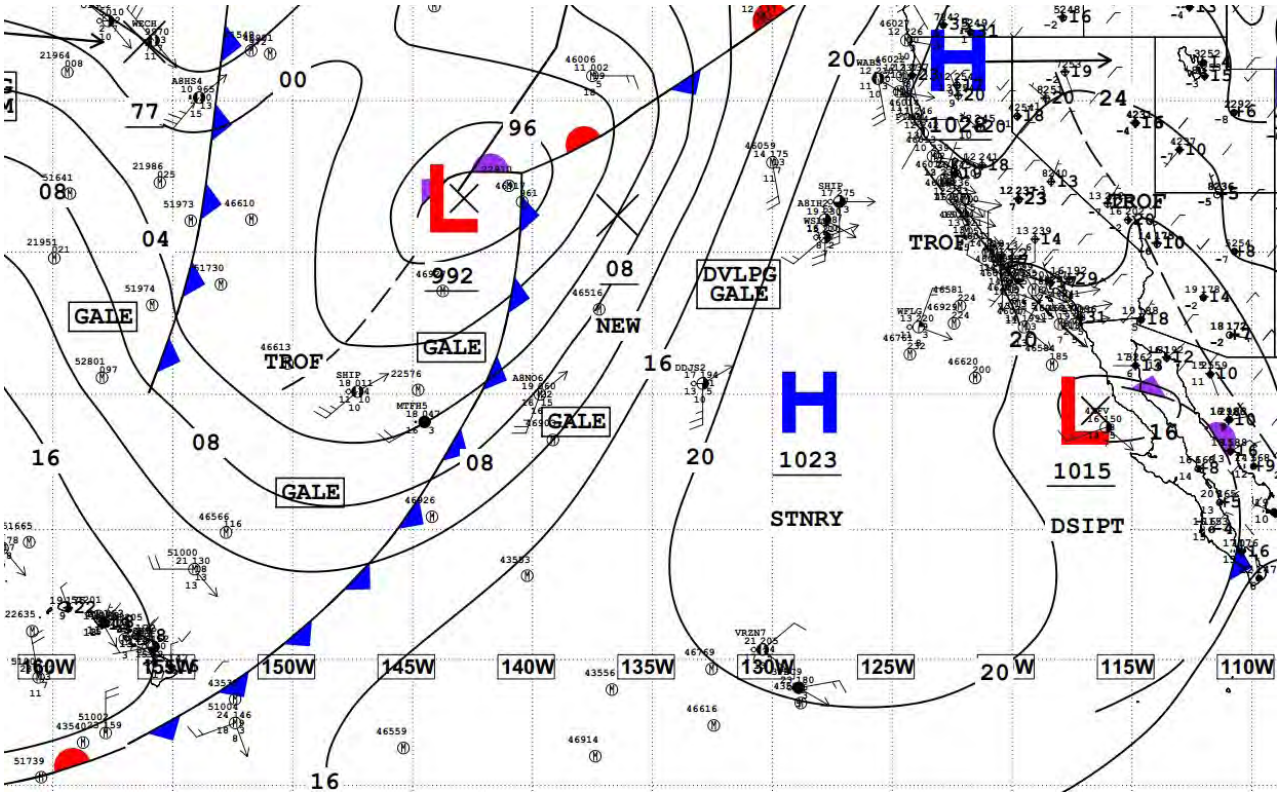


**Figure 20.** The NWS Unified Surface Analysis from 1800 UTC 08 Feb 2012. Gale warnings were in effect for the northwest portion of the TAFB AOR at this time in addition to the northeast corner of the NWS Honolulu AOR south of 30°N and west of 140°W as well as the southern portion of the NHC Ocean Prediction Center AOR just north of 30°N near 145°W.

# Marine Weather Review – North Atlantic Area

## July to December 2011

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### Introduction

The pattern over the North Atlantic during this period was generally progressive from southwest to northeast, originating near the U.S. East Coast or Atlantic provinces of Canada but with some originating over the central Atlantic waters. A more northern track was favored into September. There was a lack of the type of high latitude blocking that would cause systems to stall or move erratically after moving out over the North Atlantic, or even turn west. The first cyclone of non-tropical origin producing hurricane force winds was in mid-September. There were three and five such cyclones in October and November, respectively. December was the most active month in the six month period, producing ten hurricane force lows. November and December produced the most intense cyclones, with five having central pressures in the 940 hPa, including the deepest of the five month period, 940 hPa, in late November.

This five month period includes much of the Atlantic hurricane season, which was active in 2011. During the period from mid-July to early November eight tropical storms and four hurricanes either formed in or moved through OPC's southwestern waters before becoming post-tropical (extratropical). These included one major hurricane, Ophelia in early October, and Hurricane Irene which impacted the U.S. East Coast in late August. Hurricane Katia and Tropical Storm Philippe redeveloped into strong extratropical lows with hurricane force winds. Other tropical systems occurred during the period but remained south of OPC's area including Emily which weakened to a remnant low upon entering OPC's far southwestern waters on August 7. More detailed information on tropical cyclones may be found in NHC's postseason summaries (Reference 2).

### Tropical Activity

**Tropical Storm Bret:** Bret entered OPC's marine area near 31N 74W early on July 20 as a tropical storm with maximum sustained winds of 45 kts with gusts to 55 kts. While moving slowly northeast the top sustained winds weakened to 35 kts the following evening. On the evening of the 21st, Bret weakened to a tropical depression near 36N 68W and then at 1500 UTC on the 22nd was downgraded to a post-tropical low with maximum sustained winds of 30 kts. The cyclone then dissipated as a trough south of Newfoundland on the 23rd.

**Tropical Storm Cindy:** Cindy developed from a nontropical low near 35N 54W at 2100 UTC July 20 with maximum sustained winds of 35 kts with gusts to 45 kts. Early the next day the tropical storm reached peak strength while passing near 38N 49W with maximum sustained winds of 50 kts and gusts to 60 kts. The cyclone then gradually weakened while tracking northeast on the 21st and 22nd. The **Maersk Iowa** (KABL) reported southwest winds of 35 kts and 5.5 m seas (18 ft) near 41N 42W at 0000 UTC on the 22nd. Cindy became an extratropical gale with maximum sustained winds of 35 kts on the evening of the 22nd near 49N 32W before dissipating as a trough the next morning.

**Tropical Storm Franklin:** Franklin was another short lived cyclone over the southwestern waters, originating from an area of low pressure on a slow moving front. Low pressure passing 150 nm northwest of Bermuda early on August 12 became Tropical Depression Six near 36N 64W at 2100 UTC that day and Tropical Storm Franklin twelve hours later near 38N 60W with maximum sustained winds of 35 kts with gusts to 45 kts. Franklin's sustained winds peaked at 40 kts at 1500 UTC on the 13th before weakening later that day. Franklin became a post-tropical frontal gale near 41N 51W the following evening with maximum sustained winds of 35 kts, before turning toward the east-southeast on the 14th and dissipating 600 nm southwest of the Azores Islands on the 16th.

**Tropical Storm Gert:** Tropical Storm Gert moved north into OPC's marine area southeast of Bermuda near 31N 63W early on August 15 with maximum sustained winds of 50 kts and gusts to 60 kts. Gert reached peak intensity later that morning while passing 90 nm east of Bermuda when its maximum sustained winds reached 55 kts. The cyclone then turned toward the northeast and began to weaken, becoming a post-tropical remnant low with gales near 37N 58W on the morning of the 16th. The **Veendam** (PHEO) reported southwest winds of 35 kts near 33N 65W at 0900 UTC August 16 as Gert passed to the north. Later, the **Honor** (WDC6923) near 38N 55W encountered south winds of 45 kts at 1800 UTC on the 16th. The top winds diminished to below gale force on the 17th as the center passed 250 nm south of Cape Race. Gert's remains became absorbed by a larger low pressure area passing east of Newfoundland late on the 17th.

**Hurricane Irene:** Hurricane Irene entered OPC's marine area 180 nm south of Cape Fear, North Carolina at mid-day August 26 with maximum

sustained winds of 85 kts with gusts to 105 kts or Category 2 on the Saffir-Simpson scale (Reference 4). Irene's sustained winds dropped to 75 kts at a first landfall near Cape Lookout on the morning of the 27th and to 65 kts inland over eastern North Carolina that afternoon. The hurricane then moved just offshore from the Virginia capes the following evening before passing near Atlantic City, New Jersey early on the 28th when the top sustained winds weakened to tropical storm strength, 60 kts. Irene then moved inland near New York City shortly thereafter and became an extratropical low over northern New England the following evening with maximum sustained winds 45 kts (*Figure 1*). *Figure 2* is an infrared satellite image showing Hurricane Irene off the New Jersey coast just before downgrade to a tropical storm. It shows the circular central dense overcast typical of hurricanes. An expanding cloud shield to the north associated with a frontal zone and drier air entering the south portion of Irene's circulation indicate a beginning of extratropical transition. Post-tropical (extratropical) Irene then weakened while tracking inland over eastern Canada and became absorbed by a frontal system on the night of the 29th. **Table 1** lists some ship, buoy and C/MAN station observations taken during passage of Irene.

**Tropical Storm Jose:** A non-tropical low pressure which became Jose is seen in the first part of *Figure 1* as the 1008 hPa low near 28N 63W. Tropical Storm Jose moved into OPC's area near 31N 66W with maximum sustained winds of 40 kts on the morning of August 28th and passed 55 nm west of Bermuda shortly thereafter. The second part of *Figure 1* shows a weakening Jose north of Bermuda and southeast of the departing Irene shortly before becoming a post-tropical low, with top winds dropping to below gale force on the night of the 28th. The remains of Jose were absorbed by a frontal system on the 29th.

**Unnamed Tropical Storm:** A reanalysis by the National Hurricane Center indicated that a short lived low pressure area passing between Bermuda and Nova Scotia from August 31st to September 3rd (*Figure 3*) briefly had sufficient tropical characteristics to be reclassified as a tropical storm. It existed as a tropical storm from the morning of September 1st to the evening of September 2nd, when it became extratropical about 300 nm south of Halifax, Nova Scotia. At its maximum strength at 0600 UTC on the 2nd NHC estimated a central pressure as low as 1002 hPa and maximum sustained winds of 40 kts.

**Hurricane Katia:** Katia passed north between Bermuda and the southeast U.S. coast, crossing 31N at 70W on the evening of September 7th as a Category 1 hurricane with maximum sustained winds 70 kts with gusts to 85 kts. After developing sustained winds as high as 80 kts on the morning of the 8th, Katia then maintained an intensity of

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Horizon Trader** (KIRH) | 36N 71W | 28/0000 | SE 45 | 15.8/52 |
| **Caribbean Princess** | 41N 68W | 28/1200 | S 55 | 5.0/16 |
| (ZCDG8) | 41N 65W | 28/2200 | S45 | 8.0/26 |
| WKAB | 40N 67W | 28/2100 | S37 | 9.0/30 |
| Buoy 41004 | 32.5N 79.1W | 27/0000 | NW 43 G54 | |
| | | | Peak gust 56 | |
| | | 26/1900 | | 7.5/25 |
| Buoy 41013 | 33.4N 77.7W | 26/2200 | NE 43 G56 | 7.5/25 |
| | | | Peak gust 60 | |
| | | 27/0100 | Maximum | 8.5/28 |
| Buoy 41036 | 34.2N 77.0W | 27/1600 | SW 49 G64 | 6.0/20 |
| | | | Maximum | 8.5/28 |
| Buoy 41001 | 34.7N 72.7W | 27/1900 | S 39 G47 | 8.5/28 |
| | | | Peak gust 51 | |
| | | 27/1600 | Maximum | 10.0/33 |
| Buoy 44009 | 38.5N 74.7W | 27/2200 | E 39 G54 | 4.5/15 |
| | | 28/0700 | Maximum | 6.5/21 |
| **Oregon Inlet** | 35.8N 75.4W | 27/200 | S 51 G68 | |
| | | | Peak gust 70 | |
| **Cape Lookout** | 34.6N 76.4W | 27/0700 | NE 58 G66 | |
| | | 27/0800 | Peak gust 68 | |
| | | 27/1200 | Pressure 953.3mb | |

**Table 1.** Selected ship, buoy and C/MAN platform observations taken during passage of Hurricane Irene.

75 kts for sustained winds as it turned toward the northeast through the 9th and passed near 41N 58W late on the 9th. Katia weakened only slightly when approaching a stationary front to the north on the night of the 9th. Katia quickly transitioned into an intense extratropical low as shown in *Figure 4* over only a twelve hour period. *Figure 5* is an OSCAT image taken about at the time Katia was declared a post-tropical low by NHC, showing a relatively tight circulation of winds to75 kts, highest on the south side as the cyclone takes on more of an asymmetric structure of an extratropical low. Buoy 41048 (32.0N 69.6W) reported southeast winds of 68 kts with gusts to 93 kts and 12.0 m seas (39 ft) at 0600 UTC on the 8th as the hurricane passed nearby. This buoy reported a peak gust of 97 kts at 0400 UTC on the 8th and a pressure of 976.8 mb five hours later. The Canadian buoy 44140 (42.9N 51.5W) at 1200 UTC September 10 reported northwest winds of 62 kt and 7.5-m seas (25 ft), and a pressure of 957.0 hPa at 1100 UTC on the 10th. The **Caribbean Princess** (ZCDG8) near 41N 70W reported northeast winds of 43 kts at 0900 UTC on the 9th. Post-tropical Katia then moved out over the central North Atlantic on the 11th with its top winds lowering to storm force, and passed just north of the British Isles the next day before moving inland over southern Norway as a gale force low early on the 13th.

**Hurricane Maria:** Maria entered OPC's marine area near 31N 68W on the morning of September 15th as a strong tropical storm with maximum sustained winds of 60 kts and gusts to 75 kts. Maria became a hurricane six hours later while moving northeast, and passed north of Bermuda near 37N 65W on the evening of the 15th when it reached a maximum intensity of 70 kts for sustained winds and gusts to 85 kts. The cyclone weakened the next day with the approach of a cold front and passage over cooler water (*Figure 6*) and became absorbed into the rapidly developing hurricane force low moving into the Labrador Sea as depicted in *Figure 6*. The **P&O Nedlloyd Marseille** (MYSU5) reported west winds of 47 kts and 7.0 m seas (23 ft) near 48N 61W at 2300 UTC on the 16th, while the **Umia Vut** (PFQE) near 52N 56W encountered west winds of 50 kt. **Hibernia Platform** (VEP717, 46.7N 48.7W) with an anemometer height of 139 m reported southwest winds of 70 kts at 2100 UTC on the 16th, while **Terra Nova FPSO** 46.4N 48.4W with an anemometer height of 53 m encountered south winds 51 kts. The observations were taken after Maria was absorbed late on the 16th and were in the circulation of the developing hurricane force low.

**Hurricane Ophelia:** Hurricane Ophelia moved into OPC's marine area southeast of Bermuda on the afternoon of October 1st and developed into a Category 4 major hurricane later that day while passing 120 nm east-northeast of Bermuda, when it was accompanied by maximum sustained winds of 120 kts with gusts to 145 kts. Ophelia then accelerated northeast toward cooler water and a stationary front to the north with a weakening trend setting in the next day. Ophelia's maximum sustained winds diminished to 70 kts on the evening of the 2nd as the center passed near 44N 59W and to tropical storm strength, 60 kts, early on the 3rd. The Canadian buoy 44141 43.0N 58.0W reported southeast winds of 52 kts with gusts to 68 kts and 9.5 m seas (31 ft) at 0100 UTC October 3rd, followed by a report of 14.0 m seas (46 ft) one hour later. Buoy 44139 44.2N 57.1W reported southeast winds of 43 kts with gusts to 56 kts and 7.5 m seas (25 f t) at 0400 UTC on the 3rd, followed one hour later by a report of 12.0 m seas (39 ft). Ophelia then became extratropical over the island of Newfoundland on the morning of the 3rd before passing northeast of the Grand Banks later that day as a gale force low. Post-tropical Ophelia then passed northwest of the British Isles early on the 5th before becoming absorbed by a developing low near Iceland.

**Tropical Storm Philippe:** Philippe, a hurricane south of the area, moved into OPC's marine area near 31N 51W early on October 8th as a strong tropical storm with maximum sustained winds of 60 kts. Later that day Philippe became an extratropical storm near 35N 46W with maximum sustained winds of 50 kts. *Figure 7* shows post-tropical Philippe as a storm force low in the first part. A high resolution ASCAT pass from 1222 UTC on the 9th revealed wind 50 kts on the west and southwest sides of the cyclone. Over the next three days Philippe moved slowly north with some strengthening, followed by more rapid strengthening as it passed east of Greenland on the 12th and 13th (*second part of Figure 7*). The cyclone developed a lowest central pressure of 962 hPa in the east Greenland waters on the 13th. *Figure 8* is an ASCAT image showing an area of strongest winds from the west to northwest off the southern tip of Greenland, revealing winds up to 60 kts. The **Mary Artica** (BATEU00) near 61N 49W reported northwest winds of 50 kts at 0600 UTC on the 13th. The cyclone subsequently moved east away from Greenland late on the 14th and the 15th and its top winds lowered to storm force on the 15th. After passing just north of the British Isles late on the 17th the storm moved into southern Norway late on October 18th. The **Sirrah** (WKAP) reported north winds of 55 kts near 64N 24W at 1400 UTC on the 17th while the **Sea-Land Racer** (WKAP) near 58N 21W reported northwest winds of 45 kts and 10.5 m seas (34 ft) one hour later.

**Tropical Storm Sean:** Tropical Storm Sean initially entered OPC's marine area on a track similar to that of Katia on the afternoon of November 10th, with maximum sustained winds of 55 kts and gusts to 65 kts. The cyclone weakened the next day as a cold front approached. *Figure 14* shows Sean merging with the front and becoming an extratropical gale late on the 11th. It did not merge with the developing hurricane force low to the north but instead remained a distinct low on the front as it tracked east along 42N on the 12th and early on the 13th before turning southeast and dissipating near the coast of Morocco late on the 16th. The **APL Japan** (WDE8288) reported southeast

winds of 45 kts and 5.0 m seas (16 ft) near 36N 55W at 0600 UTC on the 12th. Three hours later the **Power** (ZCBF3) near 41N 44W encountered northwest winds of 45 kts and 3.0 m seas (10 ft).

## Other Significant Events of the Period

**North Atlantic Storm, July 10-11:** An unseasonably deep low developed while passing just south of the Atlantic provinces of Canada on the 9th and 10th with center developing a central pressure of 984 hPa near the island of Newfoundland early on July 10th, along with storm force winds in what is usually the least active month. It originated near the New England coast on the night of July 8th. The **Blue Puttees** (VXKF) near 46N 60W reported northeast winds of 45 kts at 0000 UTC on the 10th. **Hibernia Platform** (VEP717) 46.7N 48.7W reported southwest winds of 60 kts at 1200 UTC on the 10th at an anemometer height of 139 m, while the **GSF Grand Banks** (YJUF7) 46.7N 48.0W reported south winds of 45 kts at its anemometer height of 82 m. The cyclone subsequently moved northeast out over the North Atlantic with its central pressure dropping to 981 hPa as it passed near 56N 43W at 1800 UTC on the 11th. The ship **BATEU04** (60N 43W) at 1300 UTC on the 11th reported northeast winds of 50 kts. The **Arnafell** (OZ2048) encountered northeast winds of 45 kts near 58N 46W eight hours later. The cyclone then weakened to a gale force low on the night of the 11th while drifting northeast, and dissipated near Iceland late on July 14th.

**Northwestern Atlantic Storm, September 3-4:** An inland low over northeastern Canada developed a new center near 61N 61W with a 978 hPa central pressure 1200 UTC September 3rd and developed storm force winds that day. A high resolution ASCAT pass at 2253 UTC on the 3rd revealed southeast winds 35 to 50 kts off the southwest Greenland coast. The cyclone drifted northeast and weakened to a gale in the Davis Strait the next day, before dissipating over southwest Greenland on the 5th.

**Northwestern Atlantic Storm, September 16-19:** The development of this hurricane force low is depicted in *Figure 6* and mentioned in the earlier paragraph on *Hurricane Maria*. The central pressure fell 34 hPa in the twenty-four hour period ending at 0600 UTC on the 17th. A 25 km ASCAT pass from 1452 UTC on the 17th revealed an area of north to northwest winds to 50 kts off the southern Labrador coast on the back side of the low and resembled the winds in the October 29th-30th event over the southwestern waters (*Figure 12*). The second part of *Figure 6* shows the cyclone at maximum intensity. The cyclone then moved northeast and weakened, with its winds lowering to storm force late on the 17th and to gale force as the center approached Iceland late on the 19th. The cyclone passed northeast of Iceland on September 22nd.

**North Atlantic Storm, October 25-28:** *Figure 9* depicts the development of this intense low over a thirty-six hour period, ending in the center attaining a lowest central pressure of 951 hPa. This was the deepest cyclone south of 50N during the period, and was the deeper of two storms crossing that area late in October. The cyclone originated as a wave of low pressure near 32N 72W at 1800 UTC October 24th. The central pressure dropped 43 hPa in the twenty-four hour period ending at 1200 UTC on the 26th. The ASCAT image in *Figure 10* reveals numerous wind vectors in the 50 to 60 kts range south of the well defined center. OPC analyzed this cyclone as a hurricane force low from 0600 UTC on the 26th through 1800 UTC on the 27th when the center passed northeast of the Grand Banks. Some ship, buoy and platform observations taken in this event are listed in **Table 2**. The cyclone subsequently weakened to a gale near 55N at 1800 UTC on the 28th before becoming absorbed by a low near Iceland on the 29th.

**North Atlantic Storm, October 28-30:** Originating as a low pressure wave over Georges Bank late on the 27th, this developing cyclone tracked east-northeast and became a hurricane force low over the central waters on the 29th with a central pressure as low as 969 hPa late on the 29th . The first part of *Figure 11* shows this as a complex system east of Newfoundland. A 25 km ASCAT pass over the central waters revealed an area of southwest winds to 50 kts south of the center at 1348 UTC on the 29th. The cyclone subsequently weakened to a gale force low in the eastern waters off Great Britain before turning north and dissipating near Iceland November 1st.

**North Atlantic Storm, October 29-November 3:** A low pressure wave near Cape Hatteras on the morning of October 29th (*Figure 11*) rapidly intensified into a hurricane force low within eighteen hours, with the central pressure falling 30 hPa in the twenty-four hour period ending at 1200 UTC October 30th. The ASCAT winds in *Figure 12* show an area of north to northwest winds 50 kts and an isolated 55 kt on the west side of the cyclone and extending into the Gulf of Maine. Hurricane-force winds lasted through the 30th as the system passed south of Nova Scotia, and occurred long before the cyclone developed its lowest central pressure of 968 hPa, when the cyclone was well out over the central North Atlantic as a storm force low near 49N 31W at 1200 UTC November 1st. The cyclone became multi-centered on November 2nd with the main center 49N 18W becoming absorbed by a new cyclone developing to the north by the 3rd.

**North Atlantic Storm, November 5-7:** This developing cyclone, one of two to develop central pressures below 950 hPa in November, originated as a low pressure wave 300 nm south of Cape Race, Newfoundland on the morning of November 5th. *Figure 13* depicts its subsequent development over a two day period into the second most intense low of the five month period. The central pressure fell 29 hPa in the twenty-four hour period ending at 1800 UTC November 7th, when the cyclone developed its lowest central pressure of 946 hPa near 58N 32W. **Table 4** lists the more notable ship and platform reports taken during passage of this storm, including a report of hurricane force

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Sea-Land Champion** (WKAU) | 38N 59W<br>37N 54W | 25/1800<br>26/0600 | SW 45<br>W 50 | 10.5/34 |
| **Mary Artica** (BATEU00) | 53N 44W | 27/1200 | NE 50 | |
| **Atlantic Compass** (SKUN) | 52N 45W | 27/1800 | NE 50 | |
| Buoy 44139 | 44.2N 57.1W | 26/1100<br>26/1200<br>26/1300 | NW 51<br>NW 49 G66<br>Maximum | <br>7.0/23<br>8.0/26 |
| Buoy 44141 | 43.0N 58.0W | 26/0600<br>26/0700<br>26/1900 | NW 58<br>NW 52 G66<br>Maximum | <br>7.5/25<br>9.0/30 |
| Buoy 44140 | 42.9N 51.5W | 26/1900<br>27/0500 | W 47 G54<br>Maximum | 9.5/31<br>11.0/36 |
| **Hibernia Platform** (VEP717) | 46.7N 48.7W | 27/1200 | W 71<br>(height 139 m) | |
| **Terra Nova FPSO** (VCXF) | 46.4N 48.4W | 27/1500<br>28/0000 | W 66<br>W 60<br>(height 53 m) | <br>8.2/27 |
| **GSF Grand Banks** (YJUF7) | 46.7N 48.0W | 27/1800 | W 54<br>(height 82 m) | |

**Table 2.** Selected ship, buoy and oil platform observations taken during passage of the North Atlantic storm of October 25-28, 2011.

winds. A high resolution ASCAT pass from near the time of the second part of *Figure 13* revealed north to northeast winds of 50 kts to as high as 65 kts off the southeast Greenland coast to the west and north of the low center. The cyclone subsequently weakened rapidly the night of November 7th and early on the 8th, and dissipated near the Greenland coast on the 8th.

**Northwestern Atlantic Storm, November 10-12:** The next major storm formed from the merging of a low over the Gulf of St. Lawrence with another over northern Quebec over a twenty-four hour period as shown in *Figure 14.* The cyclone is at maximum intensity in the second part of *Figure 14* and unlike other major lows during this period moved north through the Davis Strait. *Figure 15* shows some ASCAT wind retrievals in the 50kts to 60 kts in the enhanced flow between an approaching cold front and the southwest Greenland coast. The cyclone subsequently weakened as it passed through the Davis Strait on the 13th.

**North Atlantic Storm, Greenland area, November 18-20:** A complex area of low pressure just south of the Atlantic provinces of Canada merged with low pressure over the Labrador Sea over a thirty-six hour period to form an intense 952 hPa low near the southern tip of Greenland as shown in *Figure 16.* The central pressure dropped 35 hPa in the twenty-four hour period ending at 0600 UTC on the 19th. **Hibernia Platform** (VEP717) 46.7N 48.7W reported southwest winds of 65 kts at 1800 UTC November 18th at a height of 139 m . The **Jaeger Arrow** (C6RM7) encountered west winds of 50 kts and 10.7 m seas (35 ft) near 59N 47W at 0600 UTC on the 20th. An ASCAT pass at 1309 UTC on the 19th showed west winds of 50 kts at a pass edge near 57N 49W. The cyclone subsequently moved into the east Greenland waters on the 20th where it stalled, with its winds weakening to gale force late by the 21st. The stalled low dissipated on the 26th.

**North Atlantic Storms, November 22-27:** Two strong cyclones developed in close succession late in November, with the first originating from a complex area of low pressure over the south-central waters with the northern low breaking off, merging with a front to the north and explosively deepening while passing west and northwest of the British Isles (*Figure 17*). The central pressure fell 40 hPa in the twenty-four hour period ending at 0000 UTC November 25th, when the lowest pressure of 940 hPa was reached. This made it the deepest cyclone of the period in the North Atlantic. The infrared satellite image in *Figure 18* shows the cyclone near maximum intensity with well defined cold topped cloud bands spiraling toward the center and deep convective clouds in the cold air south of the storm center. Some ship and buoy observations taken in this event are listed in **Table 5**. ASCAT imagery from 1936 UTC on the 24th

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Sea-Land Mercury** (WKAW) | 41N 69W | 29/2200 | NE 50 | 6.7/22 |
| **President Jackson** (WRYC) | 37N 64W | 30/1200 | SW 40 | 8.8/29 |
| **Westermoor**<br>(A8CH2)<br>BATEU04 | 41N 23W<br>46N 13W<br>58N 30W | 01/1200<br>02/1200<br>02/1800 | W 50<br>W 50<br>N 50 | 4.5/15<br>5.0/16 |
| **Stuttgart Express** (DGBE) | 52N 29W | 03/1200 | NW 55 | 11.3/37 |
| Buoy 44011 | 41.1N 66.6W | 30/1300<br><br>30/1500 | W 47 G56<br>Peak gust 62<br>Maximum | 7.5/25<br><br>9.5/31 |
| Buoy 44137 | 42.3N 62.0W | 26/0600<br>26/0700<br>26/1900 | NW 58<br>NW 52 G66<br>Maximum | <br>7.5/25<br>9.0/30 |
| Buoy 44140 | 42.9N 51.5W | 26/1900<br>27/0500 | W 47 G64<br>Maximum | 9.5/31<br>11.0/36 |
| **Hibernia** Platform (VEP717) | 46.7N 48.7W | 27/1200 | W 71<br>(height 139 m) | |
| **Terra Nova FPSO** (VCXF) | 46.4N 48.4W | 27/1500<br>28/0000 | W 66<br>W 60<br>(height 53 m) | <br>8.2/27 |
| **GSF Grand Banks** (YJUF7) | 46.7N 48.0W | 27/1800 | W 54<br>(height 82 m) | |

**Table 3.** Selected ship, buoy and oil platform observations taken during passage of the North Atlantic storm of October 29-November 3, 2011.

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Talisman**<br>**(LOAW5)** | 49N 25W<br>49W 18W | 07/0000<br>07/1100 | SE 45<br>S 55 | 8.2/27<br>9.0/30 |
| **Celebrity Eclipse**<br>(9HXC9) | 37N 32W<br>38N 33W | 07/0000<br>07/0200 | NW 55<br>NW 50 | <br>6.5/21 |
| **Walther Herwig III**<br>(DBFR)<br>BATFR04<br>BATEU08 | 62N 50W<br>62N 51W<br>44N 33W<br>61N 49W | 07/1500<br>08/0200<br>07/0000<br>08/0200 | NW 50<br>NW 65<br>W 45<br>NW 50 | 4.5/15<br>5.0/16 |
| **Hibernia Platform** (VEP717) | 46.7N 48.7W | 06/0000 | N 55 | |
| **Terra Nova FPSO**<br>(VCXF) | 46.4N 48.4W | 06/0000<br>06/0600 | N 45<br>Maximum | 3.5/11<br>5.8/19 |

**Table 4.** Selected ship and oil platform observations taken during passage of the North Atlantic storm of November 5-7, 2011.

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Schiehallion** (MWYG6) | 60N 4W | 24/2200 | SW 55 | |
| **Stena Carron** (2BKQ8)<br>3ERR2 | 61N 3W<br>63N 5E | 25/0300<br>25/1200 | SW 50<br>SW 50 | 13.0/43<br>10.5/34 |
| Buoy 62095 | 53.2N 15.8W | 24.0500<br>25/1200 | S 40<br>Maximum | 6.0/20<br>9.8/32 |
| Buoy 64045 | 59.2N 11.7W | 24/1700 | SW 50 | 14.3/47 |
| Buoy 64046 | 60.5N 4.8W | 25/0000<br>25/0300 | SW 45 | 10.5/34<br>11.3/37 |
| Buoy 64041 | 60.7N 2.6W | 25/0100<br>25/0400 | SW 50 | 9.0/30<br>11.0/36 |
| Buoy 63115 | 61.6N 1.4E | 25/0600 | SW 40 | 11.3/37 |

**Table 5.** Selected ship and oil platform observations taken during passage of the North Atlantic storm of November 22-25, 2011.

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| BATFR04 | 57N 11W<br>57N 11W | 8/0900<br>8/1000 | W 65<br>W 80 | |
| **Schiehallion** (MWYG6)<br>2BKW3 | 60N 4W<br>61N 3W | 8/1800<br>9/0900 | N 65<br>NW 65 | <br>10.0/33 |
| **Global Producer 3** | 58N 1E | 9/0000<br>8/2200 | NW 60 | 8.2/27<br>11.0/36 |
| Buoy 62117 | 57.9N 0.0W | 8/1700<br>9/0100 | SW 55 | 5.8/19<br>6.7/22 |
| Buoy 62116 | 57.6N 1.1E | 8/1800<br>9/0600 | SW 55 | 7.9/26<br>9.5/31 |
| Buoy 62114 | 58.3N 0.0W | 9/0100 | NW 60 | |

**Table 6.** Selected ship and oil platform observations taken during passage of the North Atlantic storm of December 7-10, 2011.

revealed an area of southwest winds 50 to 60 kts on the edge of the pass and likely missed the strongest winds. The cyclone then quickly passed northeast of the area by the 25th. The second part of *Figure 17* shows a frontal wave of low pressure entering the picture south of Greenland, which originated near the northeast U.S. coast on the 23rd. It passed just north of the British Isles with a 972 hPa central pressure, still mostly an open wave late on the 26th. It then briefly developed hurricane-force winds around mid-day on the 27th as it moved inland over southern Norway with a 968 hPa central pressure.

**Northeastern Atlantic Storm, December 7-10:** A significant cyclone originating in the north-central waters late on December 6th moved northeast while rapidly intensifying, passing just north of Scotland on the 8th (*Figure 19*). The central pressure fell an impressive 42 hPa in the twenty-four hour period ending at 1200 UTC on the 8th. Six hours later, the low center passed near 60N 0W with a lowest central pressure of 954 hPa. The Ocean Prediction Center (OPC) analyzed a hurricane-force low on the 8th. Some notable ship and buoy observations taken in this event are listed in **Table 6**. The cyclone then passed through the North Sea on the night of the 8th and weakened inland over southern Norway early on the 10th.

**Western Atlantic Storm, December 8-11:** This cyclone developed rapidly after moving off the mid-Atlantic coast of the U.S. late on December 7th and was one of five that developed central pressures in the 940 hPa range during the late November to December period.

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Schiehallion** (MWYG6) | 61N 5W | 25/1200 | SE 50 | |
| **Stena Carron** (2BKQ8) | 61N 3W | 25/1500<br>25/2100 | W 76 | 10.0/33<br>12.5/41 |
| **West Navigator** (3ERR2) | 63.5N 5E | 25/1800<br>26/0300 | SW 45 G68 | <br>8.5/28 |
| **Draugen** (LF3F) (platform) | 64.3N 7.8E | 26/0000<br>26/0300 | W 45 G62 | 8.5/28<br>10.0/33 |
| **Troll A** (LF4B) (platform) | 60.6N 3.8E | 26/0000<br>25/1800 | W 30 G68<br>SW 50 G66 | 7.0/23<br>6.4/21 |
| Buoy 64046 | 60.5N 4.9W | 25/1500<br>25/1700 | W 49 | 11.0/36<br>13.4/44 |

**Table 7.** Selected ship, oil platform andbuoy observations taken during passage of the Northeastern storm of December 24-26, 2011.

*Figure 20* depicts the development of this cyclone over a twenty-four hour period with the maximum intensity of 946 hPa reached at 0600 UTC on the 9th as depicted in the second part of *Figure 20*. The central pressure dropped 43 hPa in the same twenty-four hour period. Wind retrievals from the ASCAT scatterometer (*Figure 21*) show an extensive area of west winds 50 kts to as high as 70 kts on the south side of the cyclone, and similar winds from the east on the north side ahead of the occluded front which was approaching the southern tip of Greenland at that time. The **Maersk Patras** (MYSU5) reported south winds of 60 kts near 46N 54W at 0000 UTC on the 9th. Three hours later **Hibernia Platform** (VEP717) 46.7N 48.7W reported southwest winds of 65 kts at an anemometer height of 139 m , and 3.5 m seas (11 ft). The cyclone turned east along 60N after passing near the southern tip of Greenland early on the 10th and its top winds weakened to storm force. After passing north of the British Isles on the night of the 11th as a gale force low, the cyclone dissipated southeast of Iceland late on the 12th. The buoy 62095 (53.1N 16.0W) reported seas reaching 10.5 m seas (34 ft) at 1600 UTC on the 11th.

**Northeastern Atlantic Storms, December 11-14:** The stronger of two cyclones that formed in this part of the Atlantic during this time developed from the merging of two lows south of Greenland (*Figure 22*) and became the hurricane-force low shown near Scotland in the second part of *Figure 22*. Six hours prior, the cyclone developed a lowest central pressure of 944 hPa while passing near 57N 12W, making it the second deepest North Atlantic low of the six month period. The central pressure fell 44 hPa in the twenty-four hour period ending at 1800 UTC on the 12th, within the period covered by *Figure 22*. Winds from the ASCAT scatterometer revealed a swath of west to southwest winds 50 to 55 kts west of the British Isles from 54N to 56N close to time of the second part of *Figure 22*. Buoy 62105 (55.0N 13.3W) reported west winds of 50 kts and 12.8 m seas (42 ft) at 1000 UTC on the 13th, and a report of 14.0 m seas (46 ft) four hours prior. A second cyclone originating in the east Greenland waters on the 12th moved southeast toward Ireland as shown in the second part of *Figure 22* and briefly developed hurricane-force winds on the south side on the night of the 13th similar to those of its predecessor. After developing a lowest central pressure of 968 hPa on the 13th, the cyclone's top winds weakened to storm force before reaching the Irish coast the next day. Further weakening followed as the low passed across southern England late on the 14th.

**North Atlantic Storm, December 21-23:** Several strong cyclones developed and moved over the northern Atlantic waters after December 20. The first of these originated near the island of Newfoundland on the 20th and then intensified out over the North Atlantic, briefly developing hurricane-force winds while passing just northeast of Iceland with a 963 hPa central pressure at 0000 UTC on the 23rd (*Figure 23*). The **Stena Carron** (2BKQ8) near 61N 4W reported southwest winds of 65 kts and 7.9 m seas (26 ft) at 0300 UTC on the 23rd followed six hours later by a report of west winds 40 kts and 10.7 m seas (35 ft) near that location. WindSat imagery in *Figure 26* reveals a swath of southwest to west winds 50 to 65 kts south of Iceland between 57N and 61N at 1812 UTC on the 22nd when the satellite passed over. Also see Reference 5 for more information on WindSat. The **Finnpine** (SFIR) near 45N 42W encountered west winds of 50 kts and 4.3 m seas (14 ft) at 1200 UTC on the 21st. Buoy 64045 (59.1N 11.5W) at 2200 UTC on the 22nd reported west winds of 45 kts with gusts to 62 kts and 10.7 m seas (35 ft), and four hours later seas 11.9 m (39 ft). The cyclone subsequently weakened to a gale northeast of the area late on the 23rd.

**North Atlantic Storm, December 22-25:** Originating over the Atlantic provinces of Canada on the night of the 21st, the cyclone that followed passed near the island of Newfoundland at 0000 UTC (*Figure 23*) and then tracked

northeast to near Iceland thirty six hours later (*Figure 24*) where it briefly developed hurricane-force winds. A 25 km ASCAT pass from 1100 UTC on the 24th showed west winds 50 to 55 kts on the south side, south of Iceland. The central pressure dropped 41 hPa in the twenty-four hour period 0600 UTC on the 24th before reaching a lowest pressure of 947 hPa six hours later. The **Helgafell** (OZ2049) encountered southwest winds of 60 kts near 61N 15W at 1800 UTC on the 24th. Buoy 64045 (59.1N 11.5W) reported west winds of 40 kts with gusts to 58 kts and 10.0 m seas (33 ft) at 1700 UTC December 24th , and maximum seas 11.0 m (36 ft) three hours later. Another buoy, 64046 (60.5N 4.9W), reported west winds of 45 kts at 0000 UTC on the 25th, and five hours later 12.2 m seas (40 ft). The cyclone then weakened northeast of Iceland on the 25th.

**Northeastern Atlantic Storm, December 24-26:** A frontal wave of low pressure passed just south of New England on the morning of December 23rd, moved over the Grand Banks the following night as a gale, and then rapidly intensified while moving over the northern Atlantic waters. The cyclone's central pressure fell 37 hPa in the twenty-four hour period ending at 0600 UTC on the 25th when the center passed near 60N 20W with a 962 hPa central pressure. The system developed hurricane-force winds as it passed near and to the east of Iceland on the afternoon of the 25th (*Figure 25*) with a lowest central pressure of 954 hPa. The cyclone passed inland over Norway by early on the 26th. Some ship, buoy and platform observations taken during this event are listed in **Table 7**.

**Southwestern North Atlantic Storm, December 26-28:** This cyclone originated inland over the northeastern U.S. late on December 25th and moved or redeveloped southeast to just south of Georges Bank on the morning of the 26th before turning east and intensifying. It developed hurricane-force winds the following night while passing 500 nm south of the island of Newfoundland with a central pressure as low as 991 hPa. Limited 25 km ASCAT data near the time of maximum intensity showed a few 50 kts northwest wind retrievals on the edge of a pass at 1329 UTC on the 27th. The **Charleston Express** (WDD6126) near 33N 60W reported west winds of 45 kts and 10.4 m seas (34 ft) at 0000 UTC on the 27th, followed twelve hours later by a report of 12.5 m seas (41 ft) near 32N 61W. The **Tyco Decisive** (V7DI7) encountered northwest winds of 50 kts and 10.0 m seas (33 ft) near 37N 56W at 1800 UTC on the 27th. The cyclone weakened later on the 27th and early on the 28th south of the Grand Banks before becoming absorbed by a developing low over Canada's Atlantic provinces on the 29th.

**Northeastern Atlantic Storm, December 26-29:** After originating over the south-central Atlantic basin on the 25th, a developing cyclone tracked northeast to 180 nm northwest of Scotland late on the 27th, where it briefly developed hurricane-force winds and a central pressure as low as 968 hPa. A high resolution ASCAT pass from 2131 UTC on the 27th revealed some northwest winds of 50 kts on the edge of the pass, near 56N 21W, indicating it may not have captured the strongest winds with this low. The **Atlantic Concert** (SKOZ) near 52N 22W reported southeast winds of 50 kts at 0600 UTC on the 26th. The **Global Producer 3** (ZQSD5) near 58.3N 0.7E reported west winds of 45 kts and 8.0 m seas (27 ft) at 1900 UTC on the 28th, and seas of 9.0 m (30 ft) one hour prior to this. Buoy 62105 (55.4N 12.1W) reported northwest winds of 40 kts with gusts to 59 kts at 0900 UTC on the 28th, and seas as high as 11.6 m (38 ft) five hours later. Buoy 64045 (59.1N 11.6W) reported northwest winds of 45 kts with gusts to 68 kts and 9.5 m seas (31 ft) and 1200 UTC on the 28th. The cyclone subsequently turned east and weakened inland over southern Norway on the night of the 28th.

**North Atlantic Storm, December 28-January 1 (2012):** The next significant low pressure system followed a more western track late in the month, intensifying as it tracked northeast through the St. Lawrence Valley and Gulf of St. Lawrence on December 28th and then into the Labrador Sea late on the 29th with storm force winds. Upon approaching southern Greenland the cyclone reformed as a new hurricane-force low center east of Greenland near 61N 41W on the morning of the 31st with a central pressure of 965 hPa. Hurricane-force winds lasted into the next day as the center deepened to 955 hPa near 63N 25W. An ASCAT pass from 2330 UTC on the 31st resembled that of the preceding event with northwest winds of 50 kts on the edge of the pass. The **Sea-Land Racer** (WKAP) near 46N 52W encountered west winds of 45 kts and 13.4 m seas (44 ft) at 1200 UTC on the 30th, although the author is not certain of the accuracy of the reported seas. **Hibernia Platform** (VEP717) 46.7N 48.7W reported southwest winds of 60 kts at 0600 and 1800 UTC on the 30th. The ship **BATEU04** reported northwest winds of 50 kts near 59N 46W at 0700 UTC January 2nd. The cyclone then weakened northeast of Iceland late on January 2nd.

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Von Ahn, Joan. and Sienkiewicz, Joe, Hurricane Force Extratropical Cyclones Observed Using QuikSCAT Near Real Time Winds, *Mariners Weather Log, Vol. 49, No. 1, April 2005.*

Saffir-Simpson Scale of Hurricane Intensity, http://www.nhc.noaa.gov/aboutsshs.shtml

http://www.nrl.navy.mil/WindSat

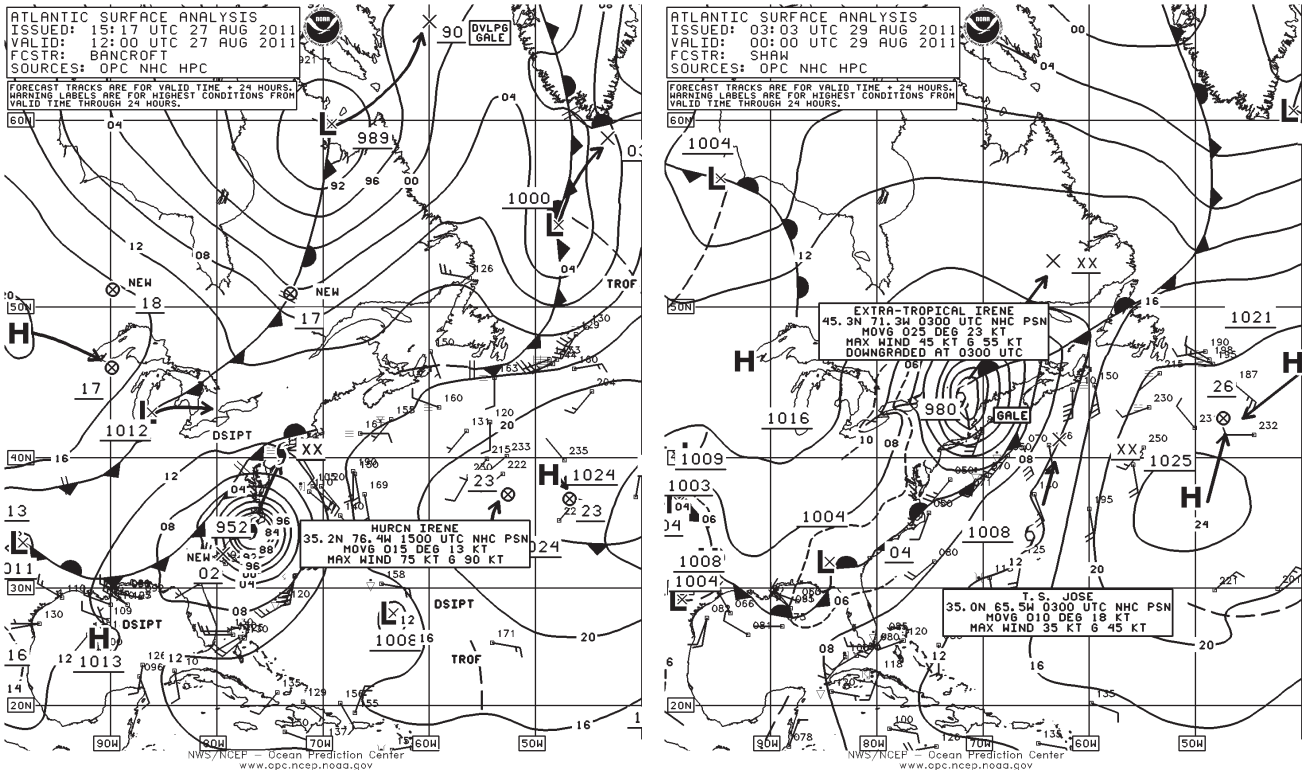


**Figure 1. OPC North Atlantic Surface Analysis charts (Part 2 - west) valid 1200 UTCAugust 27 and 0000 UTC August 29, 2011. Twenty-four hour forecast tracks are shown with the forecast central pressures given as the last two whole digits in millibars except XX for tropical cyclones. Text boxes contain information on tropical cyclones based on the latest advisory times (in this case 1500 UTC and 0300 UTC).**

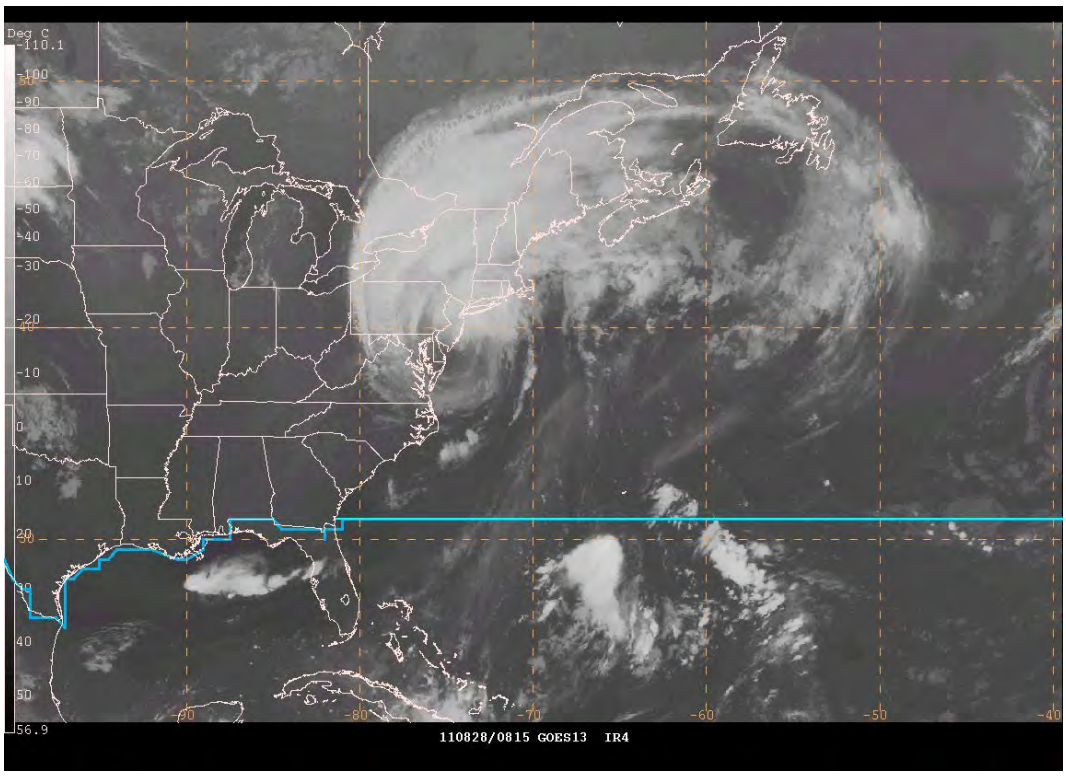


**Figure 2. GOES-13 infrared satellite image valid 0815 UTC August 28, 2011. The satellite senses temperature on a scale ranging from black (warm) to white (cold) in this type of imagery.**

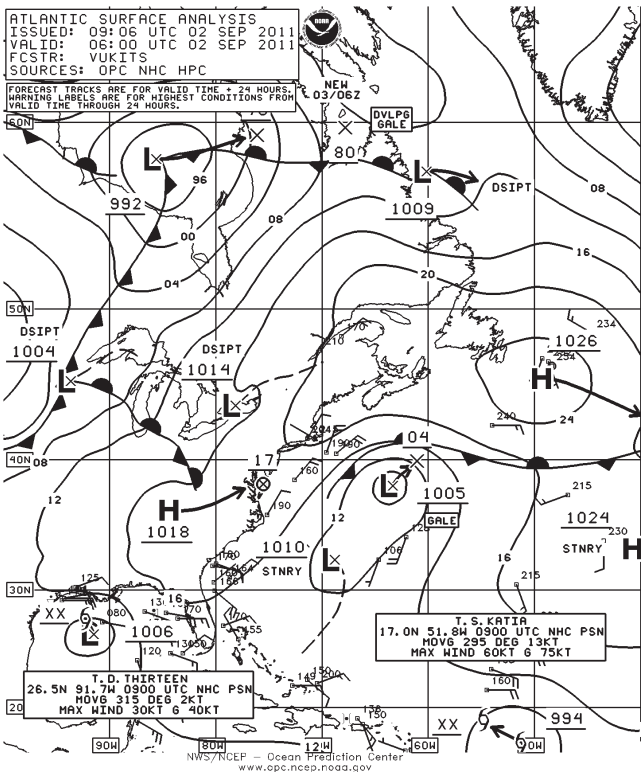


**Figure 3.** OPC North Atlantic Surface Analysis chart (Part 2) valid 0600 UTC September 2, 2011. The gale-force low near 38N 64W was later reclassified by the National Hurricane Center as an unnamed tropical storm.

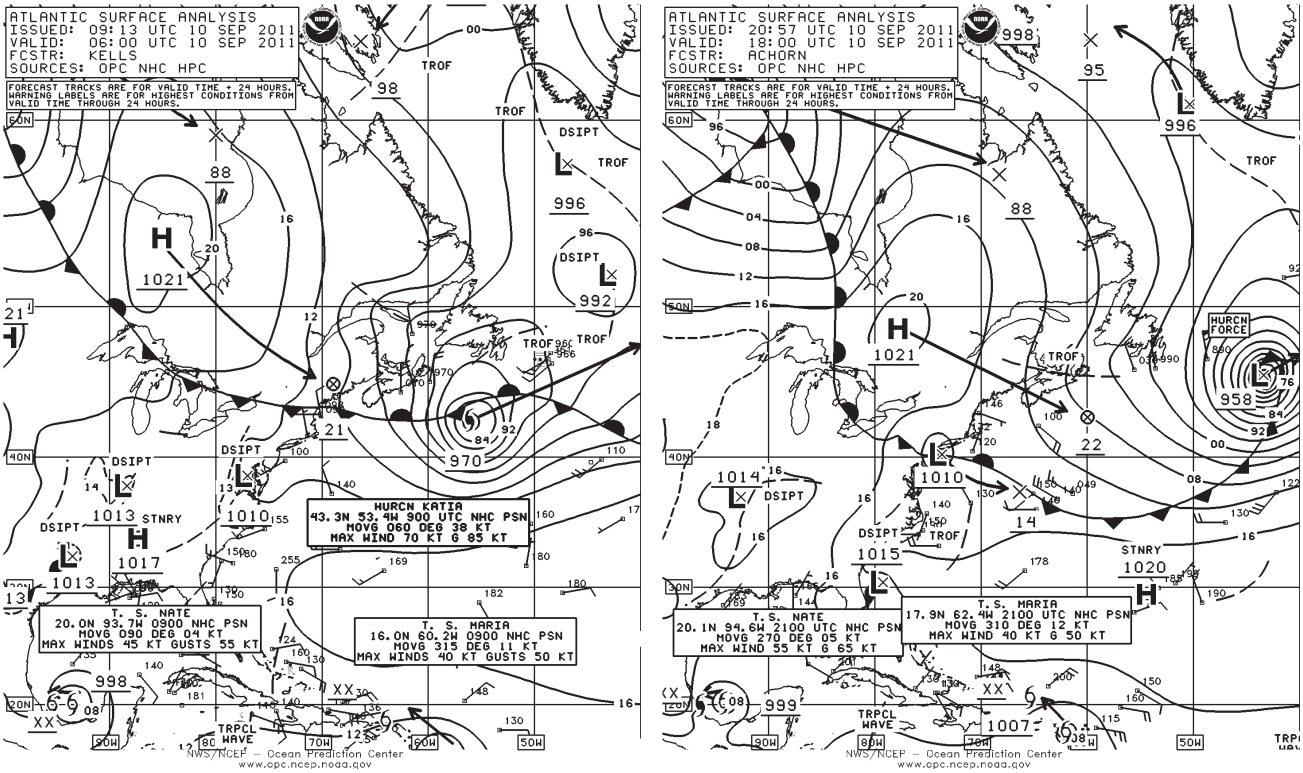


**Figure 4.** OPC North Atlantic Surface Analysis charts (Part 2) valid 0600 UTC and 1800 UTC September 10, 2011.

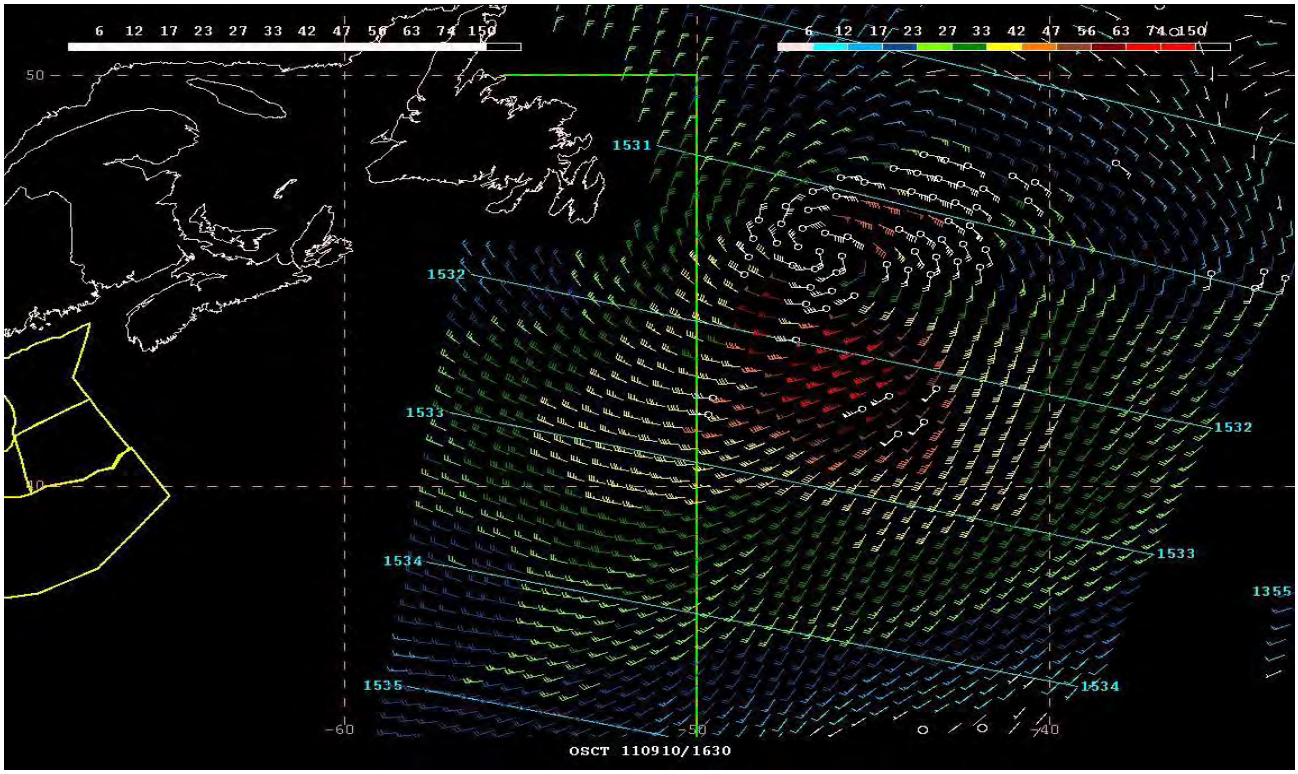


**Figure 5.** OSCAT (Indian scatterometer) image of satellite-sensed winds around Post-Tropical Katia with 50-km resolution. The valid time of the image is approximately 1500 UTC September 10, 2011, or three hours prior to the valid time of the second part of Figure 4. Imagery from the Indian scatterometer was recently made available to OPC near-real time. Image includes cross-track time lines of the satellite's descending pass labeled with four-digit UTC times. Imagery is reprocessed by NOAA/NESDIS.

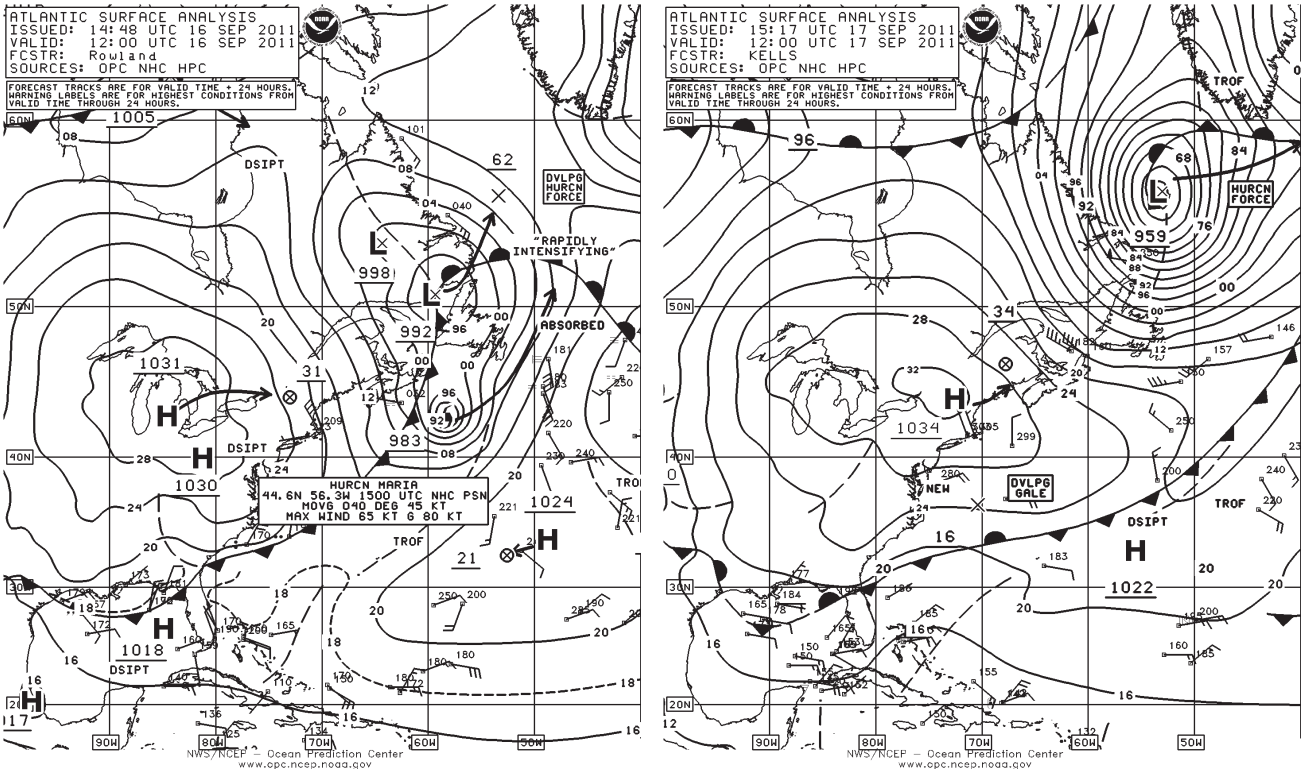


**Figure 6.** OPC North Atlantic Surface Analysis charts (Part 2) valid 1200 UTC September 16 and 17, 2011.

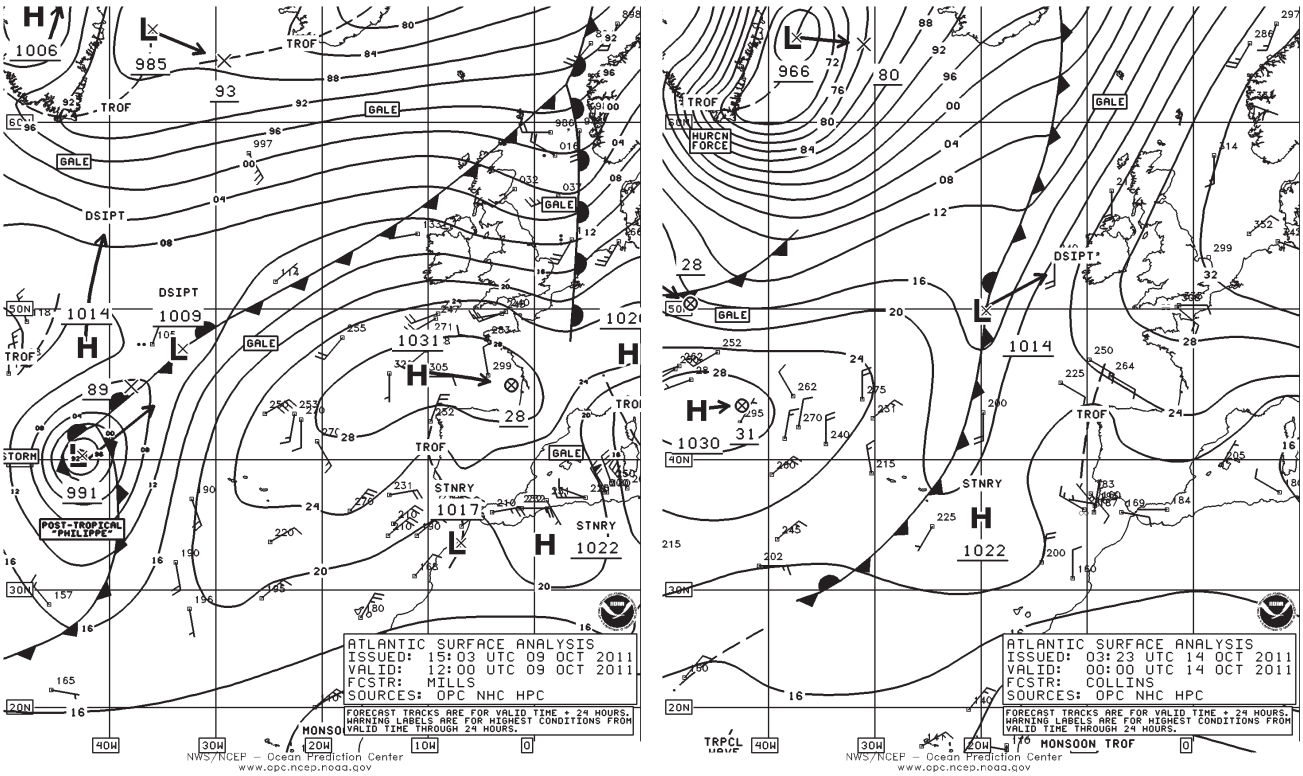


**Figure 7.** OPC North Atlantic Surface Analysis charts (Part 1 - east) valid 1200 UTC October 9 and 0000 UTC October 14, 2011.

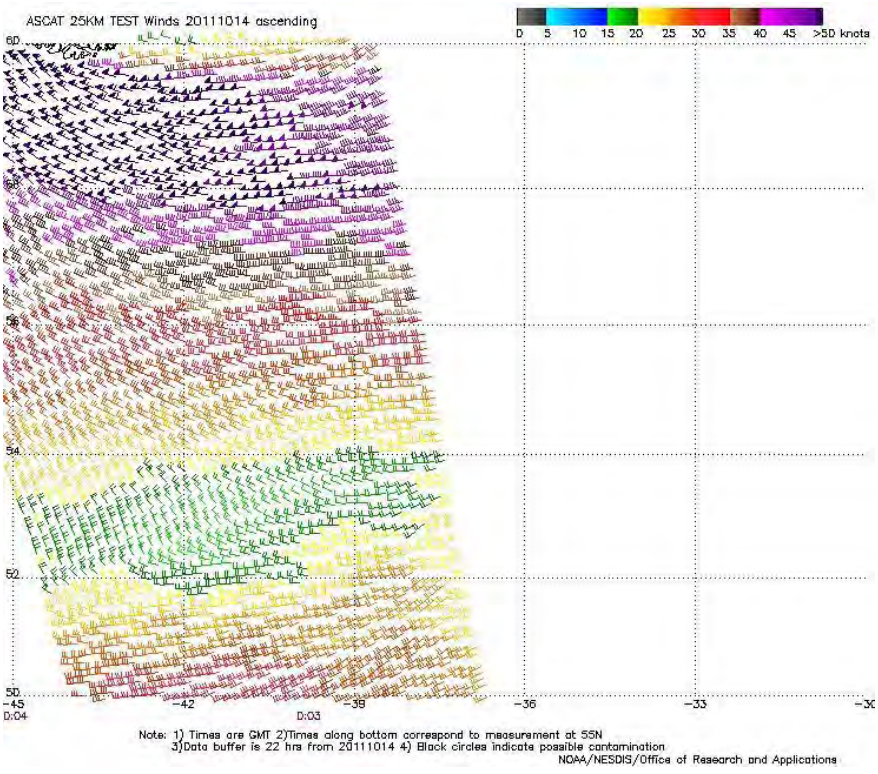


**Figure 8.** 25-km ASCAT (Advanced Scatterometer) image of satellite-sensed winds on the south side of the cyclone shown in the second part of Figure 7. The valid time of the pass is 0003 UTC October 14, 2011 or close to the valid time of the second part of Figure 7. The southern tip of Greenland is on the upper-left edge of the image. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

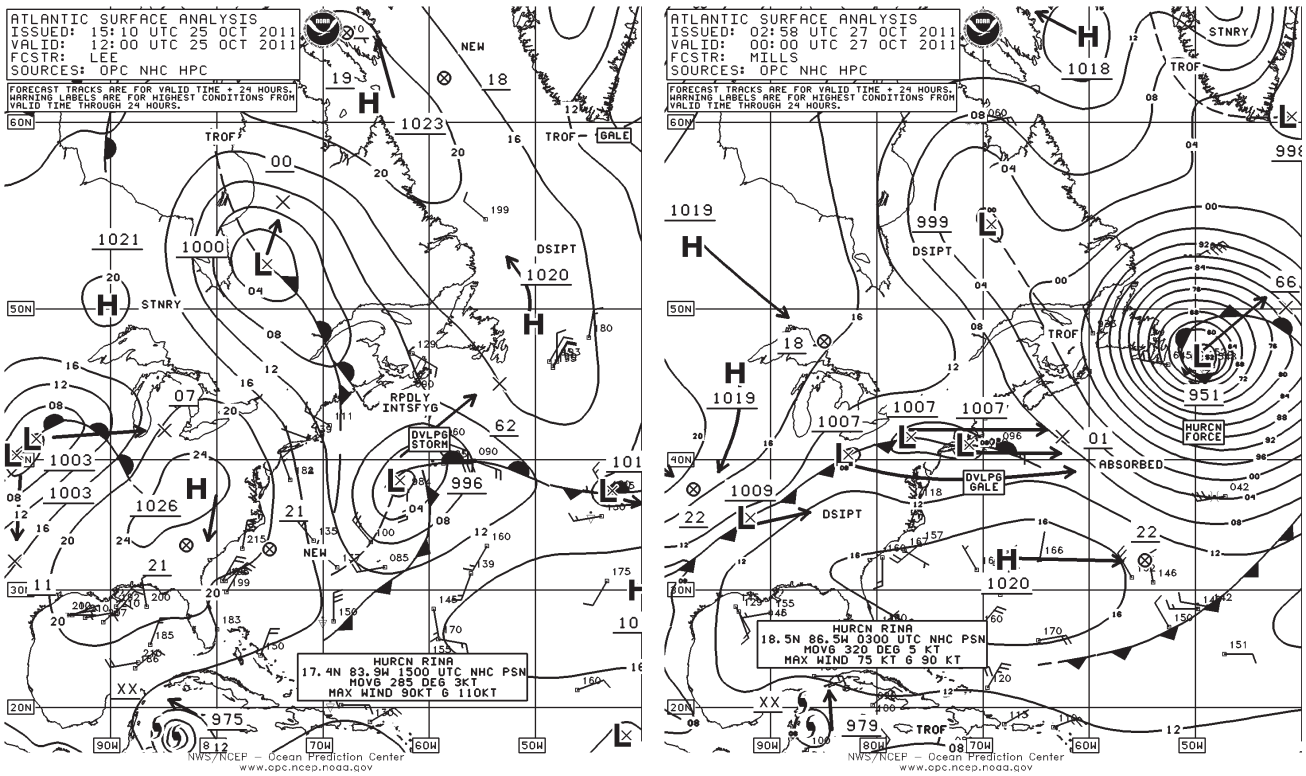


**Figure 9.** OPC North Atlantic Surface Analysis charts (Part 2) valid 1200 UTC October 25 and 0000 UTC October 27, 2011.

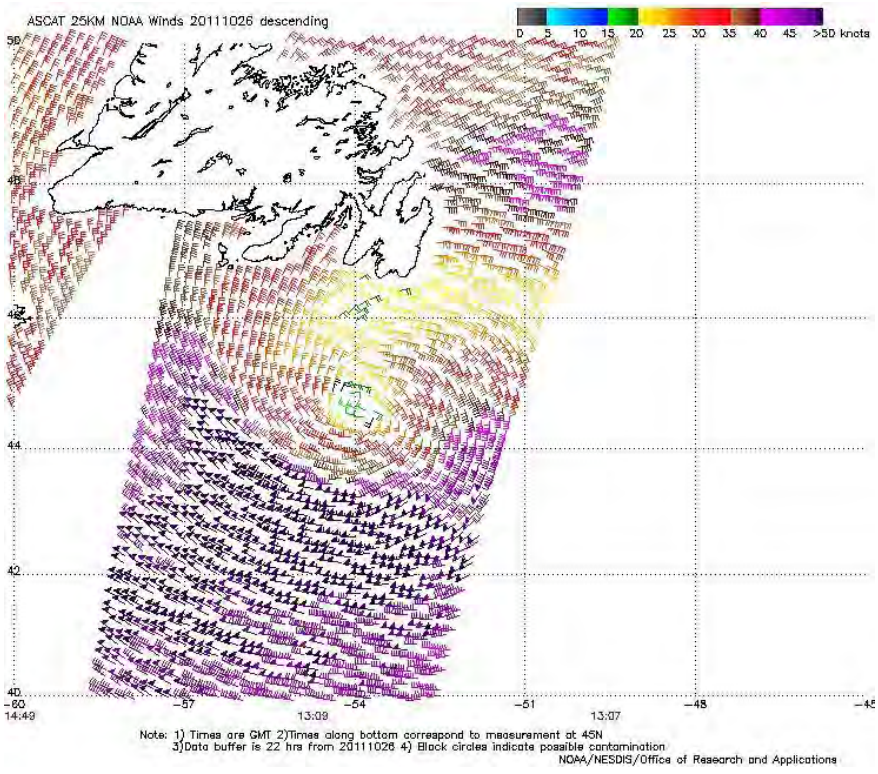


**Figure 10.** Figure 10. 25-km ASCAT image of satellite-sensed winds around the cyclone shown in the second part of Figure 9. The valid time of the pass is 1309 UTC October 26, 2011 or about eleven hours prior to the valid time of the second part of Figure 9. The center of the cyclone appears near 45N 54W with the island of Newfoundland to the north. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

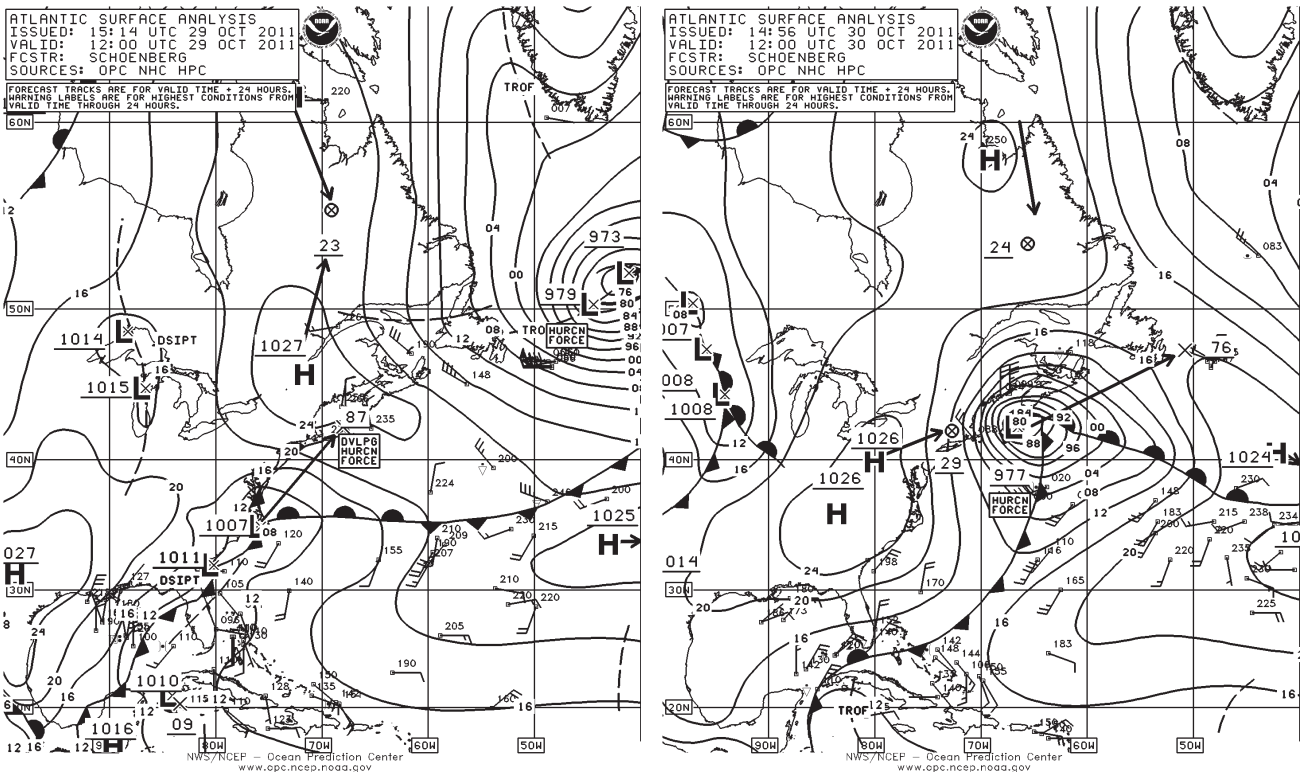


**Figure 11.** OPC North Atlantic Surface Analysis charts (Part 2) valid 1200 UTC October 29 and 30, 2011.

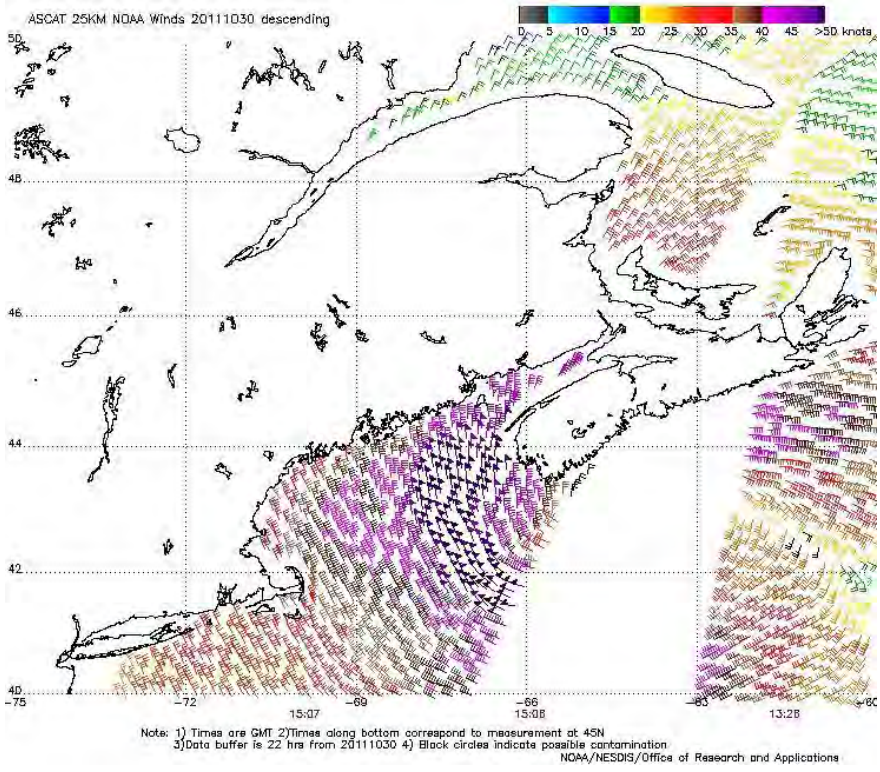


**Figure 12.** 25-km ASCAT image of satellite-sensed winds around the cyclone shown in the second part of Figure 11. The valid time of the pass is 1506 UTC October 30, 2011, or about three hours later than the valid time of the second part of Figure 11. The center of the storm is south of Nova Scotia in a data-free gap between passes. Image is courtesy of NOAA/ NESDIS/ Center for Satellite Application and Research.

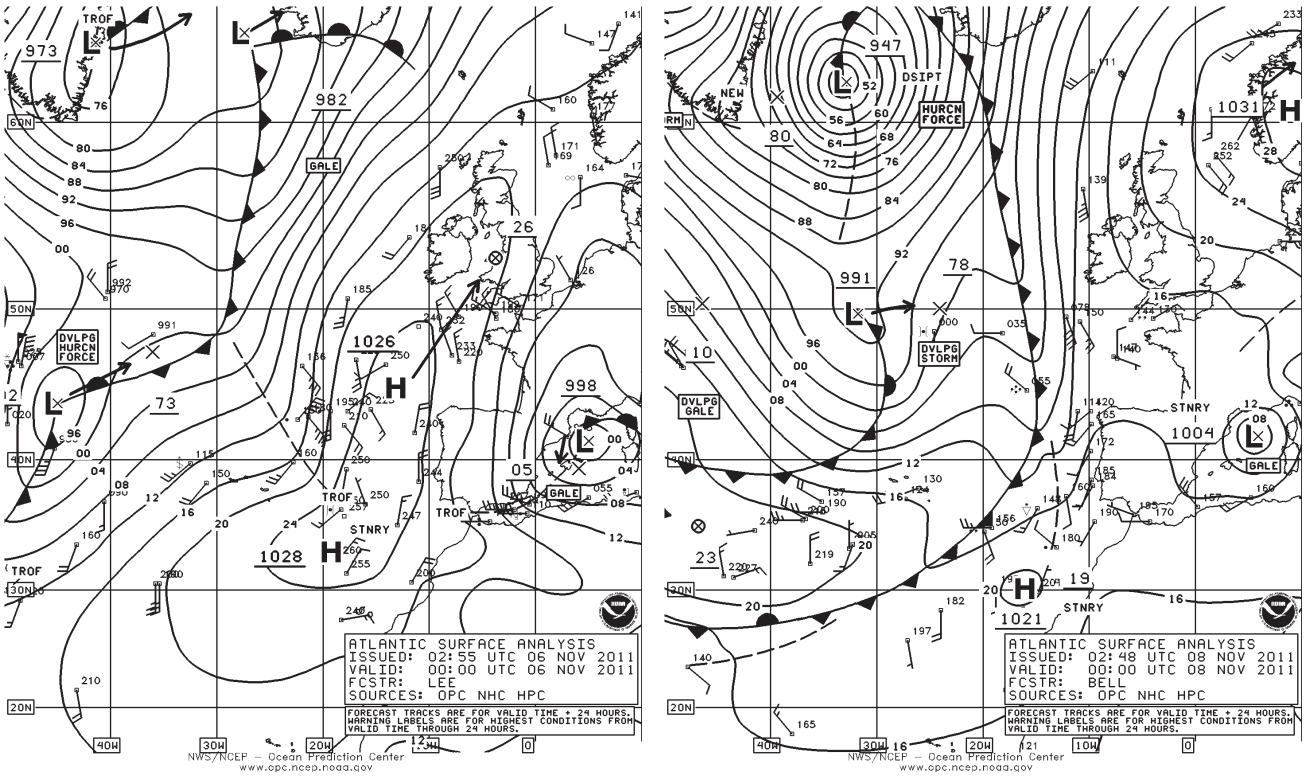


**Figure 13.** OPC North Atlantic Surface Analysis charts (Part 1) valid 0000 UTC November 6 and 8, 2011.

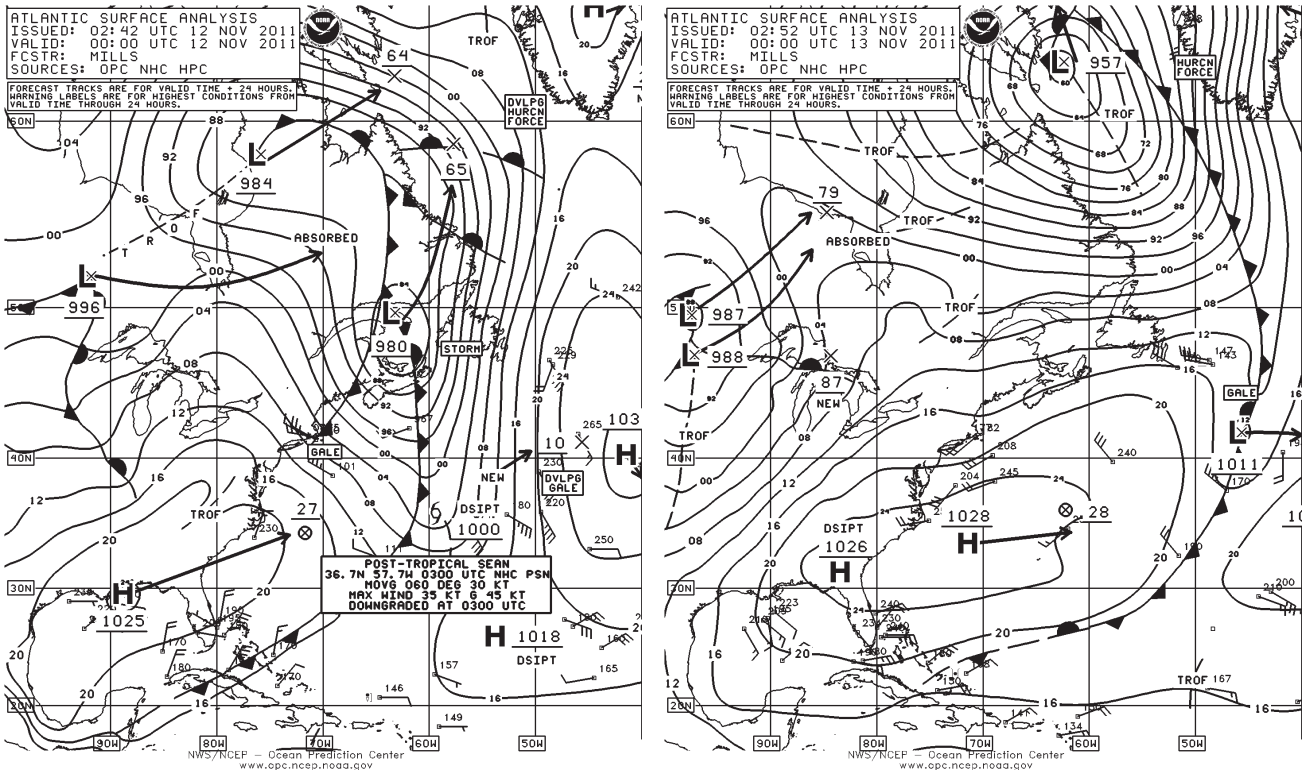


**Figure 14.** OPC North Atlantic Surface Analysis charts (Part 2) valid 0000 UTC November 12 and 13, 2011.

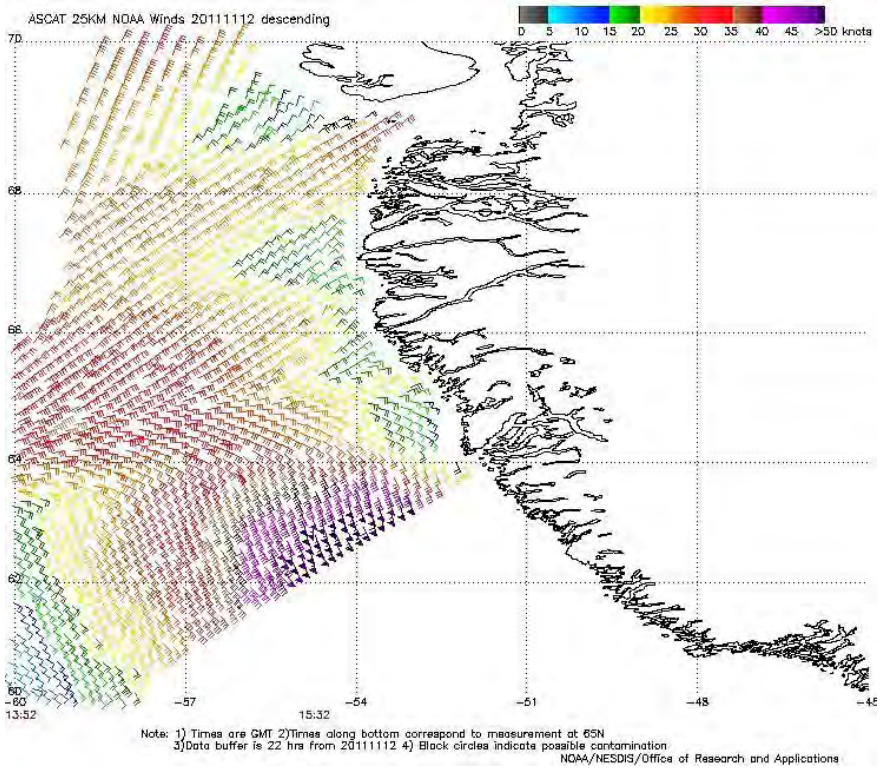


**Figure 15.** 25-km ASCAT image of satellite-sensed winds with partial coverage around the east side of the hurricane-force low shown in the second part of Figure 14. The valid time of the pass is 1532 UTC November 12, 2011, or about eight and one-half hours prior to the valid time of the second part of Figure 14. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

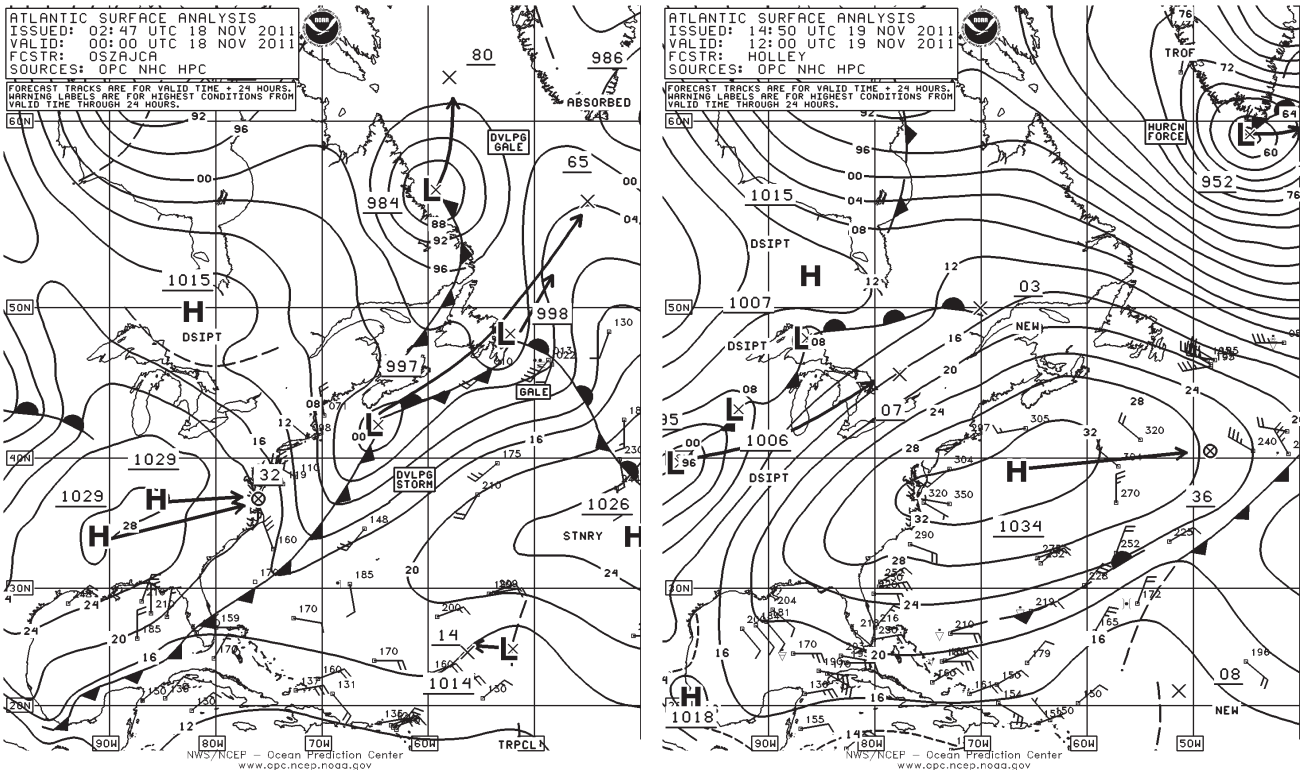


**Figure 16.** OPC North Atlantic Surface Analysis charts (Part 2) valid 0000 UTC November 18 and 1200 UTC November 19, 2011.

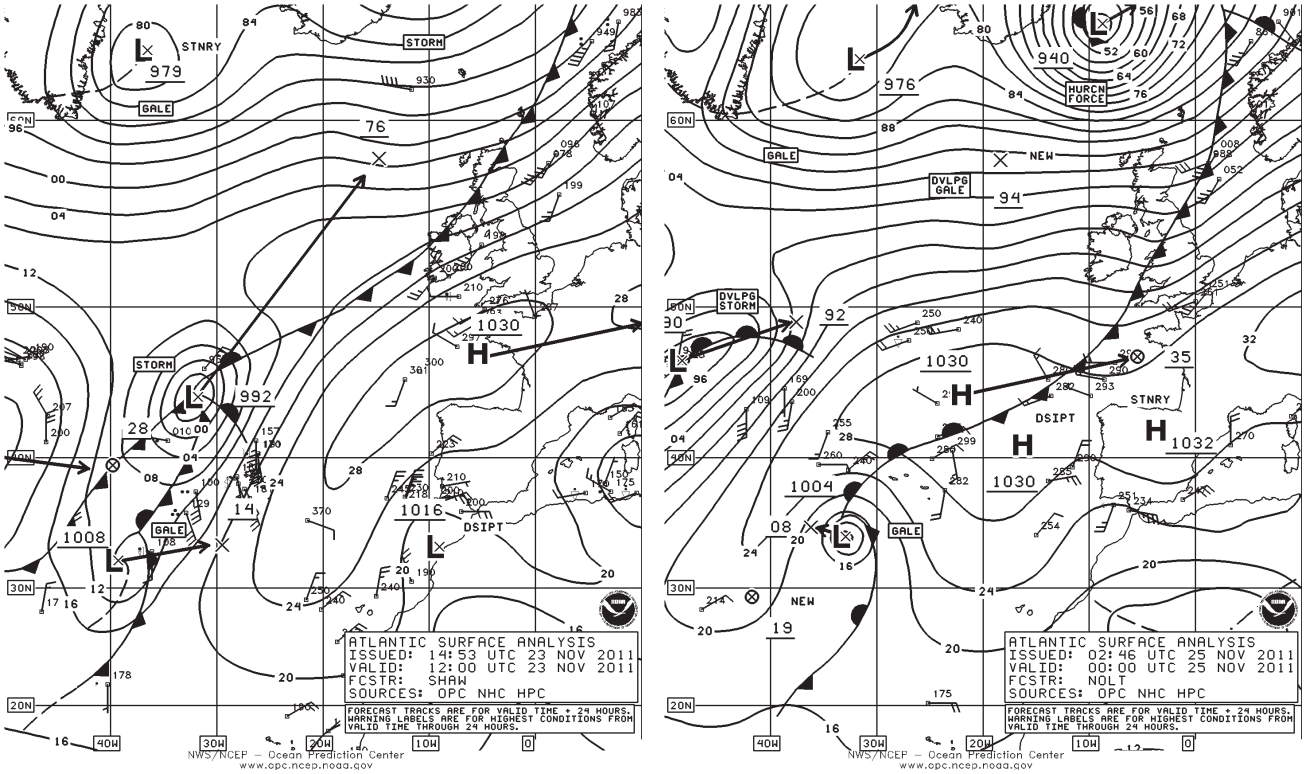


**Figure 17.** OPC North Atlantic Surface Analysis charts (Part 1) valid 1200 UTC November 23 and 0000 UTC November 25, 2011.

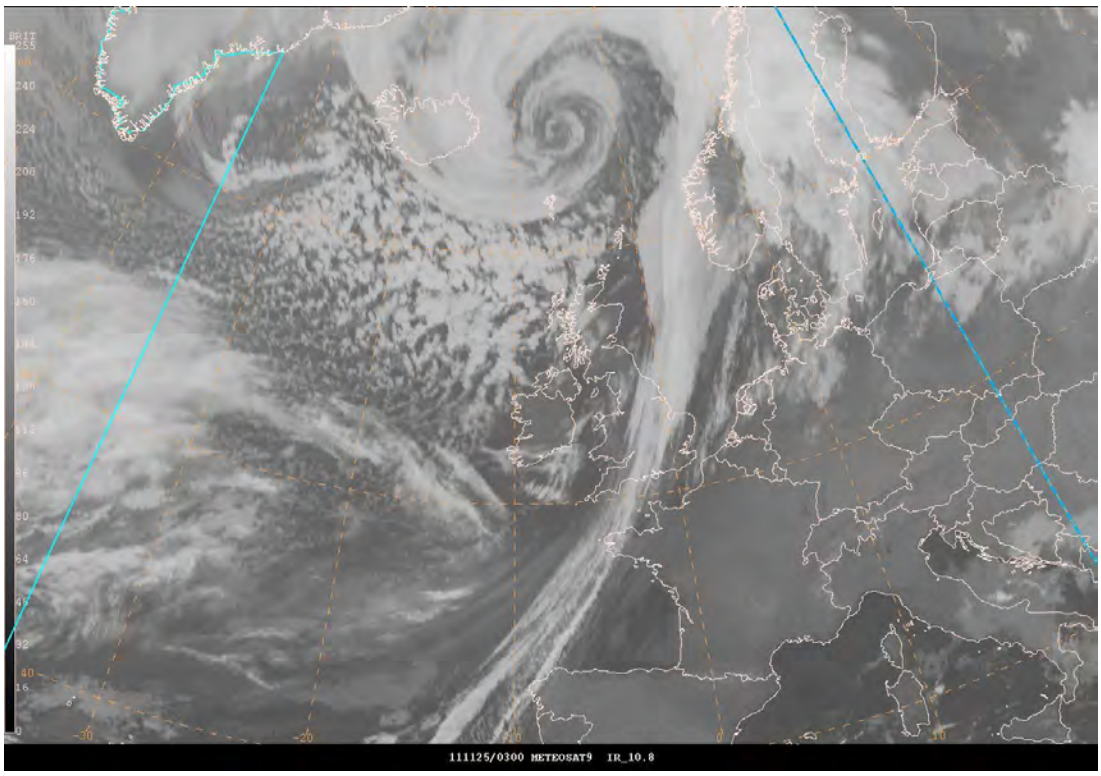


**Figure 18.** METEOSAT-9 infrared satellite image valid 0300 UTC November 25, 2011. The satellite senses temperature on a scale ranging from black (warm) to white (cold) in this type of imagery. The valid time of the image is three hours later than the valid time of the second part of Figure 17.

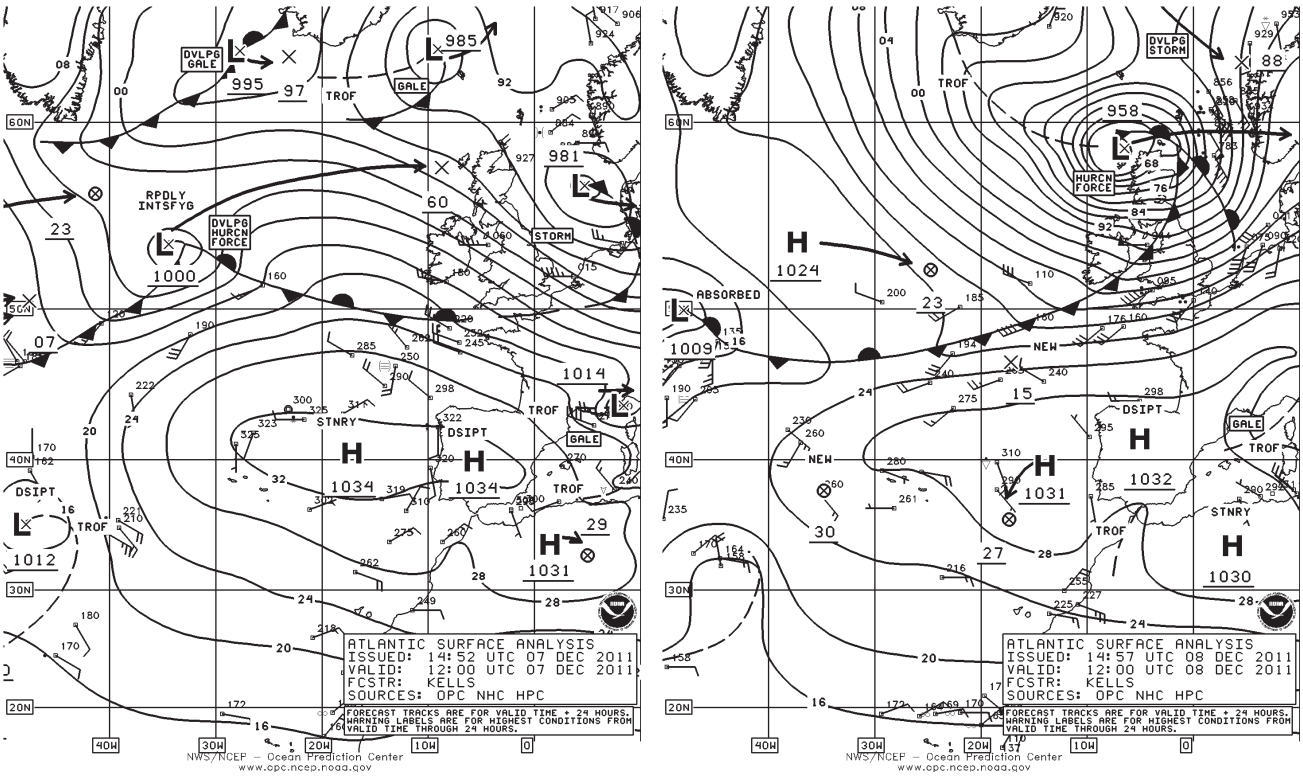


**Figure 19.** OPC North Atlantic Surface Analysis charts (Part 1) valid 1200 UTC December 7 and 8, 2011.

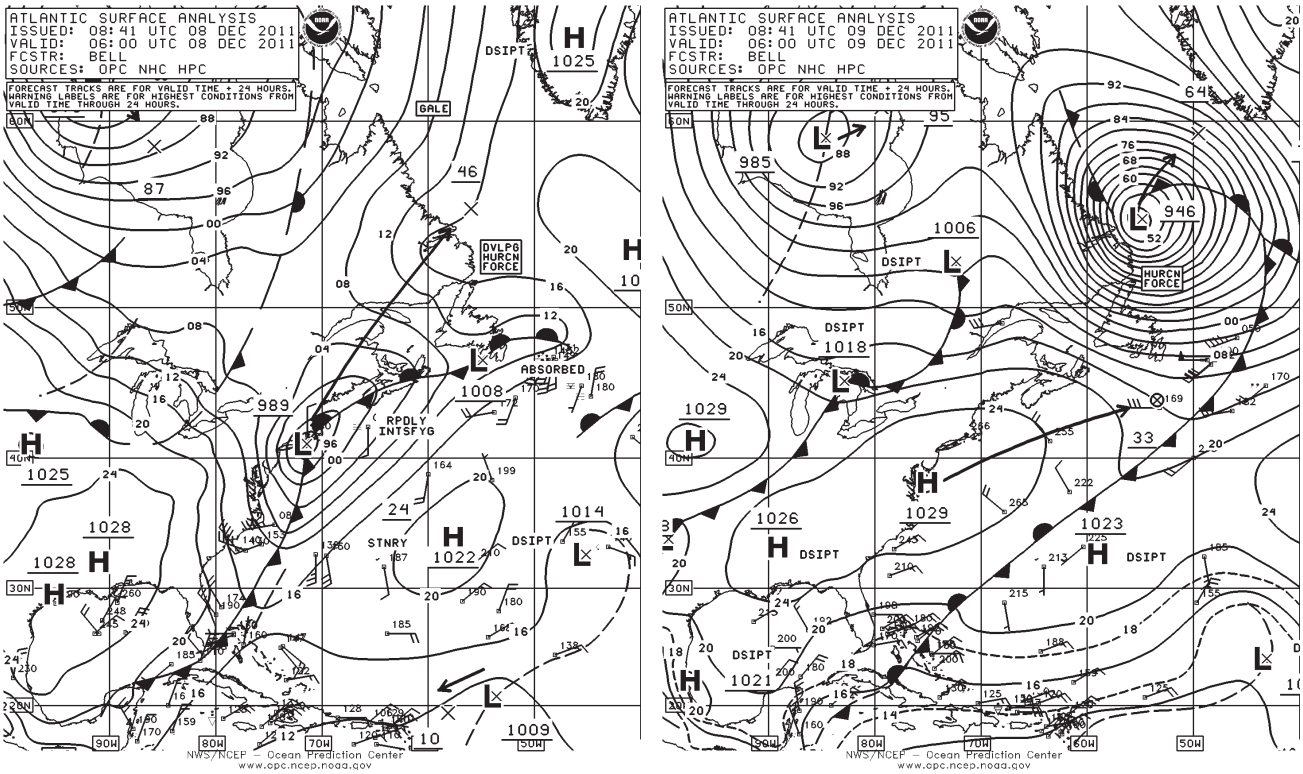


**Figure 20.** OPC North Atlantic Surface Analysis charts (Part 2) valid 0600 UTC December 8 and 9, 2011.

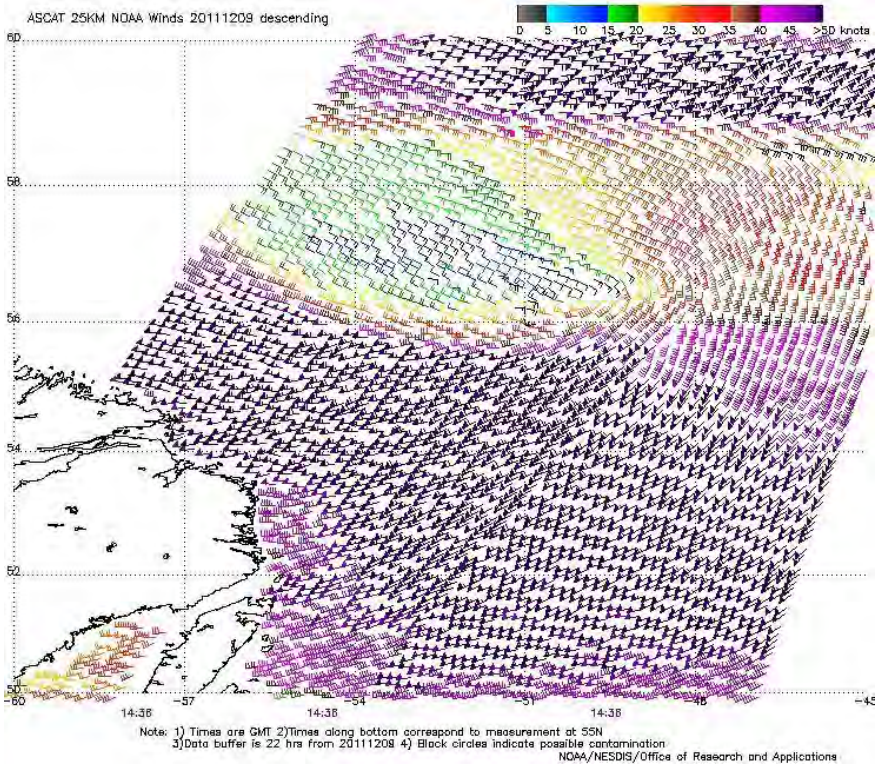


**Figure 21.** 25-km ASCAT image of satellite-sensed winds around the hurricane-force low shown in the second part of Figure 20. The valid time of the pass is 1436 UTC December 9, 2011, or about eight and one-half hours later than the valid time of the second part of Figure 20. The center of the cyclone, not well defined from the wind barbs, is in the area of lighter winds between the stronger winds ahead of the occluded front to the north and the stronger west winds to the south. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

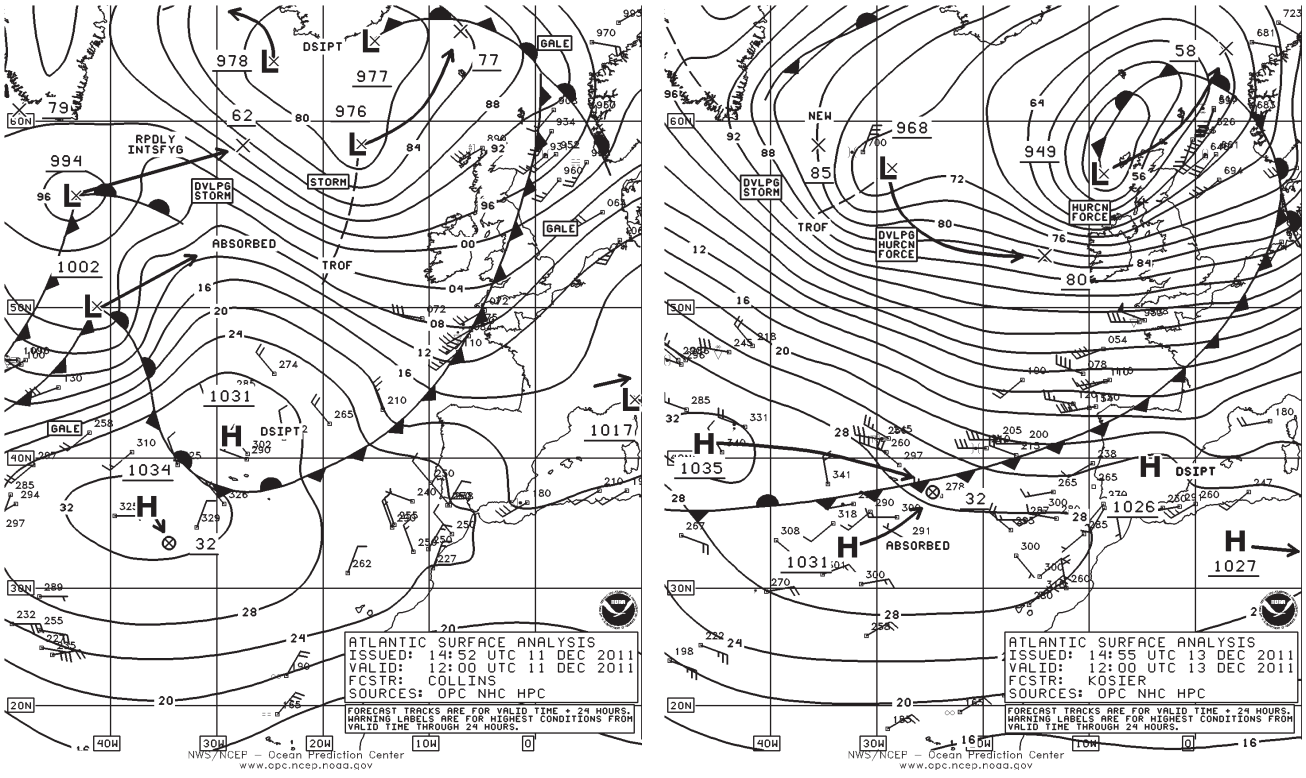


**Figure 22.** OPC North Atlantic Surface Analysis charts (Part 1) valid 1200 UTC December 11 and 13, 2011.

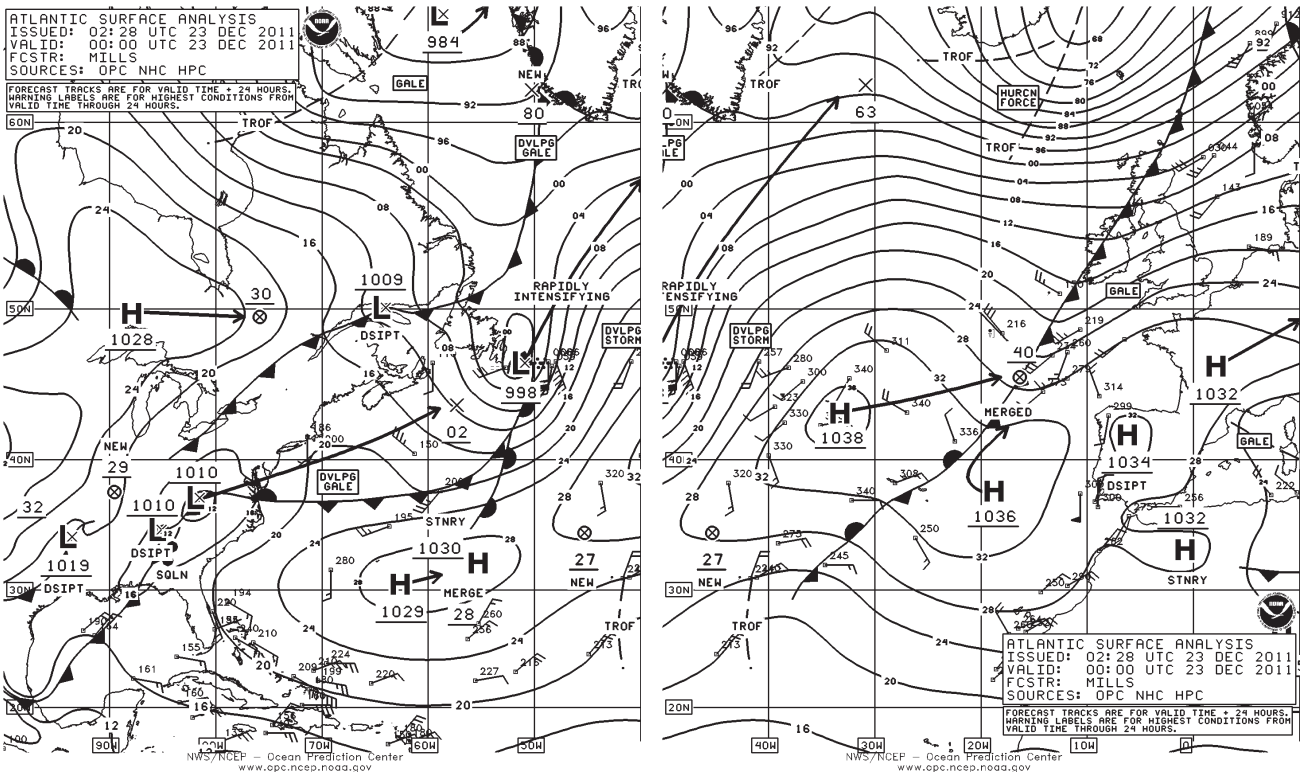


**Figure 23.** OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 0000 UTC December 23, 2011.

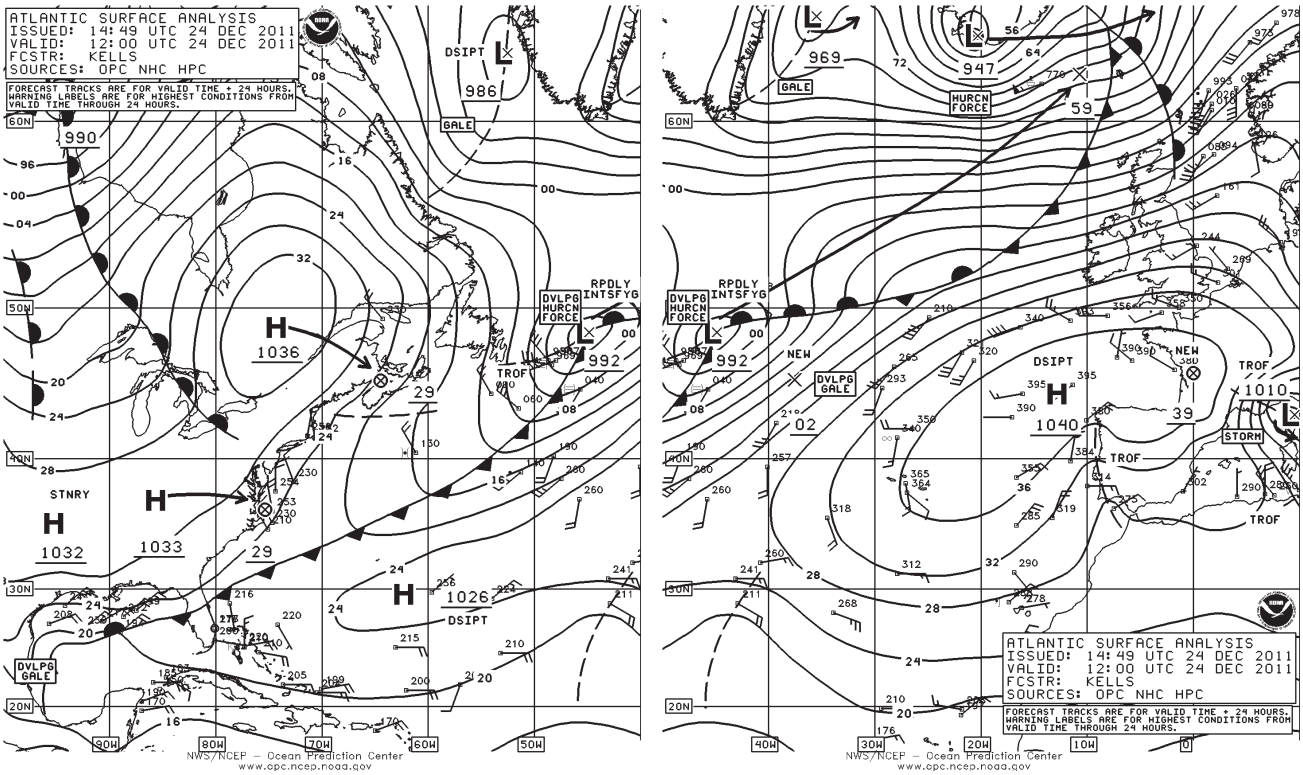


**Figure 24.** OPC North Atlantic Surface Analysis charts (Parts 1 and 2) valid 1200 UTC December 24, 2011.

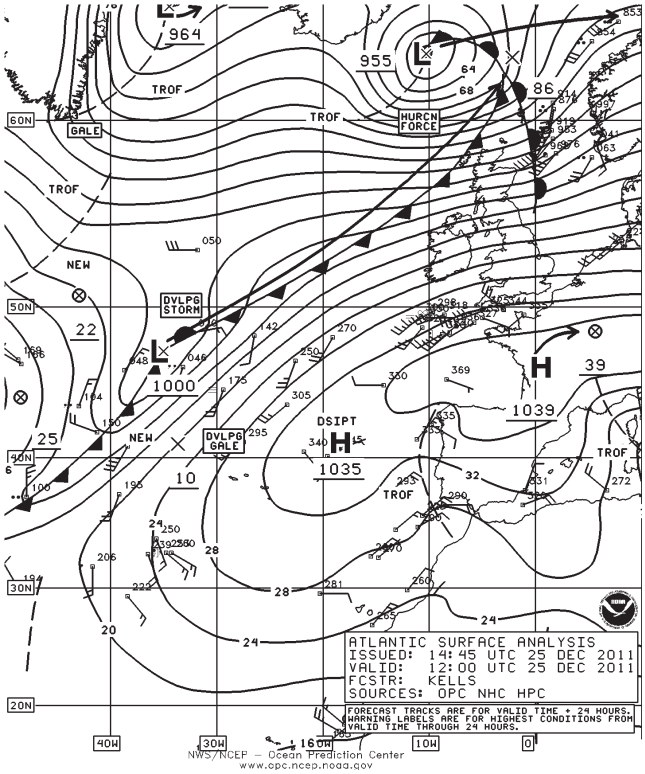


**Figure 25.** OPC North Atlantic Surface Analysis chart (Part 1) valid 1200 UTC December 25, 2011.

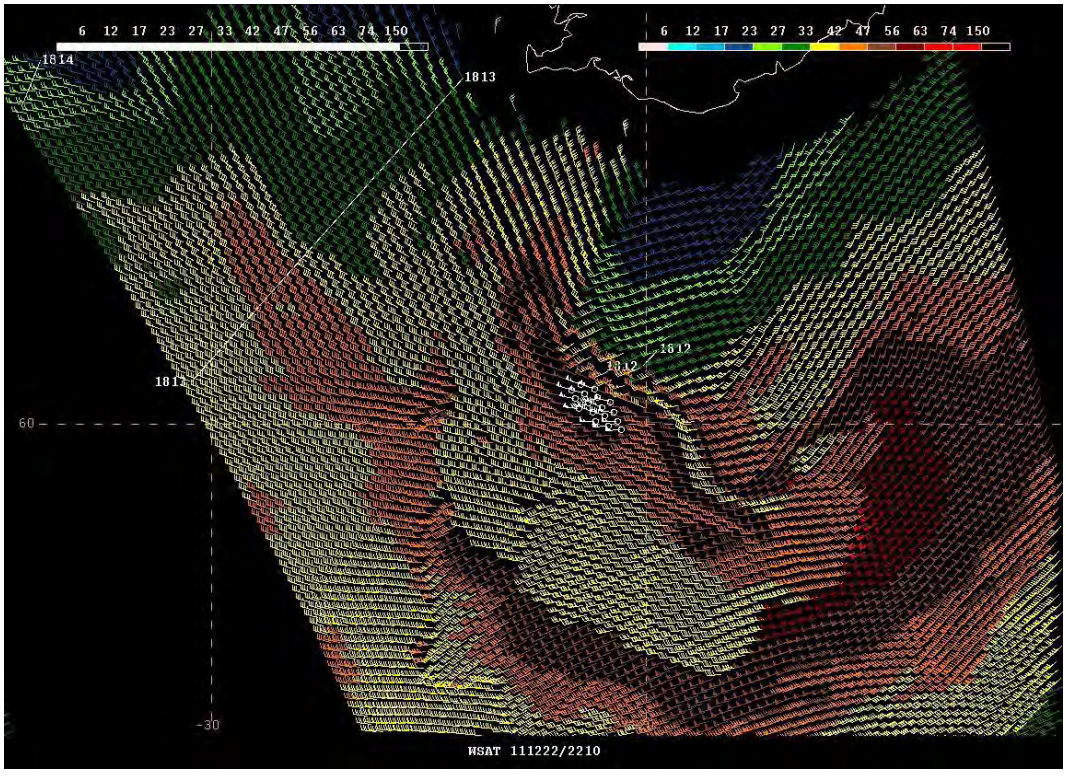


**Figure 26.** WindSat image of satellite-sensed winds (from passive microwave sensor aboard the U.S. Navy Coriolis satellite) around the south side of the hurricane-force low shown in the second part of Figure 23. The valid time of the pass is approximately 1812 UTC December 22, 2011, or less than six hours prior to the valid time of Figure 23. Iceland appears near the top of the image. Cross-track time lines of the satellite are shown with four-digit labels (UTC) in this version of the imagery adapted to OPC's operational use.



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# Marine Weather Review – North Pacific Area

## July to December 2011

*By George P. Bancroft*
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### Introduction

The weather pattern over the North Pacific became increasingly active after a relatively tranquil July as mid-summer weather gave way to an active fall pattern, with western Pacific tropical cyclones contributing to some of the developments of cyclones in the eastern North Pacific during September. One measure of the activity is the number of extratropical lows producing hurricane-force winds. There were two in September and three in October of non-tropical origin, followed by eight each in November and December. These trends in seasonal increases are supported by a past study of frequency of hurricane-force lows in the North Pacific (*Reference 3*). The main track of low pressure systems was from the area near Japan northeastward to the Gulf of Alaska with some of the cyclones turning more northward into the Bering Sea, especially in November. There was some high-latitude blocking in mid-November and in mid-December, forcing cyclones entering the Bering Sea to turn west.

Tropical cyclones in the northwestern Pacific were most active from late July through September when ten tropical systems appeared on OPC's oceanic radiofacsimile surface analysis charts, including one super typhoon. Tropical cyclones Sonca and Roke in late September, after initially becoming extratropical near Japan, later re-intensified into intense extratropical lows in the northeastern Pacific.

### Tropical Activity

**Typhoon Ma-On:** Tropical Storm Ma-On developed from a non-tropical low near 19N 155E late on July 11th and intensified while drifting northwest, becoming a typhoon by 1200 UTC on the 13th near 20N 150E with maximum sustained winds 65 kts. Ma-On reached maximum intensity two days later near 21N 140E when its sustained winds reached 115 kts, or a Category 4 major typhoon on the Saffir-Simpson intensity scale (*Reference 4*). Gradual weakening occurred over the following three days as the cyclone drifted northwest. Ma-On then turned northeastward late on the 18th as the maximum sustained winds lowered to 65 kts. The cyclone weakened to a tropical storm near 34N 137E with maximum sustained winds 55 kts at 0600 UTC on the 20th and to a tropical depression the next day as it turned more toward the southeast. Ma-On became post-tropical (or extratropical) by 0600 UTC on the 22nd near 30N 144E, and re-intensified into the compact storm force low shown in *Figure 1* east of Japan. An ASCAT image of the cyclone (*Figure 2*) offers a partial view of extratropical Ma-On including winds 40 to 50 kts detected on the north side. Some ship observations taken during this event are listed in **Table 1**. The cyclone moved northeast with its winds diminishing to gale force east of northern Japan near 151E on the morning of the 24th and to below gale force by the 26th. Dissipation followed on July 31st in the southwest Bering Sea.

**Super-Typhoon Muifa:** Tropical Storm Muifa moved into the far southwest waters in OPC's oceanic analysis area well south of Japan near 16N 135E on the afternoon of July 29th then drifted northwest while rapidly intensifying to a super typhoon, reaching a maximum strength of 140 kts for sustained winds with gusts to 170 kts at 1800 UTC the next day. Muifa then began to weaken late on the 30th and on the 31st before stalling near 22N 134E on August 1st and 2nd, and then resumed a westward movement west of the area late on the 2nd.

**Typhoon Merbok:** Tropical Storm Merbok formed near 24N 160E from a nontropical low early on August 3rd with maximum sustained winds of 40 kts, then drifted northwest through the 4th with little change in intensity. Merbok then intensified into a 65 kts typhoon near 29N 154E while turning north late on the 5th, and developed a maximum intensity of 80 kts the following day near 31N 154E. Merbok then weakened to a tropical storm by early on the 8th while moving northeast and transitioned to a post-tropical or extratropical storm-force low similar to Ma-On by 0000 UTC August 9 near 40N 161E. The **Alianca Maua** (DCPC2) reported north winds of 35 kts and 4.5 m seas (15 ft) near 39N 158E at 1500 UTC on the 8th. Post-tropical Merbok weakened to a gale force low the next day while continuing to move northeast, and dissipated in the western Bering Sea on the 12th.

**Tropical Depression 13W:** This was a short lived cyclone developing from a non-tropical low near 24N 137E at 0600 UTC August 10th with maximum sustained winds of 30 kts. The depression drifted northeast and weakened to a remnant low forty-eight hours later near 30N 140E and dissipated late on the 13th.

**Tropical Storm Talas:** A non-tropical low which became Talas was near 18N 142E with a 999 hPa central pressure at 0600 UTC on August 24th. It was named Tropical Storm Talas near 18N 141E at 0000 UTC on the 25th with 35 kts sustained winds. The cyclone moved north with its maximum sustained winds reaching 55 kts on the morning of the 28th near 24N 140E and

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| SHIP | 30N 137E | 18/0600 | SE 40 | 13.5/44 |
| SHIP | 29N 136E | 18/1800 | S 40 | 12.0/39 |
| **Northwest Sandpiper** (VNVG) | 31N 134E<br>29N 131E | 17/0000<br>16/1200 | NE 50<br>NE 55 | 4.5/15<br>4.0/13 |
| **Conti Peridot** (A8WR7) | 18N 144E | 16/0600 | S 40 | 8.5/28 |
| **Northwest Snipe** (VNVS) | 31N 136E | 17/0000 | SW 50 | |
| **Sea-Land Comet** (WDB9950) | 33N 148E | 23/1600 | SW 60 | 9.5/31 |
| **Overseas Joyce** (V7NV4) | 33N 143E | 23/1200 | NW 40 | 8.5/28 |
| **Horizon Hunter**<br>**OOCL Japan** (VRWB7) | 33N 152E<br>40N 149E | 23/1800<br>24/0000 | S 40<br>NE 45 | 15.8/52<br>8.2/27 |

**Table 1.** Ship and buoy observations taken during the passage of Tropical Cyclone Ma-On before and after extratropical transition.

maintained this intensity until moving over western Japan September 3rd where it weakened, and became a post-tropical gale in the Sea of Japan late on the 3rd. There were numerous ship reports with winds 35 to 40 kts around Talas. Stronger reports include southwest 50 kts from the **MSC Firenze** (A8KO3) near 17N 134E at 0600 UTC August 26th and a report from **SHIP** (22N 144E) with southeast winds 45 kts and 12.8 m seas (42 ft) at 2000 UTC that day. The **United Spirit** (ELYB2) reported east winds of 45 kts and 7.5 m seas (25 ft) near 29N 150E at 1800 UTC on the 31st. The extratropical remains of Talas then dissipated in the northern Sea of Japan late on September 6th.

**Tropical Storm Noru:** Tropical Storm 16W formed near 22N 150E early on September 3rd with maximum sustained winds of 40 kts and initially moved north before turning northwest early on the 4th and acquiring the name Noru, with maximum sustained winds 45 kts. At 1800 UTC on the 4th the **Kota Jati** (VRWJ7) reported south winds of 45 kts near 33N 152E and six hours later a vessel bearing the **SHIP** callsign encountered west winds of 50 kts near 33N 146E. Noru then began to weaken and became a depression near 39N 150E at 0600 UTC on the 6th and then an extratropical gale 44N 150E twelve hours later. Post-tropical Noru then moved into the Sea of Okhotsk where it developed a lowest central pressure of 980 hPa late on the 7th before becoming absorbed by a stronger inland system to the north late on the 10th.

**Tropical Storm Kulap:** Tropical Storm Kulap formed near 22N 136E at 0700 UTC September 7th and developed a maximum intensity with 45 kts sustained winds early on the 7th while moving northwest, and then weakened to a tropical depression west of the area on the 8th.

**Typhoon Roke:** Roke began as Tropical Depression 18W near 21N 136E early on September 11th and drifted northeast, becoming Tropical Storm Roke 24N 138E at 1800 UTC on the 13th with maximum sustained winds of 35 kts. Roke then weakened to a depression and moved west of the area on the 14th, only to re-emerge as a typhoon just south of Japan near 33N 136E with 90 kts sustained winds late on September 20th. At 2300 UTC on the 20th a vessel reporting with the **SHIP** callsign reported north winds of 80 kts and 4.0 m seas (13 ft) near 32N 135E, and a northwest wind of 70 kts and 4.5 m seas (14 ft) at 33N 135E one hour later. At 1200 UTC on the 21st the **Sea-Land Comet** (WDB9950) reported south winds of 40 kts and 9.5 m seas (31 ft) near 34N 141E. After moving over Japan's main island Roke transitioned to a post-tropical storm with a 980 hPa central pressure near 40N 143E the following morning while moving northeast, and then weakened to a gale on the 22nd. Extratropical Roke then passed near the western Aleutian Islands on the 23rd before re-intensifying over the northeastern Pacific as described in **Other Significant Events** below.

**Typhoon Sonca:** Sonca began as Tropical Depression 19W near 22N 154E at 1800 UTC September 14th and drifted north, becoming Tropical Storm Sonca 23N 155E early on the 15th with maximum sustained winds of 35 kts. Sonca moved northwest and intensified into a typhoon two days later. The cyclone developed a maximum intensity of 85 kts for sustained winds near 33N 143E at 1800 UTC on the 18th before weakening to a tropical storm the next day. Sonca then became an extratropical storm force low with a 996 hPa central pressure at 41N 160E at 0600 UTC September 20th before weakening to a gale while passing over the central North Pacific waters on the 20th and 21st. Subsequent re-intensification into an intense extratropical low is described below.

**Typhoon Nalgae:** Tropical Storm Nalgae formed near 19N 138E from a non-tropical low-pressure area at 1800 UTC September 27th with maximum sustained winds of 40 kts, and remained nearly stationary over the following day before moving west of the area as a typhoon late on the 28th.

## Other Significant Events

**Western Pacific Storm, July 20-22:** An unseasonably deep storm force low developed in the western waters during this period with a 980 hPa central pressure and is shown in the first part of *Figure 1.* This was the deepest non-tropical low in the North Pacific until late August. It originated as a wave of low pressure on a stationary front to the northeast of Tropical Storm Ma-On at 0600 UTC on the 20th. The **Star Atlantic** (LAYG5) near 40N 167E reported southwest winds of 45 kts and 4.5 m seas (15 ft) at 0600 UTC on the 21st. The **OOCL Japan** (VRWB7) encountered west winds of 40 kts and 7.3 m seas (24 ft) near 45N 165E at 0000 UTC on the 22nd. A 25 m ASCAT pass from 2323 UTC on the 21st revealed west winds to 45 kts on the south side, which due to the low bias of ASCAT retrievals indicates storm-force. The cyclone then weakened to a gale force low near the western Aleutians early on the 22nd and moved inland over Alaska on the 23rd.

**North Pacific Storm, August 24-25:** *Figure 3* depicts the rapid development of this cyclone from a frontal wave of low pressure over a thirty-six hour period. The central pressure fell 23 hPa in the twenty-four hour period ending at 0000 UTC on the 25th, and the second part of *Figure 3* shows the storm at maximum intensity. The high resolution ASCAT image in *Figure 4* reveals a compact circulation and a frontal feature. Although the wind barbs cannot be seen the color scale on the upper right side indicates a small area of winds 48 to 56 kts on the south side of the center. The **Horizon Hawk** (WDD6033) reported east winds of 40 kts near 47N 161W at 1200 UTC August 24. The cyclone weakened to a gale-force low late on the 25th as it moved into the Gulf of Alaska, and became absorbed by a larger low to the south on the 27th.

**Northeastern Pacific Storm, September 4-6:** *Figure 5* shows the rapid development of an eastern Aleutian's frontal wave as it moved into the Gulf of Alaska. The central pressure fell 31 hPa in the twenty-four hour period ending at 1200 UTC on September 5th. At 0000 UTC on the 6th OPC briefly analyzed this cyclone as a hurricane-force low, the first of the fall season, and it was also the first with central pressures below 960 hPa. At 0200 UTC on the 6th the ship **WDE3542** near 58N 154W reported northeast winds of 70 kts. The **Statendam** (PHSG) near 58N 142W reported southeast winds of 58 kts and 14.0 m seas (46 ft) at 0000 UTC on the 6th. The **Westwood Olympia** (C6UB2) near 57N 144W encountered southeast winds of 50 kts at 1800 UTC on the 5th. The buoy 46076 (59.5N 148.0W) reported east winds of 45 kts with gusts to 58 kt, a peak gust 62 kts and 7.0 m seas (23 ft) at 0200 UTC on the 6th. The highest seas at this buoy occurred one hour before, 8.0 m (26 ft). East Amatuli Station Light (AMAA2) near 58.9N 151.9W at 2200 UT C on the 5th reported northeast winds of 54 kts with gusts to 63 kts and a peak gust 67 kts. The cyclone subsequently weakened to a gale force low by early on the 6th while stalling, and dissipated over the Alaska Peninsula on the 8th.

**North Pacific Storm, September 17-20:** The next major event originated near the northern Kurile Islands on the 16th and moved rapidly east along the Aleutian Islands with the central pressure falling 30 hPa in the twenty-four hour period ending at 1200 UTC on the 18th. The cyclone developed hurricane-force winds while passing south of the Alaska Peninsula and Kodiak Island on the 19th and a lowest central pressure of 964 hPa at 0600 UTC on the 20th near 54N 151W. The **Dresden Express** (DHDE) near 53N 164W reported northwest winds of 50 kts and 7.0 m seas (23 ft) at 0000 UTC on the 20th. The buoy 46082 (59.7N 143.4W) at 0400 UTC on the 20th reported east winds of 45 kts with gusts to 60 kts and 8.0 m seas (26 ft) followed by a report of 10.0 m seas (33 ft) three hours later. A 25 km ASCAT pass at 0645 UTC on the 20th showed east to southeast winds 40 to 50 kts along the Alaska coast east of 147W. The cyclone weakened to a gale on the 20th and like its predecessor dissipated over southwest Alaska the next day.

**Eastern North Pacific Storm (Post-tropical Sonca), September 22-23:** The extratropical remains of Tropical Cyclone Sonca in the form of a wave of low pressure passed through the central North Pacific near 40N and rapidly intensified after passing 150W (*Figure 6*). The central pressure fell 28 hPa in the twenty-four hour period ending at 0600 UTC on the 23rd, when the cyclone was at maximum intensity. A WindSat image from 0243 UTC on the 23rd (*Figure 7*) showed the west side of the cyclone's circulation with winds to 70 kts. The **Zuiderdam** (PBIG) on the north side near 55N 131W reported east winds of 65 kts at 0500 UTC on the 23rd while the **Polar Resolution** (WDJK) reported west winds of 60 kts and 8.8 m seas (29 ft) near 53N 136W four hours later. The buoy 46205 (54.2N 134.3W) reported south winds of 45 kts and 12.0 m seas (39 ft) at 0900 UTC on the 23rd. The cyclone then moved inland later that day,

**Eastern North Pacific Storm (Post-Tropical Roke), September 25-27:** The extratropical remains of Tropical Cyclone Roke, after initially weakening like Sonca, crossed the Pacific near the Aleutian Islands before re-intensifying as a storm in the eastern Pacific with a lowest pressure of 967 hPa versus 961 hPa for post-tropical Sonca. At 1833 UTC September 26th when the cyclone was near 50N 138W with a 967 hPa central pressure, a 25-km ASCAT pass revealed west winds to 50 kt south of the center. The **YM Hiroshima** (V2OS3) near 51N 151W and the **Hanjin Philadelphia** (A8CN8) near 52N 149W both encountered northwest winds of 50 kts at 0000 UTC on the 26th, and the second ship also reported 9.5 m seas (31 ft). Buoy 46036 (48.5N 133.9W) reported southwest winds of 45 kts and 8.5 m seas (28 ft) at 1900 UTC on the 26th, and 10.5 m (34 ft) four hours later. The cyclone moved onshore

near southern Southeast Alaska the following night and weakened inland.

**North Pacific Storm, October 7-10:** A wave of low pressure originating near northern Japan intensified into a hurricane-force low south of the central and western Aleutian Islands as depicted in *Figure 8*. The cyclone is shown near maximum intensity in the second part of *Figure 8*. The ASCAT image in *Figure 9* from late on the 7th reveals a strong circulation with 50 kts wind retrievals even north of the center. The cyclone then slowly weakened as it moved into the eastern Pacific over the next two days. The **Overseas Joyce** (V7NV4) near 55N 149W reported northeast winds of 45 kts and 12.8 m seas (42 ft) at 0600 UTC on the 10th. The top winds with this system weakened to gale force on the 10th before the low center turned northward into the Gulf of Alaska, where it dissipated on the 13th.

**Northeastern Pacific Storm, October 24-26:** The development of this cyclone is shown in *Figure 10*, as the low pressure wave which came from the western Pacific rapidly intensified while absorbing the low in the eastern Bering Sea. The central pressure fell 27 hPa in the twenty-four hour period ending at 1200 UTC on the 25th. The 25 km ASCAT image from the night of the 24th (*Figure 11*) reveals remotely sensed winds in the 50 to 60 ktst range on the south side of the cyclone. Selected ship and buoy observations taken in this storm are listed in **Table 2**. The cyclone subsequently weakened rapidly on the night of the 25th and on the 26th and dissipated later that day.

**Eastern North Pacific Storm, October 27-28:** The next event originated in the eastern waters as a frontal wave of low pressure near 43N 162W late on the 26th rapidly deepened as it tracked northeast, with the central pressure falling an impressive 36 hPa in the twenty-four hour period ending at 0600 UTC on the 28th. At about that time a 25 km ASCAT pass showed west winds to 50 kts on the south side of the storm, and hurricane-force winds with this system lasted late on the 27th and early on the 28th before the cyclone moved inland on the 28th and weakened. The lowest central pressure was 967 hPa when the center was near 55N 136W early on the 28th. The Canadian buoy 46205 (54.2N 134.3W) reported southwest winds of 43 kts with gusts to 52 kts and 6.5 m seas (21 ft) at 1000 UTC on the 28th, and maximum seas 9.0 m (30 ft) three hours later. The buoy 46185 (52.4N 129.8W) reported southeast winds of 47 kts with gusts to 58 kts and 6.5 m seas (21 ft) 0600 UTC on the 28th, and highest seas 9.0 m (30 ft) two hours later.

**Western North Pacific and Bering Sea Storm of October 31-November 3:** By early November the storm track shifted more toward the Bering Sea. An area of low pressure originating southeast of Japan developed hurricane-force winds as it moved toward the Bering Sea (*Figure 12*). Hurricane-force winds lasted from the night of October 31st until the morning of November 2nd , when the central pressure rose to 984 hPa and winds eased to storm force. A 25 km ASCAT image from 1018 UTC on the 2nd contained a swath of north winds 50 kts on the west side. The **Caroline Maersk** (OZWA2) near 54N 170E reported north winds of 50 kts and 7.5 m seas (25 ft) at 1800 UTC on the 2nd. Six hours later the **APL Philippines** (WCX8884) encountered seas of 9.8 m (32 ft) along with south winds of 40 kts near 45N 167W. At 0300 UTC November 4th the ship **WY7636** near 60N 172W reported northwest winds 50 kts and 6.7 m seas (22 ft). Bering Sea buoy 46035 (57.1N 177.8W) reported southeast winds of 39 kts and 10.0 m seas (33 ft) at 1700 UTC on the 2nd, and a gust of 47 kts three hours later. The highest winds with this cyclone came before the lowest central pressure of 970 hPa, which occurred in

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Polar Discovery** (WACW) | 56N 142W<br>56N 141W | 25/1300<br>25/1700 | SE 50<br>SE 55 | 4.5/15 |
| **Horizon Anchorage** (KGTX) | 57N 149W | 25/1400 | S 50 | |
| **Star Kilimanjaro** (LAIG7) | 55N 156W<br>55N 156W | 25/1800<br>26/0000 | SW 50<br>W 45 | 8.5/28<br>9.0/30 |
| **North Star** (KIYI) | 58N 148W | 26/1200 | W 55 | |
| Buoy 46001 | 56.3N 148.0W | 26/1300<br><br>26/0800 | W 39 G49<br>Peak gust 51<br>Maximum | 9.5/31<br><br>10.5/34 |
| Buoy 46083 | 58.2N 138.0W | 26/0100<br><br>27/0200 | SE 41 G54<br>Peak gust 60<br>Maximum | 7.5/25<br><br>8.0/26 |

**Table 2.** Ship and buoy observations taken during the passage of the northeastern Pacific storm of October 24-26, 2011.

the Bering Sea near 59N 171W at 1800 UTC on the 3rd . The winds weakened to gale force the following night as the system moved inland over Alaska.

**Bering Sea Superstorm, November 7-9:** This major storm stood out as being the deepest of the non-tropical cyclones during this six-month period, developing a lowest central pressure of 943 hPa in the northern Bering Sea besides having impacts on land and fuel delivery. It originated near Japan as a wave of low pressure early on November 6th and *Figure 13* depicts the subsequent development over a thirty-six hour period including a twenty-four hour period ending at 1800 UTC on the 8th when the central pressure fell 32 hPa. *Figure 14* is an infrared satellite image of the cyclone near maximum intensity displaying broad cold-topped frontal features which also wrap around a well defined center. ASCAT imagery from 0310 UTC on the 9th showed some 50 to 60 kts of wind retrievals on the edge of a pass and may have missed the strongest winds. The **Horizon Consumer** (WCHF) reported southwest winds of 55 kts and 11.6 m seas (38 ft) near 46N 164E at 0300 UTC on the 8th. The buoy 46035 (57.1N 177.8W) reported southwest winds of 56 kts with gusts to 72 kts and 10.5 m seas (34 ft) at 0000 UTC on the 9th and a peak gust of 74 kts one hour later. Seas at this buoy reached 12.5 m (41 ft) at 2100 UTC on the 8th. Buoy 46070 (55.1N 175.3E) reported west winds of 47 kts with gusts to 58 kts and a peak gust 64 kts and 9.0 m seas (30 ft) at 2100 UTC on the 8th. The seas were as high as 10.0 m (33 ft) three hours later. The land station Savoonga, AK on St. Lawrence Island reported southwest winds of 50 kts with gusts as high as 65 kts on the morning of the 9th. The cyclone subsequently weakened as it passed north of the Bering Strait later that day.

**North Pacific and Bering Sea/Gulf of Alaska Storm, November 10-13:** This cyclone originated east of Japan near 165E early on the 9th and moved northeast, developing storm-force winds south of the western Aleutian Islands the next day and hurricane-force winds by the 12th in the Bering Sea. ASCAT imagery showed retrievals of west winds 50 to 60 kts south of the center in the southeast Bering Sea at 0831 UTC on the 12th. *Figure 15* shows the primary hurricane-force low at maximum intensity at 0600 UTC on the 12th, weakening inland in the next twelve hours as redevelopment occurred in the Gulf of Alaska. The secondary hurricane-force low shown in the second part of *Figure 15* lingered in the northeast Gulf of Alaska on the night of the 12th and on the 13th before dissipating inland on the 15th. Some notable ship and buoy observations taken during this event are listed in **Table 3**.

**Northwestern Pacific and Bering Sea Storms, November 15-20:** Three strong cyclones of similar intensity (central pressures in the low 970s) developed in the western North Pacific waters and moved into the Bering Sea during this period. The first one originated east of Japan near 160E early on the 14th and became a hurricane-force low in the western Bering Sea near 56N 165E early on the 16th, with central pressures as low as 970 hPa. Buoy 46070 (55.1N 175.3E) reported east winds of 47 kts with gusts to 60 kts and 9.0 m seas (30 ft) at 0700 UTC November 16, a peak gust of 64 kts one hour later and highest seas 10.5 m (34 ft) at 0900 UTC on the 16th. The cyclone turned west and weakened near the Kamchatka Peninsula on the 17th (first part of *Figure 16*) as the next hurricane-force low approached from the southeast. This second system

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **Wren Arrow** (C6JD7) | 43N 172E | 10/1600 | N 50 | 5.5/18 |
| **Star Isfjord** (LAQX5) | 48N 174E | 11./1200 | NW 60 | 5.8/19 |
| **Healy (AWS)** (NWS0003) | 54.5N 165W | 11/0800 | SE 50 | |
| **Horizon Tacoma** (KGTY) | 56N 144W<br>55N 142W<br>57N 147W | 13/0000<br>12/1800<br>13/1200 | W 55<br>W 50<br>NW 55 | 13.5/44<br>15.8/52<br>10.5/34 |
| **Midnight Sun** (WAHG) | 57N 143W | 12/1200 | W 60 | |
| **Alaskan Legend** (WDD2074) | 54N 141W | 12/1200 | W 45 | 11.6/38 |
| **Polar Adventure** (WAZV) | 59N 147W<br>58N 148W | 13/0600<br>13/1200 | SW 50<br>W 65 | 11.6/38<br>11.6/38 |
| Buoy 46083 | 58.2N 138.0W | 12/1200<br><br>12/2300 | SE 35 G41<br>Peak gust 45 | 3.5/11<br><br>8.0/26 |
| Buoy 46070 | 55.1N 175.3E | 11/2300<br>12/0500 | NW 41 G51<br>Maximum | 2.5/8<br>6.5/21 |

**Table 3.** Ship and buoy observations taken during the North Pacific and Bering Sea/ Gulf of Alaska redevelopment event of November 10-13, 2011.

originated as a low pressure wave near Japan late on the 14th. The **APL Philippines** (WCX8884) near 54N 171W encountered southeast winds of 45 kts and 10.7 m seas (35 ft) at 1200 UTC on the 17th. Buoy 46035 (57.1N 177.8W) reported east winds of 50 kts and 9.0 m seas (30 ft) at 0800 UTC on the 17th, and highest seas 9.8 m (32 ft) two hours prior. A 25 km ASCAT pass at 2218 UTC November 17th showed 50 kts wind retrievals in the northwest Bering Sea. The cyclone then turned west on the 17th and dissipated west of the Kamchatka Peninsula on the 18th. The second part of *Figure 16* shows a third cyclone that was nearing its maximum intensity as it moved into the Bering Sea on the 18th, after originating near Japan early on the 16th. The A high resolution (25 km) ASCAT pass from 2337 UTC on the 18th revealed west winds 50 to 60 kts on the south side. The **Valiant** (WY7686) near 60N 172W reported northeast winds of 45 kts and 6.0 m seas (20 ft). The cyclone subsequently turned eastward in the Bering Sea with its top winds diminishing to gale force on the 20th, and dissipated the following night.

**Eastern North Pacific Storm, November 23-24:** After originating east of Japan near 160E on November 21st , the developing cyclone tracked east-northeast with gradual intensification, developing storm force winds late on the 23rd while passing near 49N 139W. It briefly developed hurricane-force winds with a lowest central pressure of 972 hPa near 51N 131W at 1800 UTC on the 24th, and moved inland the following evening. The **Polar Adventure** (WAZV) encountered southwest winds of 50 kts and 9.5 m seas (31 ft) at 0000 UTC on the 25th. The buoy 46207 (50.9N 129.9W) reported northwest winds of 45 kts and 8.2 m seas (27 ft) at 0000 UTC on the 25th, and 10.0 m seas (33 ft) three hours later.

**North Pacific Storm, November 27-30:** After originating in the Sea of Japan on November 26th , this developing cyclone tracked east near 46N and developed hurricane-force winds while passing south of the central Aleutians on the 28th. The central pressure fell 34 hPa in the twenty-four hour period ending at 0000 UTC on the 29th. The cyclone turned northeastward and developed a lowest central pressure of 968 hPa near 49N 171W six hours later. The ship **OUJI** (41N 177E) reported southwest winds of 50 kts and 5.8 m seas (19 ft) at 1200 UTC on the 28th. Twelve hours later the **Adrian Maersk** (OXLD2) encountered northwest winds of 50 kts and 4.5 m seas (15 ft) near 49N 170E. The system weakened near the Alaska Peninsula on the 29th and 30th before dissipating inland late on the 30th.

**Western North Pacific and Bering Sea Storm, December 3-8:** A frontal wave of low pressure passed just south of Japan late on December 2nd and tracked northeast while intensifying into a hurricane-force low near 45N 158E with a 970 hPa central pressure at 1800 UTC on the 4th. The lowest pressure occurred twelve hours later as the cyclone continued to move toward the western Aleutian Islands. A 25 km resolution ASCAT pass from 1034 UTC on the 5th revealed west winds of 50 kts on the south side. The cyclone's top winds lowered to storm force by the 5th . The system redeveloped to the east near the eastern Aleutians on the 6th , with the new center moving north into the Bering Sea while the old center dissipated early on the 7th. The new storm force low in the central Bering Sea at 1800 UTC on the 7th then moved northeast and weakened inland over Alaska by the 9th. Some notable ship and buoy observations taken in this event are listed in **Table 4**.

**Northeast Pacific Storm, December 10-12:** This event with greatest impact in the northeastern waters originated as a low-pressure wave east of Japan early on December 9 th which raced northeast and rapidly intensified south of the eastern Aleutian Islands late on the 10th (*Figure 17*). The central pressure fell 31 hPa in the twenty-four hour period ending at 0000 UTC on the 12th, when the central pressure was 965 hPa. The Ocean Prediction Center analyzed this system as a hurricane-force low by 0000 UTC on the 12th. The ASCAT image in *Figure 18* has wind retrievals in the 50 to 60 kts around the south and west sides of the intensifying low. The **Overseas Nikiski** (WDBH)

| OBSERVATION | POSITION | DATE/TIME (UTC) | WIND | SEA(m/f) |
|---|---|---|---|---|
| **APL Philippines** (WCX8884) | 42N 145E<br>46N 152E<br>53N 161E | 03/2300<br>04/1800<br>06/0600 | NW 40<br>N 50<br>N 40 | 9.8/32<br><br>10.7/35 |
| **Star Java** (LAJS6) | 41N 141E | 04/0600 | N 50 | 3.5/11 |
| **Grete Maersk** (OYCY2) | 40N 178W<br>41N 163W | 05/1200<br>06/0600 | S 50<br>S 40 | <br>10.0/33 |
| **APL Korea** (WCX8883) | 49N 162E | 05/0100 | NE 50 | 7.3/24 |
| **Hanjin Baltimore** (DDZB2) | 46N 161E | 06/0000 | NW 45 | |
| Buoy 46070 | 55.1N 175.3E | 05/2100<br>06/0600 | NE 35<br>Maximum | 5.2/17<br>7.3/24 |

**Table 4.** Ship and buoy observations taken during the North Pacific and Bering Sea storm of December 3-8, 2011.

reported southwest winds of 55 kts near 57N 147W at 0600 UTC on the 12th, south of the low center. Six hours later the **Horizon Tacoma** (KGTY) reported southwest winds of 55 kts and 9.8 m seas (32 ft) near 57N 144W, and at 1800 UTC on the 12th encountered seas of 13.7 m (45 ft). Buoy 46001 (56.3N 148.0W) reported southwest winds of 45 kts and 8.2 m seas (27 ft) at 0100 UTC on the 12th, and 10.7 m seas (35 ft) eight hours later. Buoy 46061 (60.2N 146.8W) at 0300 UTC on the 12th reported east winds of 50 kts and 8.2 m seas (27 ft). Buoy 46082 (59.5N 143.5W) at 1100 UTC on the 12th reported seas as high as 10.0 m (33 ft). The cyclone stalled on the south coast of Alaska on the 12th and weakened to a gale, before dissipating the next day.

**North Pacific and Bering Sea Storm, December 11-15:** A pair of hurricane-force lows, the second and third most intense of the period in the North Pacific, developed in close succession in the middle of December. The first of these is shown in *Figure 19* at maximum intensity over the central Aleutians. It originated as a new low on a front over Japan early on the 10th which rapidly intensified while passing south of the western Aleutians on the 12th. The central pressure fell 38 hPa in the twenty-four hour period ending at 0000 UTC on the 13th. OPC analyzed this system as a hurricane-force low from 0000 UTC through 1200 UTC on the 13th. ASCAT winds from 0730 and 0930 UTC December 13th passes revealed a wind distribution similar to that of *Figure 21* (for the stronger low that followed) except about 5 kts weaker. The **Cosco Yokohama** (A8EH3) near 54N 176W reported east winds of 50 kts at 0600 UTC on the 13th, while the **Star Atlantic** (LAYG5) encountered northwest winds of 55 kts near 51N 180W. Buoy 46072 (51.7N 172.2W) reported southwest winds of 45 kts with gusts to 54 kts and 11.9 m seas (39 ft) at 1500 UTC on the 13th, and a prak gust 58 kts eight hours later. At 1800 UTC that day this buoy reported maximum seas of 13.4 m (44 ft). The cyclone then turned toward the northwest into the Bering Sea late on the 13th and began to weaken, with its top winds diminishing to gale force by the 15th. Dissipation followed later that day.

**North Pacific and Bering Sea Storm, December 11-15:** A second hurricane-force low that followed originated east of Japan early on the 12th and moved east before turning northeast and rapidly intensifying late on the 13th. *Figure 19* shows the developing storm near 41N 172E and *Figure 20* depicts a hurricane-force low at maximum intensity as it turned north into the Bering Sea. The central pressure fell 31 hPa in the twenty-four hour period ending at 1800 UTC on the 14th. The 25 km ASCAT pass in *Figure 2*1 reveals a swath of west winds 50 to 65 kts south of the eastern Aleutians and winds as high as 50 kts on the north side in the Bering Sea. The **Rotterdam Express** (DMRX) reported northwest winds of 45 kts and 8.5 m seas (28 ft) at 0000 UTC on the 15th. Seven hours later, the **Healy (Aws)** (NWS0003) encountered northeast winds of 50 kts near 57N 166W. The **Horizon Tacoma** (KGTY) near 55N 159W reported south winds of 50 kts and 13.7 m seas (45 ft) at 1800 UTC on the 15th. Buoy 46075 (53.9N 160.8W) reported south winds of 45 kts with gusts to 54 kts and 13.4 m seas (44 ft) at 1200 UTC on the 15th. The cyclone subsequently weakened while moving north in the eastern Bering Sea and then dissipated in the northeast Bering Sea on the 17th.

**Eastern North Pacific Storms, December 20-24:** A pair of cyclones tracked east-northeast from the waters east of Japan near 157E, across the North Pacific and developed into 972 hPa hurricane-force lows after passing east of 165W. ASCAT passes from 0821 UTC on the 21st and 2015 UTC on the 22nd, for the two cyclones, were similar in showing 50 kts winds south of the centers. The first one developed a 972 hPa center near 47N 153W at 0000 UTC on the 22nd after deepening by 30 hPa in the twenty-four hour period ending at 1800 UTC on the 21st. Hurricane-force winds occurred south of the center mainly on the 21st. The **Sea-Land Lightning** (WDB9986) reported west winds of 50 kts and 5.8 m seas (19 ft) near 43N 163W at 1200 UTC on the 21st, and 9.0 m seas (30 ft) near 41N 159W twelve hours later. The **Hanjin Baltimore** (DDZB2) encountered north winds of 50 kts and 9.0 m seas near 52N 153W at 1200 UTC on the 22nd. The cyclone then weakened while turning north toward the Gulf of Alaska on the 22nd, and became absorbed by a new low in the northern Gulf of Alaska late that day. The second cyclone briefly developed hurricane-force winds while attaining its lowest pressure of 972 hPa near 48N 161W at 0000 UTC December 23rd, after it deepened by 28 hPa in the preceding twenty-four hours. The **As Valdivia** (A8XD5) reported west winds of 50 kts and 11.3-meter seas (37 feet) near 42N 160W at 1800 UTC on the 23rd. The **Polar Resolution** (WDJK) encountered southeast winds of 50 kts near 54N 140W at 1200 UTC on the 24th. The cyclone turned northeast that day and weakened to a gale force low later that day before dissipating over Southeast Alaska the next day.

**North Pacific Storm, December 23-27:** Low pressure originating 300 nm south of Japan early on December 22nd moved northeast and developed into the hurricane-force low shown in the first part of *Figure 22*. It then weakened during the following thirty-six hours while tracking northeast, before re-intensifying in the Gulf of Alaska late on the 25th. The second part of *Figure 22* shows the cyclone near maximum intensity. The central pressure fell 26 hPa in the twenty-four hour period ending at 1800 UTC on the 26th. A 25 km ASCAT pass from 2029 UTC on the 26th showed west winds of 50 to 55 kts south of the low center. The **Savannah Express** (DNDD) encountered southeast winds of 50 kts and 7.3 m seas (24 ft) near 53N 142W at 0300 UTC on the 26th. The Canadian buoy 46205 (54.2N 134.3W) reported southeast winds of 45 kts with gusts to 52 kts and 7.0 m seas (23 ft) at 1200 UTC on the 26th, and 9.5 m seas (31 ft) three hours later. Buoy 46083 (58.2N 138.0W) reported southeast winds of 50 kts with gusts to 58 kts at 1600 UTC on the 26th, and seas of 9.0 m 1000 UTC

on the 27th. The cyclone subsequently weakened late on the 26th and dissipated inland over Alaska the next day.

**North Pacific Storm, December 25-28:** The last event of the period followed a track from near Japan early on December 24th east-northeast similar to those of the December 20th -24th cyclones but developed hurricane-force winds earlier, in the western Pacific, and did not developed its lowest central pressure of 967 hPa until approaching Southeast Alaska early on the 28th when its top winds were weakening. The cyclone passed near 45N 178E as a hurricane-force low early on the 26th when a 25 km ASCAT pass showed an area of west winds of 50 kts on the south side between 38N and 41N, similar to the December 20th -24th events. The cyclone moved inland over Southeast Alaska as a gale late on the 28th.

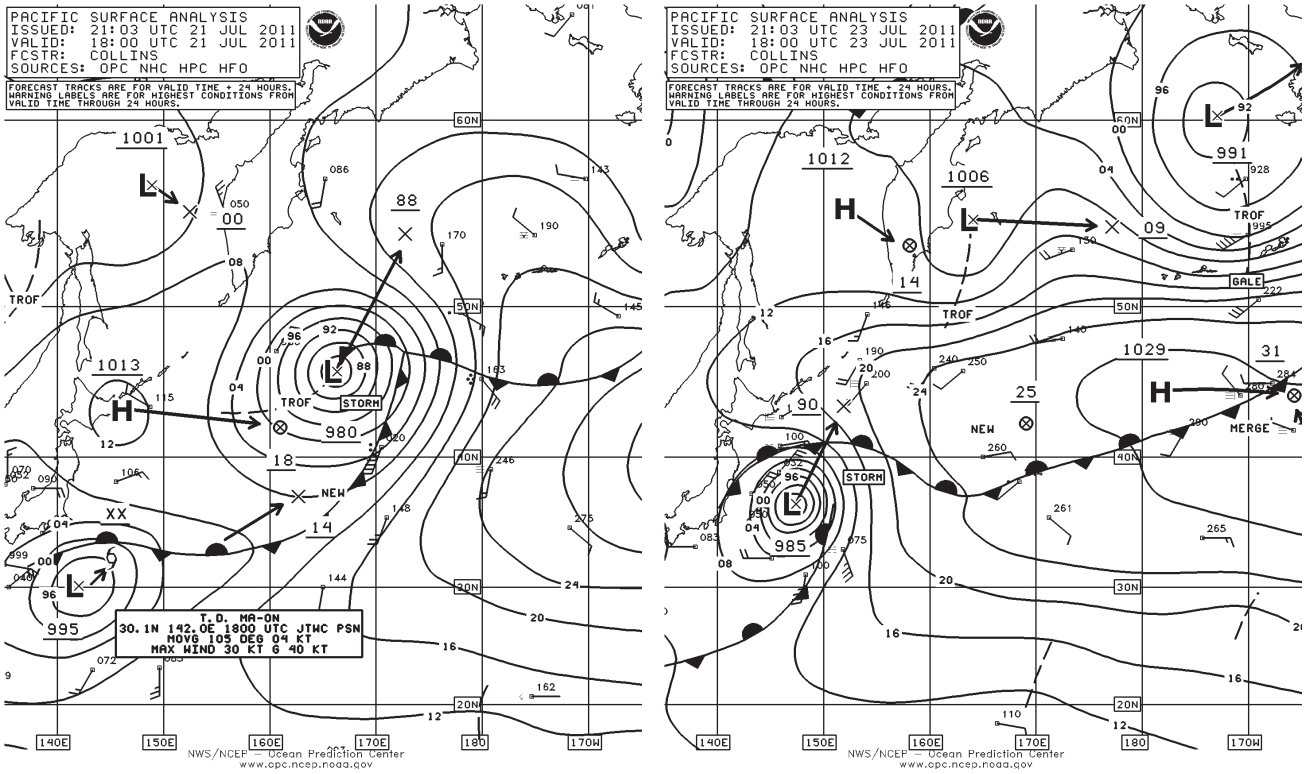


**Figure 1.** OPC North Pacific Surface Analysis charts (Part 2 - west) valid 1800 UTC July 21 and 23, 2011. Twenty-four hour forecast tracks are shown with the forecast central pressures given as the last two whole digits in millibars, except XX for tropical cyclones. The text box in the first panel contains advisory information on Tropical Depression Ma-On from the Joint Typhoon Warning Center (JTWC).

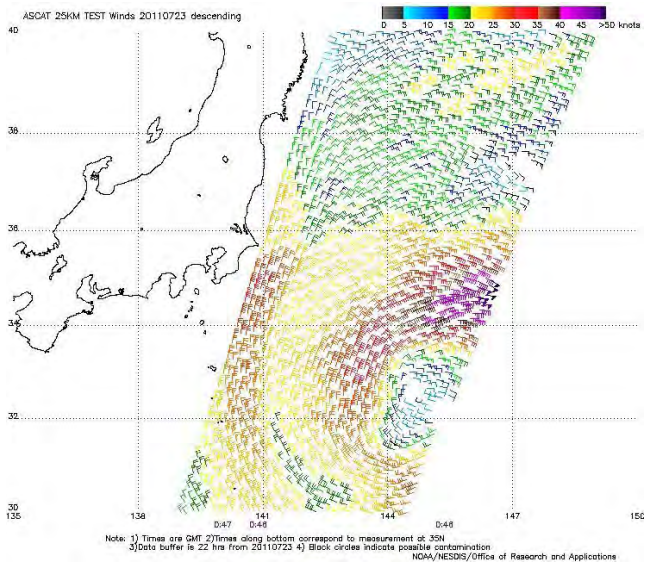


**Figure 2.** ASCAT (Advanced Scatterometer) image of satellite-sensed winds around the storm shown in the second part of Figure 1 (extratropical or post-tropical Ma-On). The resolution is 25 km in this high-resolution version of the imagery. The valid time of the pass is 0046 UTC July 23, 2011, or about seventeen and one-quarter hours prior to the valid time of the second part of Figure 1. JTWC declared Ma-On extratropical at 0600 UTC July 22. The well-defined storm center appears near the lower-right edge of the pass. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

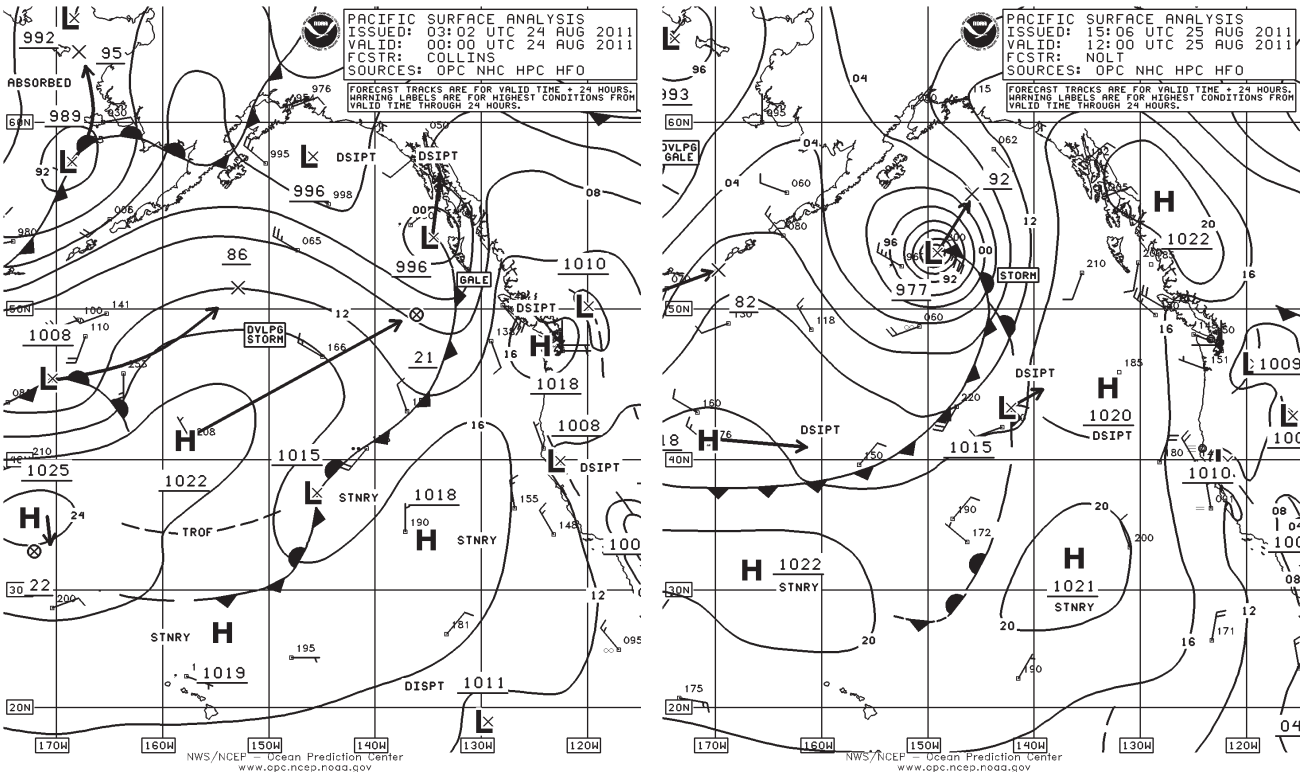


**Figure 3.** OPC North Pacific Surface Analysis charts (Part 1 - east) valid 0000 UTC August 24 and 1200 UTC August 25, 2011.

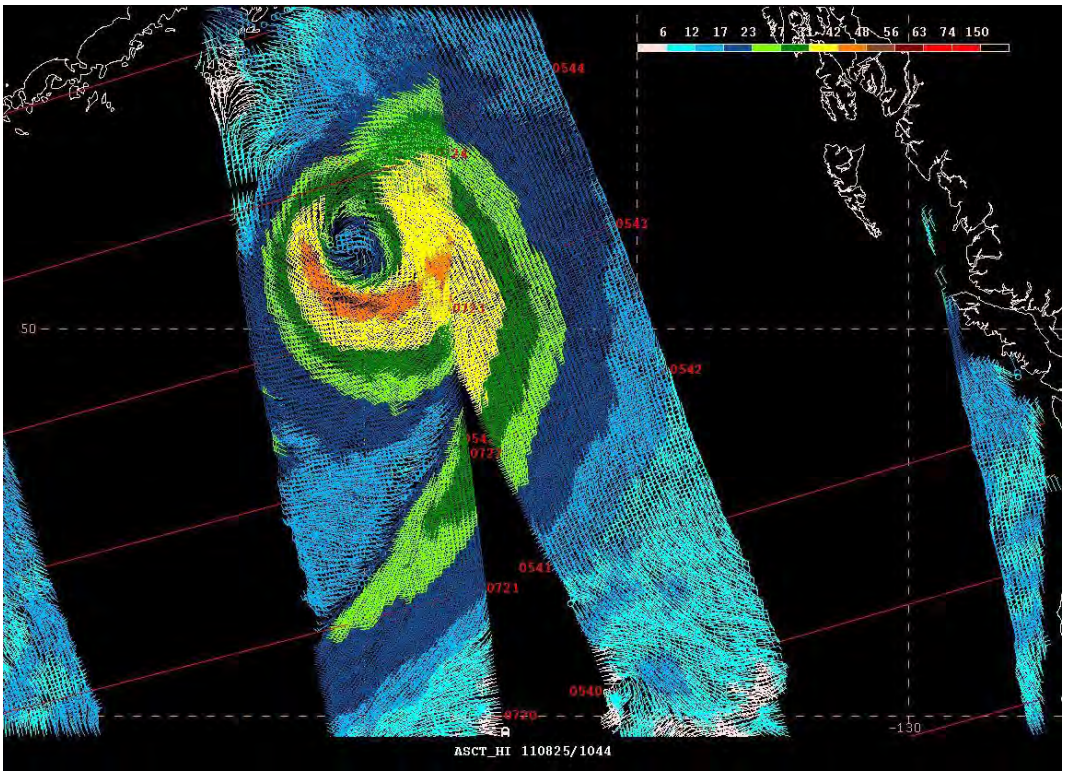


**Figure 4.** High-resolution ASCAT (25-km resolution) image of satellite-sensed winds around the storm shown in the second part of Figure 3. The valid time of the eastern pass is approximately 0543 UTC and of the western pass, which contains the cyclone center and strongest winds, approximately 0723 UTC August 25, 2011. These times are five to seven hours prior to the valid time of the second part of Figure 3. Portions of Alaska and British Columbia appear in the upper part of the image. This version of imagery, adapted for OPC operational use, includes numbered (UTC) cross-track time lines of the satellite and a color scale for the wind barbs on the upper-right side of the image.

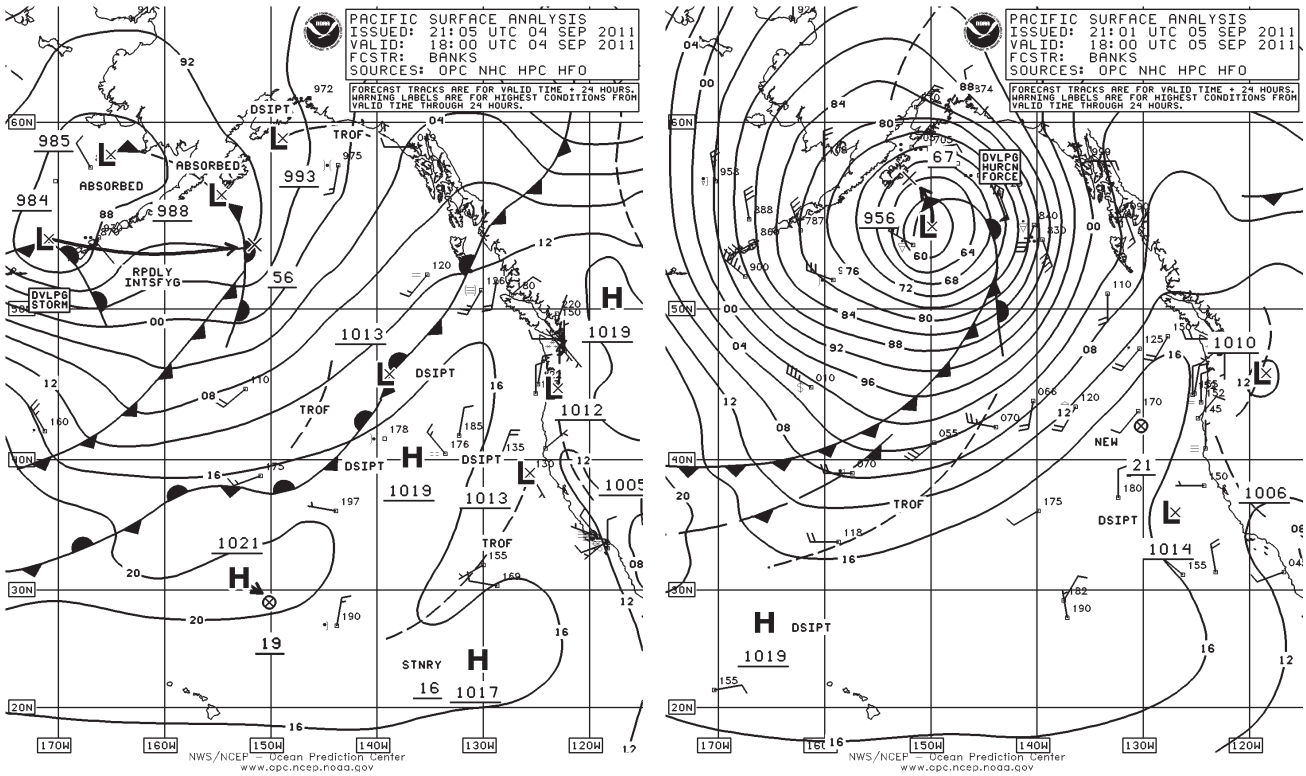


**Figure 5.** OPC North Pacific Surface Analysis charts (Part 1) valid 1800 UTC September 4 and 5, 2011.

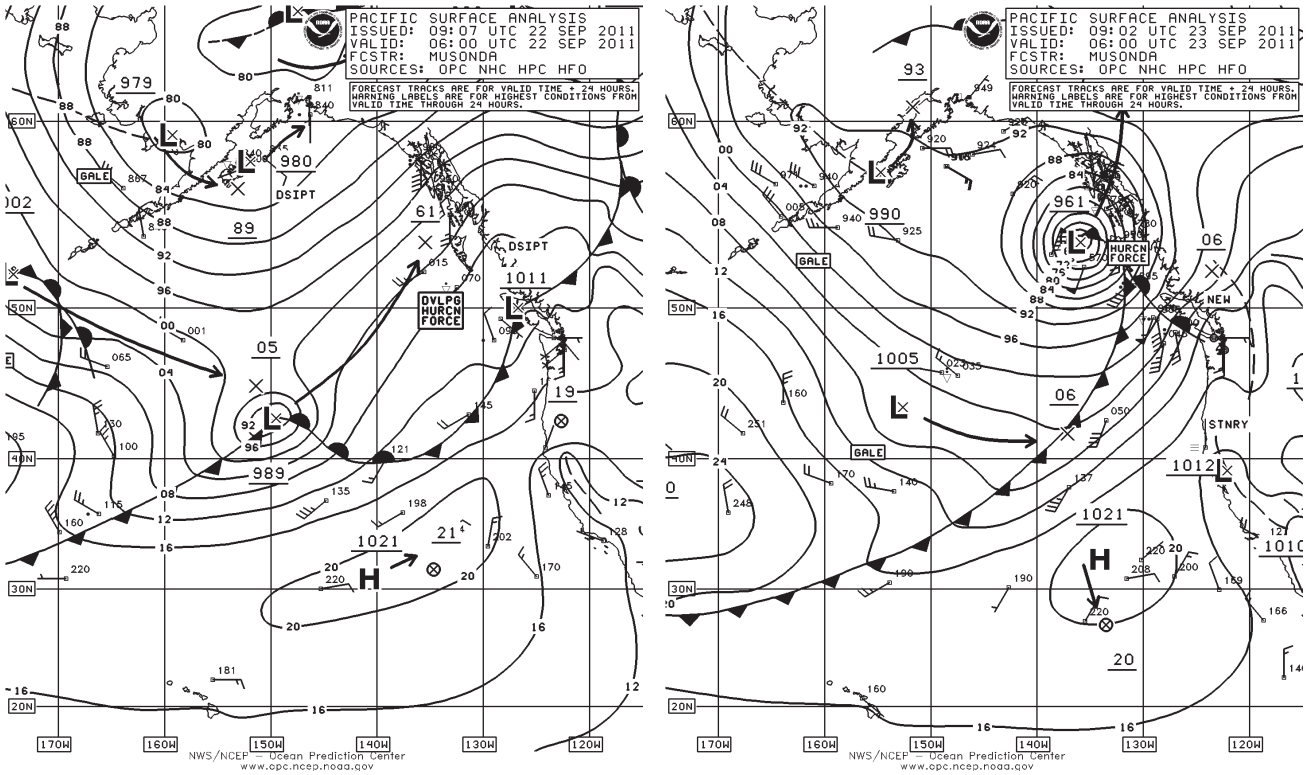


**Figure 6.** OPC North Pacific Surface Analysis charts (Part 1) valid 0600 UTC September 22 and 23, 2011.

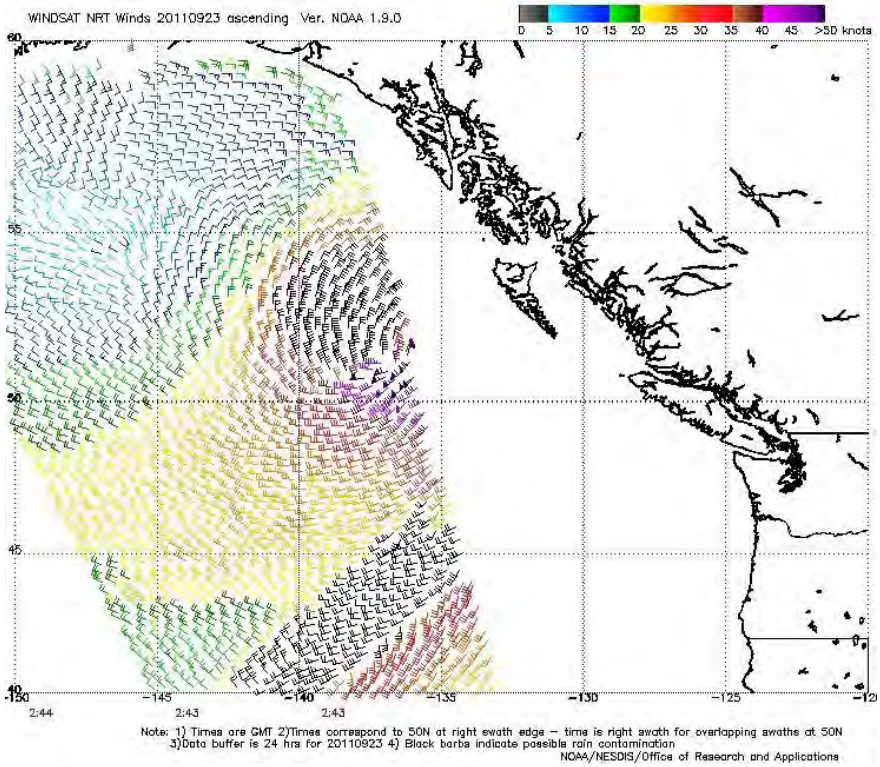


**Figure 7.** WindSat image of satellite-sensed winds (from passive microwave imager aboard the Coriolis satellite) around the west side of the hurricane-force low shown in the second part of Figure 6. The valid time of the pass is approximately 0243 UTC September 23, 2011, or about three and one-quarter hours prior to the valid time of the second part of Figure 6. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

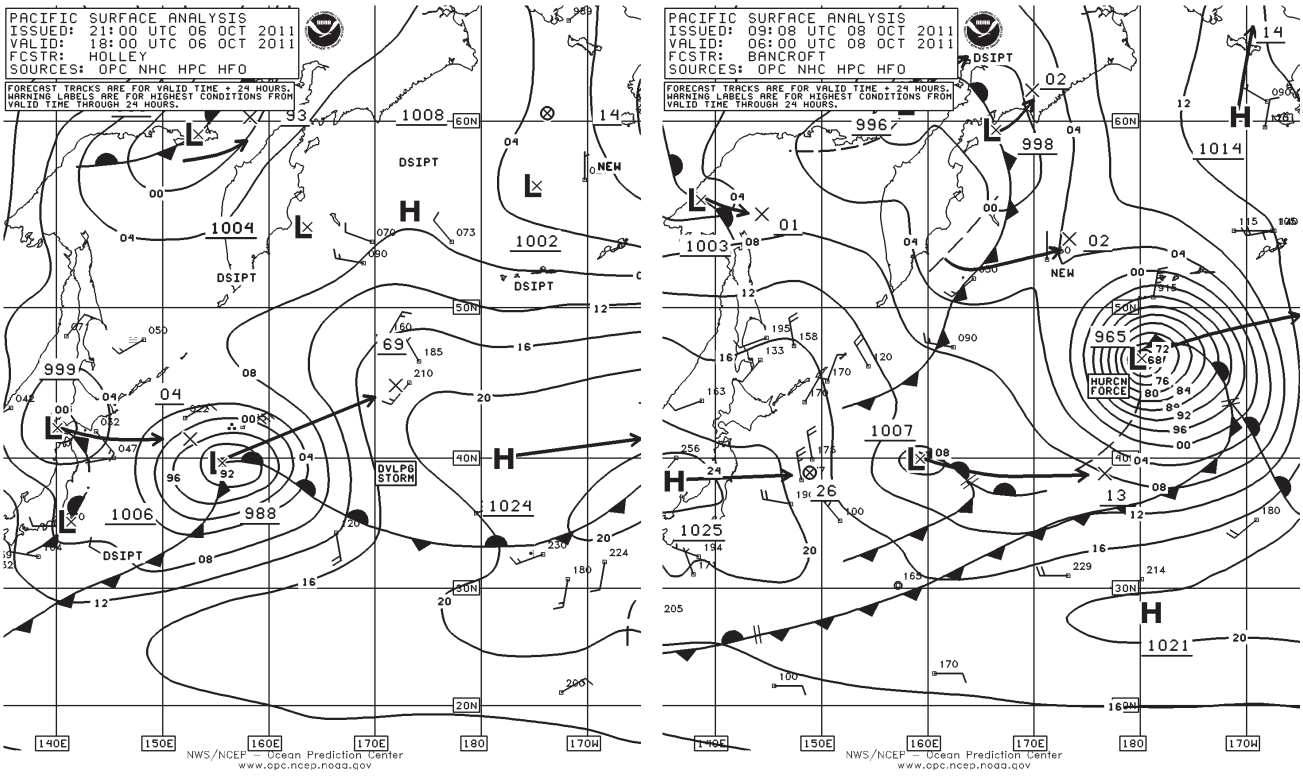


**Figure 8.** North Pacific Surface Analysis charts (Part 2) valid 1800 UTC October 6 and 0600 UTC October 8, 2011.

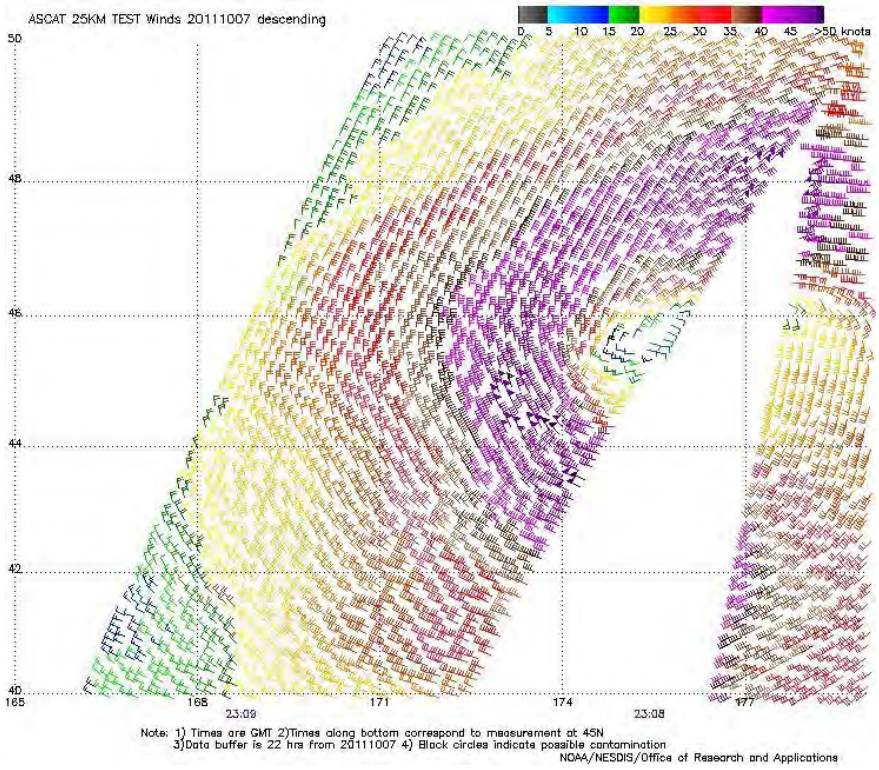


**Figure 9.** 25-km ASCAT image of satellite-sensed winds around the cyclone shown in the second part of Figure 8. Portions of two adjacent passes are shown, with the left or most recent pass valid 2308 UTC October 7, 2011, or about seven hours prior to the valid time of the second part of Figure 8 and containing the strongest winds. The center of the cyclone is near the right edge of this pass. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

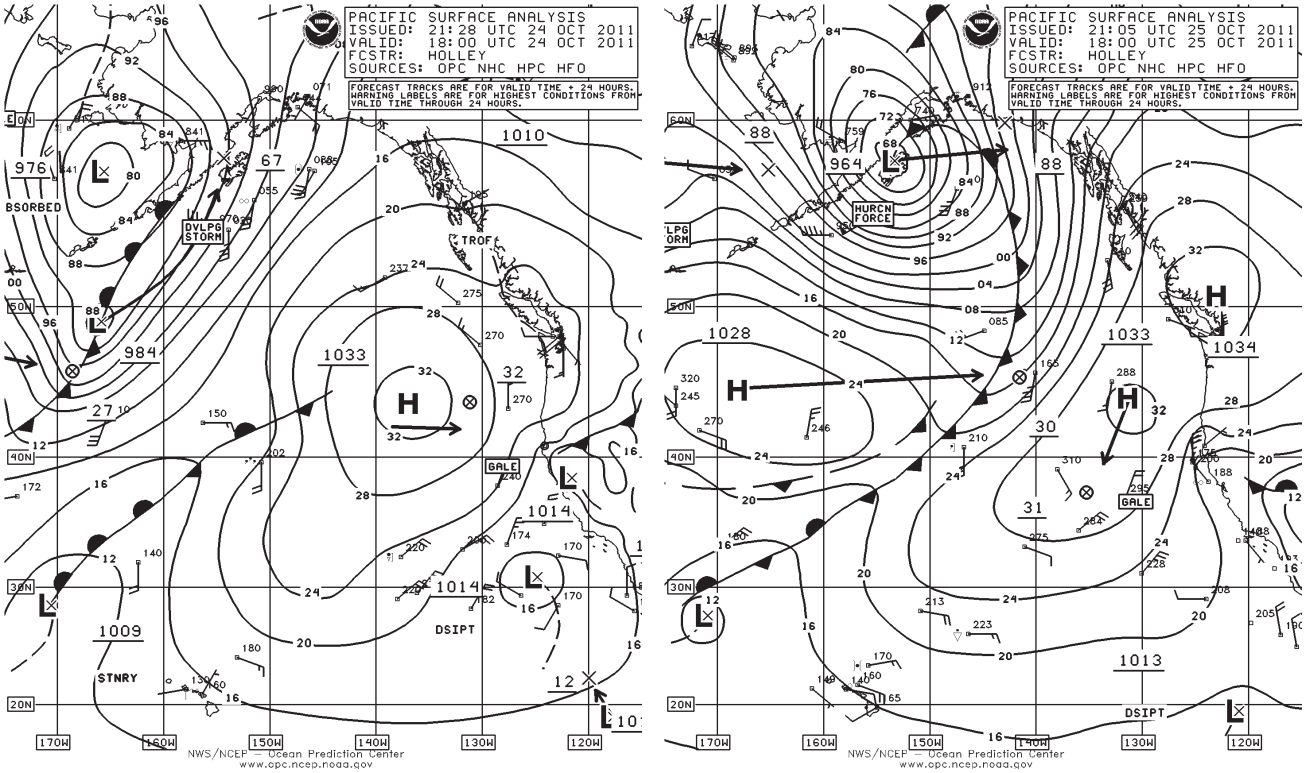


**Figure 10.** OPC North Pacific Surface Analysis charts (Part 1) valid 1800 UTC October 24 and 25, 2011.

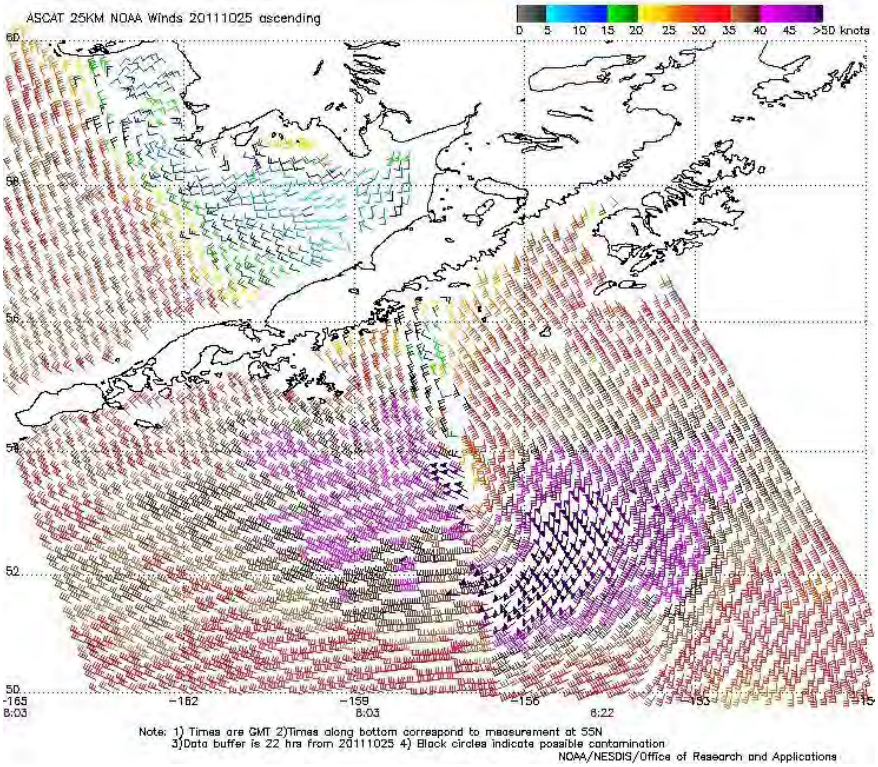


**Figure 11.** 25-km ASCAT image of satellite-sensed winds around the hurricane-force low shown in the second part of Figure 10. The valid time of the eastern pass is 0622 UTC and of the western pass 0803 UTC October 25, 2011, or ten to twelve hours prior to the valid time of the second part of Figure 10. Southwest Alaska and Kodiak Island appear in the image. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

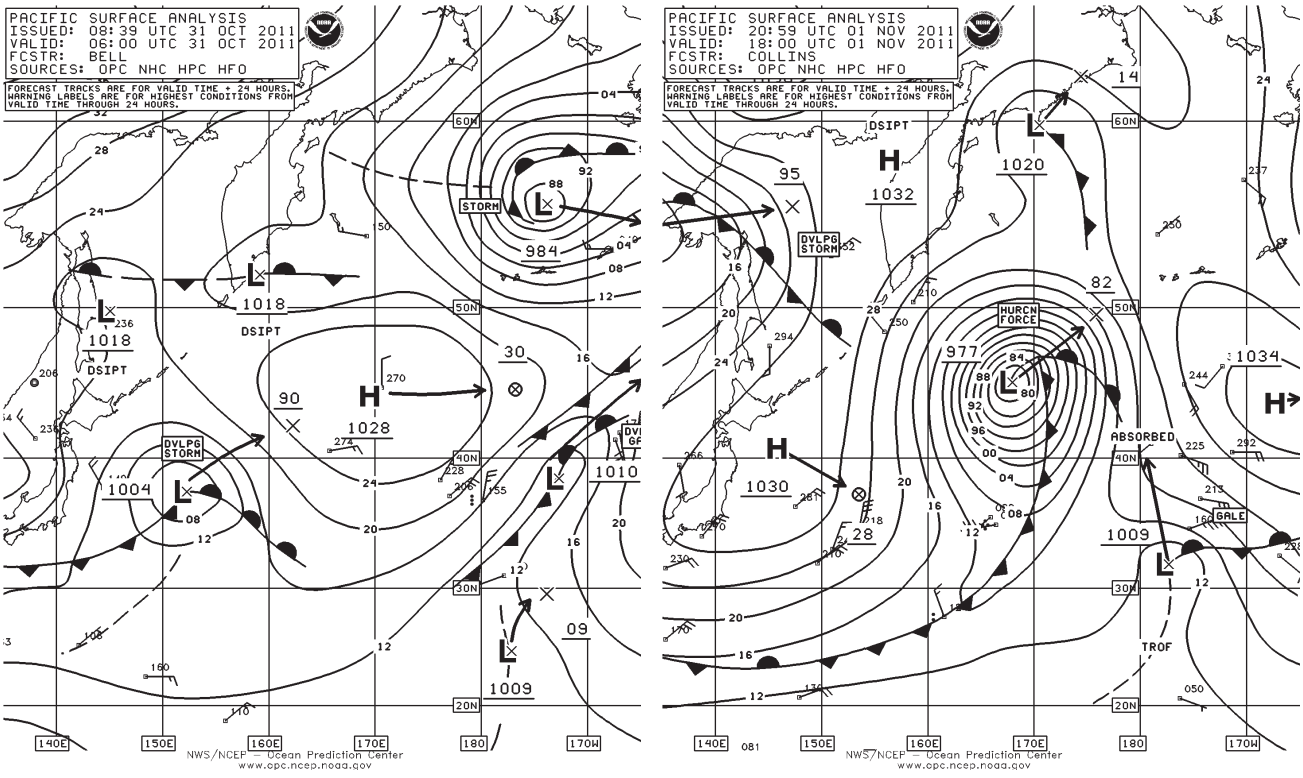


**Figure 12.** North Pacific Surface Analysis charts (Part 2) valid 0600 UTC October 31 and 1800 UTC November 1, 2011.

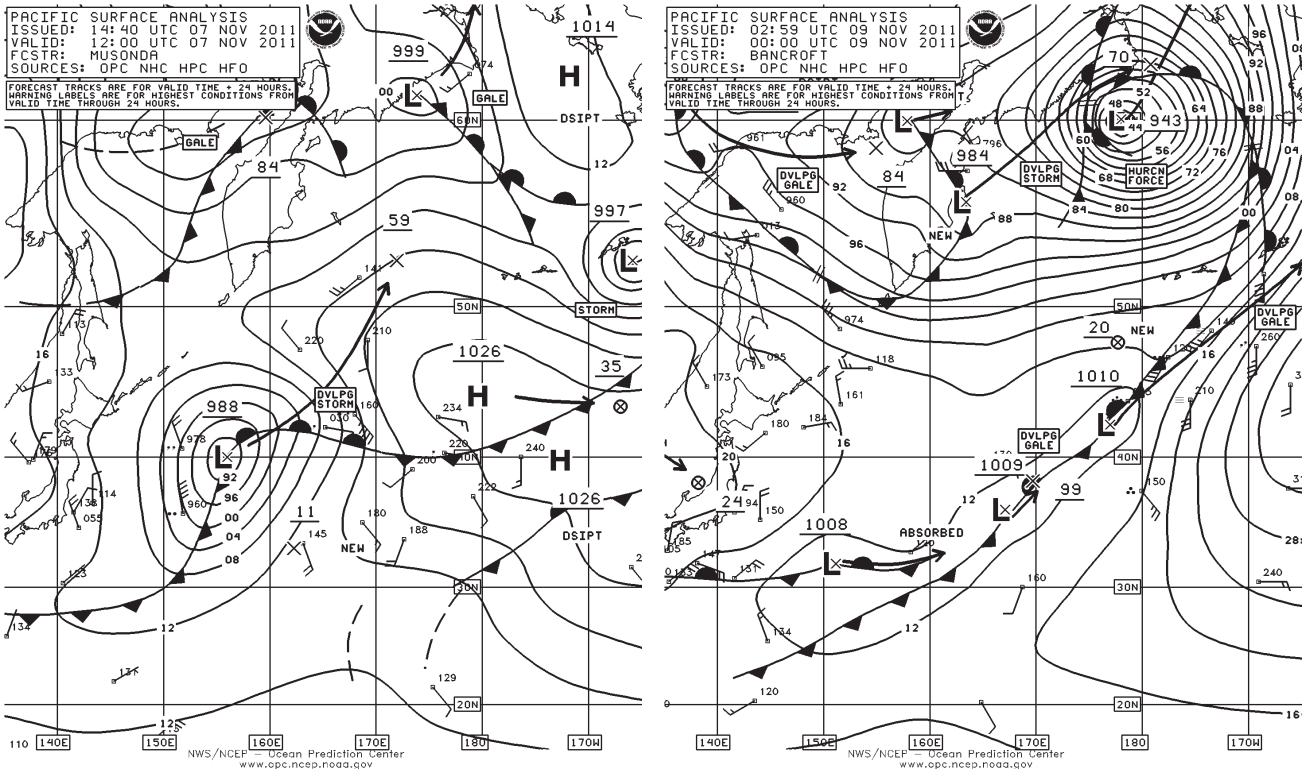


**Figure 13.** OPC North Pacific Surface Analysis charts (Part 2) valid 1200 UTC November 7 and 0000 UTC November 9, 2011.

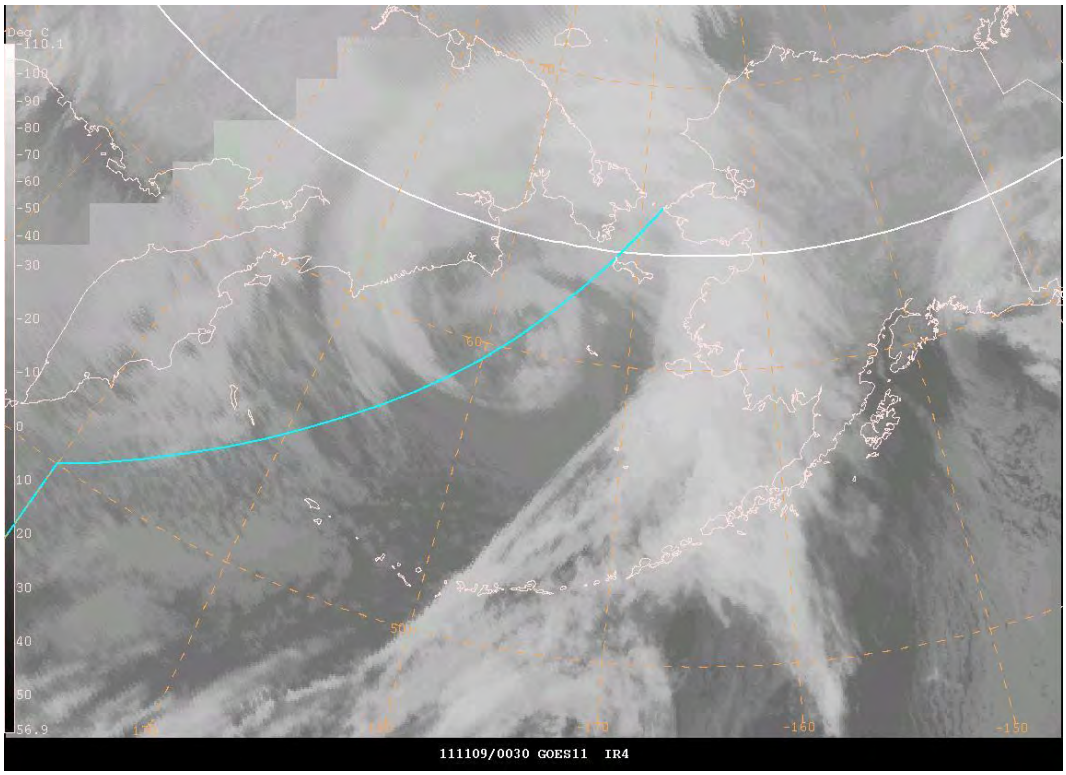


**Figure 14.** Mosaic of GOES-west, MTS and polar infrared satellite imagery valid 0030 UTC November 9, 2011. Satellites senses temperature on a gray scale from black (warm) to white (cold) in this type of imagery. The valid time of the image is only one half hour later than that of the second part of Figure 13.

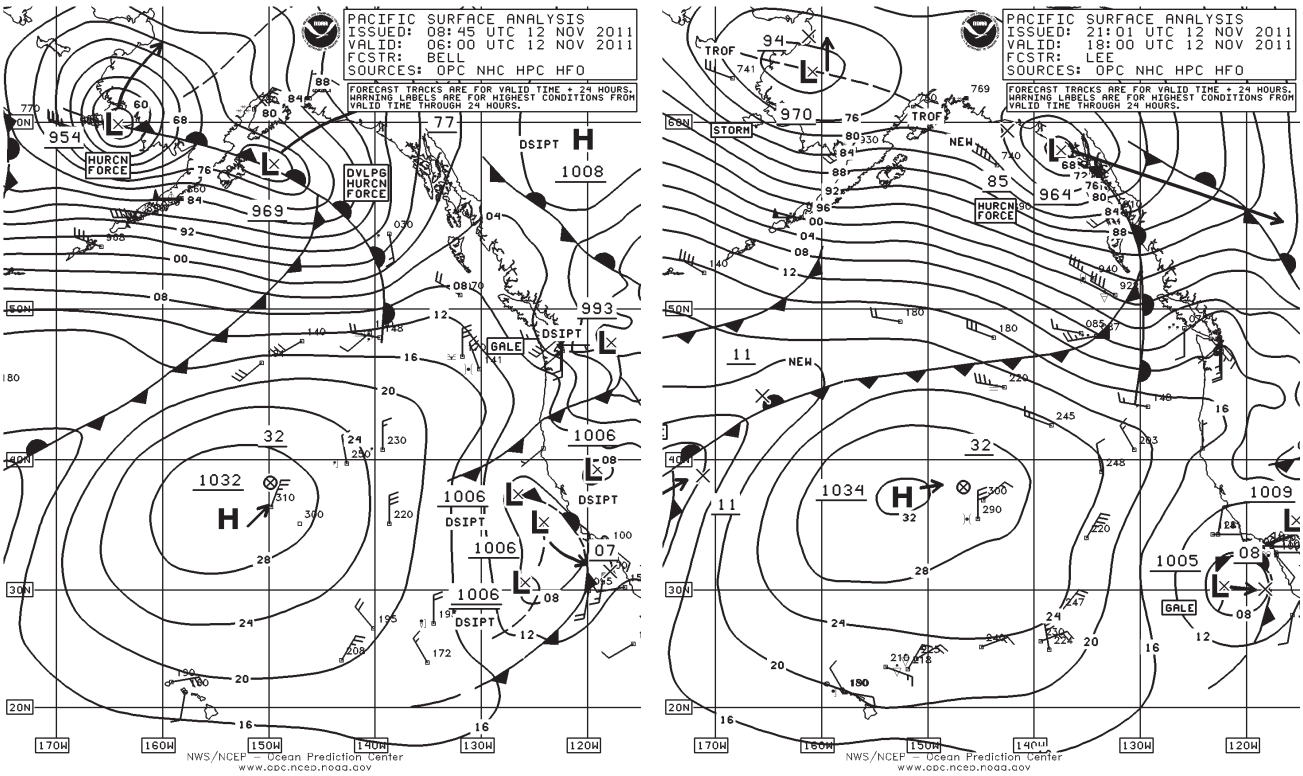


**Figure 15.** OPC North Pacific Surface Analysis charts (Part 1) valid 0600 UTC and 1800 UTC November 12, 2011.

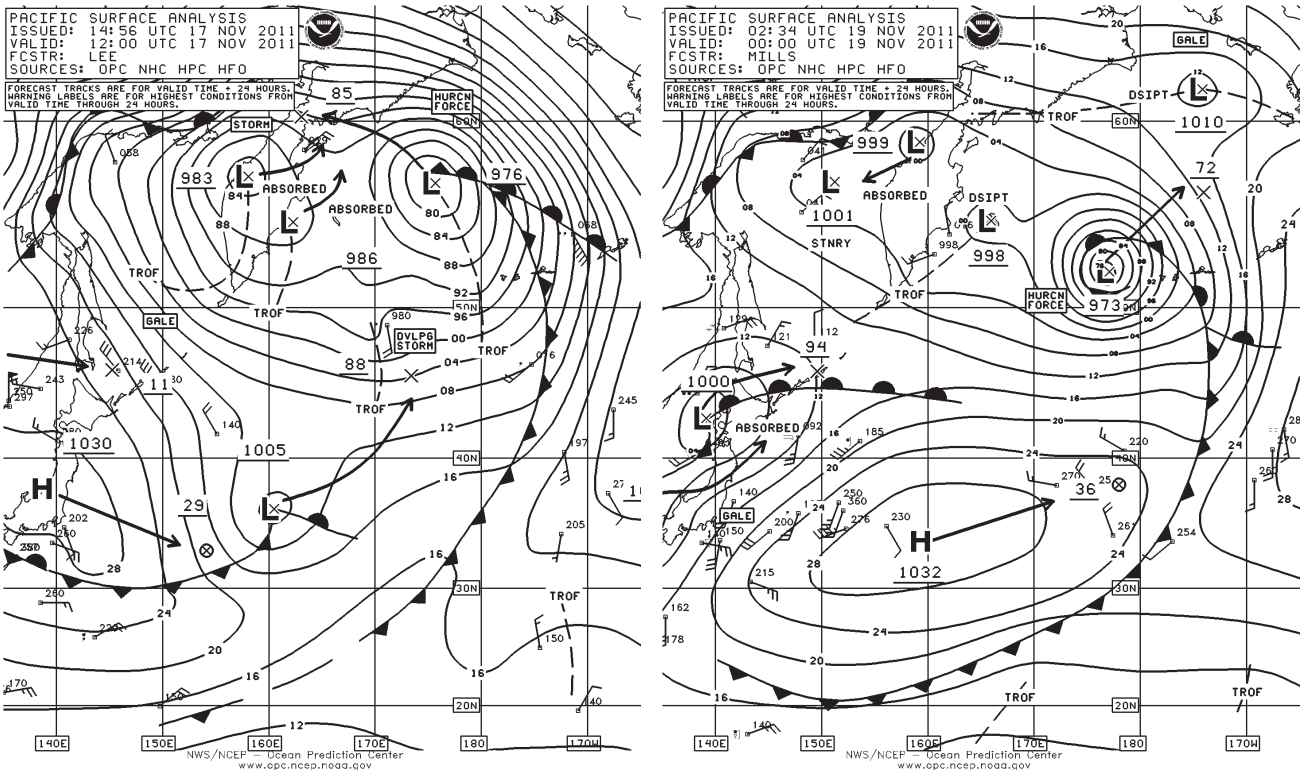


**Figure 16.** OPC North Pacific Surface Analysis charts (Part 2) valid 1200 UTC November 17 and 0000 UTC November 19, 2011.

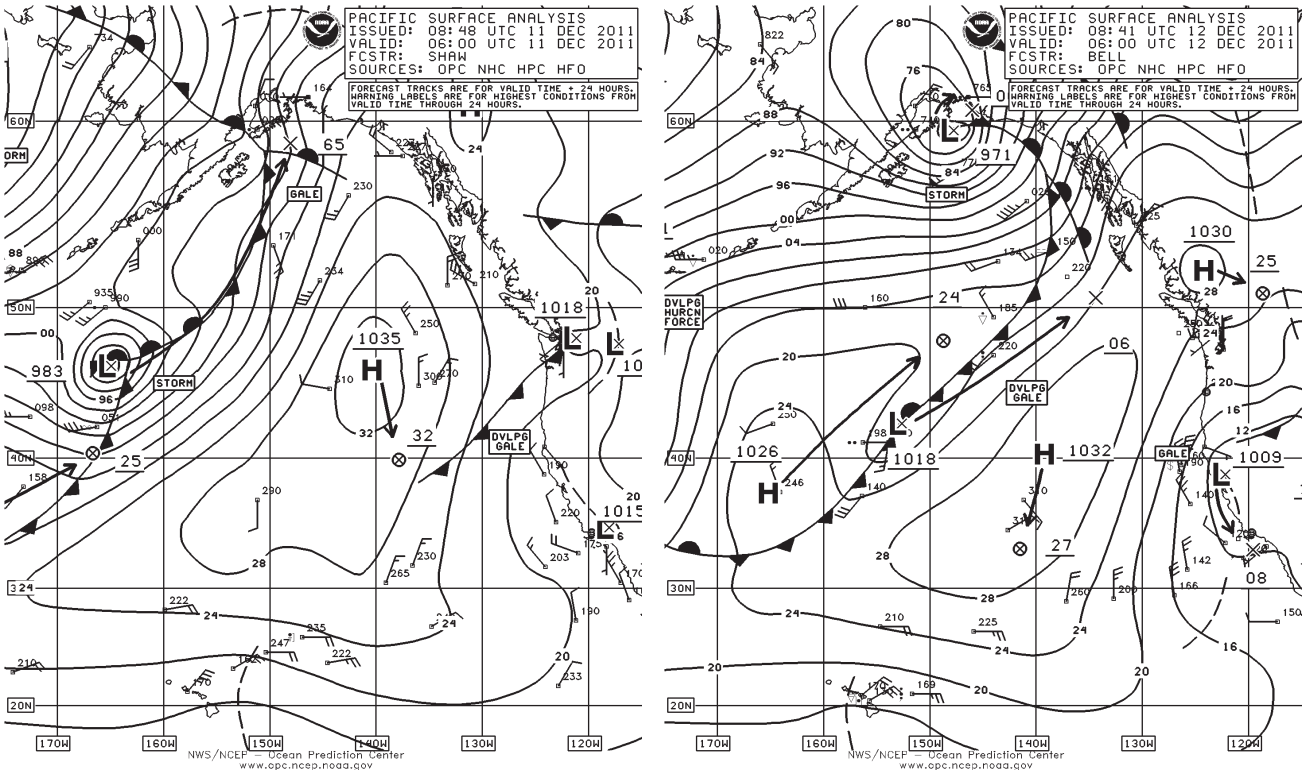


**Figure 17.** OPC North Pacific Surface Analysis charts (Part 1) valid 0600 UTC December 11 and 12, 2011.

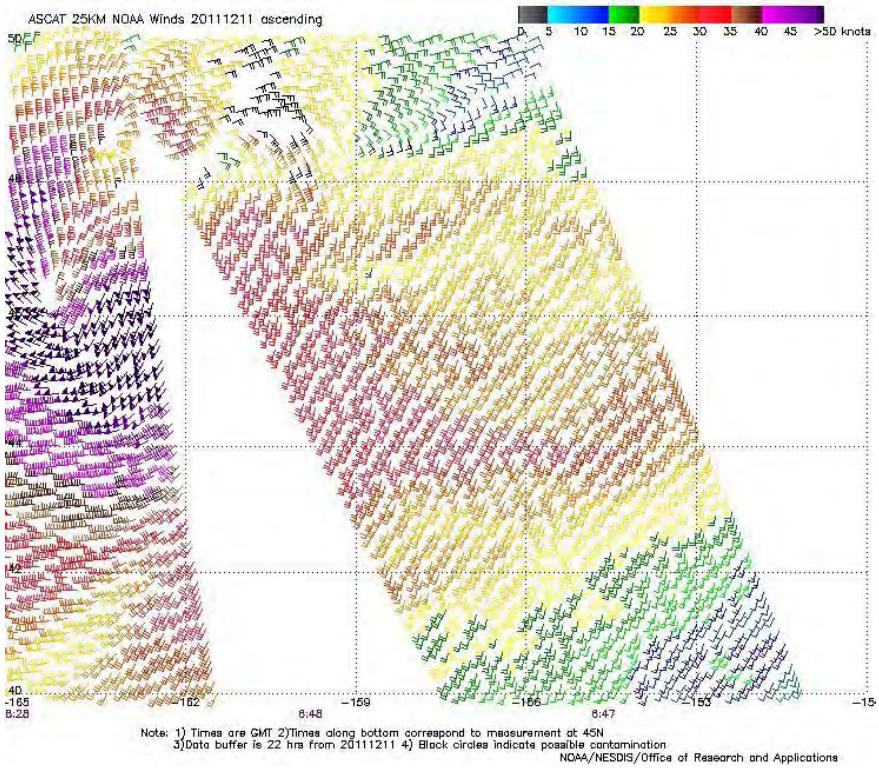


**Figure 18.** 25-km resolution ASCAT image of satellite-sensed winds around the cyclone shown in Figure 17. Portions of two passes are shown, with the later pass (0828 UTC December 11) containing the strongest winds and valid about two and one-half hours later than the valid time of the first part of Figure 17. The well-defined center is near the left edge of the image. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

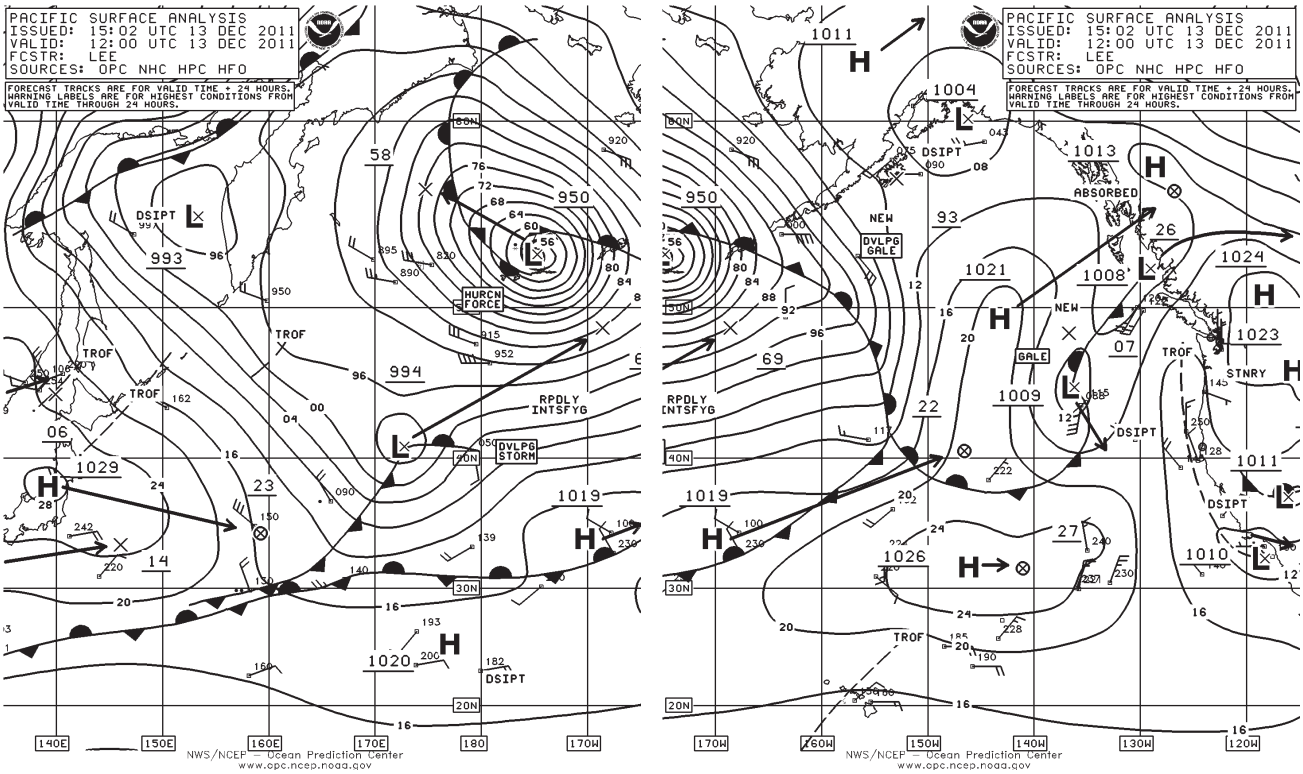


**Figure 19.** OPC North Pacific Surface Analysis charts (Parts 1 and 2) valid 1200 UTC December 13, 2011.

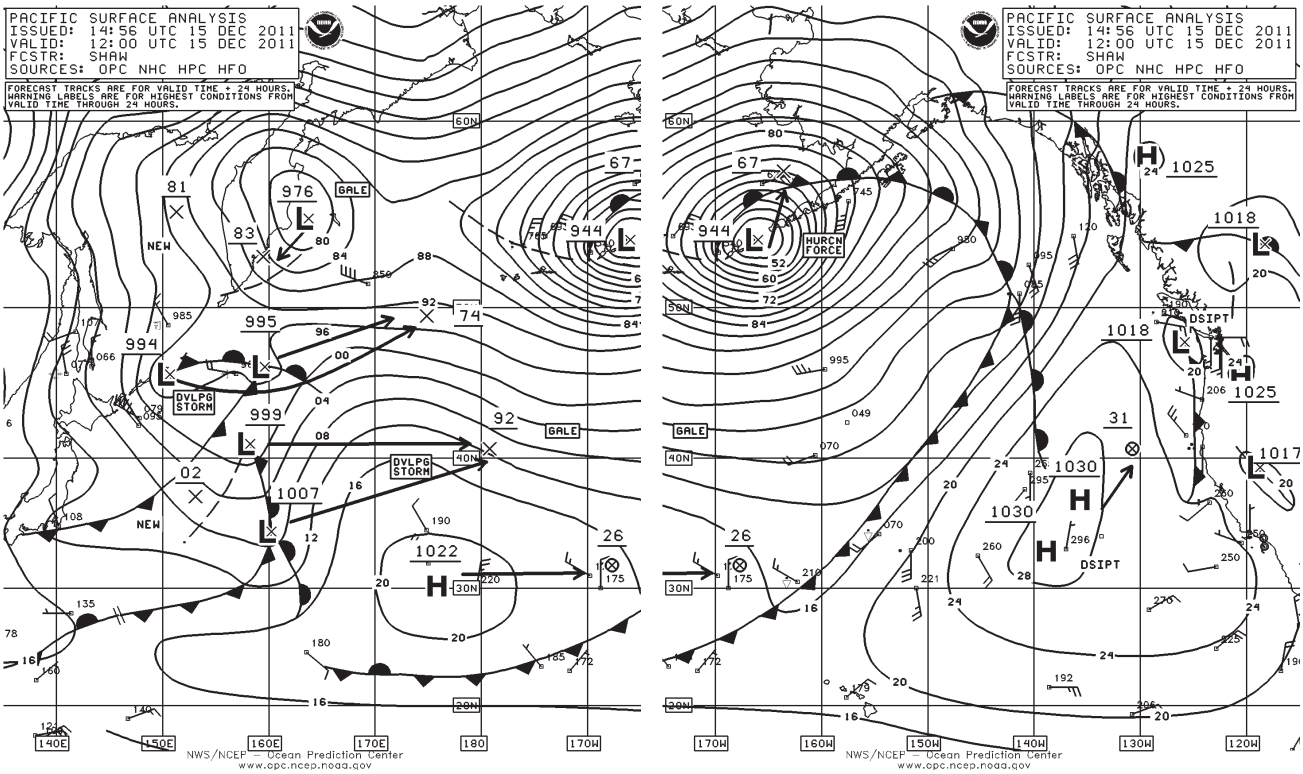


**Figure 20.** OPC North Pacific Surface Analysis charts (Parts 1 and 2) valid 1200 UTC December 15, 2011.

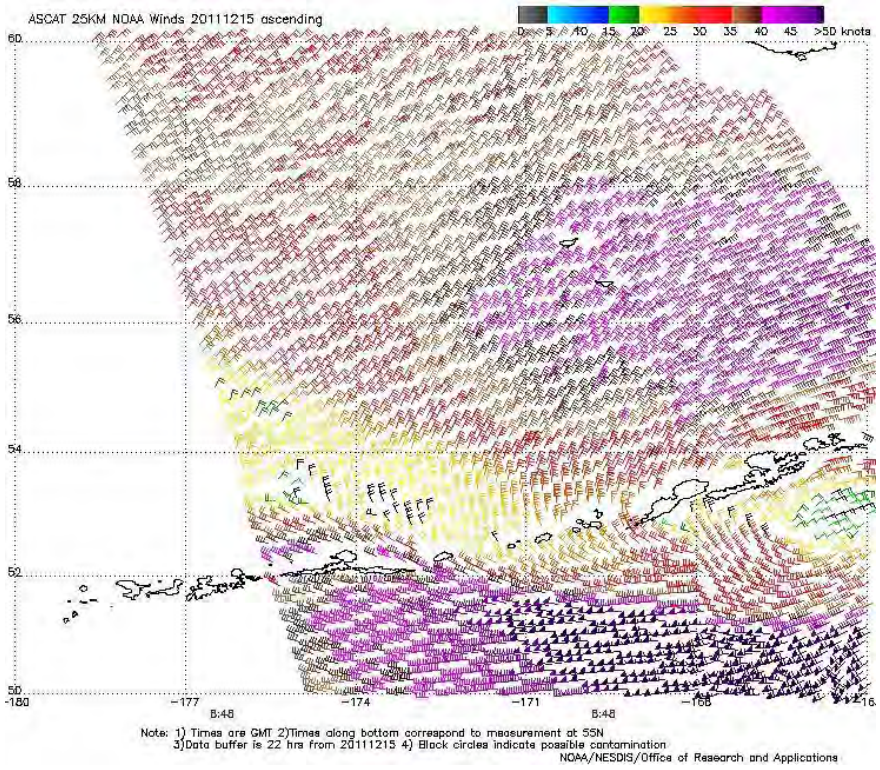


**Figure 21.** 25-km resolution ASCAT image of satellite-sensed winds around the intense cyclone shown in Figure 20. The valid time of the pass is 0848 UTC December 15, 2011, or about three and one-quarter hours prior to the valid time of Figure 20. The central and eastern Aleutian Islands appear in the image, with the cyclone center near 53N 166W near the lower-right edge of the image. Image is courtesy of NOAA/NESDIS/ Center for Satellite Application and Research.

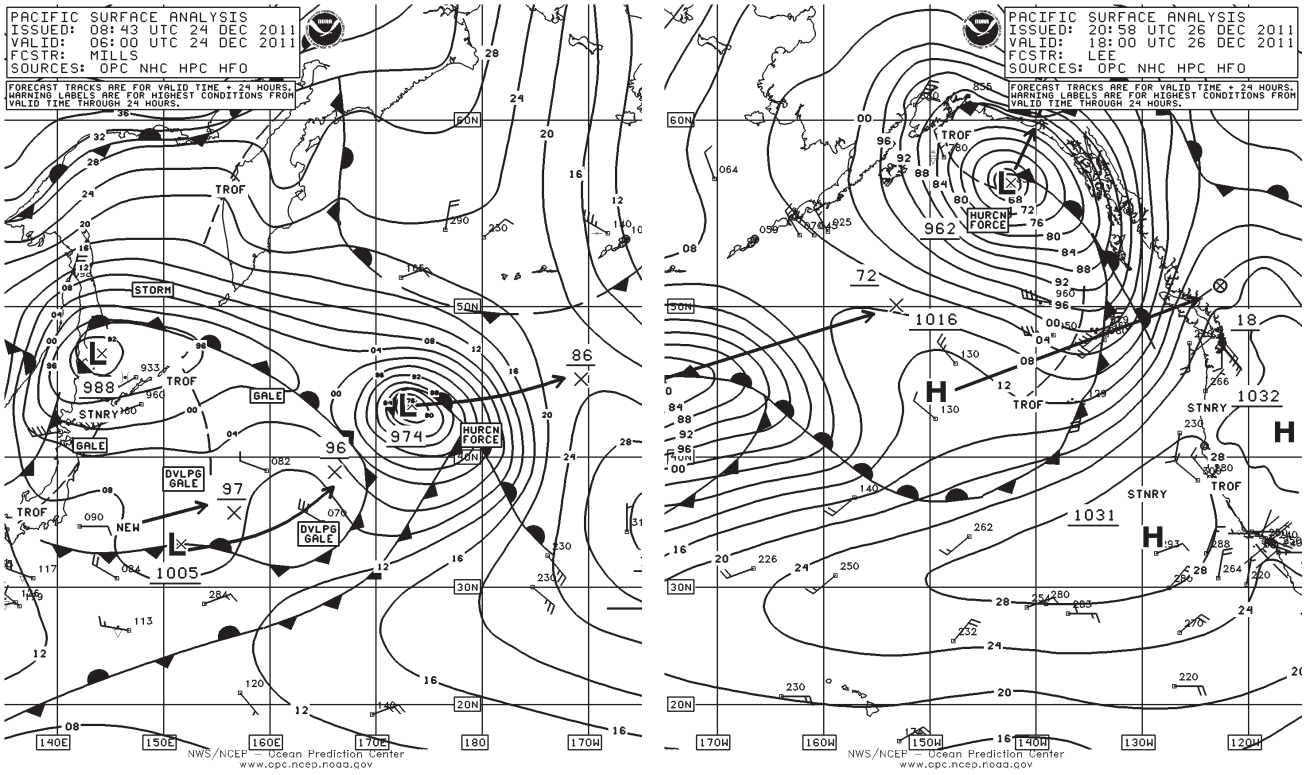


**Figure 22.** OPC North Pacific Surface Analysis charts valid 0600 UTC December 24 (Part 2) and 1800 UTC December 26, 2011.





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# VOS Program Awards


Crowley Maritime Corporation has been selected as a 2011 Company Award Winner for the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's "Voluntary Observing Ship" (VOS) program. The selection is based on Crowley's 48 active vessels providing a total of 20,430 highly accurate and timely weather observations for the U.S. VOS program in 2011.

Particularly impressive was Crowley's St Louis Express, a cargo vessel whose crew members alone recorded 4,926 observations last year, ranking her the second-highest reporting vessel in the entire United States VOS program.

Pictured Left to Right: Mr. Michael Golonka, General Manager; Robert Niemeyer, PMO, Jacksonville, FL; Ed Burdorf, Senior Port Captain

For the second consecutive year the crew of the Charleston Express has been awarded the annual VOS Award for observing excellence. In 2011 the crew provided over 1500 quality marine observations. Well done and THANKS from NOAA!!!!
Pictured L-R: Capt. John Farmer, C/M Brendan S. Smith, 2/M Brandon M. Teal, 3/M Christopher W. Funke. * or as the Captian said (Old married guy and the young guns) *

# VOS Program Awards

For the THIRD consecutive year the Sealand Eagle has been awarded the annual VOS Award. The crew provided over 1647 quality marine observations in 2011. Well done and many THANKS from NOAA!!!!

Pictured L-R: Stephen Sasso Deck Cadet, Brent McClaine 2M, Aaron Moore, 3M, and John Kelly, Chief Mate.

For the THIRD consecutive year the Sealand Racer has been awarded the annual VOS Award. The crew provided over 1400 quality marine observations in 2011. Well done and many THANKS from NOAA!!!!

Left to right, 2M Ken Quinn, CM Karen Reyes, Capt. Don Laverdure, 3M Vitaly Kuznetsoff.
Not pictured but also contributing are CM Steve Watt, Capt Jon Pratt and Capt. J. Jackson.

The Washington Express has won the annual VOS Award in 2011 for the third consecutive year. The crew provided over 1200 marine observations. Well done and thanks!!!

Pictured from left to right: 2/M Ed Hurley, C/M Dan Martin, Cadet Joe Soha and 3/M Jeremy Cunningham.
Contributing observers during 2011: 2/Mates Joe Ward, Andrew Longnecker, Brendan Meyers & Trevor Battles. 3/Mates Ian Falkenberg and Joe Young.

# VOS Program Awards

Cruise Ship Amsterdam won a 2011 VOS Award with an outstanding total of 1,224 valuable marine observations! This was a new all time ship's record! The Amsterdam had a worldwide itinerary in 2011.

Pictured: Eversen, Wilhelmus F. — Master
Teensma, Gerard H.D. — Chief Officer
Allcock, Simon J. — 2nd Officer
Koolhaas, Wouter — 2nd Officer
Harrison, Dominic Ernest — 2nd Officer
Campbell, Colin — 3rd Officer
Shearman, Thomas Charles — 3rd Officer
Shaghaghi, Babak — 4th Officer
Van Velzen, Vincent — Cadet Officer
Hubble, Larry — Anchorage Port Meteorological Officer

Cruise Ship Paul Gauguin won their first ever VOS Award in 2011! They had an outstanding total of 1,568 valuable marine observations which was a new ship's record. Their observations were mainly from the South Pacific Ocean.

Photo Left to Right: Lars Vogel, Chris Mounter, Noel Leanillo, Lawrence Roxas, Josh Smith

# VOS Program Awards


Tanker Atlantic Grace won a 2011 Voluntary Weather Observing Ship (VOS) Award. This was their first ever award and they had an outstanding total of 1,122 valuable marine observations!

Photo Left to Right:
Cadet Keldeep Mutneja
3rd Officer Rahul Kaushik
Captain Vinay Khosla
Chief Officer Abdul Quader
2nd Officer Vivek


Tanker Axel Spirit won a 2011 Voluntary Weather Observing Ship (VOS) Award. This was their first ever award and they had an excellent total of 784 valuable marine observations! They were the #1 Observing Ship in the Teekay Fleet!

Photo left to right:
Cadet Cvjetovic Tomislav
Chief Officer Zienko Krzysztof
3rd Officer Paksham Kumar
Captain D'souza Damascene
3rd Officer Huynh Nhut Tam
2nd Officer Chandra Vikas


Proudly displaying the Philadelphia Express' SIXTH consecutive annual NOAA VOS AWARD for 2011 are from Left to right:
Paul "Slick" Sallee C/M, Ryan "Arlo" Guthrie 3/M, Captain Dave Sulin, and seated Brett 'Kentucky" Monthie 2/M. Not pictured but also participating over the 2011 year were Captain Scott Putty, Chuck Rau C/M, Chris Hendrickson C/M, Brendan "Downtown" Smith 2/M, Brandon "Ricky Bobby" Teal 2/M, Al Roland 2/M, Jeremy "Slim" Cunningham 3/M, Brendan Myers 3/M, John Groth 3/M, Cadet Eric "Squarehead" Isaksen, Cadet Peter "Crabcake" Horton, Cadet Craig "Stonewall" Froehlich, Cadet Ian "Hulk" Nisley, and Cadet Zach Bradley.

Well done and many thanks from NOAA!!!!!

# VOS Program Awards


For the fifth consecutive year, the DISNEY MAGIC is a 2011 Award Winner for the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's "Voluntary Observing Ship" (VOS) program. The ship is also a recipient of the 5 Year Pennant for being awarded 5 consecutive annual VOS performance awards. NOAA congratulates the crew for their consistent dedication to the marine observing program over the past 5 years. A Job Very Well Done!

Pictured left to right are:
Staff Captain Andy Mc Ronald
Safety Officer Michele Moro
1st Officer Antonio Guarino
1st Officer Dean Kanjac
2nd Officer Rikardo Denoble
Safety Office Evgeny Babchenko

Award to the Disney Wonder

Pictured is captain Fabian Martin Dib

# VOS Program Awards


For the fifth consecutive year, the Norwegian Sun is a 2011 Award Winner for the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's "Voluntary Observing Ship" (VOS) program. The ship is also a recipient of the 5 Year Pennant for being awarded 5 consecutive annual VOS performance awards. NOAA congratulates the crew for their consistent dedication to the marine observing program over the past 5 years. A Job Very Well Done!

Pictured Left To Right:
Staff Captain Teo Grbic
3rd Officer Alfred Clement
Captain Tommy Stensrud
Chief Officer Kristijan Uhac
Captain Ronny Borg


The El Yunque has been selected as a 2011 Award Winner for the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's "Voluntary Observing Ship" (VOS) program. The ship recorded and transmitted nearly 600 quality marine observations. This is the 9th award for the El Yunque since 2001. Well Done!

Pictured Left to Right:
Chief Mate Kwesi Amoo
Captain Michael Richie
2nd Mate Dustin Leserra

# VOS Program Awards


Tanker ship George N won a 2011 VOS Award with an excellent total of 935 marine observations from the Atlantic and Pacific Oceans as well as the Norwegian and Mediterranean Seas.

Standing Left to Right:
2nd Officer - Gaurav Kulshreshtha
Captain - Sanjay Sadh
Chief Officer - Gautam Dubey
3rd Officer - Vaibhav Jain

Sitting
Deck Cadet - Naveen Chaturvedi

For the 10 consecutive year, the Horizon Producer has been selected for the as a 2011 National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's "Voluntary Observing Ship" (VOS) program award winner. During the year of 2011, the Horizon Producer recorded and transimitted over 1325 quality marine weather observations, a new ship record. The ship is also a recipient of the 10 Year Pennant for being awarded 10 consecutive annual VOS performance awards. During the past 10 years, the ships crew recorded and transmitted over 10,000 marine weather observations. A Job Well Done!

Pictured Left to Right:
3rd Mate Terry Williams
2nd Mate Bob Anderson
Captain Mark Ruppert

Not Pictured:
Captain Bill Boyce
Chief Mate Chris Danilek
Chief Mate John Rawley
Second Mate James McAfee
Third Mate Bernard Scott
Third Mate Bert "Hurricane" Haney

# VOS Program Awards


Captain Kevin G. Coulombe accepts the "5 year, Observing Excellence" pennant from NY PMO Jim Luciani, on behalf of all contributing crew aboard MAERSK WYOMING. Congratulations for a job well done!! Keep up the great work!!

The Norwegian Jewel has been selected as a 2011 Award Winner for the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service's "Voluntary Observing Ship" (VOS) program. The ship recorded and transmitted over 525 quality marine observations. Well Done!

Picture Left to Right:
Staff Captain Niklas Persson
Captain Lars Bergstrom
2nd Officer Ernest Torres
2nd Officer Arturo Abamo
1st Officer Navigation Ferdinand Aguilar

# VOS Program Awards

The Norwegian Gem won its 3rd annual VOS Award. The Ships crew recorded and transmitted 1040 quality observations during the year of 2011. Thank you for your continued support.

Pictured from left to right:
Staff Captain Zeljko Jurac
Staff Captain Stefan Nording
2nd Officer Luis C. Botacio Underwood

Cruise Ship Norwegian Pearl won a 2011 VOS Award with an outstanding total of 1,661 marine observations! This was a new ship's record and their 2nd ever VOS Award. Their observations were from Alaskan waters, the Eastern Pacific, and the Caribbean.

From right to left (standing):
NWS HMT Geri Swanson
Navigation Officer Vicente Amicone
Staff Captain Mattias Andersson
Quarter Master Aquilino Demecillo
Captain Gunnar Hammerin
Deck Cadet Suzanne Thompson
2ndOfficer Jason Habana
2nd Officer Vito Diaz
3rd Officer Teody Eugene Tolentino
NWS Meteorologist Nicole Hannon

From right to left (knee on the ground):
Quarter Master Crisanto Jamandre
Quarter Master Mel Alcantara


Tanker Oriental Queen was selected for a 2011 VOS Award with an excellent total of 669 valuable marine observations! This was their 5th consecutive VOS Award which qualified Oriental Queen for a special 5 Year Award Pennant as well.

Photo Left to Right (standing):
2nd Officer KARTHEEK DEVARAKONDA
Chief Officer GANESH PANIGRAHI
Captain RAJINDER KUMAR
Left to Right (seated):
Cadet DSILVA ACKLISTER DOMSON
3rd Officer SHAILESH K MISHRA

# VOS Program Awards

Cruise Ship Norwegian Star won their 2nd consecutive VOS Award in 2011 with an outstanding total of 1,778 valuable marine observations! This was a new all time yearly ship's record.

Photo from left to right:
3rd Officer Tanase Gima
3rd Officer Jay Pastorin
2nd Officer Marko Karabatic

Cruise Ship Oosterdam won a 2011 VOS Award with an excellent total of 842 marine observations from the North Pacific Ocean. This was their first ever VOS Award and a new all time ship's record!

Back row:
chief officer Paul Adams,
3rd officer Jimmy Plug,
2nd officer Gordon Cree
Captain Henk Draper.

Front row:
Guest relations attendant Chren Padilla
international concierge Janique Deuzeman
2nd officer Casper Stravers,

# VOS Program Awards

Cargo Ship Posidana won their first ever VOS Award in 2011. They had an outstanding total of 1,571 valuable marine observations! This was a new ship's record and placed them #1 among the Masterbulk Fleet of Observing Ships.

Photo Left to Right:
3rd Officer Yolan S. Velasco
Radio Mate Alvin Eric Barbato
Chief Officer Danilo L.Ramirez
Captain Mauricio H.Ferrariz,Jr.
2nd Officer Aurelio L.Planteras.

Cruise Ship Splendour of the Seas won their 4th consecutive VOS Award in 2011. They had an outstanding total of 2,521 valuable marine observations!

Photo Standing from left to right:
1st Officer Emil Grandev,
Staff Captain Juan Caranti
Quartermaster Burnie
Quartermaster Jay
Captain Carl Graucob
1st Officer Janusz Kalinowski

In front from left to right:
2nd Officer Tomasz Dudzynski
Quartermaster Jupiter
Quartermaster Gomez
Quartermaster Ismail
2nd Officer Juan Blake
1st Officer Randy Salazar

# VOS Program Awards


On board the Maersk Georgia: Captain Philip Solito, Chief Officer Horatiu (back row), 2/m Christopher Gillard and 3/m Glen Baumgart accept the 2011 Annual VOS award for observing excellence throughout 2011. Our thanks to all members of the crew who contributed to reporting these important observations.

Cruise Ship Zuiderdam won a 2011 VOS Award with an outstanding total of 2,075 marine observations from the North Pacific and Caribbean! This was a new ship's record and their 2nd VOS Award!

Pictured:
Andrew McDonald, Genki Kino, Michiel Willems, Jordi van Sikkelerus, Omrine Wilson, Adam Gardner, Captain Chris Turner, Jonathan Edwards, Geri Swanson (NWS), Martijn de Leege, Nicole Hannon (NWS).

# VOS Program Awards


Cruise Ship Volendam won a 2011 VOS Award with an outstanding total of 4,856 marine observations from the North and South Pacific Oceans. This was their 4th consecutive VOS Award and the highest total in the Holland America fleet.

Chief Officer: Colm Ryan with NWS Assistant PMO Geri Swanson

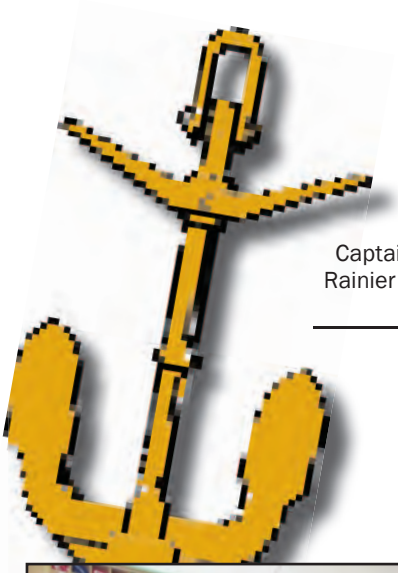
Cruise Ship Volendam won a 2011 VOS Award with an outstanding total of 4,856 marine observations from the North and South Pacific Oceans. This was their 4th consecutive VOS Award and the highest total in the Holland America fleet.

Pictured L-R: A/O Kenneth van der Tuin, Deck Cadet Andre Knight, C/O Colm Ryan, 2/O Marienus Hazelman, 3/O Adam Wilson, QM Muhazin, A/O Ruben de Roos, 3/O Aline Sauzé. Pictured on the inset QM Muhazin and Machdy

# VOS Program Awards


Cruise Ship Celebrity Millennium won a 2011 VOS Award with an outstanding total of 2,514 marine observations from the North Pacific Ocean and Caribbean Sea. This was their 4th consecutive VOS Award.

In the photo from left to right:
Apprentice Officer: Costin Iacob
2nd Officer: Panos Vogiatzoglon
Safety Officer: Pantelis Ampotzis
Chief Officer: Kostas Petrakakis



Captain of the Westwood Rainier accepts their award for 2011


2011 VOS award presented to UBC Santa Marta. Pictured is 3rd Mate Roger Tagaca, PMO Dave Jones, Captain Hakon Isaksson, and 2nd Mate Elpidio Tangcalagan

# VOS Program Awards


"Captain Allwyn Phillips, Master, M.V. Bernardo Quintana A., accepts the 2011 VOS award on behalf of the crew"


Tanker ship Antwerpen won their first ever VOS Award in 2011 with an excellent total of 855 marine observations from the Western Pacific and Indian Ocean. This was a new yearly ship's record for observations.

Pictured from Left to Right:
Standing
Chief Officer : Mathew Rigesh John
Master : Captain. Gaurab Pal
Second Officer : Jaspal Minhas

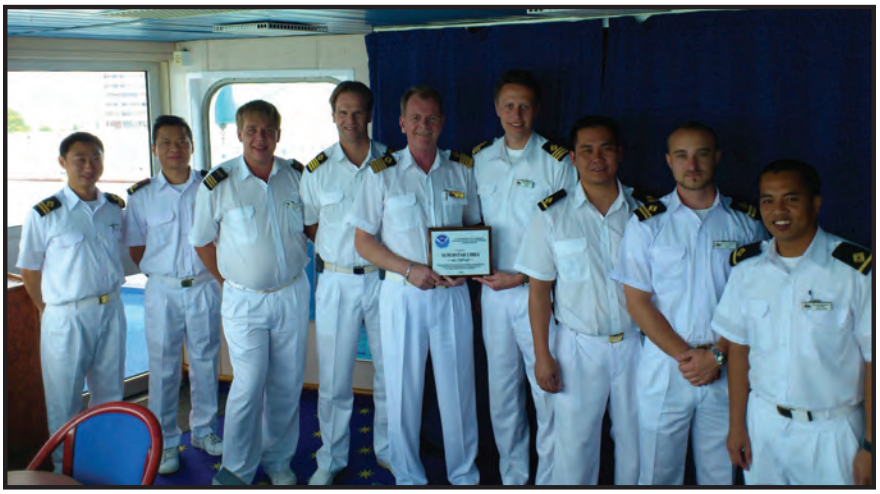
Sitting
Third Officer : Mayank Sundriyal
Cadet : Kunal Ashok Nihalani

2011 VOS Award presented to H A Sklenar. Pictured from left to right are: Chief Officer Edmund Brigoli, Third Officer Fawaz Kazi, Captain Pradeep Widge, and Cadet Aneeth Bhandari

# VOS Program Awards

Cruise Ship Superstar Libra won their 2nd consecutive VOS Award in 2011. They had an outstanding total of 1,349 valuable marine observations which was a new ship's record!

Photo Left to Right:
2nd Officer Larry Yin Mai La
3rd Officer Huan Jun Yao
Safety Manager Niklas Nilsson
Staff Captain Joakim Vonasek
Captain Lennart Jegerfalk
1st Officer Daniel Pantzarfelt
3rd Officer Jimmy Cerdenola
2nd Officer Christoffer Sandstrom
3rd Officer Erick Anonuevo



Cargo Ship Star Fraser won their 2nd consecutive VOS Award in 2011. They had an outstanding total of 1,526 valuable marine observations which was a new ship's record! They were the #1 observing ship in the Star Shipping Fleet!

PHOTO FROM LEFT TO RIGHT:
3rd Officer Trainee GP Rodan Yarra
Chief Officer Edwin Llagas
Captain Jonathan Sison
2nd Officer John Jimena
3rd Officer Von Erick Robles

Cruise Ship Zaandam won a 2011 VOS Award with an excellent total of 902 marine observations from the North Pacific Ocean! This was their 2nd VOS Award.

In the photograph:
Captain André van Schoonhaven
Chief Officer Peter Cordfunke
1st Officer Steven Macbeath
2nd Officer Kevin Jamieson
3rd Officer Joot Schol
4th Officer Amy MacDonald
cadet Fiona Standen
cadet Kayleigh Fait
ANC PMO Larry Hubble

# VOS Program Awards

## Master Vasile Liviu Catalin and 2M Alvin L. Serrano accepting the VOS plaque for entering our VOS program




Return to Table of Contents

# National Weather Service VOS Program New Recruits:

March 1 through May 31, 2012

| SHIP NAME | CALL SIGN |
|---|---|
| A. P. Moller | 0VYQ2 |
| Algoma Quebecois | CYGR |
| Algowood | VCTD |
| Ariso | 3FHJ6 |
| Cafer Dede | V7PR8 |
| Caribbean Sea | PHNU |
| Disney Fantasy | C6ZL6 |
| Expedient | ONFY |
| Hazel Lorraine | WYR7722 |
| Incentive | WCW9879 |
| Katrina Em | WTK2245 |
| Legend | WDF9316 |
| MAERSK ILLINOIS | WMLI |
| Maersk Visby | 9V8827 |
| Mathilde Maersk Skagen | 0UJS2 |
| New Delhi Express | VRBK5 |
| Noble Globetrotter I | A8UD3 |
| NYK Libra | HOJY |
| NYK Triton | 3FUL2 |
| Oar Northwest | WDG3142 |
| Ocean Hope 3 | WDF2354 |
| Santa Monica | MGYB8 |
| Seabrooke | WDC4069 |
| Silver Spray | WDC8162 |
| Skagen Maersk | OYOS2 |
| Stormbird | WDA6306 |

| SHIP NAME | CALL SIGN |
|---|---|
| Taurus | WDF4091 |
| USCGC Stratton | NJIM |
| Walter J. McCarthy Jr. | WXU3434 |
| Wendy O. | WDF8784 |
| Zim New York | VRGA7 |
| Unique Explorer | VRGT8 |
| USCGC Fir | NAYV |
| Vietnam Express | VRCZ4 |
| West Sirius | 3EMK6 |
| YP676 | YP 676 |
| YP696 | YP 696 |
| YP686 | YP 686 |
| Yuyo Spirits | 3FNF4 |

# VOS Cooperative Ship Report:

## January through June 30, 2012

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. P. Moller | OVYQ2 | 22 | 30 | 28 | 49 | 27 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 208 |
| Achievement | WDF2728 | 152 | 27 | 120 | 44 | 4 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 356 |
| Adrian Maersk | OXLD2 | 24 | 23 | 9 | 21 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 120 |
| Advantage | WPPO | 0 | 54 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 |
| Adventure Of The Seas | C6SA3 | 81 | 53 | 36 | 53 | 141 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 512 |
| Adventurer | WBN3015 | 19 | 39 | 23 | 0 | 30 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 115 |
| Al Huwaila | C6VG2 | 25 | 46 | 17 | 17 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 121 |
| Al Khuwair | C6VM6 | 3 | 0 | 0 | 0 | 9 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| Al Marrouna | C6VF5 | 58 | 39 | 47 | 38 | 37 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 263 |
| Alaska Mariner | WSM5364 | 8 | 46 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 74 |
| Alaska Titan | WDE4789 | 1 | 8 | 4 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Alaskan Explorer | WDB9918 | 112 | 137 | 96 | 83 | 65 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 537 |
| Alaskan Frontier | WDB7815 | 40 | 31 | 14 | 5 | 33 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 139 |
| Alaskan Legend | WDD2074 | 31 | 13 | 0 | 16 | 34 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 154 |
| Alaskan Navigator | WDC6644 | 44 | 34 | 99 | 99 | 53 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 379 |
| Albemarle Island | C6LU3 | 43 | 39 | 42 | 47 | 37 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 228 |
| Albert Maersk | OUOW2 | 0 | 0 | 0 | 0 | 52 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 82 |
| Alert | WCZ7335 | 0 | 30 | 1 | 27 | 3 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 75 |
| Algolake | VCPX | 0 | 0 | 0 | 4 | 29 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 49 |
| Algoma Discovery | CFK9796 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Algoma Navigator | VGMV | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Algoma Progress | VDRV | 35 | 0 | 12 | 21 | 34 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 138 |
| Algoma Quebecois | CYGR | 0 | 0 | 0 | 0 | 3 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Algoma Spirit | CFN4309 | 0 | 0 | 0 | 31 | 33 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 82 |
| Algoway | VDFP | 0 | 0 | 0 | 8 | 12 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Alkin Kalkavan | TCOL6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Alliance Beaumont | WKDY | 61 | 31 | 8 | 27 | 38 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 223 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alliance Charleston | WRAH | 17 | 41 | 61 | 65 | 84 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 328 |
| Alliance Norfolk | WGAH | 0 | 1 | 16 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| Alliance St Louis | WGAE | 24 | 24 | 34 | 9 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| Allure Of The Seas | C6XS8 | 25 | 18 | 7 | 0 | 28 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 108 |
| Alpena | WAV4647 | 0 | 0 | 20 | 51 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| Altair Voyager | C6OK | 40 | 62 | 33 | 47 | 1 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 208 |
| American Century | WDD2876 | 105 | 0 | 58 | 252 | 340 | 238 | 0 | 0 | 0 | 0 | 0 | 0 | 993 |
| American Integrity | WDD2875 | 14 | 0 | 0 | 23 | 31 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 88 |
| American Mariner | WQZ7791 | 0 | 0 | 0 | 1 | 39 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 63 |
| American Spirit | WCX2417 | 4 | 0 | 0 | 7 | 26 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 63 |
| American Tern | WAHF | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Amsterdam | PBAD | 108 | 116 | 102 | 49 | 143 | 278 | 0 | 0 | 0 | 0 | 0 | 0 | 796 |
| Andromeda Voyager | C6FZ6 | 8 | 25 | 34 | 55 | 76 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 243 |
| Antonis I. Angelicoussis | C6FP5 | 8 | 12 | 6 | 0 | 41 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 127 |
| Antwerpen | VRBK6 | 137 | 78 | 76 | 130 | 403 | 212 | 0 | 0 | 0 | 0 | 0 | 0 | 1036 |
| APL Agate | WDE8265 | 32 | 0 | 2 | 25 | 14 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 92 |
| APL Belgium | 9VKQ3 | 0 | 0 | 1 | 2 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| APL China | WDB3161 | 81 | 67 | 42 | 51 | 55 | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 363 |
| APL Coral | WDF6832 | 18 | 39 | 45 | 37 | 17 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 161 |
| APL Cyprine | WDE8293 | 0 | 0 | 32 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 |
| APL England | 9VDD2 | 67 | 12 | 7 | 31 | 25 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 155 |
| APL Garnet | 9VVN | 7 | 46 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 55 |
| APL Japan | WDE8288 | 44 | 23 | 28 | 85 | 66 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 278 |
| APL Kennedy | 9VAY4 | 36 | 32 | 28 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 101 |
| APL Korea | WCX8883 | 179 | 141 | 33 | 63 | 189 | 191 | 0 | 0 | 0 | 0 | 0 | 0 | 796 |
| APL Paradise | 3ECJ7 | 5 | 40 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 89 |
| APL Pearl | WDE8264 | 61 | 80 | 71 | 51 | 21 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 296 |
| APL Philippines | WCX8884 | 31 | 9 | 26 | 31 | 24 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 153 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APL Qatar | 9VMJ5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APL Sardonyx | 9VVU | 19 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| APL Scotland | 9VDD3 | 2 | 21 | 12 | 16 | 17 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 99 |
| APL Singapore | WCX8812 | 51 | 1 | 11 | 20 | 26 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 139 |
| APL Tennessee | 9HA2064 | 49 | 48 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| APL Texas | VRFH2 | 88 | 25 | 79 | 40 | 15 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 257 |
| APL Thailand | WCX8882 | 72 | 52 | 52 | 42 | 56 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 319 |
| APL Tourmoline | 9VVP | 36 | 0 | 1 | 21 | 18 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 114 |
| APL Washington | VRFD6 | 21 | 13 | 33 | 49 | 43 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 232 |
| Aquarius Voyager | C6UC3 | 25 | 57 | 51 | 52 | 57 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 293 |
| Aquavictory | A8VA2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Arctic Bear | WBP3396 | 0 | 0 | 7 | 11 | 3 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Arctic Ocean | C6T2062 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Arctic Titan | WDG2803 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Arcturus Voyager | C6YA7 | 41 | 71 | 91 | 92 | 44 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 381 |
| Aries Voyager | C6UK7 | 63 | 61 | 62 | 57 | 38 | 91 | 0 | 0 | 0 | 0 | 0 | 0 | 372 |
| Ariso | 3FHJ6 | 0 | 18 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Arnold Maersk | OXES2 | 19 | 26 | 39 | 12 | 1 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 173 |
| Arthur M. Anderson | WE4805 | 98 | 0 | 12 | 65 | 110 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 309 |
| Arthur Maersk | OXJH2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Atlantic Breeze | VRDC6 | 0 | 6 | 8 | 11 | 18 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| Atlantic Cartier | SCKB | 28 | 50 | 40 | 31 | 30 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 196 |
| Atlantic Explorer (AWS) | NWS0021 | 138 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 138 |
| Atlantic Explorer (AWS) | WDC9417 | 92 | 211 | 411 | 268 | 424 | 235 | 0 | 0 | 0 | 0 | 0 | 0 | 1641 |
| Atlantic Frontier | VRDJ7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Atlantic Gemini | VRDO9 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Atlantic Grace | VRDT7 | 0 | 2 | 35 | 142 | 236 | 326 | 0 | 0 | 0 | 0 | 0 | 0 | 741 |
| Atlantic Lily | VREF6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Atlantic Rose | VREF7 | 20 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Atlantis | KAQP | 290 | 516 | 591 | 718 | 507 | 679 | 0 | 0 | 0 | 0 | 0 | 0 | 3301 |
| Atlantis (AWS) | NWS0020 | 454 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 454 |
| Attentive | WCZ7337 | 1 | 11 | 8 | 1 | 3 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| Aurora | WYM9567 | 0 | 0 | 30 | 425 | 570 | 563 | 0 | 0 | 0 | 0 | 0 | 0 | 1588 |
| Aware | WCZ7336 | 10 | 10 | 14 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| Axel Spirit | C6FY5 | 87 | 18 | 11 | 47 | 36 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 238 |
| Azamara Journey | 9HOB8 | 4 | 37 | 21 | 22 | 9 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 112 |
| Azamara Quest | 9HOM8 | 7 | 52 | 73 | 38 | 80 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 288 |
| Badger | WBD4889 | 0 | 0 | 0 | 0 | 1 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 84 |
| Baltic Bear | V7QN4 | 14 | 23 | 21 | 26 | 24 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 131 |
| Baltic Cove | A8VG9 | 3 | 14 | 7 | 16 | 5 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 57 |
| Baltic Wind | A8SU8 | 3 | 6 | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Baltic Wolf | V7QX8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Barbara Andrie | WTC9407 | 20 | 0 | 0 | 22 | 51 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 113 |
| Barbara Foss | WYL4318 | 13 | 14 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| Barrington Island | C6QK | 22 | 26 | 19 | 12 | 11 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 122 |
| Bebedouro | ELFN7 | 0 | 34 | 55 | 24 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 142 |
| Bell M. Shimada | WTED | 0 | 2 | 23 | 153 | 2 | 300 | 0 | 0 | 0 | 0 | 0 | 0 | 480 |
| Bell M. Shimada (AWS) | NWS0025 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Berge Nantong | VRBU6 | 48 | 0 | 16 | 6 | 29 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 121 |
| Berge Ningbo | VRBQ2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Berlian Ekuator | HPYK | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Bernardo Quintana A. | C6KJ5 | 59 | 49 | 46 | 45 | 28 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 243 |
| Berra K | TCTH9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bluefin | WDC7379 | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Bonn Express | ZCEG4 | 20 | 0 | 16 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| Brilliance Of The Seas | C6SJ5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Brotonne Bridge | VRHO2 | 51 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 77 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Buccaneer | WYW5588 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Bulk Mexico | A8VL8 | 92 | 76 | 81 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 |
| Bulwark | WBN4113 | 19 | 8 | 8 | 5 | 24 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 98 |
| Burns Harbor | WDC6027 | 13 | 0 | 0 | 13 | 31 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 93 |
| Cafer Dede | V7PR8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| California Voyager | WDE5381 | 12 | 30 | 32 | 18 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 105 |
| Calumet | WDE3568 | 32 | 2 | 0 | 0 | 3 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 57 |
| Camai | KF003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Capricorn Voyager | C6UZ5 | 2 | 4 | 33 | 10 | 54 | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 170 |
| Capt. Henry Jackman | VCTV | 0 | 62 | 50 | 20 | 7 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 151 |
| Caribbean Sea | PHNU | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Carnival Conquest | 3FPQ9 | 13 | 25 | 49 | 29 | 7 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 150 |
| Carnival Destiny | C6FN4 | 148 | 33 | 51 | 35 | 20 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 303 |
| Carnival Dream | 3ETA7 | 1 | 56 | 37 | 26 | 1 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 187 |
| Carnival Ecstasy | H3GR | 8 | 5 | 6 | 8 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| Carnival Elation | 3FOC5 | 9 | 13 | 0 | 16 | 27 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 94 |
| Carnival Fantasy | H3GS | 54 | 28 | 11 | 17 | 16 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 155 |
| Carnival Fascination | C6FM9 | 15 | 8 | 28 | 7 | 44 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 141 |
| Carnival Freedom | 3EBL5 | 27 | 18 | 17 | 17 | 23 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 103 |
| Carnival Glory | 3FPS9 | 29 | 33 | 43 | 26 | 19 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 170 |
| Carnival Imagination | C6FN2 | 49 | 42 | 39 | 0 | 41 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 215 |
| Carnival Inspiration | C6FM5 | 28 | 4 | 15 | 42 | 34 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 138 |
| Carnival Legend | H3VT | 10 | 3 | 22 | 32 | 13 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 94 |
| Carnival Liberty | HPYE | 96 | 5 | 11 | 32 | 22 | 99 | 0 | 0 | 0 | 0 | 0 | 0 | 265 |
| Carnival Magic | 3ETA8 | 56 | 11 | 26 | 96 | 96 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 360 |
| Carnival Miracle | H3VS | 17 | 21 | 17 | 14 | 15 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 125 |
| Carnival Paradise | 3FOB5 | 0 | 4 | 3 | 39 | 37 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 102 |
| Carnival Pride | H3VU | 23 | 34 | 25 | 23 | 89 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 252 |
| Carnival Sensation | C6FM8 | 31 | 21 | 14 | 20 | 34 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 157 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carnival Spirit | 3FPR9 | 26 | 50 | 41 | 35 | 27 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 203 |
| Carnival Splendor | 3EUS | 37 | 27 | 21 | 96 | 142 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 368 |
| Carnival Triumph | C6FN5 | 9 | 20 | 2 | 6 | 39 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 163 |
| Carnival Valor | H3VR | 25 | 40 | 55 | 16 | 25 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 172 |
| Carnival Victory | 3FFL8 | 17 | 0 | 11 | 29 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 67 |
| Caroline Maersk | OZWA2 | 9 | 32 | 0 | 15 | 40 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 97 |
| Cason J. Callaway | WE4879 | 35 | 0 | 1 | 83 | 98 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 244 |
| Castor Voyager | C6UZ6 | 4 | 23 | 41 | 10 | 23 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 140 |
| Celebrity Century | 9HJI9 | 116 | 31 | 0 | 0 | 57 | 115 | 0 | 0 | 0 | 0 | 0 | 0 | 319 |
| Celebrity Constellation | 9HJB9 | 245 | 159 | 352 | 481 | 446 | 365 | 0 | 0 | 0 | 0 | 0 | 0 | 2048 |
| Celebrity Eclipse | 9HXC9 | 585 | 520 | 587 | 587 | 507 | 399 | 0 | 0 | 0 | 0 | 0 | 0 | 3185 |
| Celebrity Equinox | 9HXD9 | 409 | 462 | 485 | 342 | 259 | 162 | 0 | 0 | 0 | 0 | 0 | 0 | 2119 |
| Celebrity Infinity | 9HJD9 | 68 | 334 | 323 | 308 | 172 | 192 | 0 | 0 | 0 | 0 | 0 | 0 | 1397 |
| Celebrity Mercury | 9HJG9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Celebrity Millennium | 9HJF9 | 148 | 160 | 107 | 8 | 76 | 109 | 0 | 0 | 0 | 0 | 0 | 0 | 608 |
| Celebrity Silhouette | 9HA2583 | 311 | 165 | 136 | 197 | 131 | 180 | 0 | 0 | 0 | 0 | 0 | 0 | 1120 |
| Celebrity Solstice | 9HRJ9 | 270 | 384 | 413 | 415 | 289 | 180 | 0 | 0 | 0 | 0 | 0 | 0 | 1951 |
| Celebrity Summit | 9HJC9 | 37 | 88 | 90 | 77 | 74 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 437 |
| Centurion | WBN3022 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chamai | WDF9872 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Charles Island | C6JT | 15 | 2 | 13 | 12 | 27 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 95 |
| Charleston Express | WDD6126 | 119 | 16 | 91 | 113 | 126 | 136 | 0 | 0 | 0 | 0 | 0 | 0 | 601 |
| Chemical Pioneer | KAFO | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chenega | WDC3997 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Clementine Maersk | OUQK2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CMB Biwa | ONED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Commitment | WDE3894 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Copenhagen Express | ZCDP2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corwith Cramer | WTF3319 | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Costa Allegra | ICRA | 197 | 151 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 349 |
| Costa Atlantica | IBLQ | 0 | 0 | 10 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58 |
| Costa Fortuna | IBNY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Costa Luminosa | ICGU | 547 | 397 | 372 | 148 | 172 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 1697 |
| Costa Marina | IBNC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Costa Mediterranea | IBCF | 0 | 0 | 0 | 23 | 26 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 111 |
| Costa Neoromantica | IBCR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Courage | WDC6907 | 16 | 3 | 0 | 9 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| Courage | WDE3893 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Crystal Marine | 9VIC4 | 0 | 13 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Darya Shanthi | VRXB2 | 0 | 0 | 0 | 7 | 5 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 74 |
| Deepwater Millennium | V7HD2 | 34 | 10 | 5 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| Defender | WBN3016 | 26 | 24 | 29 | 30 | 15 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 144 |
| Delaware II | KNBD | 79 | 138 | 69 | 22 | 130 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 442 |
| Delaware II (AWS) | NWS0012 | 0 | 327 | 357 | 0 | 221 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 1025 |
| Deliverance | WDE2632 | 3 | 3 | 0 | 2 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| Dependable | V7DI6 | 0 | 0 | 51 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| Diane H | WUR7250 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Discoverer Clear Leader | V7MO2 | 101 | 94 | 80 | 79 | 67 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 480 |
| Discoverer Deep Seas | V7HC6 | 46 | 128 | 153 | 132 | 118 | 134 | 0 | 0 | 0 | 0 | 0 | 0 | 711 |
| Discoverer Enterprise | V7HD3 | 0 | 20 | 15 | 21 | 14 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 82 |
| Discoverer Inspiration | V7MO3 | 11 | 6 | 2 | 0 | 13 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Discoverer Spirit | V7HC8 | 0 | 20 | 12 | 58 | 53 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 211 |
| Disney Dream | C6YR6 | 0 | 46 | 36 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 89 |
| Disney Fantasy | C6ZL6 | 0 | 0 | 0 | 27 | 45 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 84 |
| Disney Magic | C6PT7 | 0 | 16 | 11 | 39 | 26 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 95 |
| Disney Wonder | C6QM8 | 18 | 101 | 119 | 16 | 10 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 328 |
| Dominator | WBZ4106 | 0 | 25 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 57 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drew Foss | WYL5718 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Duncan Island | C6JS | 65 | 55 | 38 | 60 | 54 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 324 |
| Eagle Tacoma | S6NK2 | 0 | 0 | 4 | 7 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| Eagle Toledo | S6NK3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eagle Trenton | S6NK4 | 0 | 0 | 0 | 45 | 96 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 189 |
| Ecem Kalkavan | V7JT6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Edgar B. Speer | WQZ9670 | 23 | 0 | 26 | 105 | 58 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 282 |
| Edwin H. Gott | WXQ4511 | 3 | 0 | 1 | 18 | 93 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 200 |
| El Morro | KCGH | 38 | 29 | 18 | 15 | 25 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 133 |
| El Yunque | WGJT | 30 | 21 | 21 | 70 | 78 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 271 |
| Elversele | ONCT | 34 | 42 | 35 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 144 |
| Empire State | KKFW | 0 | 0 | 0 | 0 | 116 | 125 | 0 | 0 | 0 | 0 | 0 | 0 | 241 |
| Enchantment Of The Seas | C6FZ7 | 12 | 23 | 15 | 1 | 18 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 84 |
| Endeavor (AWS) | WCE5063 | 685 | 690 | 720 | 708 | 744 | 718 | 0 | 0 | 0 | 0 | 0 | 0 | 4265 |
| Endurance | WDE9586 | 73 | 69 | 51 | 51 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 255 |
| Endurance | WDF7523 | 18 | 10 | 14 | 5 | 28 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 118 |
| Ensign | WBN3012 | 1 | 15 | 12 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| Eot Spar | WDE9193 | 54 | 39 | 29 | 26 | 18 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 190 |
| Erkan K | V7ND9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Ernest N | A8PQ6 | 14 | 0 | 5 | 13 | 42 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 111 |
| Eships Dana | ZDJT6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eskden | DYLD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eurodam | PHOS | 201 | 263 | 322 | 258 | 150 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 1254 |
| Eurus Lima | A8MH9 | 0 | 0 | 0 | 12 | 16 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| Eurus Lisbon | A8MI2 | 0 | 0 | 0 | 5 | 17 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| Eurus London | A8MH7 | 10 | 8 | 11 | 50 | 17 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 119 |
| Ever Dainty | 9V7951 | 11 | 3 | 3 | 3 | 14 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| Ever Decent | 9V7952 | 0 | 0 | 1 | 19 | 16 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ever Develop | 3FLF8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ever Devote | 9V7954 | 0 | 0 | 8 | 3 | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Ever Diadem | 9V7955 | 27 | 13 | 20 | 51 | 68 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 210 |
| Ever Diamond | 3FQS8 | 93 | 85 | 127 | 283 | 510 | 268 | 0 | 0 | 0 | 0 | 0 | 0 | 1366 |
| Ever Divine | 9V7956 | 0 | 0 | 0 | 0 | 32 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 60 |
| Ever Ethic | VQFS4 | 0 | 11 | 8 | 13 | 19 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| Ever Excel | VSXV3 | 0 | 0 | 0 | 42 | 46 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 114 |
| Ever Radiant | 3FFR4 | 8 | 4 | 6 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Ever Reach | 3FQO4 | 5 | 6 | 15 | 5 | 12 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| Ever Refine | 3FSB4 | 67 | 6 | 17 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| Ever Result | 3FSA4 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Ever Reward | 3FYB3 | 53 | 154 | 168 | 391 | 587 | 582 | 0 | 0 | 0 | 0 | 0 | 0 | 1935 |
| Ever Safety | 3EMQ4 | 15 | 38 | 24 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 103 |
| Ever Salute | 3ENU5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ever Shine | MJKZ4 | 39 | 33 | 30 | 0 | 44 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 150 |
| Ever Steady | 3EHT6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ever Summit | 3EKU3 | 5 | 3 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| Ever Ulysses | 9V7962 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Ever Unific | 9V7961 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ever Uranus | 3FCA9 | 10 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Ever Urban | 3FXN9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Ever Useful | 3FCC9 | 30 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| Everest Spirit | C6FY8 | 85 | 44 | 95 | 72 | 45 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 390 |
| Evergreen State | WDE4430 | 1 | 0 | 4 | 18 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| Excalibur | ONCE | 39 | 69 | 63 | 44 | 75 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 352 |
| Excel | ONAI | 85 | 51 | 84 | 46 | 75 | 102 | 0 | 0 | 0 | 0 | 0 | 0 | 443 |
| Excelerate | ONDY | 66 | 51 | 38 | 0 | 56 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 274 |
| Expedient | ONFY | 0 | 0 | 0 | 0 | 1 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| Explorer | ONFE | 97 | 89 | 72 | 58 | 75 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 445 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Explorer | WBN7618 | 0 | 0 | 3 | 1 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| Explorer Of The Seas | C6SE4 | 13 | 0 | 0 | 1 | 13 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| Fairchem Bronco | V7MC8 | 77 | 57 | 62 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 227 |
| Fairchem Friesian | V7PU7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Fairchem Mustang | HPOW | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Fairchem Stallion | H3WD | 59 | 26 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| Fairweather | WDB5604 | 0 | 0 | 0 | 0 | 4 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| Fairweather (AWS) | WTEB | 0 | 0 | 0 | 346 | 0 | 190 | 0 | 0 | 0 | 0 | 0 | 0 | 536 |
| Federal Asahi | VRWG3 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| Federal Mackinac | V7RI8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Federal Saguenay | 8PNQ | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Federal Schelde | 8POF | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Federal Venture | VRXL7 | 64 | 28 | 10 | 14 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 134 |
| Florida Voyager | WDF4764 | 20 | 10 | 22 | 15 | 18 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 93 |
| Freedom | WDB5483 | 35 | 39 | 13 | 14 | 18 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 166 |
| Freedom Of The Seas | C6UZ7 | 82 | 31 | 17 | 1 | 10 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 160 |
| Freja Dania | A8LC2 | 16 | 3 | 14 | 10 | 43 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 104 |
| Fritzi N | A8PQ4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Front Kathrine | V7QX2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Furth | V7MP5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| G. L. Ostrander | WCV7620 | 0 | 1 | 1 | 30 | 41 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 167 |
| Garden City River | S6AJ8 | 19 | 18 | 9 | 8 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 70 |
| Gauntlet | WBN6511 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Gemini Voyager | C6FE5 | 43 | 31 | 34 | 54 | 33 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 223 |
| Genco Augustus | VRDD2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Genco Claudius | V7SY6 | 62 | 85 | 85 | 62 | 57 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 397 |
| Genco Constantine | VRDR8 | 0 | 8 | 45 | 59 | 43 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 203 |
| Genco Hadrian | V7QN8 | 42 | 40 | 29 | 14 | 15 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 152 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Genco Raptor | V7NB8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Genco Thunder | V7LZ4 | 29 | 24 | 29 | 17 | 17 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 121 |
| Genco Tiberius | VRDD3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Genco Titus | VRDI7 | 34 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| General Rudder | WTAU | 0 | 0 | 0 | 0 | 14 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Genoa Express | ZCDJ7 | 0 | 0 | 0 | 27 | 30 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| George N | A8PQ5 | 2 | 3 | 2 | 10 | 30 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 61 |
| Geysir | WCZ5528 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Glen Canyon Bridge | 3EFD9 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Global Spirit | ELTL3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Golden Bear | NMRY | 0 | 0 | 0 | 0 | 52 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 107 |
| Golden State | WHDV | 3 | 10 | 17 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| Gordon Gunter (Aws) | NWS0014 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gordon Gunter (Aws) | WTEO | 0 | 0 | 141 | 582 | 582 | 407 | 0 | 0 | 0 | 0 | 0 | 0 | 1712 |
| Grandeur Of The Seas | C6SE3 | 54 | 43 | 68 | 31 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 212 |
| Great Republic | WDF7994 | 107 | 0 | 19 | 64 | 46 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 250 |
| Green Bay | WDD9433 | 23 | 34 | 62 | 17 | 10 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 151 |
| Green Dale | WCZ5238 | 31 | 11 | 47 | 14 | 23 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 143 |
| Green Lake | WDDI | 0 | 61 | 44 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| Green Ridge | WZZF | 15 | 12 | 23 | 20 | 25 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 113 |
| Gretchen H | WDC9138 | 4 | 10 | 24 | 35 | 41 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 128 |
| Gsf Development Driller I | YJSW5 | 12 | 21 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| Gsf Grand Banks | YJUF7 | 0 | 55 | 188 | 218 | 209 | 177 | 0 | 0 | 0 | 0 | 0 | 0 | 847 |
| Guardian | WBO2511 | 21 | 17 | 12 | 27 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 79 |
| Gulf Reliance | WDD2703 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gulf Titan | WDA5598 | 11 | 4 | 11 | 1 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| H A Sklenar | C6CL6 | 25 | 110 | 16 | 156 | 66 | 99 | 0 | 0 | 0 | 0 | 0 | 0 | 472 |
| H. Lee White | WZD2465 | 13 | 0 | 0 | 4 | 27 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 61 |
| Hazel Lorraine | WYR7722 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Henry B. Bigelow (AWS) | WTDF | 0 | 0 | 0 | 7 | 99 | 498 | 0 | 0 | 0 | 0 | 0 | 0 | 604 |
| Henry Goodrich | YJQN7 | 0 | 0 | 0 | 8 | 97 | 183 | 0 | 0 | 0 | 0 | 0 | 0 | 288 |
| Herbert C. Jackson | WL3972 | 18 | 0 | 11 | 35 | 24 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 103 |
| Hi'ialakai (AWS) | WTEY | 0 | 3 | 445 | 658 | 437 | 159 | 0 | 0 | 0 | 0 | 0 | 0 | 1702 |
| Hon. James L. Oberstar | WL3108 | 53 | 0 | 29 | 156 | 52 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 346 |
| Honor | WDC6923 | 43 | 19 | 15 | 17 | 28 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 151 |
| Hood Island | C6LU4 | 36 | 47 | 55 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 170 |
| Horizon Anchorage | KGTX | 106 | 116 | 97 | 62 | 149 | 140 | 0 | 0 | 0 | 0 | 0 | 0 | 670 |
| Horizon Challenger | WZJC | 110 | 40 | 50 | 79 | 77 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 422 |
| Horizon Consumer | WCHF | 0 | 13 | 53 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81 |
| Horizon Discovery | WZJD | 16 | 29 | 9 | 50 | 69 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 216 |
| Horizon Eagle | WDD6039 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Horizon Enterprise | KRGB | 58 | 32 | 37 | 39 | 34 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 235 |
| Horizon Falcon | WDD6040 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Horizon Hawk | WDD6033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Horizon Hunter | WDD6038 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Horizon Kodiak | KGTZ | 27 | 29 | 56 | 46 | 48 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 248 |
| Horizon Navigator | WPGK | 150 | 154 | 143 | 138 | 115 | 203 | 0 | 0 | 0 | 0 | 0 | 0 | 903 |
| Horizon Pacific | WSRL | 71 | 62 | 18 | 11 | 48 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 255 |
| Horizon Producer | WJBJ | 158 | 0 | 0 | 196 | 174 | 191 | 0 | 0 | 0 | 0 | 0 | 0 | 719 |
| Horizon Reliance | WFLH | 80 | 79 | 70 | 61 | 73 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 444 |
| Horizon Spirit | WFLG | 82 | 84 | 79 | 79 | 81 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 473 |
| Horizon Tacoma | KGTY | 33 | 26 | 30 | 23 | 39 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 188 |
| Horizon Tiger | WDD6042 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Horizon Trader | KIRH | 80 | 54 | 64 | 53 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 283 |
| Hosanger | 9VAW8 | 100 | 137 | 114 | 115 | 87 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 578 |
| Houston | KCDK | 7 | 9 | 2 | 11 | 17 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 81 |
| Hugo N | A8TD2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hunter | WBN3744 | 0 | 0 | 0 | 16 | 38 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 129 |
| Incentive | WCW9879 | 13 | 4 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Independence Ii | WGAX | 72 | 122 | 105 | 88 | 57 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 495 |
| Independence Of The Seas | C6WW4 | 24 | 26 | 28 | 14 | 7 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 108 |
| Indian Ocean | C6T2063 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indiana Harbor | WXN3191 | 13 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| Integrity | WDC6925 | 28 | 57 | 46 | 11 | 27 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 216 |
| Integrity | WDD7905 | 0 | 0 | 0 | 0 | 80 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 154 |
| Invader | WBO3337 | 5 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| Island Champion | WCZ7046 | 0 | 0 | 11 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| Island Scout | WDC6588 | 0 | 12 | 0 | 0 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| James L. Kuber | WDF7020 | 170 | 0 | 13 | 215 | 19 | 91 | 0 | 0 | 0 | 0 | 0 | 0 | 508 |
| James R. Barker | WYP8657 | 40 | 0 | 18 | 81 | 250 | 271 | 0 | 0 | 0 | 0 | 0 | 0 | 660 |
| Jean Anne | WDC3786 | 27 | 59 | 95 | 104 | 31 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 332 |
| Jenny N | A8PQ7 | 8 | 11 | 12 | 13 | 39 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| Jewel Of The Seas | C6FW9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| John G. Munson | WE3806 | 43 | 0 | 2 | 95 | 119 | 148 | 0 | 0 | 0 | 0 | 0 | 0 | 407 |
| John J. Boland | WZE4539 | 0 | 0 | 0 | 11 | 16 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| Joides Resolution | D5BC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Joseph L. Block | WXY6216 | 238 | 0 | 121 | 342 | 0 | 672 | 0 | 0 | 0 | 0 | 0 | 0 | 1373 |
| Justine Foss | WYL4978 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ka'imimoana (Aws) | WTEU | 146 | 641 | 509 | 501 | 512 | 386 | 0 | 0 | 0 | 0 | 0 | 0 | 2695 |
| Karen Andrie | WBS5272 | 37 | 0 | 40 | 134 | 103 | 320 | 0 | 0 | 0 | 0 | 0 | 0 | 634 |
| Karoline N | A8PQ8 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Kasif Kalkavan | V7IX7 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Katrina Em | WTK2245 | 0 | 4 | 26 | 4 | 5 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| Kaveri Spirit | C6WK2 | 18 | 21 | 25 | 16 | 26 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 130 |
| Kaye E. Barker | WCF3012 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 66 |
| Kennicott | WCY2920 | 25 | 5 | 0 | 41 | 25 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 119 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Keswick | C6XE5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Kilo Moana | WDA7827 | 11 | 1 | 35 | 67 | 70 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 202 |
| Kiyi | KAO107 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| Knorr | KCEJ | 0 | 132 | 742 | 684 | 732 | 719 | 0 | 0 | 0 | 0 | 0 | 0 | 3009 |
| Knorr (AWS) | NWS0029 | 558 | 303 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 861 |
| Kodiak | KQXZ | 0 | 2 | 18 | 9 | 12 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 59 |
| Kota Halus | 9V8258 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kota Harum | 9VFF8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kota Jati | VRWJ7 | 55 | 85 | 70 | 30 | 52 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 350 |
| Kota Jaya | VRWM2 | 10 | 14 | 20 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 58 |
| Lahore Express | VRBY8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lauren Foss | WDB3834 | 0 | 1 | 39 | 78 | 83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 201 |
| Laurence M. Gould (AWS) | WCX7445 | 651 | 621 | 648 | 647 | 674 | 598 | 0 | 0 | 0 | 0 | 0 | 0 | 3839 |
| Lavender Passage | 3FJY6 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Lee A. Tregurtha | WUR8857 | 0 | 0 | 5 | 17 | 12 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| Legacy | WDF7311 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Legend | WDF9316 | 0 | 0 | 0 | 60 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 81 |
| Leslie Lee | WYC7933 | 4 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Liberty Eagle | WHIA | 56 | 46 | 10 | 7 | 31 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 218 |
| Liberty Glory | WADP | 6 | 4 | 22 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 60 |
| Liberty Grace | WADN | 4 | 11 | 0 | 40 | 63 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 141 |
| Liberty Of The Seas | C6VQ8 | 4 | 2 | 2 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| Liberty Pride | KRAU | 11 | 59 | 52 | 28 | 40 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 224 |
| Liberty Spirit | WCPU | 13 | 21 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| Liberty Sun | WCOB | 14 | 20 | 13 | 84 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 162 |
| Lion City River | 9VJC5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Livorno Express | ZCDV9 | 13 | 63 | 45 | 38 | 19 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 200 |
| LNG Abuja | C6W2032 | 27 | 49 | 71 | 120 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 271 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lng Edo | C6W2033 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lng Gemini | V7BW9 | 56 | 52 | 83 | 45 | 44 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 334 |
| Lng Jupiter | C6XQ5 | 0 | 68 | 11 | 2 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 107 |
| Lng Leo | V7BX2 | 0 | 27 | 43 | 66 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 162 |
| Lois H | WTD4576 | 0 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Lowlands Brilliance | 9HA3015 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 |
| Lowlands Orchid | ONFP | 31 | 10 | 23 | 36 | 39 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 193 |
| Lyla | V7QK3 | 28 | 12 | 18 | 30 | 113 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 301 |
| Maasdam | PFRO | 204 | 237 | 283 | 212 | 176 | 206 | 0 | 0 | 0 | 0 | 0 | 0 | 1318 |
| Madrid Spirit | ECFM | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| Maersk Carolina | WBDS | 35 | 16 | 12 | 3 | 3 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 89 |
| Maersk Drummond | A8JF3 | 5 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| Maersk Georgia | WAHP | 45 | 34 | 14 | 78 | 75 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 281 |
| Maersk Idaho | WKPM | 5 | 53 | 25 | 32 | 22 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 197 |
| Maersk Illinois | WMLI | 0 | 0 | 13 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| Maersk Iowa | KABL | 57 | 73 | 49 | 57 | 70 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 365 |
| Maersk Jaun | HBDD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Jurong | 3ERO6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Kentucky | WKPY | 46 | 30 | 26 | 45 | 32 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 239 |
| Maersk Merritt | VRCH6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Missouri | WAHV | 86 | 65 | 15 | 19 | 14 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 212 |
| Maersk Montana | WCDP | 63 | 54 | 63 | 24 | 33 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 246 |
| Maersk Ohio | KABP | 99 | 82 | 58 | 65 | 103 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 460 |
| Maersk Peary | WHKM | 68 | 70 | 43 | 27 | 36 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 288 |
| Maersk Tangier | A8NH3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Tennessee | WMFW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Texas | KRPW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Utah | WKAB | 83 | 77 | 94 | 85 | 45 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 452 |
| Maersk Virginia | WAHK | 0 | 6 | 59 | 71 | 13 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 173 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maersk Visby | 9V8827 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Wakayama | 3FCC4 | 0 | 19 | 17 | 10 | 12 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 63 |
| Maersk Westport | VRFO4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Wind | S6TY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Winnipeg | VRGI7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maersk Wisconsin | WKPN | 53 | 18 | 24 | 13 | 22 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 180 |
| Maersk Wyoming | WKPF | 48 | 20 | 38 | 50 | 132 | 77 | 0 | 0 | 0 | 0 | 0 | 0 | 365 |
| Mahimahi | WHRN | 28 | 20 | 44 | 14 | 20 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 139 |
| Maia H | WYX2079 | 0 | 0 | 0 | 55 | 23 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 80 |
| Majesty Of The Seas | C6FZ8 | 0 | 0 | 14 | 31 | 26 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 94 |
| Major Bernard F. Fisher | KBGK | 0 | 0 | 0 | 0 | 20 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| Malolo | WYH6327 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Manfred Nystrom | WCN3590 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Manistee | WDB6831 | 41 | 0 | 0 | 44 | 22 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 132 |
| Manitowoc | WDE3569 | 109 | 0 | 0 | 232 | 80 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 507 |
| Manoa | KDBG | 0 | 0 | 6 | 27 | 25 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| Manukai | WRGD | 53 | 54 | 39 | 16 | 9 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 187 |
| Manulani | WECH | 40 | 27 | 23 | 31 | 17 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 152 |
| Maple 2 | C6TF8 | 2 | 49 | 63 | 54 | 68 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 275 |
| Marchen Maersk | OUIY2 | 1 | 0 | 33 | 6 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 82 |
| Marcus G. Langseth (AWS) | WDC6698 | 274 | 560 | 659 | 670 | 743 | 718 | 0 | 0 | 0 | 0 | 0 | 0 | 3624 |
| Maren Maersk | OUJI2 | 0 | 0 | 14 | 6 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Margrethe Maersk | OZBY2 | 33 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Maria A. Angelicoussis | C6FP2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Marine Express | 3FHX2 | 10 | 18 | 12 | 8 | 19 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 79 |
| Mariner Of The Seas | C6FV9 | 22 | 16 | 5 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 |
| Marit Maersk | OUJN2 | 54 | 25 | 0 | 8 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 126 |
| Mary Ann Hudson | KSDF | 80 | 7 | 28 | 33 | 56 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 279 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Matanuska | WN4201 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Mathilde Maersk Skagen | OUJS2 | 42 | 0 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70 |
| Maui | WSLH | 48 | 51 | 47 | 47 | 50 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 285 |
| Maunalei | KFMV | 34 | 4 | 19 | 20 | 27 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 158 |
| Maunawili | WGEB | 38 | 15 | 9 | 3 | 47 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 136 |
| Mein Schiff | 9HJH9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Melville | WECB | 368 | 665 | 743 | 705 | 652 | 581 | 0 | 0 | 0 | 0 | 0 | 0 | 3714 |
| Mesabi Miner | WYQ4356 | 33 | 0 | 22 | 38 | 49 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 189 |
| Messologi | 3EIM6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Midnight Sun | WAHG | 64 | 37 | 31 | 67 | 29 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 237 |
| Mike O'leary | WDC3665 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Mill House | 9VAK9 | 7 | 9 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| Mill Reef | 9VAK8 | 41 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| Mindanao | S6SR | 52 | 24 | 84 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 214 |
| Mineral Beijing | ONAR | 15 | 12 | 13 | 31 | 53 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 139 |
| Mineral Belgium | VRKF5 | 11 | 1 | 35 | 37 | 19 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 112 |
| Mineral Dalian | ONFW | 54 | 48 | 53 | 41 | 15 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 241 |
| Mineral Dragon | ONFN | 8 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 29 |
| Mineral Ningbo | ONGA | 6 | 59 | 47 | 11 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 125 |
| Mineral Noble | ONAN | 11 | 33 | 11 | 18 | 42 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 140 |
| Mineral Tianjin | ONBF | 4 | 0 | 0 | 2 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| Miss Roxanne | WCX4992 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Mokihana | WNRD | 0 | 18 | 34 | 41 | 49 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 194 |
| Mol Experience | 3ELI7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Monarch Of The Seas | C6FZ9 | 24 | 38 | 83 | 68 | 43 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 283 |
| Monitor | WCX9104 | 2 | 0 | 0 | 28 | 8 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| Montrealais | VDWC | 0 | 0 | 0 | 19 | 28 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| Morning Glory Viii | A8AT8 | 1 | 0 | 0 | 0 | 27 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 134 |
| Morning Haruka | A8GK7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Msc Poesia | 3EPL4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Murat K | V7NE2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mustafa Dayi | TCZF2 | 0 | 4 | 25 | 23 | 19 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 77 |
| Mv Ocean Giant | WDG4379 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nachik | WDE7904 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Nancy Foster (AWS) | NWS0008 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nancy Foster (AWS) | WTER | 0 | 0 | 118 | 552 | 375 | 299 | 0 | 0 | 0 | 0 | 0 | 0 | 1344 |
| Nanuq | WCY8498 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Nathaniel B. Palmer (AWS) | WBP3210 | 298 | 199 | 237 | 326 | 170 | 328 | 0 | 0 | 0 | 0 | 0 | 0 | 1558 |
| Naval Academy Yp 676 | YP 676 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Naval Academy Yp 686 | YP686 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Naval Academy Yp 696 | YP 696 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Navigator | WBO3345 | 19 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| Navigator Of The Seas | C6FU4 | 46 | 6 | 8 | 1 | 19 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 81 |
| Neptune Voyager | C6FU7 | 0 | 1 | 7 | 1 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| New Delhi Express | VRBK5 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| New Horizon | WKWB | 0 | 0 | 0 | 0 | 172 | 93 | 0 | 0 | 0 | 0 | 0 | 0 | 265 |
| Nieuw Amsterdam | PBWQ | 60 | 93 | 115 | 90 | 67 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 465 |
| Noble Ace | 2ELO7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Noble Globetrotter I | A8UD3 | 0 | 0 | 0 | 7 | 38 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| Noble Star | KRPP | 55 | 49 | 48 | 8 | 11 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 190 |
| Noordam | PHET | 199 | 136 | 58 | 151 | 285 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 910 |
| North Star | KIYI | 72 | 82 | 57 | 45 | 55 | 135 | 0 | 0 | 0 | 0 | 0 | 0 | 446 |
| Northern Jupiter | A8TA5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Northern Victor | WCZ6534 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Northwest Swan | ZCDJ9 | 67 | 39 | 58 | 51 | 30 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 263 |
| Norwegian Dawn | C6FT7 | 123 | 226 | 201 | 332 | 551 | 438 | 0 | 0 | 0 | 0 | 0 | 0 | 1871 |
| Norwegian Epic | C6XP7 | 33 | 17 | 42 | 34 | 13 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 166 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Norwegian Gem | C6VG8 | 291 | 133 | 88 | 96 | 108 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 785 |
| Norwegian Jade | C6WK7 | 216 | 211 | 240 | 213 | 269 | 234 | 0 | 0 | 0 | 0 | 0 | 0 | 1383 |
| Norwegian Jewel | C6TX6 | 16 | 232 | 331 | 92 | 85 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 814 |
| Norwegian Pearl | C6VG7 | 527 | 478 | 593 | 632 | 560 | 521 | 0 | 0 | 0 | 0 | 0 | 0 | 3311 |
| Norwegian Sky | C6PZ8 | 163 | 233 | 254 | 235 | 159 | 134 | 0 | 0 | 0 | 0 | 0 | 0 | 1178 |
| Norwegian Spirit | C6TQ6 | 215 | 274 | 231 | 204 | 104 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 1065 |
| Norwegian Star | C6FR3 | 29 | 30 | 19 | 57 | 103 | 91 | 0 | 0 | 0 | 0 | 0 | 0 | 329 |
| Norwegian Sun | C6RN3 | 53 | 6 | 53 | 138 | 33 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 290 |
| Nyk Delphinus | 3ENU7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nyk Demeter | 3ENV5 | 12 | 13 | 10 | 20 | 25 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 91 |
| Nyk Diana | 3EOS4 | 63 | 22 | 53 | 52 | 25 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 249 |
| Nyk Futago | 9V8739 | 15 | 5 | 40 | 32 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 132 |
| Nyk Libra | HOJY | 0 | 0 | 0 | 0 | 4 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 35 |
| Nyk Rosa | 3FJM9 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Nyk Rumina | 9V7645 | 66 | 47 | 27 | 0 | 9 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 177 |
| Nyk Triton | 3FUL2 | 22 | 4 | 0 | 1 | 31 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 120 |
| Oasis Of The Seas | C6XS7 | 0 | 53 | 61 | 55 | 68 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 299 |
| Ocean Atlas | WDHL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ocean Clipper | V7DZ8 | 0 | 0 | 38 | 8 | 58 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 140 |
| Ocean Crescent | WDF4929 | 0 | 11 | 0 | 17 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Ocean Freedom | WDF9323 | 66 | 47 | 45 | 84 | 47 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 326 |
| Ocean Harvester | WBO5471 | 0 | 0 | 0 | 1 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Ocean Hope 3 | WDF2354 | 14 | 0 | 20 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| Ocean Mariner | WCF3990 | 0 | 0 | 0 | 0 | 33 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 66 |
| Ocean President | VRAD4 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Ocean Reliance | WADY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ocean Titan | WDB9647 | 15 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| Okeanos Explorer (Aws) | NWS0016 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Okeanos Explorer (Aws) | WTDH | 0 | 268 | 531 | 531 | 495 | 306 | 0 | 0 | 0 | 0 | 0 | 0 | 2131 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oleander | V7SX3 | 2 | 10 | 27 | 24 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 91 |
| Olive L. Moore | WDF7019 | 42 | 0 | 0 | 29 | 137 | 146 | 0 | 0 | 0 | 0 | 0 | 0 | 354 |
| OOCL America | VRWE8 | 63 | 0 | 0 | 37 | 58 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 212 |
| OOCL Busan | VRDN3 | 12 | 6 | 8 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| OOCL Nagoya | VRFX8 | 1 | 17 | 11 | 9 | 7 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 98 |
| OOCL Norfolk | VREX4 | 17 | 25 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| Oosterdam | PBKH | 3 | 40 | 61 | 54 | 68 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 256 |
| Optimana | 9VAR2 | 53 | 190 | 2 | 7 | 112 | 126 | 0 | 0 | 0 | 0 | 0 | 0 | 490 |
| Orange Sky | ELZU2 | 0 | 4 | 18 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Orange Star | A8WP6 | 5 | 11 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| Orange Sun | A8HY8 | 17 | 0 | 25 | 6 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| Oregon II (AWS) | WTDO | 73 | 414 | 100 | 0 | 88 | 465 | 0 | 0 | 0 | 0 | 0 | 0 | 1140 |
| Oregon Voyager | WDF2960 | 29 | 2 | 10 | 10 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 58 |
| Oriental Queen | VRAC9 | 13 | 18 | 34 | 30 | 14 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 124 |
| Orion Voyager | C6MC5 | 26 | 15 | 6 | 19 | 35 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 207 |
| Oscar Dyson | WTEP | 5 | 121 | 118 | 15 | 703 | 610 | 0 | 0 | 0 | 0 | 0 | 0 | 1572 |
| Oscar Dyson (AWS) | NWS0001 | 74 | 541 | 736 | 523 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1913 |
| Oscar Elton Sette (AWS) | WTEE | 0 | 0 | 123 | 101 | 57 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 338 |
| Oscar Elton Sette (AWS) | NWS0015 | 0 | 0 | 192 | 453 | 306 | 245 | 0 | 0 | 0 | 0 | 0 | 0 | 1196 |
| Ouro Do Brasil | ELPP9 | 23 | 11 | 1 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| Overseas Alcesmar | V7HP2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Overseas Anacortes | KCHV | 34 | 24 | 14 | 52 | 15 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 161 |
| Overseas Andromar | V7HP4 | 10 | 17 | 1 | 26 | 6 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 96 |
| Overseas Ariadmar | V7HP6 | 10 | 6 | 7 | 7 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| Overseas Boston | WJBU | 58 | 90 | 73 | 43 | 65 | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 399 |
| Overseas Cascade | WOAG | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Overseas Houston | WWAA | 7 | 0 | 0 | 1 | 4 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| Overseas Joyce | V7NV4 | 79 | 3 | 9 | 23 | 98 | 94 | 0 | 0 | 0 | 0 | 0 | 0 | 306 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Overseas Long Beach | WAAT | 41 | 33 | 23 | 29 | 29 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 170 |
| Overseas Los Angeles | WABS | 224 | 163 | 101 | 138 | 151 | 174 | 0 | 0 | 0 | 0 | 0 | 0 | 951 |
| Overseas Luxmar | WDC7070 | 17 | 3 | 2 | 0 | 21 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| Overseas Maremar | WDC6975 | 11 | 5 | 4 | 43 | 39 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 150 |
| Overseas Martinez | WPAJ | 0 | 0 | 36 | 7 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Overseas Nikiski | WDBH | 22 | 11 | 8 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| Overseas Rimar | V7HQ3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Overseas Tampa | WOTA | 4 | 24 | 7 | 10 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| Overseas Texas City | WHED | 0 | 0 | 0 | 0 | 14 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Pacific Celebes | VRZN9 | 27 | 13 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| Pacific Flores | VRZN8 | 64 | 18 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 96 |
| Pacific Freedom | WDD9283 | 0 | 0 | 0 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Pacific Java | VRZN7 | 28 | 18 | 13 | 19 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 91 |
| Pacific Makassar | VRZO2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pacific Mistral | A8WI2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pacific Santa Ana | A8WI3 | 33 | 46 | 94 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 238 |
| Pacific Star | WCW7740 | 3 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Pacific Star | WDD3686 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Pacific Wolf | WDD9286 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pandalus | WAV7611 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Paragon | WDD9285 | 0 | 0 | 0 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Patriarch | WBN3014 | 13 | 9 | 9 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| Patriot | WQVY | 8 | 0 | 16 | 48 | 32 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 114 |
| Paul Gauguin | C6TH9 | 39 | 135 | 104 | 118 | 105 | 237 | 0 | 0 | 0 | 0 | 0 | 0 | 738 |
| Paul R. Tregurtha | WYR4481 | 32 | 0 | 24 | 103 | 91 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | 318 |
| Peace Voyage | VRHO5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pelican State | WDE4433 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Perseverance | WDE5328 | 11 | 10 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| Philadelphia Express | WDC6736 | 326 | 266 | 131 | 127 | 94 | 179 | 0 | 0 | 0 | 0 | 0 | 0 | 1123 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Philip R. Clarke | WE3592 | 107 | 0 | 5 | 41 | 104 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 310 |
| Phoenix Alpha | VRZT8 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Phoenix Beta | VRZT9 | 68 | 44 | 28 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 143 |
| Phoenix Light | HPHV | 15 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| Phoenix Voyager | C6QE3 | 8 | 17 | 73 | 58 | 17 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 206 |
| Phyllis Dunlap | WDA6552 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Pilot | WBN3011 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pisces (Aws) | WTDL | 0 | 0 | 28 | 352 | 244 | 531 | 0 | 0 | 0 | 0 | 0 | 0 | 1155 |
| Polar Adventure | WAZV | 47 | 32 | 42 | 27 | 39 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 200 |
| Polar Cloud | WDF5296 | 0 | 0 | 1 | 0 | 13 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Polar Discovery | WACW | 38 | 65 | 79 | 24 | 46 | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 331 |
| Polar Endeavour | WCAJ | 69 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 88 |
| Polar Endurance | WDG2085 | 0 | 0 | 0 | 12 | 20 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| Polar Enterprise | WRTF | 107 | 113 | 29 | 68 | 76 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 426 |
| Polar Ranger | WDC8652 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Polar Resolution | WDJK | 231 | 361 | 253 | 270 | 252 | 241 | 0 | 0 | 0 | 0 | 0 | 0 | 1608 |
| Polar Spirit | C6WL6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polar Storm | WDE8347 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polar Viking | WDD6494 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Polar Wind | WDE6058 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Posidana | 9VBM6 | 201 | 226 | 247 | 162 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 838 |
| Premium Do Brasil | A8BL4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| President Adams | WRYW | 30 | 29 | 26 | 43 | 35 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 218 |
| President Jackson | WRYC | 69 | 68 | 67 | 61 | 65 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 386 |
| President Polk | WRYD | 25 | 33 | 41 | 26 | 27 | 46 | 0 | 0 | 0 | 0 | 0 | 0 | 198 |
| President Truman | WNDP | 44 | 45 | 33 | 6 | 46 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 204 |
| Presque Isle | WZE4928 | 12 | 0 | 1 | 33 | 23 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 79 |
| Prestige New York | KDUE | 1 | 9 | 0 | 11 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pride Of America | WNBE | 22 | 27 | 15 | 34 | 74 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 204 |
| Pride Of Baltimore Ii | WUW2120 | 0 | 0 | 0 | 2 | 34 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| Prinsendam | PBGH | 59 | 45 | 48 | 14 | 142 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 318 |
| Progress Ace | HPQI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Prosperous | VRIA3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pt. Barrow | WBM5088 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pt. Thompson | WBM5092 | 0 | 0 | 0 | 0 | 35 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 43 |
| R. J. Pfeiffer | WRJP | 0 | 0 | 0 | 0 | 37 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 89 |
| R. M. Thorstenson | KGCJ | 24 | 15 | 22 | 21 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 91 |
| Radiance Of The Seas | C6SE7 | 63 | 59 | 99 | 57 | 14 | 55 | 0 | 0 | 0 | 0 | 0 | 0 | 347 |
| Rainier | WTEF | 0 | 0 | 0 | 0 | 5 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 125 |
| Rainier (Aws) | NWS0011 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ranger | WBN5979 | 0 | 0 | 1 | 0 | 10 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| Rebecca Lynn | WCW7977 | 2 | 0 | 5 | 14 | 13 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 63 |
| Redoubt | WDD2451 | 0 | 27 | 0 | 9 | 15 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| Regulus Voyager | C6FE6 | 56 | 27 | 53 | 51 | 17 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 248 |
| Resolve | WCZ5535 | 7 | 26 | 22 | 20 | 27 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 147 |
| Rhapsody Of The Seas | C6UA2 | 62 | 51 | 2 | 6 | 20 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 199 |
| Robert C. Seamans | WDA4486 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Robert Gordon Sproul (Aws) | WSQ2674 | 0 | 0 | 0 | 247 | 273 | 272 | 0 | 0 | 0 | 0 | 0 | 0 | 792 |
| Robert S. Pierson | CFN4934 | 1 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Roger Blough | WZP8164 | 146 | 0 | 42 | 315 | 202 | 156 | 0 | 0 | 0 | 0 | 0 | 0 | 861 |
| Roger Revelle | KAOU | 743 | 695 | 716 | 708 | 664 | 687 | 0 | 0 | 0 | 0 | 0 | 0 | 4213 |
| Ronald H. Brown (Aws) | NWS0018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ronald H. Brown (Aws) | WTEC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ronald N | A8PQ3 | 0 | 12 | 2 | 5 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 35 |
| Ryndam | PHFV | 47 | 47 | 19 | 88 | 92 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 337 |
| S/R American Progress | KAWM | 11 | 12 | 19 | 4 | 34 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 115 |
| Safmarine Makutu | MRWF2 | 35 | 19 | 17 | 16 | 19 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 131 |
| Safmarine Ngami | ONFC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Saga Adventure | VRBL4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saga Andorinha | MYNJ6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saga Monal | VRZQ9 | 16 | 7 | 5 | 5 | 27 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 82 |
| Saga Navigator | VRDA4 | 0 | 0 | 0 | 17 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Saga Viking | VRXO6 | 9 | 16 | 26 | 17 | 8 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Saipem 7000 | C6NO5 | 0 | 0 | 0 | 0 | 9 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 66 |
| Sam Laud | WZC7602 | 0 | 0 | 0 | 0 | 16 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Samuel De Champlain | WDC8307 | 10 | 0 | 9 | 20 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 65 |
| Sandra Foss | WYL4908 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Santa Monica | MGYB8 | 17 | 79 | 58 | 74 | 83 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 367 |
| Saudi Abha | HZRX | 65 | 20 | 16 | 0 | 36 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 141 |
| Saudi Diriyah | HZZB | 6 | 45 | 6 | 0 | 32 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 120 |
| Saudi Hofuf | HZZC | 4 | 4 | 0 | 11 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| Saudi Tabuk | HZZD | 0 | 0 | 45 | 46 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 134 |
| Sea Breeze | WBN3019 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sea Hawk | WDD9287 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Sea Horse | WBN4382 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Sea Prince | WYT8569 | 15 | 8 | 0 | 0 | 9 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| Sea Victory | WCY6777 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sea Voyager | WCX9106 | 38 | 6 | 42 | 23 | 48 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 213 |
| Sea-Land Champion | WKAU | 51 | 49 | 8 | 19 | 16 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 163 |
| Sea-Land Charger | WDB9948 | 25 | 0 | 11 | 27 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| Sea-Land Comet | WDB9950 | 51 | 45 | 16 | 5 | 24 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |
| Sea-Land Eagle | WKAE | 146 | 79 | 127 | 122 | 88 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 606 |
| Sea-Land Intrepid | WDB9949 | 61 | 27 | 39 | 48 | 48 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 256 |
| Sea-Land Lightning | WDB9986 | 51 | 23 | 40 | 45 | 53 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 265 |
| Sea-Land Mercury | WKAW | 67 | 84 | 89 | 89 | 70 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | 456 |
| Sea-Land Meteor | WDB9951 | 4 | 27 | 55 | 26 | 18 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 180 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sea-Land Racer | WKAP | 87 | 96 | 76 | 43 | 51 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 416 |
| Seabourn Spirit | C6FR4 | 37 | 25 | 41 | 31 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 169 |
| Seabrooke | WDC4069 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Seabulk Arctic | WCY7054 | 23 | 8 | 30 | 32 | 13 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 121 |
| Seabulk Trader | KNJK | 43 | 15 | 22 | 31 | 38 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 188 |
| Sedef Kalkavan | V7LU5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sena Kalkavan | V7JH2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Senang Spirit | C6ME8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Seneca | WBN8469 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sentinel | WBN6510 | 24 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Sentry | WBN3013 | 34 | 18 | 0 | 7 | 35 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 112 |
| Serenade Of The Seas | C6FV8 | 10 | 2 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 |
| Serenata | 3EEE2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Sesok | WDE7899 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Seven Seas Mariner | C6VV8 | 53 | 47 | 26 | 51 | 39 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 260 |
| Seven Seas Navigator | ZCDT7 | 0 | 14 | 16 | 9 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 |
| Seven Seas Voyager | C6SW3 | 11 | 13 | 16 | 24 | 17 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 85 |
| Sheila Mcdevitt | WDE2542 | 8 | 15 | 28 | 27 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 118 |
| Sidney Foss | WYL5445 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Sierra | WSNB | 11 | 5 | 2 | 30 | 17 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 75 |
| Siku | WCQ6174 | 0 | 0 | 0 | 0 | 10 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| Silver Lining | HOWS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Silver Spray | WDC8162 | 7 | 6 | 5 | 7 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 |
| Sinuk | WCQ8110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Siranger | 9VAH | 20 | 12 | 22 | 24 | 15 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 143 |
| Skagen Maersk | OYOS2 | 0 | 0 | 17 | 44 | 27 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 115 |
| Skodsborg | 3FXP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sol Do Brasil | ELQQ4 | 43 | 23 | 27 | 7 | 9 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 125 |
| Splendour Of The Seas | C6TZ9 | 288 | 227 | 185 | 202 | 227 | 217 | 0 | 0 | 0 | 0 | 0 | 0 | 1346 |
| St Louis Express | WDD3825 | 377 | 290 | 413 | 422 | 335 | 351 | 0 | 0 | 0 | 0 | 0 | 0 | 2188 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| St Nicholas | WDB8066 | 7 | 4 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| St. Clair | WZA4027 | 0 | 0 | 0 | 0 | 23 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| Stacey Foss | WYL4909 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Stalwart | WBN6512 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Star Alabama | LAVU4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Star America | LAVV4 | 0 | 27 | 11 | 0 | 24 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| Star Atlantic | LAYG5 | 25 | 14 | 32 | 27 | 29 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 146 |
| Star Derby | LAXS2 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Star Dieppe | LEQZ3 | 23 | 31 | 26 | 10 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 99 |
| Star Eagle | LAWO2 | 24 | 24 | 17 | 37 | 24 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 159 |
| Star Evviva | LAHE2 | 7 | 11 | 12 | 8 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| Star Florida | LAVW4 | 30 | 15 | 25 | 25 | 17 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 149 |
| Star Fraser | LAVY4 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Star Fuji | LAVX4 | 21 | 6 | 34 | 10 | 23 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 112 |
| Star Gran | LADR4 | 19 | 26 | 0 | 0 | 82 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 154 |
| Star Grip | LADQ4 | 26 | 14 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Star Hansa | LAXP4 | 3 | 15 | 23 | 4 | 22 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 99 |
| Star Harmonia | LAGB5 | 24 | 32 | 33 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 98 |
| Star Herdla | LAVD4 | 19 | 5 | 10 | 0 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| Star Hidra | LAVN4 | 3 | 21 | 0 | 26 | 1 | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 98 |
| Star Isfjord | LAOX5 | 46 | 7 | 60 | 18 | 22 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 174 |
| Star Ismene | LANT5 | 2 | 20 | 0 | 25 | 18 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 80 |
| Star Istind | LAMP5 | 44 | 21 | 30 | 36 | 11 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 147 |
| Star Japan | LAZV5 | 0 | 73 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 129 |
| Star Java | LAJS6 | 21 | 11 | 63 | 15 | 53 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 197 |
| Star Juventas | LAZU5 | 46 | 32 | 0 | 9 | 19 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 132 |
| Star Kilimanjaro | LAIG7 | 31 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Star Kinn | LAJF7 | 31 | 0 | 45 | 10 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 91 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Star Kirkenes | LAHR7 | 18 | 11 | 14 | 0 | 21 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 87 |
| Star Kvarven | LAJK7 | 26 | 36 | 17 | 24 | 51 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 164 |
| State Of Maine | WCAH | 0 | 0 | 0 | 0 | 58 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 106 |
| Statendam | PHSG | 90 | 47 | 32 | 52 | 14 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 267 |
| Stellar Voyager | C6FV4 | 3 | 34 | 0 | 0 | 23 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 84 |
| Stewart J. Cort | WDC6055 | 0 | 0 | 5 | 36 | 70 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 129 |
| Stikine | WDC8583 | 9 | 11 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Stimson | WDG2051 | 14 | 11 | 0 | 1 | 37 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 101 |
| Stormbird | WDA6306 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Sunshine Ace | C6XN6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sunshine State | WDE4432 | 6 | 8 | 20 | 11 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 55 |
| Superstar Aquarius | C6LG6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Superstar Libra | C6DM2 | 105 | 110 | 122 | 115 | 117 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 670 |
| Sylvie | VRCQ2 | 5 | 4 | 3 | 17 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 55 |
| Talisman | LAOW5 | 11 | 23 | 34 | 50 | 13 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 141 |
| Tamesis | LAOL5 | 0 | 0 | 20 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| Tan'erliq | WCY8497 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tangguh Hiri | C6XC2 | 102 | 75 | 81 | 96 | 98 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 541 |
| **Tarang** | ELSR7 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| **Taurus** | WDF4091 | 0 | 2 | 31 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| **Thailand Express** | 3EIZ7 | 14 | 20 | 19 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59 |
| **Thomas G. Thompson** | KTDQ | 28 | 72 | 6 | 5 | 5 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 129 |
| **Thomas Jefferson** | WTEA | 0 | 0 | 0 | 0 | 1 | 375 | 0 | 0 | 0 | 0 | 0 | 0 | 376 |
| **Thomas Jefferson (Aws)** | NWS0019 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Thrasher** | V7TE3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Tim S. Dool** | VGPY | 0 | 0 | 9 | 23 | 33 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 117 |
| **Time Bandit** | WCX2255 | 1 | 0 | 3 | 16 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| **Tina Litrico** | KCKB | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Tonsberg** | 9HA2066 | 16 | 0 | 2 | 33 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| **Trailblazer** | WDE6541 | 24 | 8 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tridonawati** | ELNY2 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| **Triumph** | WDC9555 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| **Tropic Carib** | J8PE3 | 0 | 4 | 26 | 17 | 1 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 72 |
| **Tropic Dawn** | J8PR3 | 23 | 7 | 5 | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| **Tropic Express** | HO7723 | 24 | 20 | 17 | 17 | 16 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 115 |
| **Tropic Jade** | J8NY | 18 | 21 | 19 | 17 | 17 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 107 |
| **Tropic Lure** | J8PD | 26 | 22 | 21 | 23 | 28 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 145 |
| **Tropic Night** | J8NX | 19 | 27 | 17 | 18 | 21 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 125 |
| **Tropic Opal** | J8NW | 28 | 36 | 40 | 44 | 43 | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 233 |
| **Tropic Palm** | J8PB | 14 | 6 | 0 | 0 | 8 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| **Tropic Sun** | J8AZ2 | 11 | 9 | 10 | 13 | 14 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 69 |
| **Tropic Tide** | J8AZ3 | 20 | 31 | 58 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 131 |
| **Tropic Unity** | J8PE4 | 44 | 46 | 46 | 38 | 42 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 245 |
| **Ts Kennedy** | KVMU | 79 | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 133 |
| **Tug Dorothy Ann** | WDE8761 | 1 | 0 | 3 | 69 | 54 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 208 |
| **Tug Spartan** | WDF5483 | 0 | 14 | 12 | 165 | 210 | 198 | 0 | 0 | 0 | 0 | 0 | 0 | 599 |
| **Tustumena** | WNGW | 4 | 37 | 84 | 186 | 254 | 222 | 0 | 0 | 0 | 0 | 0 | 0 | 787 |
| **Tyco Decisive** | V7DI7 | 5 | 66 | 0 | 0 | 31 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 192 |
| **Tyco Durable** | V7DI8 | 7 | 16 | 1 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 35 |
| **Tyco Responder** | V7CY9 | 23 | 105 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 163 |
| **Tycom Reliance** | V7CZ2 | 0 | 0 | 4 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| **Ubc Saiki** | P3GY9 | 55 | 1 | 42 | 52 | 74 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 257 |
| **Ubc Santa Marta** | 5BDK2 | 68 | 40 | 25 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 146 |
| **Umang** | A8PF6 | 20 | 45 | 28 | 27 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 133 |
| **Unique Brilliance** | VRXK4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **Unique Carrier** | VRCV5 | 0 | 0 | 0 | 0 | 32 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 88 |
| **Unique Explorer** | VRGT8 | 1 | 0 | 6 | 33 | 9 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 60 |
| **Unique Sunshine** | VRWV4 | 21 | 9 | 1 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| **United Spirit** | ELYB2 | 0 | 0 | 0 | 0 | 51 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Uscgc Healy** | NEPP | 159 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 182 |
| **Uscgc Healy (Aws)** | NWS0003 | 733 | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 946 |
| **Uscgc Stratton** | NJIM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Valdez Star** | WCO7674 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Veendam** | PHEO | 149 | 142 | 45 | 189 | 119 | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 695 |
| **Vega Voyager** | C6FV3 | 11 | 5 | 37 | 49 | 25 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 176 |
| **Veracruz Express** | ZCDJ2 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| **Vietnam Express** | VRCZ4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Vigilant** | WDE2719 | 42 | 67 | 57 | 60 | 82 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 345 |
| **Viking Star** | WDE6434 | 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 |
| **Virginian** | KSPH | 74 | 26 | 68 | 94 | 58 | 66 | 0 | 0 | 0 | 0 | 0 | 0 | 386 |
| **Vision Of The Seas** | C6SE8 | 29 | 33 | 46 | 36 | 4 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 155 |
| **Volendam** | PCHM | 383 | 489 | 414 | 285 | 100 | 284 | 0 | 0 | 0 | 0 | 0 | 0 | 1955 |
| **Voyager Of The Seas** | C6SE5 | 84 | 22 | 18 | 24 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 158 |
| **Walter J. Mccarthy Jr.** | WXU3434 | 0 | 0 | 0 | 0 | 32 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 101 |
| **Warrior** | WBN4383 | 0 | 4 | 10 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 28 |
| **Washington Express** | WDD3826 | 58 | 91 | 127 | 124 | 52 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 542 |
| **Wendy O.** | WDF8784 | 0 | 0 | 0 | 1 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| **West Sirius** | 3EMK6 | 28 | 18 | 19 | 3 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 80 |
| **Westerdam** | PINX | 73 | 7 | 98 | 32 | 39 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 298 |
| **Western Ranger** | WBN3008 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Westwood Columbia** | C6SI4 | 20 | 26 | 41 | 28 | 49 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 196 |
| **Westwood Olympia** | C6UB2 | 21 | 40 | 23 | 51 | 44 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 220 |
| **Wilfred Sykes** | WC5932 | 640 | 0 | 99 | 701 | 734 | 687 | 0 | 0 | 0 | 0 | 0 | 0 | 2861 |
| **Wolstad** | WCY2270 | 5 | 18 | 0 | 11 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| **World Spirit** | ELWG7 | 16 | 3 | 3 | 3 | 2 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 77 |
| **Xpedition** | HC2083 | 0 | 10 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| **Ym Antwerp** | VRET5 | 41 | 2 | 0 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 69 |
| **Ym Busan** | VREX8 | 22 | 15 | 32 | 17 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 94 |
| **Yorktown Express** | WDD6127 | 50 | 26 | 23 | 19 | 44 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |

| Ship Name | Call | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Yuhsan** | H9TE | 0 | 0 | 113 | 261 | 386 | 334 | 0 | 0 | 0 | 0 | 0 | 0 | 1094 |
| **Yuyo Spirits** | 3FNF4 | 61 | 53 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 118 |
| **Zaandam** | PDAN | 22 | 11 | 24 | 97 | 68 | 92 | 0 | 0 | 0 | 0 | 0 | 0 | 314 |
| **Zim Los Angeles** | A8SI3 | 26 | 24 | 47 | 15 | 39 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 169 |
| **Zim New York** | VRGA7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Zim Ningbo** | A8SI5 | 12 | 20 | 22 | 50 | 8 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 147 |
| **Zim Shanghai** | VRGA6 | 18 | 14 | 24 | 21 | 19 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 102 |
| **Zim Shenzhen** | VQUQ4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Zuiderdam** | PBIG | 254 | 228 | 267 | 319 | 277 | 134 | 0 | 0 | 0 | 0 | 0 | 0 | 1479 |

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(1) 162.550 mHz
(2) 162.400 mHz
(3) 162.475 mHz
(4) 162.425 mHz
(5) 162.450 mHz
(6) 162.500 mHz
(7) 162.525 mHz

Channel numbers, e.g. (WX1, WX2) etc. have no special significance but are often designated this way in consumer equipment. Other channel numbering schemes are also prevalent.

The NOAA Weather Radio network provides voice broadcasts of local and coastal marine forecasts on a continuous cycle. The forecasts are produced by local National Weather Service Forecast Offices.

Coastal stations also broadcast predicted tides and real time observations from buoys and coastal meteorological stations operated by NOAA's National Data Buoy Center. Based on user demand, and where feasible, Offshore and Open Lake forecasts are broadcast as well.

The NOAA Weather Radio network provides near continuous coverage of the coastal U.S, Great Lakes, Hawaii, and populated Alaska coastline. Typical coverage is 25 nautical miles offshore, but may extend much further in certain areas.

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