

Ocean Prediction Center 2009 Accomplishments

1. Introduction

In 2009, the Ocean Prediction Center made significant progress toward achieving its major strategic objectives in providing enhanced marine weather services, operational coastal guidance and oceanographic forecasts. OPC lead the NWS-wide marine weather service program (MWX) that met or exceeded GPRA performance goals for both wind and wave forecast accuracy. OPC and the Tropical Analysis and Forecast Branch of the National Hurricane Center achieved the synchronization of operational modeling cycle for scheduling of marine weather forecasts. By aligning the operations on the same model cycle, the consistency of OPC and TAFB marine weather service products across our common boundaries will be significantly improved. Through a joint effort at both centers to develop digital marine weather service capability, vessels crossing boundaries between the two centers will soon receive seamless forecast information.

In 2009, mariners increasingly relied on NCEP products and services. The OPC web site reached record breaking popularity with 50.6 million recorded hits. This was a 2% increase over the 49.6 hits for 2008. Our most popular products are the three hourly wave analysis charts followed by the surface analysis charts. OPC website underwent continued improvements to broaden our services including the dissemination of real time operational global ocean model data from the U.S. Navy and displaying of oceanographic forecast information. OPC also made significant progress in developing an extratropical storm surge (ETSS) guidance capability. The experimental ETSS guidance is expected to become a new OPC operational service in early 2010.

At the third intergovernmental meeting of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) in Marrakech, Morocco in November 2009, the OPC Director, Ming Ji, was elected to be the coordinator for the JCOMM services and forecast systems program area (SFSPA). This is a reflection of OPC's leadership in enhancing met-ocean services for the broad range of users by providing integrated marine weather, oceanographic and coastal forecast information for navigation safety, natural hazard mitigation, and ocean environment protection and stewardship. As a member of the JCOMM Management Committee, Ming will play a key role in the U.S. leadership for coordinated international efforts to improve met-ocean and coastal forecasting services worldwide, including contributions to the global framework of climate services. A high priority international effort is the planned implementation of the global maritime distress safety system (GMDSS) for the Arctic Ocean in 2011.

2. Major Accomplishments

In early February, the OPC provided outlook and short-term forecasts for the National Oceanic Atmospheric Administration (NOAA) Ship *Oscar Dyson*, which was scheduled to make a Gulf of Alaska crossing - an open ocean transit that can be particularly dangerous this time of year. After a safe arrival in Kodiak, the *Dyson* headed to the Bering Sea, where the OPC once again provided outlook forecasts due to the February 23rd failure of *Dyson's* V-Sat, which is used for internet access at sea. The OPC sent surface forecast charts via email to the *Dyson* along with the outlook forecasts until the V-Sat was repaired on March 19. In March, the NOAA ship *Ka'imimoana* requested weather support from OPC for a mission to service fixed and drifting buoys in the Pacific. They departed Bellingham, WA for the start of their field season.

In March 2009, the scallop boat *LADY MARY* sank about 60 nm offshore of Cape May NJ. All souls aboard were lost, with the exception of one crew member who was able to put on his survival suit before the boat sank. After the incident, an official US Coast Guard/NTSB board of inquiry held hearings in May 2009 to gather facts from experts familiar with the contributing conditions surrounding the vessel at the time. Among these experts was LTJG Glazewski who represented the OPC at the hearing. He was accompanied by the deputy chief of the Dept. of Commerce's general litigation division. The hearing was held at USCG station Cape May and Matt provided testimony for nearly an hour of questions. He pointed out that the conditions in the vicinity and at the time of the tragic event was expertly forecasted three days in advance in a consistent fashion.

In March the OPC implemented access to ocean surface current data on a routine basis. The data is extracted from the U.S. Navy Operational Global Ocean Model (NCOM). NCOM is a mature ocean model that the Navy depends upon for its operations. The availability of NCOM current fields increases OPC's awareness and prediction capability for the Gulf Stream region and will ultimately result in specialized guidance for hazardous Gulf Stream conditions based on NCOM currents, including a wind against current tool. This tool will help predict local areas of high seas with steep and dangerous waves.

An OPC-led effort to develop NWS-wide procedures regarding official marine volcanic ashfall statements, advisories, and warnings came to fruition in March when these new policies were accepted for implementation in the 2010 NWS directive update cycle. The procedures underlie an important part of the OPC warning program. Ships at sea can be adversely affected by ashfall since it does not dissolve in water, is extremely abrasive, similar to finely crushed window glass, mildly corrosive, and electrically conductive. Mechanical engines, such as a large diesel engine on a ship have zero tolerance for such foreign substances. A ship may encounter volcanic ash for several hours due to its relatively slow speed.

Also in March, OPC developed and implemented a method of producing wave period forecasts automatically. These automated wave periods replace the hand drawn charts which were issued for about 10 years. As a result, the duty forecaster now has more time to devote to generating wave height, marine weather, and surface system forecasts.

During the month of April the OPC issued 100% of its approximately 3000 weather charts before the established radiofax deadline. Although the on time success rate of OPC products in general is consistently more than 99.5% in any given month, the attainment of 100% success rate for graphics products is a major achievement.

In August, the OPC took an important step towards significantly expanding our presence in the digital world. A transition plan was developed which will result in all OPC products being available as part of digital marine services. This plan addresses a number of technically complex issues and will take at least a year to come to fruition.

Also in August, OPC took part in a USCG mission in the Arctic Ocean off Alaska. Beginning August 10, for about one month, LTJG Matt Glazewski, of OPC served aboard the USCG Cutter Spar in the Bering and Chukchi Seas. Matt conducted assessments on hydrographic mapping for National Ocean Service and evaluated NWS weather services in the Arctic Ocean

The QuikSCAT satellite provided critical ocean surface vector wind (OSVW) data to support NWS operational marine weather and hurricane warning and forecast missions. Prior to its demise in Nov. 2009, NOAA has been leading an international partnership of NOAA-NASA-Japan Space Agency (JAXA) for the continuation of operational OSVW capability. Joe Sienkiewicz, Chief, Ocean Applications Branch, is the NWS leader in the Research and Operational Users Working Group (ROUWG) under this international partnership. The Group is responsible to define operational user requirements for the OSVW sensor aboard a planned Japanese satellite known as GCOM-W2 mission. In 2009, the ROUWG held three meetings with engineers from JAXA and NASA JPL (April-Tokyo, August-Anchorage, and November-Tokyo). The ROUWG completed the user requirements documents for the proposed Dual Frequency Scatterometer (DFS) aboard GCOM-W2.

3. Conference and Workshop Participation

National

Ocean Prediction Center (OPC) lead marine forecaster Scott Prosis gave a presentation on National Weather Service (NWS) Marine Services at the United States Power Squadron's District 5 Annual Conference in Ocean City, MD on March 28. The most popular part of the presentation was showing how to use point and click forecast off the NWS web page which is based on the National Digital Forecast Database (NDFD) and the experimental marine point forecast.

On May 11, Joe Sienkiewicz, Chief, Ocean Applications Branch, participated in a seminar at American Meteorological Society (AMS) Headquarters in Boston on the operational use of ocean vector winds from the QuikSCAT satellite. Attendees were navigators and skippers from the Volvo Round the World Sailing Race. The race participants use gridded QuikSCAT winds produced by the OPC to aid in tactical, routing, and safety decisions. Racers stated that QuikSCAT winds are extremely useful and are of very high quality. They gave examples of QuikSCAT winds verifying extremely well in high winds such as their transit across the Straits of Luzon en route to Qingdao, China

Ming Ji, Director of the Ocean Prediction Center, and Joe Sienkiewicz attended the NASA Ocean Vector Winds Science Team Meeting May 18-20, in Boulder, CO. Joe gave a talk explaining the use of ocean surface vector winds to detect and diagnose the threat potential for wind generated waves to impact coastal areas.

Joe also participated in a NASA/JAXA hosted Scatterometer and Climate Workshop, Arlington, VA August 19-21. The workshop focused on climate applications of scatterometer derived ocean surface vector winds. A set of requirements for climate applications of scatterometer based data.

International

Joe Sienkiewicz and Mike Brennan of the National Hurricane Center (NHC) attended the Joint Research and Operational Users Working Group meeting on an ocean surface vector wind instrument aboard the Japanese Aerospace Exploration Agency (JAXA) GCOM-W2 satellite. The Working Group included scientists from JAXA, NASA, NOAA, and JMA and met in Tokyo, Japan April 20 and 21. Joe also participated in the third Research and Operational Users Working Group meeting for the JAXA GCOM W-2 satellite in Tokyo Nov. 4-5.

Ming Ji represented the U.S. at the third session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) which took place in Marrakech, Morocco, 4-11 November 2009. There were some 105 participants in the session, from 39 Members/Member States and 4 international organizations. The session addressed a number of important program areas including marine and ocean data management, observing systems, and forecast systems and services. Ming had the honor of being elected as program area coordinator for services and forecast systems. This position plays a key role as a member of the JCOMM Management Committee.

4. Outreach

Safety Training

Joe Sienkiewicz and Paul Vukits, OPC Lead Forecaster, took part in 30th annual Safety At Sea Seminar hosted by the U.S. Naval Academy Sailing Squadron and Maryland Marine Trades Association March 28-29. Paul and Joe presented four separate seminars as well as staffed an OPC booth and handed out literature about OPC's products and services. Some 350 sailors attended the two day seminar series. Many participants went out of their way to acknowledge the usefulness of OPC's products and stated that they were extremely appreciative of NOAA and NWS services.

Boat Shows

Dave Feit, Chief of OPC's Ocean Forecast Branch (OFB), and Scott Prorise, OPC Lead Forecaster, assisted the NHC in staffing a booth at the Miami International Boat Show on Feb 13.

Dave and Joe Sienkiewicz participated in the Connecticut Maritime Association Shipping 2009 Conference in Stamford, CT March 23-25. They staffed a National Oceanic Atmospheric Administration (NOAA) booth which focused on National Ocean Service (NOS) Charting, National Weather Service (NWS) Volunteer Observing Ship Program and OPC products and services. Conference attendees included shipping companies, United States Coast Guard (USCG), private weather routing service providers, maritime unions, maritime training schools, communication companies and experts, marine insurance and other support services to the shipping industry.

Government

OPC forecaster Jim Kells and NHC's Ariel Cohen participated in the NOAA Science Open House at WFO Key West on March 21.

Seminars and Workshops for Sailing and Boating Organizations

On April 23, Dave Feit gave a seminar at the meeting of the Council of American Master Mariners Professional Development Conference held at Texas A&M Maritime Academy in Galveston, TX. Dave described the functions and services provided by OPC and TPC, NCEP's marine oriented Centers. The audience comprised about 50 retired and active master mariners, Texas A&M Maritime Academy cadets, and a number of Maritime Academy faculty. The purpose of the briefing was education and outreach to the users of NCEP's marine products. It was clear from the questions asked during the seminar and the informal interactions afterward that this segment of the maritime community relies heavily on NCEP's marine products and services. The mariners were not only very familiar with the particulars of OPC marine charts but they were also familiar with the specific forecasters who produced them. This was a result of OPC charts indicating the forecaster who created them, a detail that was apparently appreciated by the end users. The NWS was complimented on its valuable service to the maritime community.

5. Special Activities

On July 30, WFO Honolulu (HFO) experienced a complete AWIPS hardware failure and requested OPC to backup HFO North Pacific High Seas, Offshore, and Navtex text products. This unscheduled backup lasted 24 hours and was successfully executed.

On October 14 -16 participants from OPC and NHC, among others, met to discuss the technical and scientific challenges of establishing high seas and offshore digital marine services. Outcomes and recommendations included: establishing a technical coordination group to exchange and discuss technical challenges and issues concerning optimizing AWIPS for handling large grids, establishing a science coordination group to exchange and discuss scientific information, best practices, and evaluating tools and techniques.

In September, OPC initiated a forecaster exchange with coastal WFOs. Kevin Achorn, OPC marine forecaster, kicked off the program with a trip to the Western Region where he visited 3 WFOs. The purpose of the visits is to understand some of the requirements of individual WFOs as well as to provide them with the latest information available at the OPC.

6. Awards

Joe Sienkiewicz and Ming Ji attended the first high resolution sea surface temperature (SST) data users symposium in Santa Rosa, CA, on May 28-29. At the symposium the OPC was presented the 2008 Partnerships Award from the National Ocean Partnership Program (NOPP) as a team member of the NOPP supported Multi-Instrument SST (MISST) project. MISST was a five (5) year project (2004-2008) that successfully carried out science and technological development and transition into operations of SST observations from multiple Satellite SST sensors. The MISST project has resulted in OPC's successful incorporation of an all-weather SST capability into marine weather forecast operations and demonstration of its values through partnering with academia, industry and government laboratories.

The following OPC staff received local unit Cline Awards: Dave Mills for Leadership, George Bancroft for outreach, and Scott Prosis for Meteorology.

Fran Achorn received the National Cline Award for Engineering, Electronics, or Facilities.

7. OPC Staff as of December 31, 2009

Administration

Ming Ji, Director
Kevin McCarthy, Deputy Director
Crystal Rickett, Administrative Officer
Sharleta Hubbard, Secretary

Ocean Forecast Branch

David Feit, Branch Chief
Senior Marine Forecasters: Robert Oszajca, Scott Prosis, James Clark, Douglas Scovil, Paul Vukits, Edward Schoenberg (part time)
Marine Forecasters: Kevin Achorn, George Bancroft, Kathy Bell, Timothy Collins, James Clark, Timothy Holley, James Kells, David Kosier, Paul Lee, Hugh McRandal, David Mills, Frank Musonda, James Nolt, Michael Rowland, Todd Shaw

Ocean Applications Branch

Joseph Sienkiewicz, Acting Branch Chief/Science and Operations Officer
Curt Janota, Meteorologist Developer, Frances Achorn, Meteorologist Developer
Matthew Glazewski, LTJG, NOAA Corps Officer



Fran Achorn, OPC Development Meteorologist, preparing a new automated analysis method for eventual implementation.



Scott Prorise (left) and Dave Feit (right) visiting the WWV broadcast facility in Ft. Collins, CO, from where OPC voice broadcasts originate.



The OPC provided outlook and short-term forecasts for the National Oceanic Atmospheric Administration (NOAA) Ship *Oscar Dyson* during a Gulf of Alaska crossing. The *Oscar Dyson* at its home port in Kodiak, AK.



Visit by Chris Burr, Executive Officer, NHC (left) conferring with Scott Prosis (right) at the Atlantic Regional Forecast Desk.



Curt Janota, OPC Development Meteorologist, testing new software in support of OPC's 24/7 operations.