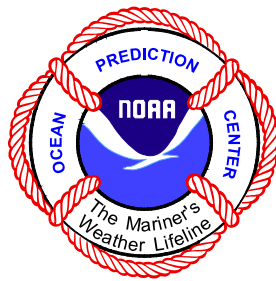


Ocean Prediction Center

2010 Annual Accomplishments



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1. Introduction

2010 was a very exciting year for the Ocean Prediction Center (OPC), as the office thrust forward with a number of plans focused on implementing a suite of next generation services within ocean forecasting and coastal services.

The OPC advanced partnerships within NOAA, as well as with its sister offices with high seas and offshore service responsibilities including the National Hurricane Center (NHC) Tropical Analysis and Forecast Branch (TAFB), the Honolulu Weather Forecast Office (WFO) and the NWS Alaska Region (AR). These strong bonds ensure that mariners transiting across boundaries of responsibility waters will receive seamless and equitable services. Additionally, OPC personnel attended various outreach events from Virginia to Alaska, and have undertaken challenging tasks such as examining how its products can be further integrated with maritime technology systems like Electronic Charting Display Information Systems (ECDIS) and throughout the Global Maritime Distress and Safety System (GMDSS).

The OPC worked extensively with the TAFB and other partners within the National Weather Service (NWS) in 2010 on the continued development of a gridded infrastructure for the large ocean domains. Significant progresses have been made in adapting software used at local NWS WFOs for use over the North Atlantic and North Pacific oceans. The experimental products and services based on the gridded infrastructure are expected to begin in 2011.

The OPC website had over 45 million hits in 2010 as mariners continue to use the high quality of forecasts and products provided. Some upgrades were made to the page to allow for easier navigation in an ocean tab format. Continual upgrades are planned in 2011 as OPC staff examines how to make navigating the site more ergonomic.

2. Major Accomplishments

Digital Services

The OPC, along with the rest of NCEP, took the important initial steps in late 2010 toward the implementation of new Advanced Weather Interactive Processing System (AWIPS-2) software for product generation. AWIPS-2 will replace AWIPS-1 (the current software) throughout the NWS, and will integrate different product viewing and generation capabilities used at local WFOs and National Centers into one package. The OPC stands ready for transition to AWIPS-2 in 2011.

As mentioned in the introduction, the OPC is working jointly with the TAFB on the development of a gridded product suite. Frances Achorn of OPC's Ocean Applications Branch visited the TAFB in April as part of the synergy program. While there, Fran helped the TAFB automate their wave period chart production, and assisted with European model integration into their version of the developing gridded forecasting editor.

Under the leadership of the Joint WMO-IOC Technical Commission of Oceanography and Marine Meteorology (JCOMM), an international effort is underway to incorporate marine weather forecast products into shipboard Electronic Charting Display Information Systems

(ECDIS) as an additional display layer over nautical charts and routes planned in ECDIS. OPC is following this international development closely as this will lead to a new way for mariners to view OPC maritime weather safety information.

Arctic Service

The OPC embarked on an exciting joint project with the NWS Alaska Region in 2010. OPC jointly developed an Arctic services webpage, hosted by the Alaska Region at www.arctic.arh.noaa.gov. It was a significant step forward in implementing parts of NOAA's Arctic Vision and Strategy (which can be found at www.arctic.noaa.gov.) The webpage highlights new offshore zone forecasts in the US Arctic, as well as a suite of automated products from the OPC. This webpage provided critical support for the NOAA Ship *Fairweather* which spent much of the 2010 summer surveying the depths of the Bering Strait region. The Arctic products and services disseminated via the webpage were evaluated by LT Matt Glazewski, OPC's Technical Operations Coordination Meteorologist, aboard the US Coast Guard Cutter (USCGC) *Healy*, a polar-capable ice breaker, in September of 2010. His voyage provided valuable in situ validation data for the Arctic forecasts.



LT Matt Glazewski stands on sea ice in front of the USCG Cutter HEALY in the Beaufort Sea

Volcanic Ashfall

OPC lead a significant NWS-wide project regarding the maritime impacts of volcanic eruptions. This project was initiated in 2008 and was completed in 2010 with the updating of 6 NWS directives. The updated directives became effective in early September 2010. When a volcanic eruption occurs within or adjacent to US waters, mariners will now receive a product specific to the impact whether they are traveling coastwise, offshore, or on the high seas at the time of the eruption. These products convey important information from the US Geological Survey volcano observatories monitoring the volcanos, and will allow mariners to plan avoidance voyage contingencies. Similar to aircraft engines, volcanic ash can damage ship engines to the point where they are inoperable, rendering the vessel dead in the water, a serious risk to life and property. (For more information, see: www.opc.ncep.noaa.gov/volcano)

Extratropical Storm Surge

The OPC has been working closely with partners in NOAA's National Ocean Service (NOS) Coast Survey Development Laboratory (CSDL) on the development of a new generation hydrodynamic modeling system for operational forecasting of extratropical storm surge, tides and water levels, and transitioning it into NCEP operations. This system is known as the Extratropical Surge and Tidal Operational Forecast System, or ESTOFS. The ESTOFS will predict real-time astronomical tides that OPC currently lacks. When operational, OPC forecasters will be able to access model guidance on both the astronomical and storm forcing components of the total water level thus enabling them to provide comprehensive coastal guidance during coastal storm events. The model data is expected to become available to OPC forecasters in 2011.

3. Conference and Workshop Participation

WMO – THORPEX

Mr. Joseph Sienkiewicz, OPC's Ocean Applications Branch Chief, attended The World Meteorological Organization's (WMO) Observing System Research and Predictability Experiment (THORPEX) meeting in Oslo, Norway in October. Mr. Sienkiewicz represented not only the Ocean Prediction Center, but also the interests of all NWS employees who work in polar maritime weather. The meeting, a "Polar Prediction Workshop," was comprised of a THORPEX contribution to the improvement of polar predictions on weather to seasonal timescales. Mr. Sienkiewicz was joined by Dr. David Novak of the NWS Hydrometeorological Prediction Center, co-located with the OPC in Camp Springs, Maryland.

AMS Air-Sea Interaction Conference

Mr. Sienkiewicz and lead forecaster Mr. Jim Clark attended the American Meteorological Society's (AMS) Air-Sea Interaction conference in Annapolis MD in September. Mr. Clark presented a poster on satellite altimetry verification and how it is integrated into OPC's procedures, and Mr. Sienkiewicz presented an ocean surface vector winds poster showing wave propagation across great circle rays in the interconnected ocean environment.

Ocean Vector Winds Science Team

Mr. Sienkiewicz attended the International Ocean Vector Winds Science Team meeting at the Centre Mediterrani d'Investigacions Marines i Ambientals (CMIMA) in Barcelona, Spain in May. Mr. Sienkiewicz presented a paper entitled "The Impact of the Loss of QuikSCAT on NWS Operations." Of note in the presentation were Mr. Sienkiewicz's points on a reduction in forecaster situational awareness and confidence concerning wind conditions over the oceans, reduced consistency of observed winds due to sole reliance on ASCAT and its limited coverage, a reduced number of Atlantic Hurricane Force cyclones, and an increased reliance by forecasters on numerical weather prediction analyses to estimate winds of warning conditions and not on observed conditions.

Aquarius / SAC-D Science Team Meeting

OPC Director Ming Ji participated in the 6th Aquarius/SAC-D Science team meeting, held in Seattle WA in July. The meeting focused on the science team's preparations for the upcoming launch. (The mission is a United States - Argentina partnership, including contributions from, Italy, Canada, France and Brazil). The primary measurement goal of the mission is to provide realtime measurements of sea surface salinity (SSS), albeit at a coarse spatial and temporal resolution of 150 km and monthly mean, respectively, and at a limited accuracy of 0.2 psu. However, this would be a huge step to begin addressing a major observational gap in surface oceanographic parameters (i.e., SSS) relevant to the OPC mission. In addition, the satellite observatory will also measure aspects of ocean winds, rain, sea ice, sea and land surface temperatures, soil moisture, high temperature events (fires and volcanic activities), nighttime light sources, atmospheric temperature/humidity soundings, space environment and autonomous data relay from remote ground stations.

Bi-Annual AGU Ocean Science Meeting

In February, Dr. Ji and Mr. Sienkiewicz attended the Bi-Annual American Geophysical Union's Ocean Science meeting in Portland, OR. The theme of the meeting surrounded the challenge of developing predictive tools for stewardship of marine resources in the 21st Century. Mr. Sienkiewicz spoke at two different sessions, highlighting the loss of the Quikscat satellite, and hurricane force winds in extratropical cyclones. While in Portland, Dr. Ji and Mr. Sienkiewicz also visited the local NWS WFO.

JCOMM Meetings

In May, OPC Director Ming Ji attended the JCOMM Maritime Safety Services Workshop in Melbourne, Australia. The workshop is one of the steps toward the expansion of GMDSS for the Arctic Ocean. Five new Arctic Ocean METAREAs are scheduled to become operational under the expanded GMDSS in 2011.

Dr. Ji also attended JCOMM Services Program Area expert team meetings in St Petersburg, Russia (Sea Ice and Maritime Safety) in March, Toronto Canada (Wind Waves and Storm Surges) in May and Tokyo Japan (Operational Ocean Forecasting Systems) in October. The expert team

meetings identified priority projects, agreed to outcomes and deliverables, and finalized timelines for all projects and for each team during the current JCOMM intersessional period (2009-2012).

4. Outreach

OPC's outreach program performed at its highest level in years during 2010 as representatives attended over a dozen events nationwide in an effort to educate mariners and partners on OPC's products and services.

USCG Search and Rescue Conference

LT Matt Glazewski, OPC's outreach coordinator, spoke at a number of events in 2010. He was invited to the U.S. Coast Guard Sector Delaware Bay's regional search and rescue (SAR) conference, which was held at the USCG Training Center in Cape May, NJ. Recent events including OPC's 2009 testimony at the official board of inquiry regarding the F/V Lady Mary were of particular interest at the SAR conference.

Seymour Johnson Air Force Base

LT Glazewski also spoke at Seymour Johnson Air Force Base in Goldsboro, NC, where he educated USAF pilots about marine weather in OPC's Atlantic Offshore zones. Pilots from Seymour Johnson conduct routine training exercises over the Atlantic. While driving to NC, LT Glazewski made a visit to the Wakefield, VA local WFO.

Pacific Marine Expo

LT Glazewski, along with Mr. Ted Beuhner, the Warning Coordination Meteorologist (WCM) from NWS WFO Seattle, gave a one hour lecture and Q&A session at the 2010 Pacific Marine Expo. The expo, which was held at Seattle's Qwest Field Event Center, is the largest industrial maritime trade show in the entire Pacific Rim. LT Glazewski and Mr. Buehner spoke to a hundred guests about the meaning of significant wave height, and the risks that should be understood regarding it while interpreting NWS forecasts at sea. Before and after the talk, LT Glazewski staffed the NWS booth at the show with other forecasters from the Seattle WFO, Anchorage WFO, and from the Alaska Region of the NWS.



LT Matt Glazewski, along with Ms. Aimee Fish (Alaska Region Marine Program Manager), Mr. Shaun Baines (WFO Anchorage Forecaster) and Mr. Jay Albrecht (WFO Seattle Forecaster) staff the NWS Booth at the 2010 Pacific Marine Expo inside Seattle's Qwest Field Event Center

Connecticut Maritime Association Shipping Conference

Mr. Joe Sienkiewicz, along with Ocean Forecast Branch (OFB) Chief David Feit attended the Connecticut Maritime Association Shipping 2010 Conference in Stamford, CT. They staffed a NOAA booth which focused on NOS charting, the NWS Volunteer Observing Ship Program (VOS) and OPC products and services. Conference attendees included shipping companies, 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.

Safety at Sea Seminar

Mr. Sienkiewicz and Mr. Paul Vukits also attended the 31st annual Safety At Sea Seminar hosted by the U.S. Naval Academy Sailing Squadron and Maryland Marine Trades Association in March. 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

Throughout the year, OPC forecasters and management attended a number of other events during 2010, including the Atlantic City, Annapolis, and New York City Boat Shows.

5. Special Activities

Support for response to the Deep Water Horizon oil spill in Gulf of Mexico

The Deep Water Horizon oil spill in Gulf of Mexico in April triggered an immediate response by a wide range of the Federal Government agencies. Although the Gulf of Mexico is not within OPC's forecast area of responsibility, the office still played important roles in the response and cleanup of the oil. The U.S. Naval Oceanographic Office (NAVO) configured a high resolution regional ocean model for the Gulf of Mexico and the Caribbean Sea. Through a prior arrangement between OPC and NAVO, OPC immediately began to disseminate real-time Navy model data to a broad community of government, private and academic institutions, including the NOAA Office of Response and Restoration, in a coherent effort to model and track the oil in the Gulf. Real-time high resolution ocean model data from the NAVO were essential for the oil tracking effort.

Additionally, LT Glazewski staffed the NOAA desk at the Department of Homeland Security's National Operations Center in Northwest Washington DC periodically during the crisis, serving as a focal point for disseminating and briefing NOAA-related information about the response effort to senior DHS leadership.

Antarctic Support

From early January through March 2010, the OPC provided special weather support for the Antarctic Living Marine Research (AMLR) program field campaign. The field campaign was conducted by the Antarctic Research Division of NOAA National Marine Fisheries Service (NMFS) off of the Antarctic Peninsula aboard a chartered research vessel. OPC tailored products for the area of the field campaign. Throughout the three-month long special support, OPC forecasters also gained experience forecasting for Southern Hemisphere employing their meteorological expertise. The AMLR program has been ongoing for 25 years. NMFS scientists previously relied on Russian contractors to provide limited weather information. In 2010, they switched to NWS for weather support for their voyage. OPC is expected to continue providing the special support for the AMLR program in the coming years.

Partnership and Collaborations

Internal collaboration is a topic that many within the NWS see as a key to effective products and services. The OPC began to experiment using an NWS-sanctioned system called NWS-Chat involving the Pacific Northwest marine offices, which also included participation from Environment Canada's Meteorological Service Pacific Storm Prediction Centre in Vancouver, BC.

The goal of the chat-based collaboration is to allow for better coordination across the international boundary on all three sides: Washington State, offshore of Vancouver Island, and adjoining Southeast Alaska.

Another important internal collaboration exercise that the OPC participated in during 2010 was the forecaster exchange program. The OPC sent forecasters to Wilmington NC, Morehead City, NC, Medford, OR, and Portland OR, while those offices sent representatives to the OPC. This exchange allows each individual to gain a greater understanding of how marine forecasting operations are conducted at each location. This information, in turn, can be shared with the forecaster's home office staff which increases awareness and reciprocated appreciation.

International Collaboration

OPC Director Ming Ji, is serving as the JCOMM Service and Forecast Systems program area coordinator for the current JCOMM intersessional period (2009-2012). In this capacity, he leads the JCOMM efforts in implementing new Arctic Ocean meteorological areas (METAREAs) for the expansion of the GMDSS to cover Arctic Ocean with marine weather and sea ice warning and forecast services, developing operational ocean forecasting services at national meteorological-hydrological services, and implementing demonstration projects for coastal hazard prediction and mitigation. In addition to the Arctic Ocean GMDSS expansion, major expected outcomes from the JCOMM Services Program Area for the current intersessional period include pilot/demonstration projects for coastal hazard prediction and mitigation, implementing a Quality Management System framework approach at operational marine forecast services, advancing standards for ECDIS display of marine weather and oceanographic charts, and development of a guide of operational ocean forecasting.

6. Awards

Senior Marine Forecaster Mr. Jim Clark and OAB transition meteorologist Mr. Shawn Smith each received local office level Isaac Cline awards in 2010. Mr. Smith was recognized for providing exceptional information technology support through web development. Mr. Clark was recognized for his efforts in model evaluation and development of case studies in extratropical storm surge as guidance for the other OFB forecasters.

7. Staff

OPC Staff

A number of staff changes occurred at the OPC during 2010. Most notably, OPC's Ocean Forecast Branch Chief, Mr. David Feit, retired from Federal service on September 30 after a distinguished career of 45 years. Mr. Feit is looking forward to spending time with his grandson during his retirement.

OPC and HPC said goodbye to our secretary, Ms. Sharleta Hubbard, as she moved on to take a position at the US Office of Personnel Management. OPC and HPC welcomed her replacement, Ms. DeVerah Petersen, who has made an excellent transition.

OPC and HPC also said goodbye to Ms. Crystal Rickett, Administrative Officer. Ms. Rickett accepted a position with the Climate Prediction Center of NCEP.

The OAB bade farewell to one its Transition Meteorologists, Mr. Shawn Smith, who took a position at the Columbia, SC, WFO. Mr. Richard Lam filled the position later in the year. Richard joined the OPC from a Student Career Experience Program (SCEP) position at the Juneau, AK WFO in September.

The OAB also said goodbye to one of its capable Transition Meteorologists, Mr. Curt Janota. Curt had worked at the OPC for over a decade, and took a position at the NWS Telecommunications Operations Center (TOC) in Silver Spring, MD in September.



Mr. David Feit chats with NESDIS employee Celso Barrientos during Dave's retirement party

Summer Interns

During the course of the summer, the OPC also hosted three student interns: Mr. Jeffrey Strong from the University of Virginia, Mr. Benjamin Albright from the Pennsylvania State University, and Cadet 1st Class Cory O'Hara from the United States Coast Guard Academy.

Jeffrey Strong was a senior at UVA and NOAA Hollings Scholar. Mr. Strong used the workstation WRF to simulate the extratropical cyclones examined this past winter by the NOAA P-3 in the Winter Storms Experiment. He compared the flight, SFMR, and drop sound data acquired by the P-3 with the WRF results.

Benjamin Albright graduated from Penn State University in 2010. He came to us through the Howard University NOAA Center for Atmospheric Science (NCAS) program. Mr. Albright learned GEMPAK and then applied the ensemble functionality to the marine forecast problem. Mr. Albright prototyped a variety of fields including the combination of winds and waves and probability of heavy freezing spray. Ben continues his work with Joe as a graduate student at Howard University.

Cadet 1st Class Cory O'Hara of the USCG Academy is a marine environmental science major with a focus on both marine biology and chemistry. 1/C O'Hara created an inventory of ecological forecasting efforts underway within NOAA and helped prioritize the efforts concerning a variety of factors. His effort, although challenging, helped NOAA map out what efforts to consider bringing into operations. 1/C O'Hara drafted a concept of operations (ConOps) white paper which is being used as the foundation for this effort.

OPC Staff as of 31 December 2010

Administration

Director: Dr. Ming Ji

Deputy Director: Kevin McCarthy

Secretary: DeVerah Petersen

Administrative Officer: Vacant

Ocean Forecast Branch

Chief: Vacant

Senior Marine Forecasters: Robert Oszajca, Scott Prosis, James Clark, Douglas Scovil, Paul Vukits, Edward Schoenberg (part time)

Marine Forecasters: Kevin Achorn, George Bancroft, Robert Banks, Kathy Bell, Timothy Collins, Timothy Holley, James Kells, David Kosier, Paul Lee, Hugh McRandal, David Mills, Frank Musonda, James Nolt, Michael Rowland, Todd Shaw

Ocean Applications Branch

Chief: Joseph Sienkiewicz

Technical Operations Coordination Meteorologist: LT Matt Glazewski, NOAA Corps

Meteorologist Developer: Frances Achorn

Meteorologist Developer: Vacant

Meteorologist Trainee: Richard Lam

Contractors: Bob Daniels, Greg McFadden, Yan Hao