

Hydrometeorological Prediction Center 2006 Accomplishments Report

I. Introduction

The Hydrometeorological Prediction Center (HPC) advanced on several fronts during 2006. The year was marked by increasing collaboration between HPC forecasters and NWS field offices. HPC improved its ties with the emergency management community and became a major partner in the Hurricane Liaison Team (HLT). HPC successfully forecast several significant weather events. HPC enhanced the usability of several products by distributing them in GIS format.

2. Major Accomplishments

Hydrometeorological Prediction Center (HPC) Prepared For HLT Back Up - As part of strengthening its ability to provide back up forecast services for the Tropical Prediction Center (TPC), HPC's Kevin McCarthy and Ed Danaher hosted a meeting with Federal Emergency Management Agency (FEMA) officials on February 23 to discuss back up procedures for the TPC-based HLT. HPC participates in HLT briefings on tropical cyclones that threaten the United States and its territories. HPC serves as the backup for TPC tropical cyclone services and, therefore, is an obvious choice to provide back up HLT functions in the event of an outage that makes it impossible for the TPC to function during a landfalling tropical cyclone.

The meeting established that FEMA would send one or two people to HPC to interact with the emergency managers in the potentially impacted area after discussion and agreement by the TPC and HPC directors that the HLT functions should be shifted to HPC.

HPC Hosts HLT Meeting - Kevin McCarthy, HPC Deputy Director, hosted Matthew Green, FEMA HLT Coordinator and his supervisor, on December 7. They discussed the HLT operations for the 2006 hurricane season and potential improvements to the HLT capabilities after the HPC moves to its new location in late 2008. The new building will be located in College Park, MD and will have a room dedicated to the HLT equipment and operations.

Maryland Senator Mikulski Visits HPC - On June 5, Senator Barbara Mikulski toured the HPC operations area. The tour was hosted by National Centers for Environmental Prediction (NCEP) Director, Dr. Louis Uccellini. Senator Mikulski met many staff members ([see photos below](#)) and expressed a great deal of interest in the operational

functions of HPC in general as well as the various specific responsibilities of the forecasters. She also took the time to inquire about how each of the staff members she met became interested in meteorology and about the path that led them to their current job. Senator Mikulski concluded the tour with a press conference attended by both print and broadcast media.

HPC and TPC Conducted Tropical Cyclone Backup Tests - HPC serves as the backup center for the tropical cyclone forecast program of the TPC. As part of the readiness training and testing conducted before and during the hurricane season.

On July 11 HPC and TPC tested the backup capability of the Tropical Cyclone program in the East Pacific basin. HPC issued text and graphic products for Tropical Storm Bud for two forecast cycles (15Z and 21Z advisories), including web graphics. HPC and TPC compared notes after the test and decided it was a successful test of the HPC backup capability.

During a second test, HPC prepared and issued all TPC's tropical cyclone products for the 15 UTC and 21 UTC advisory cycles on Tuesday, August 9. Forecasts were issued for both Irene in the Atlantic and for what became Fernanda in the Pacific. Regarding Fernanda, HPC for the first time initiated a new storm during its watch. The very successful test further strengthened HPC's ability to assume hurricane-forecast responsibilities from the TPC at a moment's notice should the need arise.

A third successful test was performed on September 19.

Some HPC Products Available in Geographic Information System (GIS) Format -

On August 1, HPC began producing a portion of the HPC product suite in Geographic Information System (GIS) format. Included are all Quantitative Precipitation Forecast (QPF) products, the Excessive Rainfall Forecast, and the Significant River Flood Outlook. Winter weather forecasts in GIS format were available during the winter season. These products are available for download from the HPC anonymous ftp server. Users with GIS software can integrate these forecast fields with other GIS data in order to better assess the potential impact of a weather event over a specific area.

HPC Enhances Surface Analysis Product - HPC has enhanced a text product that can be used to generate weather maps showing the location of surface fronts and high and low pressure centers. The message provides the latitude and longitude for these weather features, allowing the replication of the HPC surface analysis. The old product, which was developed decades ago when it was hand generated and customers hand plotted the points, depicts the location of these features to the nearest degree. The new product shows these locations to the nearest tenth of a degree. The new version was developed at the request of several National Weather Service (NWS) customers. Among other things, it is used in a university research project on automated front and boundary determination.

Operational Highlights

HPC Forecasters Involved with California Flooding Events - Over the New Year holiday weekend, HPC forecasters conducted several interviews with AP Radio, CNN Radio, and CBS Radio related to the extensive heavy rain falling along the entire west coast of the United States. HPC issued special storm summaries through the weekend for this event, which was actually a series of individual events over a large geographic area.

HPC Forecasters Set Several QPF Records in November - There were several major precipitation events in November, and HPC forecasters responded with record-setting results. November records for Threat Scores were set for Day 1 (0.5 inch, 1 inch – a NWS GPRA Measure, 3 inch), Day 2 (0.5 inch) and Day 3 (0.5 inch and 1 inch).

HPC Meteorologists Support Mexican Meteorological Service for Rare Snow Event - Joshua Scheck (Winter Weather Focal Point) and Michel Davison (International Desks Coordinator) coordinated on a rare winter event in Chihuahua, Mexico. On December 7, Joshua recognized a threat of snow in that area with possible accumulations of 1-2 inches in the valleys and 3-4 inches in the mountains and discussed the situation with Michel Davison. Michel sent an email to the Mexican National Meteorological Service to advise them. On December 12 HPC received confirmation of 1.5 inches of snow in the lowland areas, where snow had not been observed for 23 years.

HPC Participates in Conference Call for Northern California Flooding - HPC forecaster David Roth participated in an April conference call including the Sacramento WFO, the CNRFC, and representatives of the California governor's office. The governor himself was scheduled to visit the facility later in the afternoon. David discussed the weather pattern expected to develop in the medium range forecast period. Northern California has had unusually high precipitation recently and there has been some flooding and breaching of levees. More precipitation was expected, and the snow-pack in the Sierras was already high.

HPC Participated in National Oceanic Atmospheric Administration (NOAA) Air Quality Program in 2006 - HPC again issued air quality guidance for the NOAA Air Quality program for the summer of 2006. The program expanded in 2006 such that the HPC discussion, issued every weekday morning, covers the relevant weather nationwide. In addition to the conference calls for the Northeast (New England, New York, New Jersey), HPC also participated, as needed, in a Mid Atlantic Region call moderated by an air quality manager based at Penn State University.

Outreach, conferences, and visitors

HPC Meteorologists Participated in Several Local School Science Programs and Science Fairs

On January 3 and 4, Pam Szatanek (HPC Meteorologist) worked with 185 students in several science classes, including the 9th grade honors program, at North Pointe High School in Waldorf, Md.

On February 9, Michael Eckert of the HPC made a weather presentation to 2nd grade students at MM Pierce Elementary School in Remington, VA

On March 1, Michael Eckert made a weather presentation to 16 teachers and the science coordinator for Fauquier County, VA public schools.

On April 13, Michael Eckert, of HPC hosted a high school student (Steven Malik) from Liberty High School in Bealeton, VA for a career shadowing day. Mike gave Steven an overview of the NWS and HPC operations, and Steven shadowed the day 1 QPF shift with Mike for the day.

HPC meteorologist Michael Schichtel was the invited speaker for an assembly of all five 1st grade classes at Island Creek Elementary School in Alexandria, VA on January 12.

HPC Science and Operation Officer (SOO) Interviewed by Local Community Publication in Ohio - HPC Science and Operations Officer (SOO), Peter Manousos, was interviewed in early January by the Bath Herald, a free monthly publication mailed to every home in Bath OH. The interview centered on the function of the HPC and it's role within NCEP and NOAA as well as the duties of a SOO at HPC.

HPC Meteorologist Detailed to TPC - Todd Kimberlain, a forecaster with HPC, was detailed to TPC in September to provide support with the Spanish Language media desk during Tropical Cyclone Ernesto.

HPC Meteorologist Detailed to Forest Fire - Pam Szatanek, Forecaster with HPC, was detailed to Elk City, ID as part of her Incident Meteorologist (IMET) training program. She remained on-site for 10 days providing weather support. She was the first NCEP IMET from the Washington, DC area to be assigned to a wildfire event.

HPC Meteorologists Provided Presentations at Several Weather Forecast Offices (WFOs) and River Forecast centers (RFCs) - HPC staff provided several presentations discussing HPC operations to the WFOs Cleveland, Milwaukee, Tucson, Phoenix, Detroit and the RFC and WFO in Tulsa, OK, WFO Pittsburgh and the Southeast RFC at Atlanta.

HPC meteorologists also provided presentations concerning weather forecasting and NWS operations to several other groups including: the Northeast Ohio Chapter of the American Meteorological Society, the Fauquier Chapter of the National Association of

Retired Federal Employees, Remington, VA Ruritans, Learning Tree Farm in Fauquier County, VA, Remington/Bealeton Seniors Club, Girl Scouts in Fauquier County, VA, Tyler Elementary School in Prince William County, VA, and the American Meteorological Society at Millersville University.

Field Forecaster Visits HPC - Ken Kostura from the WFO in Blacksburg, VA spent two days at HPC to familiarize himself with HPC forecast programs, especially Winter Weather and Medium Range. While at HPC, Ken presented a study of Snow Events in the Appalachians in Northwest Flow. More than a dozen HPC meteorologists attended the presentation.

HPC Product Highlighted at Annual Meeting - The 86th Annual Meeting of the American Meteorological Society (AMS), held January 29 - February 2, in Atlanta, GA, included many presentations of interest to NOAA. A symposium of note was the Fourth Annual User's Forum, which focused on how weather affects the energy and retail industries. One of the presentations during the forum was by Jason Jackson, the Director of Emergency Management for Wal-Mart, which is the world's largest retailer. He mentioned that weather caused the greatest business disruption to Wal-Mart. He encouraged the meteorological community not to sensationalize the weather as it creates unpredictable perturbations on their supply and demand. One of his important points, in referring to NWS products, was that "keeping it simple" greatly helps Wal-Mart at both the corporate and local store levels in preparing for upcoming weather events. To make his point he used HPC's Today's National Forecast Chart ("the Gudes Chart") as the perfect example of a helpful, simplified product.

HPC Meteorologist Participating in Boulder Seminar - Pamela Szatanek participated as a panelist at the second workshop of the Weather and Society / Integrated Studies (WAS*IS) program at NCAR in Boulder, CO. The purpose of the workshop was to relate weather and forecasting to societal impact. The topics focused on uncertainty and probabilistic methods, decision tools, and resiliency and vulnerability. Pam worked extensively on a research project since the first WAS*IS workshop. This project, entitled "Precipitating an Understanding of Weather: A Focus on First Responders", won the award for Outstanding Project.

HPC Meteorologist at IMET Training - Pamela Szatanek participated in the IMET training class in Boise during the week of February 27. The course covered multiple hazards related to meteorology, e.g., fire weather, oil spills, and other hazardous material spills. The course included an interesting history of the NWS Fire Weather Program and the current agency relationships devoted to “all-hazards” incidents. Many of the course materials were operational products from HPC, such as surface analyses and the Daily Weather Map. This course is an initial requirement in the IMET training and certification process.

HPC Conducts Remote QPF Training - On September 20, Michael Eckert of HPC gave a QPF presentation to WFO Gray, ME via VISITVIEW. All aspects of QPF production in HPC were covered. Analogs, Anomalies and Ensemble forecasting were also discussed.

HPC Meteorologists Visit Sterling, VA WFO - Richard Bann and Joshua Scheck of HPC participated in the Unit Radar Committee meeting at WFO Sterling on March 13. Additionally while at the office they were able to discuss HPC forecasts with WFO staff, and to sit in on severe weather preparations with the radar meteorologist and also observe the upper air observation process. They noted the new equipment is much more flexible and reliable than the earlier generations of radiosonde.

HPC Meteorologist Continues in Advancing Cooperative Network - Bruce Sullivan, HPC Senior Branch Forecaster, has been extremely active in the Community Collaborative for Rain, Hail, and Snow (CoCoRaHS) network. He has been delivering rain gauges, and recruiting and training volunteer precipitation observers throughout Maryland. His efforts have dramatically increased the number of cooperative observers in this network, allowing forecasters to consult a website to retrieve precipitation measurements in real time.

HPC Meteorologist Participates with WFO Sterling Open House - On April 29, Michael Eckert, HPC Senior Branch Forecaster, participated in the WFO Sterling open house held at the forecast office. The general public was able to tour the WFO facility, see presentations on NWS programs and ask questions of the staff.

HPC Meteorologists Describe New Forecast Tool Under Development - On June 6, Keith Brill and Mike Schichtel of the HPC presented an overview of the HPC Interactive Cluster Tool (ICT) to participants in one of an ongoing series of meetings on predictability hosted by Zoltan Toth of the Environmental Modeling Center (EMC).

HPC SOO Featured in Local Magazine - HPC SOO, Pete Manousos, was featured in a two page article in June in the Bath Herald (a local magazine focusing on the community of Bath, OH). The article described Pete's role as an HPC employee and the NWS mission within NOAA.

HPC Forecaster Publishes a Article on Ensemble Forecasting - Keith Brill authored an invited article entitled "Operational weather forecasting using ensembles of models" in the Spring 2006 edition of SPECTRUM, the James Madison University Department of Physics Newsletter. The article gave a brief overview of numerical weather prediction and how ensembles of model runs can be used to address the uncertainty associated with inherent and initialization errors.

Three HPC Forecasters Presented at the AMS Conference - Three HPC forecasters, Mike Eckert, Frank Pereira, and Kathy Bell, presented papers and posters at the AMS conference in Washington DC the week of August 1.

HPC SOO Speaks at the AMS Broadcast Meteorology Conference - HPC SOO, Peter Manousos, briefed attendees at the AMS 34th Conference on Broadcast Meteorology in Washington D.C. on August 2 on aspects of winter weather forecasting. The presentation included an overview of how the NWS approaches winter weather forecasting, collaboration issues, numerical model guidance, and tools and techniques used by NWS forecasters. The presentation also included an in depth look at the December 22-23, 2004, Ohio Valley snow and ice storm. The presentation was followed by a 15-minute question and answer period.

HPC Forecaster at Great Lakes Workshop - Dr. Joshua Scheck, HPC meteorologist, spoke to the Great Lakes Winter Weather Workshop in Niagara Falls, Ontario, in the last week of October. His presentation covered the winter weather program at National Centers for Environmental Prediction (NCEP), focusing on the use of Short Range Ensemble Forecasts. He also brought back to HPC the Canadian presentation on the upgrade to the Canadian Global Model.

HPC Forecaster Represents HPC at the Great Divide Workshop - Richard Bann, HPC meteorologist, represented HPC at the Great Divide Weather Workshop in Billings, MT in early October.

HPC Forecaster Attends Cooperative Program for Operational Meteorology, Education and Training (COMET) Winter Weather Course - Andrew Orrison, HPC meteorologist, participated in the Winter Weather course taught at COMET in Boulder, CO at the end of October into early November.

Students Visit HPC - In April, the staff of the HPC hosted the visit of the Meteorology Club of Emmaus High, Emmaus, PA, which is located just south of Allentown.

Media activities

HPC forecasters provided interviews to numerous media outlets throughout the year, including radio, television, and the print media. CNN radio, National Public Radio, and several other national networks contacted HPC for live or taped interviews several times each month. Mike Davison, HPC International Desks Coordinator, provided many interviews in Spanish.

International Desks

The HPC International Desk is a training desk designed to train meteorologists from South and Central America and the Caribbean Basin in the techniques of weather analysis and forecasting. Due to the large number of forecasters trained, over 200, and the extensive training International Desks Coordinator Mike Davison has provided at workshops and international meetings, Mr. Davison, has excellent contacts within the meteorological services of the countries served. When weather events are likely to have a significant impact, Mr. Davison is frequently contacted by former visiting scientists for his expertise. On many occasions, Mr. Davison has been proactive in contacting the foreign meteorological services in order to ensure they were prepared for significant weather events. See photo.

HPC International Desks Begin Preparing Rainfall Forecast Charts - As an enhancement to the training function at the Tropical Desk of HPC's International Desks, on January 17 the visiting scientists began preparing precipitation forecast charts for the Caribbean area out through 3 days. These charts, which are posted on the HPC web site, compliment the Tropical Desk Bulletin. Both the charts and the bulletins are prepared Monday through Friday. Mike Davison, HPC International Desks Coordinator, has alerted former Tropical Desk students of the charts' availability and has solicited their feedback. The users of these products include the meteorological services in the Caribbean Basin, the Department of Defense, and USAID.

HPC International Desks Provides Advance Notice of Flood in Venezuela - On March 7, the HPC International Desks Tropical Desk issued special discussions warning of impending heavy rains over northwest Venezuela. The visiting forecasters and Mike Davison, HPC International Desks Coordinator, identified a weather pattern over the region favorable for flooding. In addition to describing the evolving situation in the Tropical Desk Bulletin, the heavy rains were highlighted on the day 2 and 3 Quantitative Precipitation Forecast charts prepared by the visiting forecasters. Mr. Davison also sent

emails to alumni from the desk, alerting them of the evolving situation. On March 9, a meteorologist with Venezuela's Meteorological Service praised the job done by the International Desks, mentioning that the Arauca River in western Venezuela had risen above flood stage. The early coordination and products prepared by the visiting scientist allowed local Venezuela meteorologists to issue timely weather warnings.

HPC International Desk Director Participates in Operational Forecasting Workshop in Chile - Michel Davison, HPC International Desks Coordinator, participated in the "Advanced Operational Training on Application of Numerical Weather Prediction" workshop, held in Santiago de Chile, April 17- 21, 2006.

HPC International Desks Participate in High Profile Training Event - Mr. Michel Davison, HPC International Desks Coordinator, participated by phone as a lecturer during the WMO Sponsored High Profile Training Event (HPTE) on October 17. The HPTE is a major milestone in the evolution of the WMO and the Coordination Group for Meteorological Satellites of the Virtual Laboratory for Satellite Meteorology. The training event provided a unique education and training opportunity to WMO Members through the presentation of a series of interactive, online, presentations in the period October 16 - 27.

3. Awards

HPC Meteorologist selected Alumnus of the Year by Physics Department at James Madison University - HPC Meteorologist, Keith Brill, presented a seminar entitled "Whether or Not Weather Is In Your Future..." to the Department of Physics in the College of Science and Mathematics of James Madison University on October 20. As the Physics Department's "Alumnus of the Year" Award recipient for Brill was invited to give the presentation, which highlighted some of the problem areas in numerical weather prediction. The content of the seminar was intended to encourage and inform students who might have an interest in taking on some of these challenging problems.

2006 Regional (NCEP Level) Isaac Cline Award Winners - Edwin Danaher (Leadership) and Jessica L. Clark, (Meteorology)

4. Illustrations and pictures of HPC staff and events



On June 5, Senator Barbara Mikulski toured the HPC operations area. HPC Director Jim Hoke looks on as the Senator greets visitors to the HPC International Desks.



Senator Barbara Mikulski chats with HPC forecaster Frank Rosenstein.