Weather Prediction Center

Center Overview

January 2014

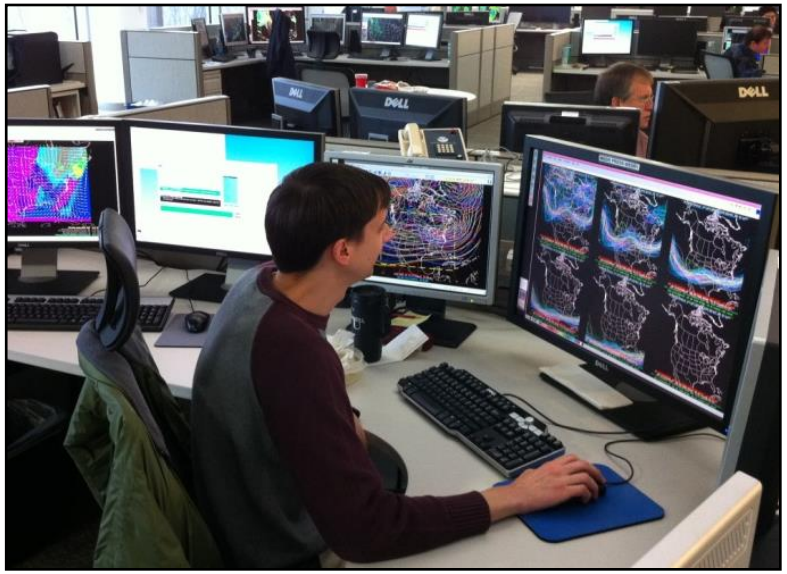
www.wpc.ncep.noaa.gov

Outline

- Overview of WPC mission, vision, and roles
- WPC Partners and Customers
- WPC Products and Services
- Plans for the future

WPC Mission

- **Mission**: WPC will remain a leader in the collaborative weather forecast process delivering responsive, accurate, and reliable national forecasts and analyses.



A New Strategic Position for WPC

A New Building

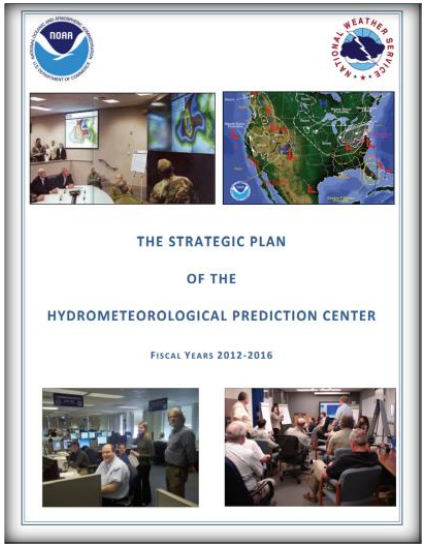
NWS, NESDIS, OAR

A New Name

The Weather Prediction Center

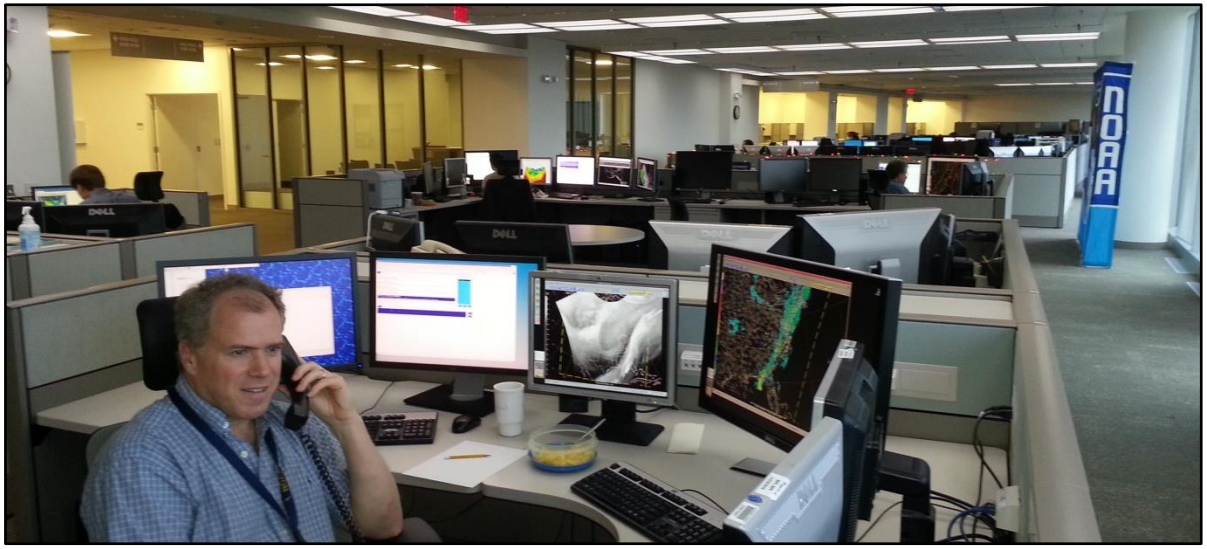
A New Vision

America's *Go-To* Center for high-impact precipitation events and forecast guidance out to 14 days for a *Weather-Ready Nation*



WPC: A Resource for Partners and Customers

- Starting point for local forecasts
- Unifying influence for nationally consistent forecasts
- Focal point for NWS collaboration
- Emergency backup



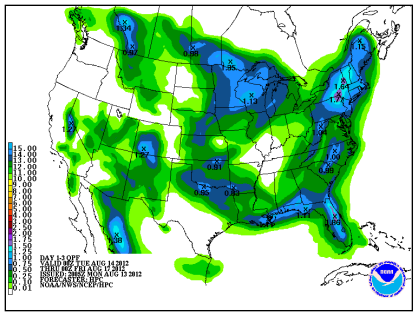
WPC Partners and Customers

- **NWS field offices**: WFOs, RFCs, CWSUs
- **NCEP Centers**: NHC, SPC, AWC, OPC, EMC, NCO, CPC
- **Federal Agencies**: DHS/FEMA, USAID
- **State Agencies**: water and flood management, emergency services
- **Media**: TV, radio, print and electronic media
- **Private sector**
- **Academic Community**
- **International**
- **Public**

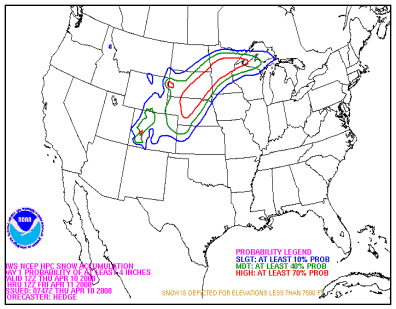
WPC Products and Services

- WPC produces a wide range of national weather forecast and analysis products:
  - Quantitative precipitation forecasts (QPFs)
  - Flash flood forecast products
  - Medium-range guidance
  - Winter weather guidance
  - Probabilistic rainfall and winter weather guidance
  - Surface analysis
  - Daily weather map
  - International forecasts for training

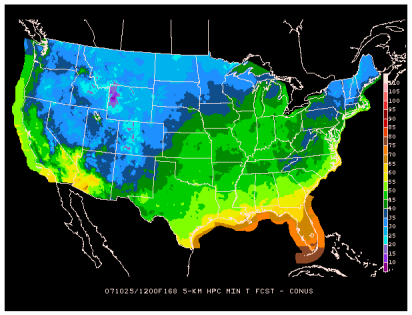
WPC Operational Desks



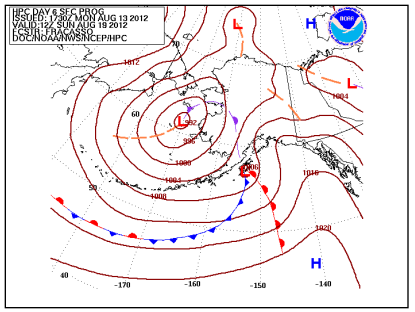
QPF



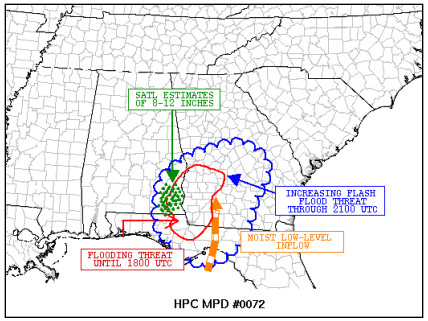
Winter Weather



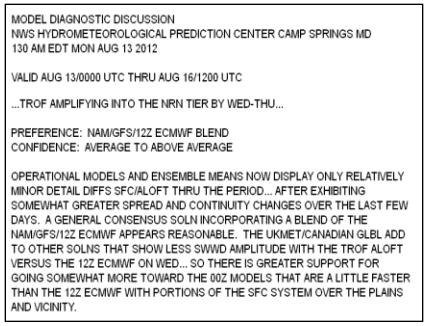
Medium Range



Alaska Med. Range



Met Watch


MODEL DIAGNOSTIC DISCUSSION
NWS HYDROMETEOROLOGICAL PREDICTION CENTER CAMP SPRINGS MD
130 AM EDT MON AUG 13 2012

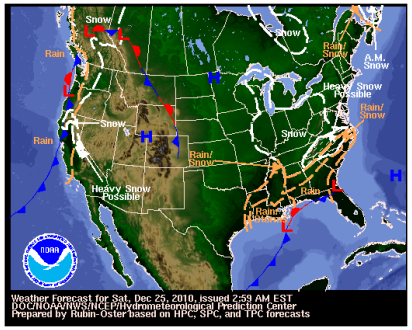
VALID AUG 13/0000 UTC THRU AUG 16/1200 UTC

...TROF AMPLIFYING INTO THE NRN TIER BY WED-THU...

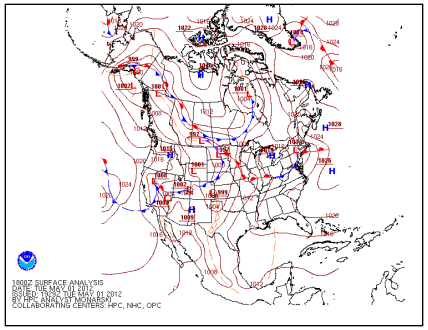
PREFERENCE: NAM/GFS/12Z ECMWF BLEND
CONFIDENCE: AVERAGE TO ABOVE AVERAGE

OPERATIONAL MODELS AND ENSEMBLE MEANS NOW DISPLAY ONLY RELATIVELY MINOR DETAIL DIFFS SFC/ALOFT THRU THE PERIOD... AFTER EXHIBITING SOMEWHAT GREATER SPREAD AND CONTINUITY CHANGES OVER THE LAST FEW DAYS. A GENERAL CONSENSUS SOLN INCORPORATING A BLEND OF THE NAM/GFS/12Z ECMWF APPEARS REASONABLE. THE UKMET/CANADIAN GLBL ADD TO OTHER SOLNS THAT SHOW LESS SWWD AMPLITUDE WITH THE TROF ALOFT VERSUS THE 12Z ECMWF ON WED... SO THERE IS GREATER SUPPORT FOR GOING SOMEWHAT MORE TOWARD THE 00Z MODELS THAT ARE A LITTLE FASTER THAN THE 12Z ECMWF WITH PORTIONS OF THE SFC SYSTEM OVER THE PLAINS AND VICINITY.

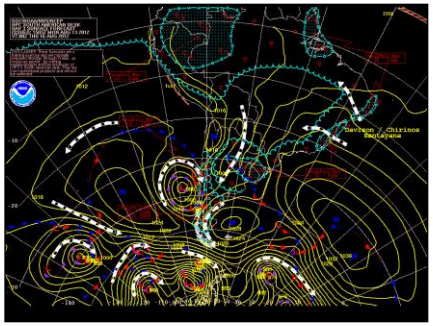
Model Diagnostics



Short Range



Surface Analysis



International

Tropical

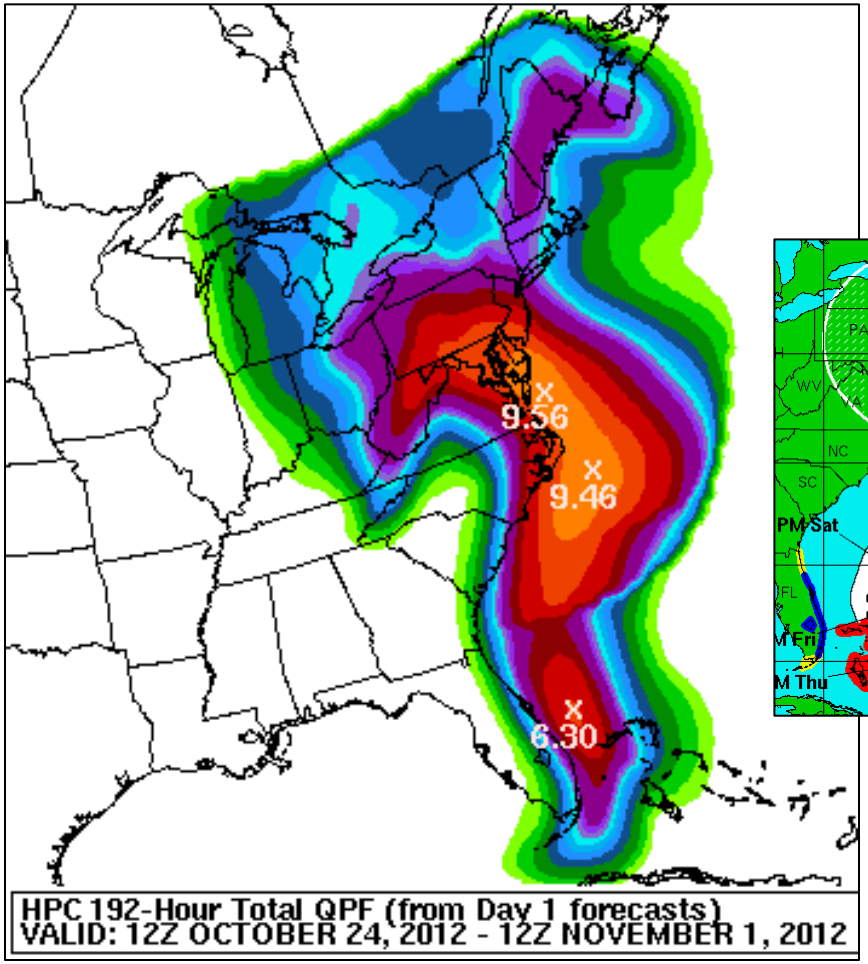
WPC Activities during High-Impact Events

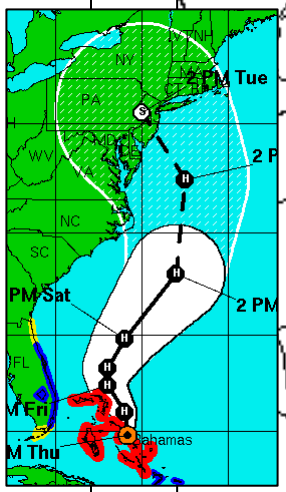
- WPC forecasters routinely interact with partners and customers leading up to high-impact precipitation events, including tropical cyclones, winter storms, and flash floods
  - Internal NWS collaboration for forecast consistency and accuracy
  - Media interactions to effectively communicate forecast impacts to public
- WPC serves as the service backup for the National Hurricane Center and issues tropical cyclone advisories for tropical cyclones after landfall

QPFs during Sandy (2012)

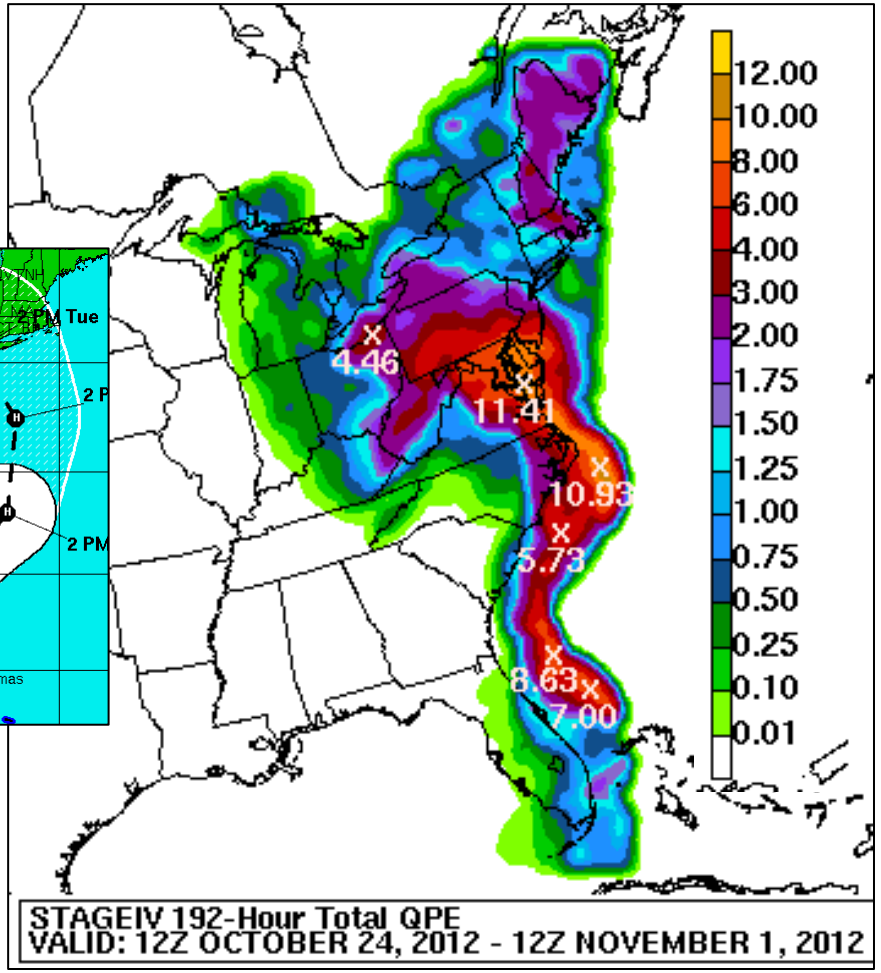
WPC forecasters assimilate and add value to numerical model forecasts

WPC QPF





Observed Precipitation



WPC Forecast Process

Each day, WPC forecasters have access to over 100 unique numerical model forecasts, which are used to develop a suite of WPC forecasts.

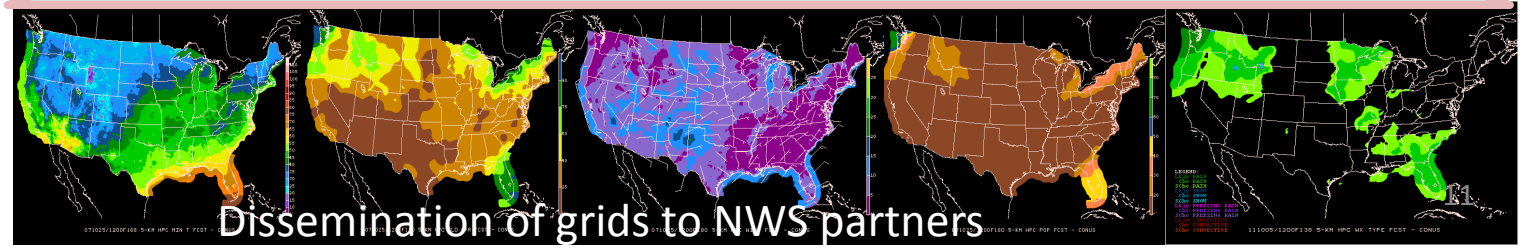
Forecaster evaluation of forecast models and ensembles
(ex., NCEP, MDL, CMC, NAEFS, ECMWF, UKMET, FNMOC)

collaboration

Forecaster weighting of ensemble guidance

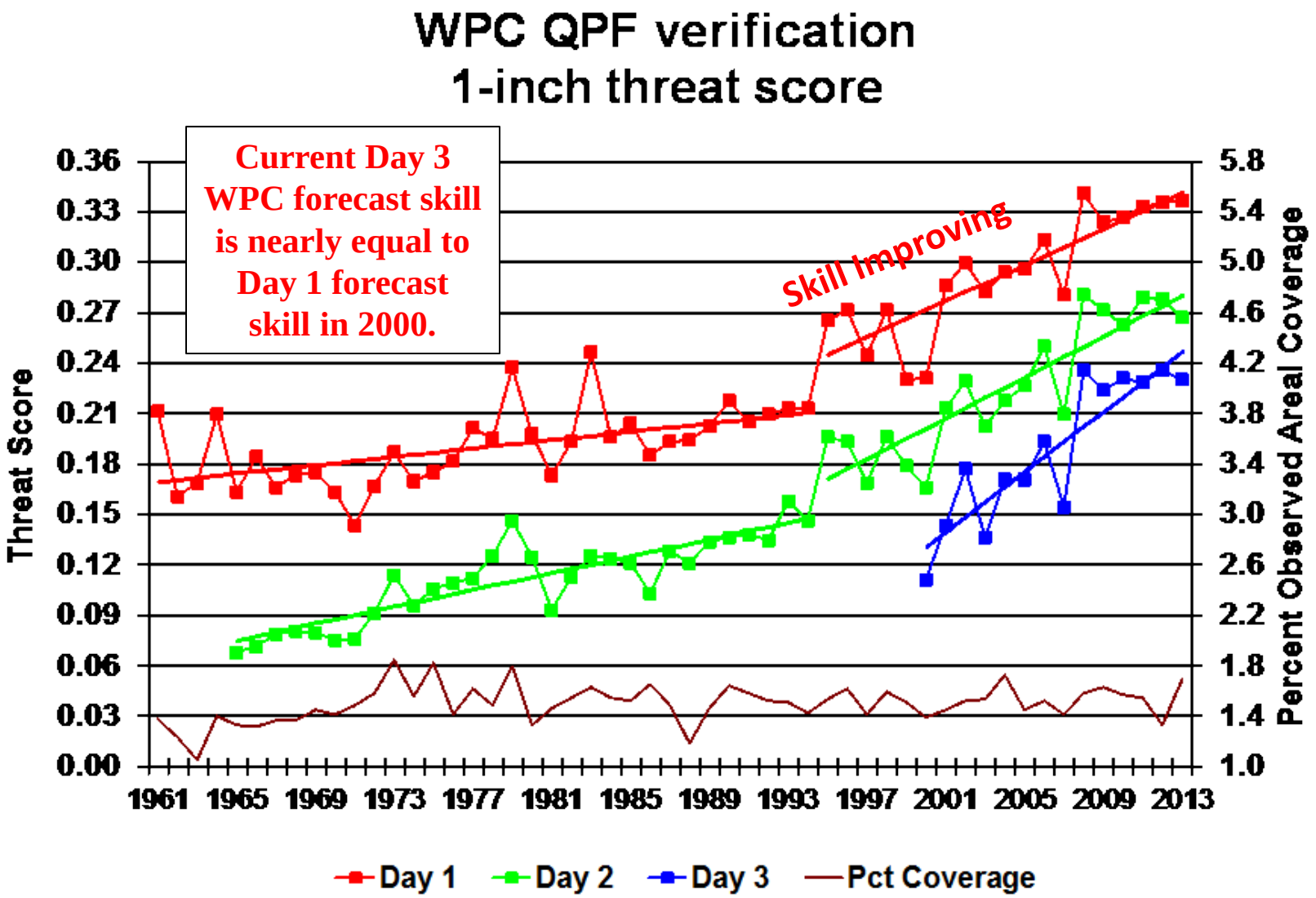
Automated grid generation

Forecaster adjustment of grids



Dissemination of grids to NWS partners

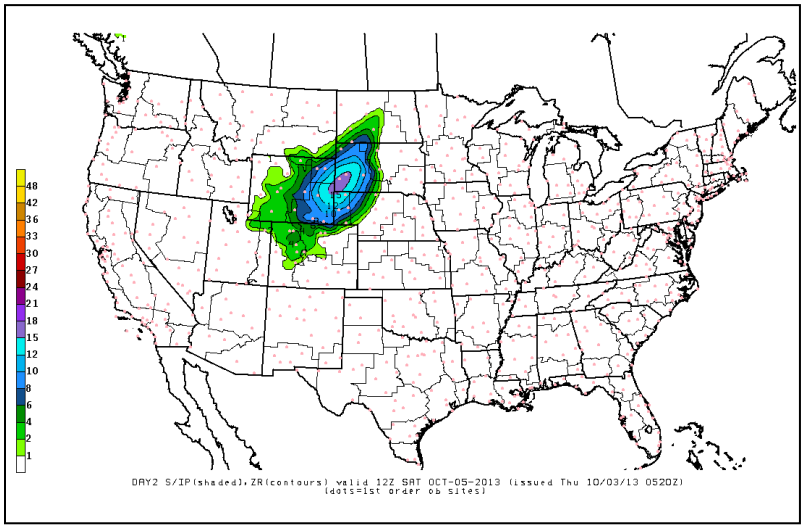
Long-Term WPC QPF Verification



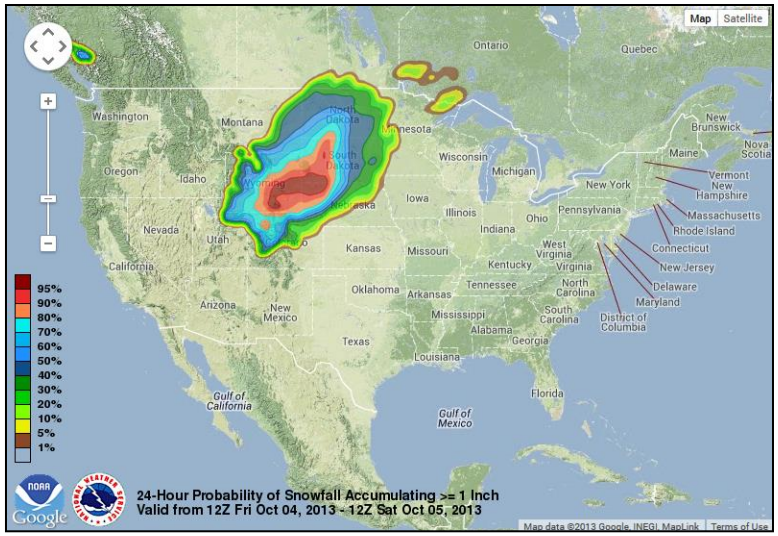
Probabilistic Forecasts

- In addition to traditional single-value deterministic forecasts, WPC is leading the NWS in the development of probabilistic QPF products, which increasingly play a significant role in weather decision support service (DSS) activities.
- Probabilistic forecasts are derived using statistical techniques that combine human-generated forecasts and numerical model forecasts.

Deterministic Snow Forecast



Probabilistic Snow Forecast



Probabilities can provide information about forecast certainty

Dissemination of WPC's Products and Services

- WPC products are disseminated both within NOAA and to the public via:
  - AWIPS to NWS field offices
  - Internet
  - FTP data hosting (GRIB2 and GIS formats)
  - Video Teleconferencing
  - DSS for high-impact events

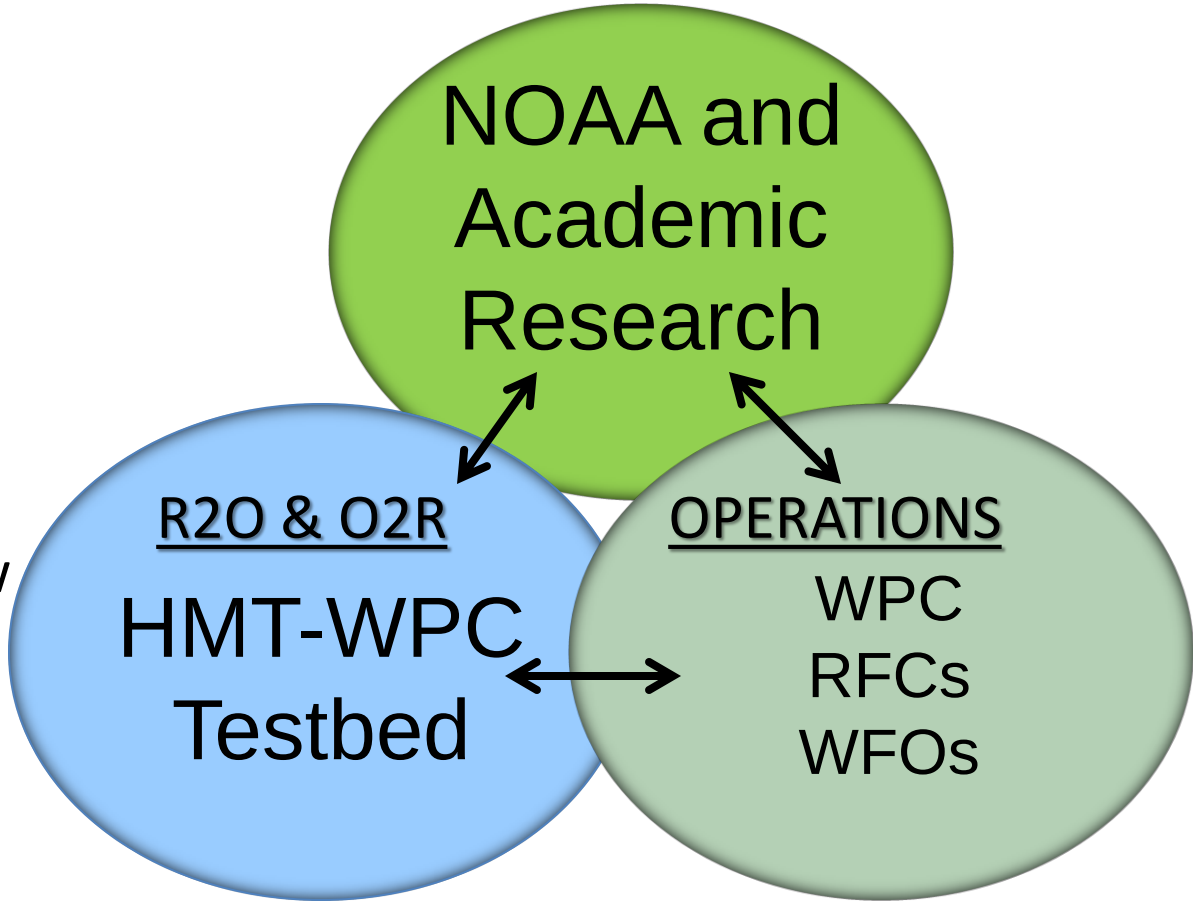
Hydrometeorological Testbed at WPC (HMT-WPC)

A component of the NOAA HMT

Goal: Transfer research innovations into operations (R2O) to improve prediction of heavy precipitation

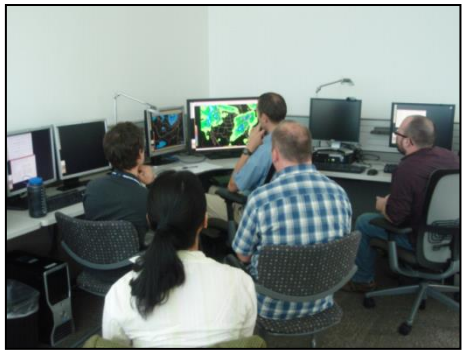
Roles:

- Identify and test new datasets to improve WPC forecasts
- Develop tools and techniques for operational use
- Provide training in new techniques to forecasters and partners



HMT-WPC Activities

The HMT-WPC facilitates R2O through real-time forecasting experiments, with diverse participation from operations, research, and academia



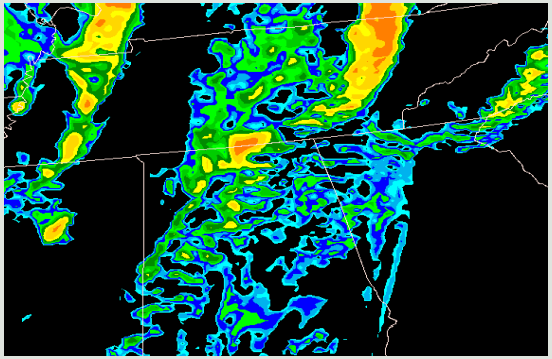
Real-Time Collaborative Experiments

Test New Datasets

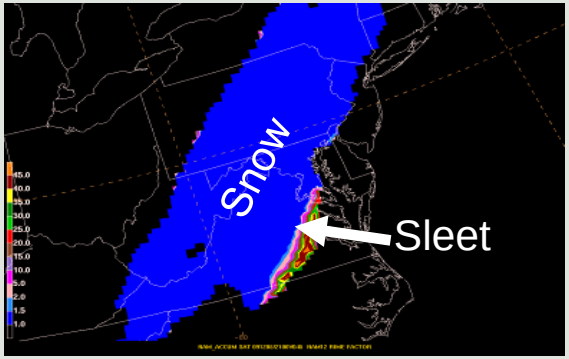
Develop New Tools/Techniques

Train Forecasters & Researchers

Warm-Season

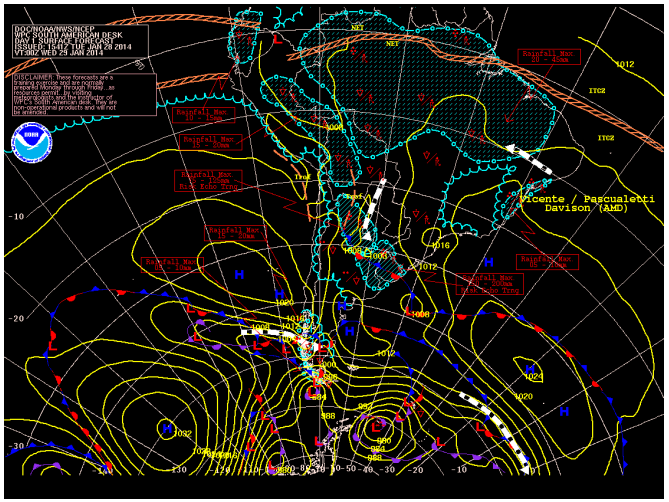


Winter Weather

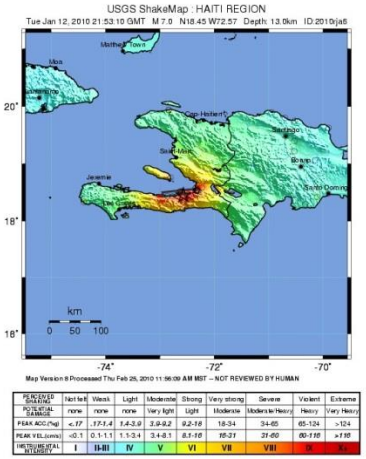


WPC International Desks

- Supported by WMO, funded by US DoS, and Met Services in Regions III/IV
- Promote a training program that enhances the scientific capacity of the participating National Meteorological Centers
  - Prepare an international cadre of meteorologists who can face the challenges of a modern forecast office. Over 300 meteorologists trained.



Weather forecast products with emphasis on precipitation forecast



Provides early warning of severe events:

-Flooding, Strong Thunderstorms

-Assistance following natural disasters such as the earthquake in Haiti.

WPC Staff and Resources – FY14

- **Organization – 46 FTEs (3 vacancies) and 3 contractors**
  - **Acting Director, Acting Deputy Director, Administrative Officer, Secretary**
  - **Forecast Operations Branch (34)**
    - Branch Chief
    - 33 Operational Forecasters, 1 Met Tech
  - **Development and Training Branch (8)**
    - Branch Chief
    - Science and Operations Officer
    - 5 Meteorologist Developers
    - International Desk Coordinator
    - Contract International Training Asst
    - 2 HMT Contractors

Budget (estimate)

Personnel	$6410K
Base non-labor	$83K
International support	$135K
Sandy Supplemental	$80K
Total Budget	*$6708K*

WPC Future Plans, cont.

- Continue to serve the weather enterprise by providing a seamless suite of national forecast and analysis products
  - **FY14 Q2**: Increase resolution of WPC medium-range grids from 5 km to 2.5 km
  - **FY14 Q4**: Contribute to development and implementation of a National Gridded Blend for land and marine parameters
  - **FY14 Q4**: Team member to develop plan to extend NWS forecasts to Day 8-10
- Establish WPC as America's *Go-To* Center for high-impact precipitation events and forecast guidance out to 14 days for a *Weather-Ready Nation*
  - **FY14 Q3**: Develop prototype Winter Storm Watch Recommender to foster spatially-consistent Watch issuances

WPC Future Plans

- Continue successful R2O activities, via the HMT-WPC, by testing, evaluating, and transitioning state-of-the-art forecast techniques into WPC operations
  - **FY14**: Integrate field participation in test bed experiments to support R2O, including the Winter Weather Experiment (Q2), HWT Spring Experiment (Q3), Flash Flood Experiment (Q4) and Summer Aviation Experiment (Q4) (shared with SPC, AWC)
- Expand and improve probabilistic forecasting techniques
  - **FY14 Q2**: Develop prototype graphical Day 4-7 Winter Outlook