

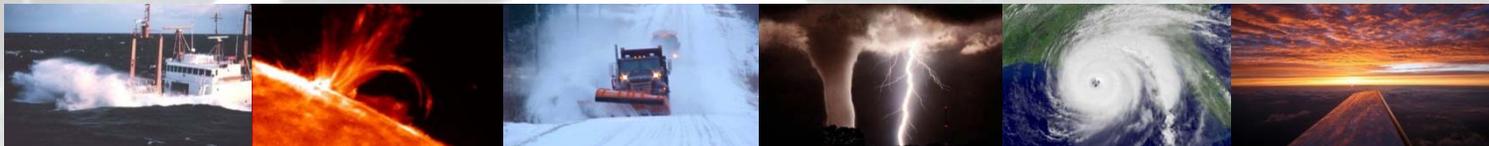


The Hydrometeorological Testbed at the Weather Prediction Center (HMT-WPC)



Wallace Hogsett
Science and Operations Officer
Weather Prediction Center

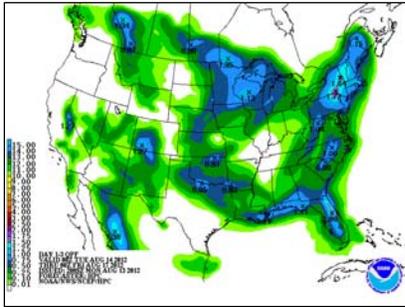
with contributions from WPC: Mike Bodner,
Faye Barthold, David Novak, and Tom Workoff



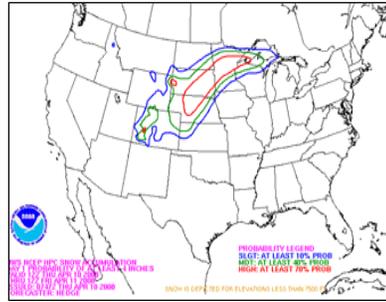
2013 NOAA GPM Workshop



WPC Operational Desks



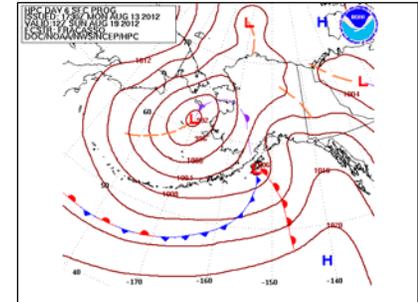
QPF



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

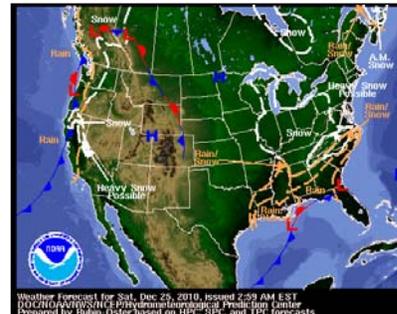
VALID AUG 13/0000 UTC THRU AUG 16/1200 UTC

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

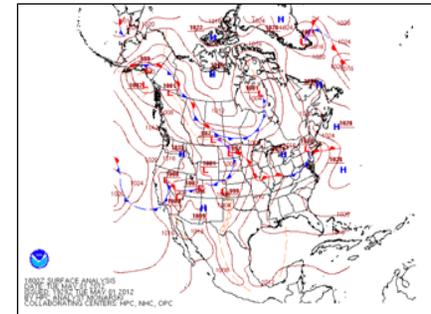
PREFERENCE: NAM/GFS/12Z ECMWF BLEND
 CONFIDENCE: AVERAGE TO ABOVE AVERAGE

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 GLOB 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.

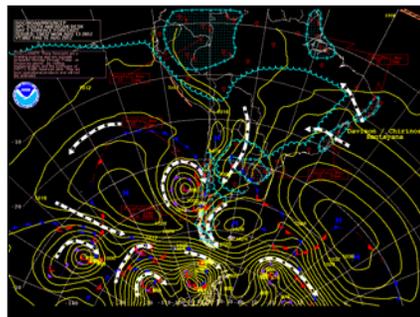
Model Diagnostics



Short Range



Surface Analysis



International



Tropical

NAM AIR QUALITY DIAGNOSTIC DISCUSSION
 NWS HYDROMETEOROLOGICAL PREDICTION CENTER CAMP SPRINGS MD
 1024 AM EDT FRI AUG 03 2012

...INTERIOR VALLEYS OF CALIFORNIA...

THE NAM INITIALIZED TEMPERATURES ON THE ORDER OF 10 TO 15 DEGREES TOO LOW IN THE SOUTHERN VALLEYS...ESPECIALLY NEAR MOJAVE AND PALM SPRINGS.

...NORTHERN TENNESSEE VALLEY...

THE RAINFALL ASSOCIATED WITH THE DECAYING MCS WAS NOT INITIALIZED WELL BY THE NAM ACROSS CENTRAL AND EASTERN TENNESSEE... AS THE MODEL WAS TOO LIGHT WITH THE RAINFALL COMPARED TO THE OBSERVED RADAR IMAGERY AND PRECIPITATION ESTIMATES.

Air Quality



HMT – WPC

Description

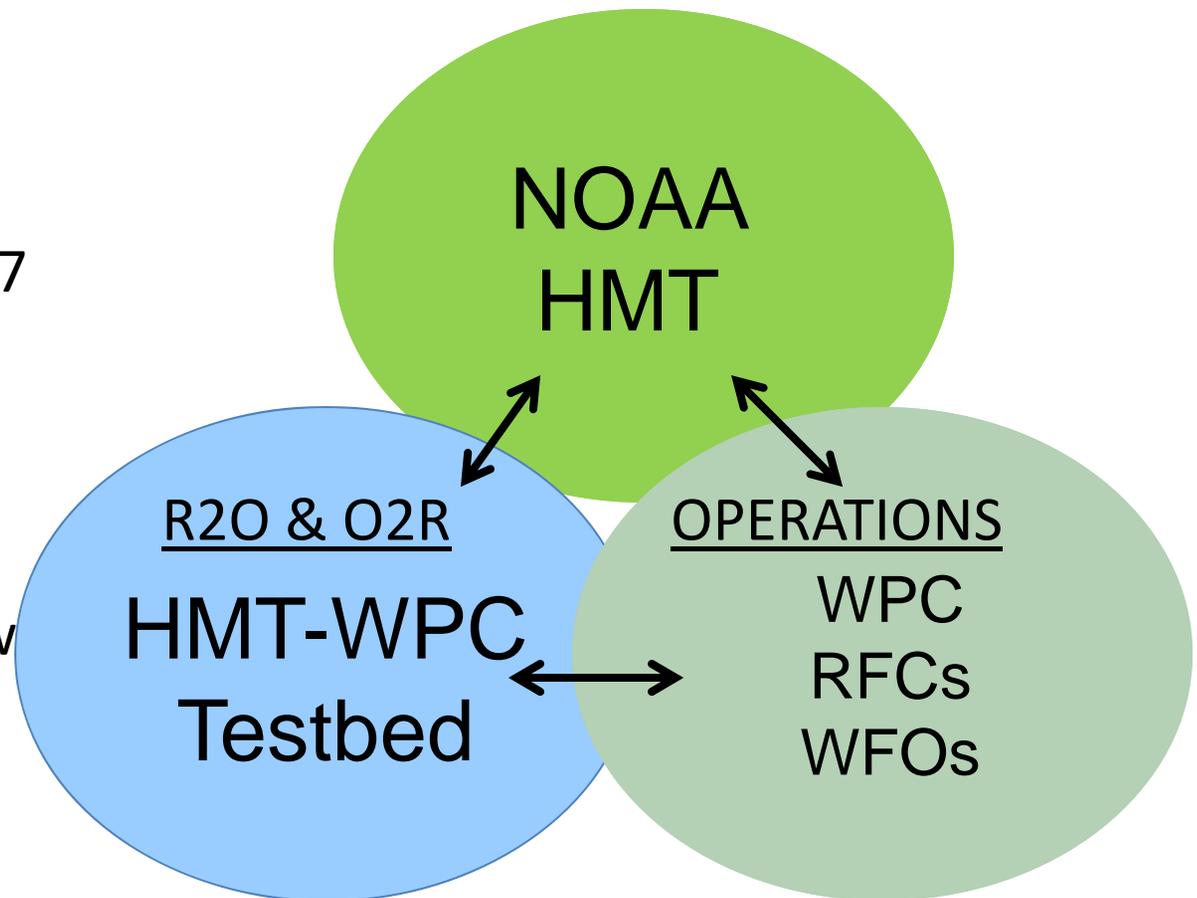


A component of the NOAA HMT

Goal: Transfer science and technology innovations into operations to improve prediction of heavy precipitation

Roles:

- Identify and test new datasets to improve WPC forecasts (out to 7 days)
- Develop tools and techniques for operational use
- Provide training in new techniques to forecasters





HMT-WPC Focus and Methods



Focus: Improve and extend prediction of heavy precipitation

Approach:

- Improve understanding of heavy precipitation phenomena
- Improve application of high-resolution and ensemble guidance

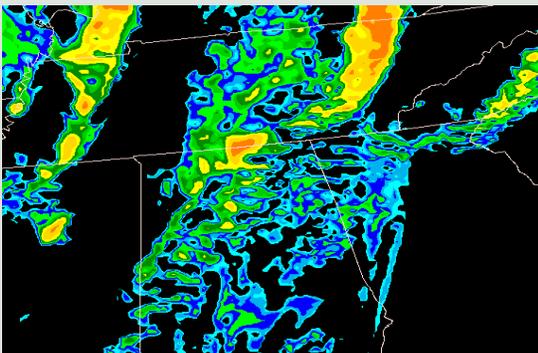
Real-Time Collaborative Experiments

Test New Datasets

Develop New
Tools/Techniques

Train Forecasters &
Researchers

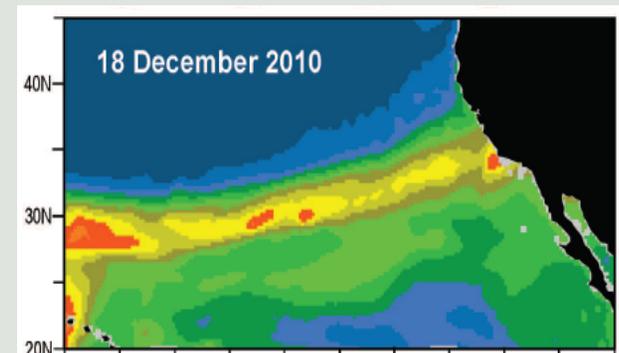
Warm-Season



Winter Weather



Atmospheric River





2012 Atmospheric Rivers Retrospective Experiment



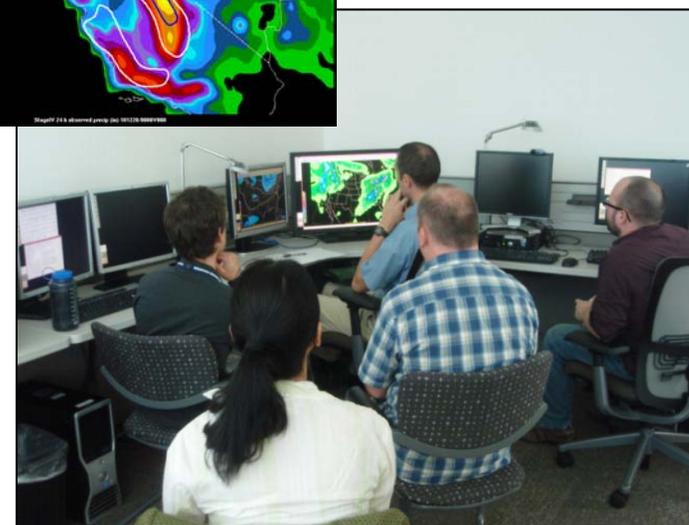
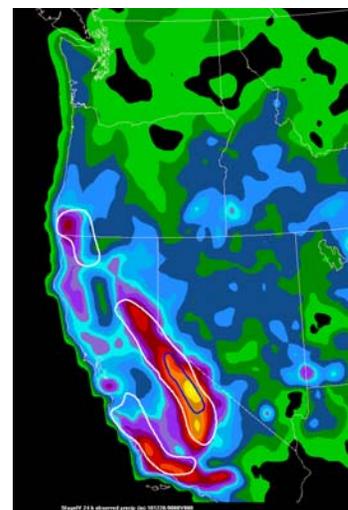
- Hosted 17 forecasters, researchers, and model developers at WPC
- Used 8 past cases over the 2008-2011 time period
- Verified using RFC precip analysis and HMT AR Observatories

Experiment Questions:

Does the HMT-ensemble, multi-model ensemble, and reforecasting dataset improve extreme precipitation forecasts?

What are the strengths & weaknesses of current model guidance?

How can forecasters add value to extreme precipitation forecasts?





2013 Winter Weather Experiment

Featured Datasets



	Provider	Model	Resolution	Forecast Hours	Notes
Operational	EMC	SREF (21 members)	16 km	87	Operational SREF
	EMC	NAM	12 km (parent) 4 km (nest)	84 60	Operational NAM; includes 12 km parent model and 4 km nest
	HPC	Autoensemble (28 members)	32 km	72	Composed of 21 SREF members, GEFS mean (2), ECMWF mean, and deterministic NAM, GFS, CMC, and ECMWF
Experimental	AFWA	WRF (10 members)	20 km	144	UKMET boundary and initial conditions
	AFWA	WRF (10 members)	4 km	72	Multi-physics, multi-initial condition convection-allowing ensemble
	EMC	NAM	12 km (parent)	84	New snow accumulation algorithm based on modified SLR technique (rime factor)

* all other operational guidance was also available to the participants



FY13 Flash Flooding and Intense Rainfall (FFaIR) Experiment



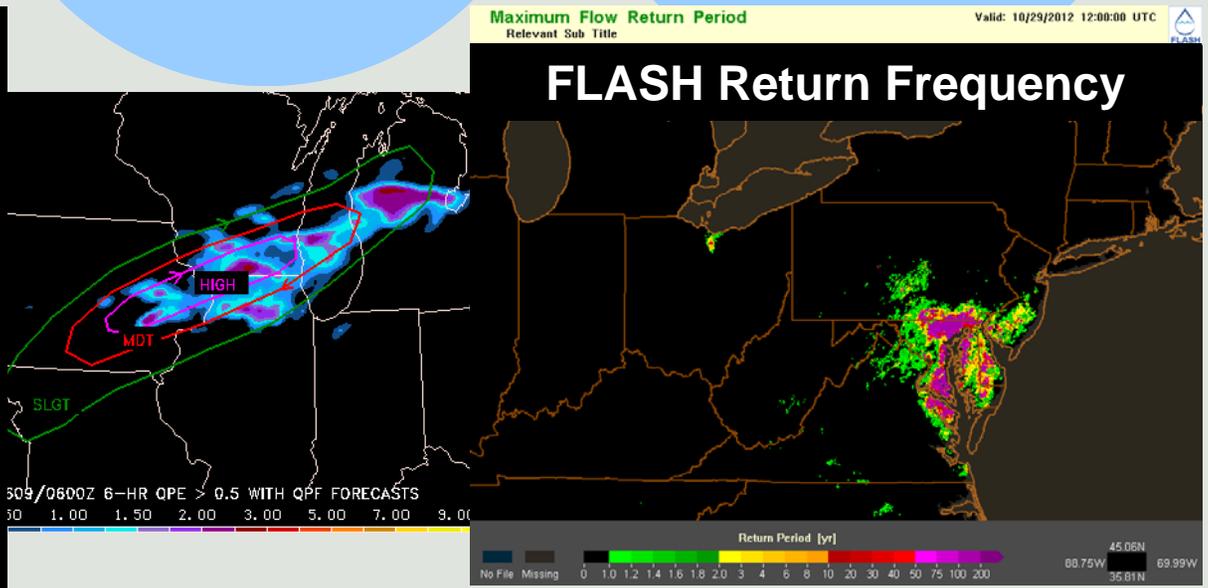
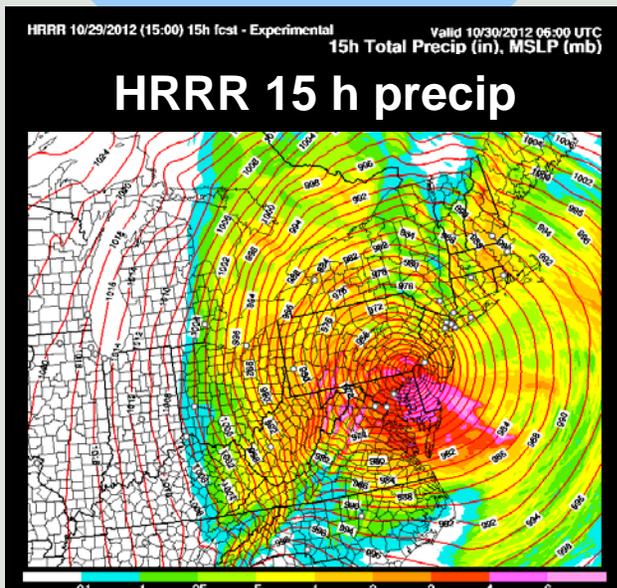
Meteorology

- 0 – 12 h probabilistic rainfall forecasts
- Satellite (GOES-R PG)
- High-res Ensembles
 - HRRR

Probabilistic Flash Flood threat product

Hydrology

- QPE
- River Stages
- Flash Flood Guidance
- FLASH hydrologic model





Summary: HMT-WPC Activities



- Accelerate R2O by developing, testing, and operationalizing emerging tools and datasets
 - Real-time and retrospective experiments
- Collaborate with entire community
 - WFOs, OAR Labs, Private sector, Academia, NCEP, GOES-R PG
- Facilitate a positive feedback loop between model and technique developers, researchers, and forecasters