

**NGGPS/MAPP
Principal Investigators Meeting
August 2-3, 2017
Agenda**

**NCWCP Auditorium
5830 University Research Court, College Park, MD 20740**

Goals:

- To assess progress on NGGPS- and MAPP-funded projects for the development of the NCEP unified prediction system focusing on modeling, data assimilation, validation, post-processing, and software infrastructure aspects
- To enhance awareness at NCEP (specifically, EMC) of the full portfolio of NGGPS and MAPP projects advancing modeling (including data assimilation and infrastructure) and prediction
- To enhance communication between NCEP and the external community PIs and enhance community engagement in NCEP's activities.

Session 1: NGGPS-Funded NOAA Testbed Projects: Enhancing High-Impact Weather Forecasts

Session 2: Model Physics and Modeling Framework

Session 3: Data Assimilation

Session 4: Verification and Validation

Session 5: Multi-Model Ensembles, Post-Processing, and Applications

[Meeting registration link](#) [Link to make hotel room reservation](#) [Beverage/snack and lunch link](#)

Remote access at the end of the agenda

DAY 1: Wednesday, August 2, 2017, 8:00am-4:30pm

8:00 am Network/Beverage service

8:30 am Welcome/Introduction
-NWS/STI Modeling Program Status/Overview (Ming Ji, Director NWS/OSTI)
-Modeling, Analysis, Predictions, and Projections, (MAPP) Program Overview, (Annarita Mariotti, Program Director)
-NGGPS Grants/Funding Status (Christopher Hedge, NWS/STI)

Session 1: NGGPS-Funded NOAA Testbed Projects: Enhancing High-Impact Weather Forecasts

(Note: the remaining sessions include testbed-affiliated projects supported by MAPP.)

9:00 am Chair: Paula Davidson (NWS/STI)

9:05 am *The subseasonal-to-seasonal variability of Northern Hemisphere midlatitudes and its influence on forecasts for weeks 3-4* (Cristiana Stan, George Mason University)

9:25 am *Unified GW Physics and Data Assimilation in the Vertically Extended Atmosphere Models* (Valery Yudin, University of Colorado/CIRES)

- 9:45 am** *Developing and Testing a High-Resolution Ensemble-Based 6-10 Day Forecast System for Atmospheric Rivers and Heavy Precipitation over the Western U.S.* (Cliff Mass, University of Washington)
- 10:05 am** *Information Extraction and Verification of Convection-Allowing Models for Tornado Forecasting* (Israel Jirak, NOAA/SPC)
- 10:25 - 10:40 BREAK**
- 10:40 am** *Exploitation of Ensemble Prediction System Information in Support of Atlantic Tropical Cyclogenesis Prediction* (Christopher Thorncroft, University at Albany/State University of New York)
- 11:00 am** *Test & Evaluation of Rapid Post-Processing & Information Extraction From Large Convection Allowing Ensembles Applied to 0-3hr Tornado Outlooks* (James Correia, NOAA/SPC OU/CIMMS)
- 11:20 am** *Improvement of Convective/Severe Weather Prediction through an Integrative Analysis of WRF Simulations and NEXRAD/GOES Observations over the CONUS* (Xiquan Dong, University of Arizona)
- 11:40 am** *The Development of the North Pacific Jet Phase Diagram at the NCEP-WPC as a Tool to Characterize the Upper-Tropospheric Flow Pattern* (Lance Bosart, University at Albany/State University of New York)
- 12:00 pm** **Lunch (orders taken in advance)**

Session 2: Model Physics and Modeling Framework

- 1:00 pm** Chair: Vijay Tallapragada (NCEP-EMC)
Chair: TBD
- 1:05 pm** *Improving lake process prediction within the Climate Forecast System for North America* (Jiming Jin, Utah State University)
- 1:25 pm** *Improving Climate Forecast System (CFS) through enhancing the Noah-MP community land model* (Fei Chen, NCAR)
- 1:45 pm** *COLA Contributions to NGGPS* (Jim Kinter, George Mason University)
- 2:05 pm** *Update from the Model Diagnostics Task Force* (David Neelin, University of California Los Angeles)
- 2:25-2:40** **BREAK**
- 2:40 pm** *Coupled Modeling Infrastructure Capabilities* (Cecelia DeLuca, NESII / University of Colorado)
- 3:00 pm** *Improving Prediction of Large-Scale Regime Transitions* (Paul Roebber, University of Wisconsin - Milwaukee)
- 3:20 pm** *Towards Advancing the MJO and 1-30 day Weather Forecasting in the Fully Coupled NGGPS* (Joshua Xiuhua Fu, IPRC, SOEST, University of Hawaii at Manoa)

- 3:40 pm** *Estimation of systematic errors in the GFS using Analysis Increments* (Eugenia Kalnay, University of Maryland)
- 4:00 pm** Evaluating the Impact of Cloud-Aerosol-Precipitation Interaction (CAPI) Schemes on Rainfall Forecast in the NGGPS (Zhanqing Li, University of Maryland)
- 4:20 pm** Q&A/guided discussion by the chairs
- 4:30 pm** Adjourn
- 5:00 pm** Unofficial dinner at TBD

DAY 2: Thursday, Aug 3 - NGGPS/MAPP PIs and Poster Session, 8:00am-5:00pm

8:00 am Network/Beverage service

Session 3: Data Assimilation

8:30 am Chair: Daryl Kleist (NCEP-EMC)
 Chair: Ron Gelaro (NASA)

8:35 am *Development of the next phase of NLDAS for improved drought monitoring and progress towards its operational transition* (David Mocko, SAIC at NASA/Goddard Space Flight Center)

8:55 am *Upgrading the CPC operational ocean monitoring to an eddy-permitting global ocean analysis using the Hybrid Global Ocean Data Assimilation System as a replacement for GODAS* (Travis Sluka, Climate Prediction Center and University of Maryland)

9:15 am *Enhancing Surface Data Assimilation and Near-Surface Weather Forecasts in NGGPS through Improved Coupling between the Land Surface and Atmosphere* (Zhaoxia Pu, University of Utah)

9:35 am *Implementing of lognormal humidity and cloud-related control variables for the NCEP GSI hybrid EnVAR Assimilation scheme* (Steven Fletcher, CIRA/CSU)

9:55 - 10:10 **BREAK**

10:10 am *Development toward NCEP's fully-coupled global forecast and data assimilation system: A coupled wave-ocean system* (Arun Chawla, EMC)

10:30 am *A High-Resolution Blended Snow Depth Analysis for NGGPS* (Cezar Kongoli, University of Maryland)

10:50 am Q&A/guided discussion by the chairs

11:00 am-12:00 pm

Poster session - area outside of conference center and auditorium

12:00 **Lunch (orders taken in advance)**

Session 4: Verification and Validation

1:00 pm Chair: Ivanka Stajner

1:05 pm *Advancing Forecast Verification and Model Development Efforts through a Flexible Satellite-Based Verification System for the Global Forecasting System* (Jason Otkin, University of Wisconsin-Madison / CIMSS / SSEC)

1:25 pm *Illustration of a Processes-Based Evaluation System for Tracing Systematic Forecast Error Evolutions in a NWP model* (Ming Cai, Florida State University)

Session 5: Multi-Model Ensembles, Post-Processing and Applications

1:45 pm Chair: Jeff Craven (NWS/STI/MDL)

Chair: Hui-Ya Chuang (NCEP/EMC)

1:50 pm *Seasonal Climate Forecasting Applied to Wildland Fire Management in Alaska* (Uma Bhatt, University of Alaska - Fairbanks)

2:10 pm *Bridging the gap in NOAA's extended and long range prediction systems through the development of new forecast products for weeks 3 and 4* (Nat Johnson, Princeton University)

2:30 pm *Towards version 2 of the global subseasonal excessive heat outlook system (SEHOS-GLOB)* (Augustin Vintzileos, University of Maryland)

2:50 - 3:05 BREAK

3:05 pm *Increasing Forecast Skill through Bridging of Climate Teleconnections: A Hybrid Statistical-Dynamical Prediction System* (Dan Collins, Climate Prediction Center)

3:25 pm *The SubX Project* (Ben Kirtman, University of Miami)

3:45 pm *Monitoring and Prediction of Flash Droughts over the United States* (Kingtse Mo, Climate Prediction Center)

4:05 pm *Weather regime diagnostic tools for sub-monthly ensemble forecasts* (Andrew Robertson, IRI, Columbia University)

4:25 pm *Validation of Significant Weather Features and Processes in Operational Models Using a Cyclone Relative Approach* (Brian Colle, State University of New York - Albany)

4:45 pm Q&A/guided discussion by the chairs / **Wrap-up**

5:00 pm Adjourn

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Poster Session

area outside of conference center and auditorium

Topic 1: NGGPS Testbeds

- Application of a Hybrid Dynamical-Statistical Model for Week 3 to 4 Forecast of Atlantic/Pacific Tropical Storm Activity* (Jae Schemm and Hui Wang, NCEP-CPC)
- Real-time VIIRS land surface products in NOAA's numerical weather prediction applications* (Ivan Csiszar, NESDIS)
- Data Mining of High Resolution Storm-Scale Data Sets* (Kristin Calhoun for Travis Smith, OU/CIMMS & NOAA/NSSL)
- Cloud-scale variational lightning data assimilation within WRF-ARW using GSI and NEWS3DVAR* (Kristin Calhoun for Alex Fierro, OU/CIMMS & NOAA/NSSL)

Topic 2: Physics/Modeling and Framework

- Improving cloud microphysics and their interactions with aerosols in the NCEP cloud models* (Sheng-Po Chen for Sarah Lu, State University of New York - Albany)

Topic 3: Data Assimilation

- On the Use of Valid Time Lagging (VTL) Ensembles to Increase Ensemble Size in the GFS Hybrid 4DVar System* (Xuguang Wang, University of Oklahoma)
- The development of a multi-resolution hybrid 4DVar system for GFS* (Xuguang Wang, University of Oklahoma)
- Development of Advanced Data Assimilation Techniques for Improved Use of Satellite-Derived Atmospheric Motion Vectors* (James Jung, University of Wisconsin)
- Improvements in Air Temperature Forecasts in the Global Forecast System (GFS) via Assimilating ASCAT Soil Moisture Retrievals* (Mitchell Schull, University of Maryland-ESSIC)

Topic 4: Verification/Validation

- Diagnosing and quantifying uncertainties of the reanalyzed clouds, precipitation and radiation budgets over the Arctic and CONUS using combined surface-satellite observations* (Baiké Xi, University of North Dakota)
- Predictability and Prediction Skills of Persistent High Pressure Systems in GEFS* (Ping Liu, State University of New York -Stony Brook)
- Developing Physics-oriented Diagnostic Tools for Model Evaluation and Improvement* (Wei-Wei Li for Zhuo Wang, University of Illinois)

Topic 5: Post-Processing and Applications

- Improving Global Wind-Wave Probabilistic Forecasts and Products Beyond Week 2* (Ricardo Campos for Steve Penny, University of Maryland)
- Investigation of aerosol effects on weather forecast using NCEP global forecast system* (Partha Bhattacharjee, NCEP/EMC for Sarah Lu, State University of New York Albany)

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Remote access logistics**

Wednesday:

NGGPS/MAPP PI Meeting Wed, Aug 2, 2017 8:30 AM - 4:30 PM EDT

Please join the meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/581530877>

Join the conference call for voice access: telecon 1-877-985-3644 passcode 5846644#

Joining from a video-conferencing room or system?

Dial: 67.217.95.2##581530877

Cisco devices: 581530877@67.217.95.2

Thursday: NGGPS/MAPP PI Meeting Thu, Aug 3, 2017 8:30 AM - 5:00 PM EDT

Please join the meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/368318101>

Join the conference call for voice access: telecon 1-877-985-3644 passcode 5846644#

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