



**NOAA OWAQ**  
**Principal Investigators**  
**Presentations**  
**Winter 2018**

**AGU - December 10th - 14th, 2018**



# Office of Weather & Air Quality



The Office of Weather and Air Quality (OWAQ) supports world-class weather and air quality research to save lives, reduce property damage, and enhance the national economy.

In pursuit of its vision and mission, OWAQ works closely with the National Weather Service (NWS) to help develop and transition weather and air quality research, including hurricanes, severe thunderstorms, heavy precipitation, and air pollution. Additionally, OWAQ utilizes social science to learn how to deal with the uncertainties weather presents and to inform its engagement and communication with researchers, funders, and the public.

Furthermore, OWAQ selects and funds research that supports and fosters collaborations — within NOAA's research laboratories and across the weather enterprise (i.e., NOAA, other Federal agencies and entities, state and local governments, academia, and the private sector). This coordination will include: 1) developing engagement mechanisms with the U.S. private weather industry; 2) enhancing two-way collaboration, coordination, and feedback between operations and research to accelerate the pace of capability improvements; 3) supporting community modeling efforts beneficial to both operational support and research questions; and 4) guiding collaborative efforts to include both operational and research priorities in planning phases.



**NOAA OWAQ Programs**

# Acronyms



**AGU - American Geophysical Union**

**AMS - American Meteorological Society**

**CIMMS - Cooperative Institute for Mesoscale Meteorological Studies**

**CIRA - Cooperative Institute for Research in the Atmosphere**

**CIRES - Partnership between NOAA and University of Colorado Boulder**

**CPC - Climate Prediction Center \*NOAA**

**CPO - Climate Program Office \*NOAA**

**CSU - Colorado State University**

**EMC - Environmental Modeling Center**

**GFDL - Geophysical Fluid Dynamics Laboratory \*NOAA**

**NASA - National Aeronautics and Space Administration**

**NCAR - National Center for Atmospheric Research**

**NCEP - National Centers for Environmental Prediction \*NOAA**

**NCSU - North Carolina State University**

**NESDIS - The NOAA National Environmental Satellite, Data, and Information Service**

**NOAA - National Oceanic and Atmospheric Administration**

**NOAA ESRL PSD - NOAA Earth Systems Laboratory Physical Sciences Division**

**NRL Monterey - U.S. Naval Research Laboratory in Monterey, California**

**NSSL - National Severe Storms Laboratory**

**NWS - National Weather Service**

**OWAQ - Office of Weather and Air Quality**

**SSEC - Space Science and Engineering Center (University of Wisconsin - Madison)**

**Stony Brook - Stony Brook University, New York**

**SUNY - The State University of New York**

**UCI ESS - University of California, Irvine Dept of Earth System Science**

**UCI School of Physical Sciences - School of Physical Sciences at the University of California, Irvine**

**UMass - University of Massachusetts**

**UTA - University of Texas At Arlington**

**UW - Madison - University of Wisconsin - Madison**

**WPC - Weather Prediction Center \*NOAA**



Hendrik Tolman  
NOAA  
AGU  
12/10/2018 (12:30 - 1:30 PM)  
Marriot Marquis Independence E  
NOAA Model Development Forum

DaNa Carlis, Presenters: Craig McLean and John Cortinas  
NOAA  
AGU  
12/10/2018 (6:15 - 7:15 PM)  
Marriott Marquis Liberty L  
Implementation of the Weather Research and Forecasting  
Innovation Act of 2017 at NOAA

Mike Hobbins, Robert Webb, Roger Pulwarty  
University of Colorado-CIRES, NOAA-OAR/ESRL  
AGU

12/11/2018 (8:00 AM -Noon)

Drought in Africa: Understanding and Exploiting the Demand  
Perspective Using A New Evaporative Demand Reanalysis

Chidong Zhang

NOAA PMEL

AGU

12/11/2018 (1:40 - 1:55 PM)

143 A-C

MJO-QBO Connection: Knowns and Unknowns (Invited)

Hendrik Tolman, Fred Toepfer, Brian Gross, Vijay Tallapragada,  
Ivanka Stajner

NOAA

AGU

12/11/2018 (1:40 - 6:00 PM)

Hall A-C

NOAA's Next Generation Global Prediction System Progress

Jeffrey Anderson, Moha El Gharmati, ... Jadwiga Richter, et al.

NCAR

AGU

12/11/2018 (1:40 - 6:00 PM)

Hall A-C

The Data Assimilation Research Testbed (DART): Ensemble  
Data Assimilation for NCAR Community Earth System Models

Zane Martin, Shuguang Wang, et al.

Columbia University

AGU

12/11/2018 (1:55 - 2:10 PM)

143 A-C

Modeling the MJO-QBO Relationship in a Reforecast Model

DJ Seo

UTA

AGU

12/11/2018 (2:10 - 2:25 PM)

Conditional bias-penalized Kalman filter for improved state estimation over the tails of distribution

Brandon Wolding, Charlotte Demott, Larissa Back, et al.

CSU

AGU

12/11/2018 (2:40 - 2:55 PM)

143 A-C

Mixed Layer Model Assessment of Boundary Layer  
Convergence and the Madden-Julian Oscillation

Hyemi Kim, Matthew Janiga, Deepthi Achuthavarier, Kathleen  
Pegion

Stony Brook Uni., CIRES/UColo

AGU

12/11/2018 (3:10 - 3:25 PM)

143 A-C

Process-based MJO Evaluation in SubX and S2S Hindcasts

Andrea Lang; Hannah Elizabeth Attard

SUNY Albany

AGU

12/12/2018 (8:00 - 8:15 AM)

143 A-C

S2S Prediction and Sources of S2S Forecast Skill: A Focus on  
Stratospheric Pathways (Invited)

Andrew Robertson (primary Convener), Christina Stan, Andrew  
Robertson (Chairs)

Columbia Uni., GMU

AGU

12/12/2018 (8:00 - 10:00 AM)

143 A-C

SESSION: Subseasonal to Seasonal Prediction of Weather and  
Climate I

Nicolas Vigaud; Andrew Robertson, et al.

Columbia University

AGU

12/12/2018 (8:30 - 08:45 AM)

143 A-C

Predictability of wintertime weather regimes over North America  
from submonthly reforecasts

Ben Kirtman

U. of Miami

AGU

12/12/2018 (10:20 - 10:35 AM)

143 A-C

The Sub-seasonal Prediction Experiment

Andrew Robertson (primary Convener), Arun Kumar, Kathleen  
Pegion (chairs)  
Columbia Uni., NOAA/NCEP, CIRES/UColo  
AGU  
12/12/2018 (10:20 AM - 12:20 PM)  
143 A-C  
SESSION: Subseasonal to Seasonal Prediction of Weather and  
Climate II

Kristen Mayer, Elizabeth Barnes  
CSU  
AGU  
12/12/2018 (11:20 - 11:35 AM)  
143 A-C  
Prediction Skill Provided by the MJO to Midlatitude Circulations  
on S2S Timescales

Andrew Robertson (primary convener), Duane Waliser, Andrew Robertson (chairs)

Columbia Uni., NASA/JPL

AGU

12/12/2018 (1:40 - 3:40 PM)

143 A-C

SESSION: Subseasonal to Seasonal Prediction of Weather and Climate III

Dan Collins et al.

CPC

AGU

12/12/2018 (1:40 - 3:40 PM)

143 A-C

Evaluating the Potential for Forecasts of Opportunity and of Extremes on Subseasonal Timescales using SubX

Ehab Meselhe

Tulane University

AGU

12/12/2018 (1:40 - 3:40 PM)

Using Dimensionless Scaling Parameters as Decision Metrics in a Heterogeneous Hydraulic Routing Scheme

Angel Munoz and Andrew Robertson

Columbia University

AGU

12/12/2018 (2:14 - 2:55 PM)

143 A-C

How much can Model Output Statistics improve sub-seasonal predictive skill over the Intra-Americas Region?



Trent Ford

Southern Illinois University

AGU

12/12/2018 (2:25 - 2:40 PM)

143 A-C

Land-Atmosphere Interactions and Subseasonal Heat Wave  
Forecasts from a Suite of Climate Forecast Models

JJ Gourley

NSSL

Hydrology

AGU

12/12/2018

Identification of extreme rainfall amounts and concomitant  
flooding impacts at continental scale

Andrew Wood

NCAR

AGU

12/12/2018 (4:15 - 4:30 PM)

Application of an ensemble-based modeling approach for assimilating observations to improve hydrologic and streamflow predictions

Andrew Robertson et al.

Columbia University

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Calibrated Multi-model Probabilistic Sub-seasonal Forecasts Based on SubX Models

Annarita Mariotti et al.

NOAA CPO

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Bridging the Weather-to-Climate Prediction Gap: Progress by  
the NOAA S2S Prediction Task Force

Charlotte Demott

CSU

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

The curious connection between ocean feedbacks and mean  
state moisture for MJO simulation

Douglas Miller, Zhuo Wang

University of Illinois

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Skillful Seasonal Prediction of Winter Blocking and Extreme  
Temperature Frequency

Emily Becker et al.

CPC

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Assessing Probabilistic Forecasts of S2S Climate Extremes  
Using the NMME

Emmerson Lajoie and Dan Collins

CPC

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Evaluation of the SubX Reforecast Skill under Real-time Considerations

Jessie Carman (primary convener)

NOAA/OWAQ

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

SESSION: Improvements in Synoptic, Subseasonal to Seasonal, and Decadal Projections Through Next-Generation Ocean Model Developments, Observations, and Coupled Data Assimilation Posters

Michael Bell, Andrew Robertson, et al.

Columbia University

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

The IRI Climate Data Library as a Platform to Archive, Analyze,  
and Distribute SubX Project Data

Neil Barton et al.

NRL Monterey

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Update on the US Navy's Earth System Prediction Capability  
Effort

Shuguang Wang

Columbia University

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Prediction and predictability of tropical intraseasonal convection: seasonal dependence and the Maritime Continent prediction barrier

Tim Schnieder

NOAA NWS

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

Subseasonal and Seasonal Prediction at NOAA: Plans and Prospects

Wei Li, Yuejian Zhu, et al.

NOAA/NWS/NCEP/EMC

AGU

12/13/2018 (8:00 - 12:20 PM)

Hall A-C

Evaluation of the dominant modes of sub-seasonal variability in the NCEP GEFS 35-day Experiments

Cheng Zheng, Edmund Chang

Stony Brook University

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Hall A-C

The Role of MJO Propagation, Lifetime and Intensity on Modulating the Temporal Evolution of the MJO Extratropical Response



Christopher Castro  
University of Arizona

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Enhancements to the WRF-Hydro Hydrologic Model Structure  
for Semi-arid Environments

DJ Seo

UTA

AGU

12/13/2018 (8:00 AM - 12:20 PM)

Nested hyper-resolution modeling for the National Water Model  
- The Dallas-Fort Worth Testbed

Christopher L. Castro  
University of Arizona  
AGU

12/13/2018 (8:30 - 08:45 AM)

Demonstrating the added values of suction losses for channel infiltration in WRF-Hydro Hydrological Model and its application in Semiarid Region

Pierre Kirstetter  
University of Oklahoma / NSSL  
AGU

12/13/2018 (9:45 - 9:50 AM)

Probabilistic Quantitative Precipitation Estimates with Ground- and Space-based Remote Sensing

Zhuo Wang, Chuan-Chieh Chang

University of Illinois

AGU

12/13/2018 (1:40 - 6:00 PM)

Hall A-C

Multi-Year Prediction of Atlantic Tropical Cyclones

Jessie Carman (primary convener)

NOAA/OWAQ

AGU

12/13/2018 (4:00 - 6:00 PM)

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SESSION: Improvements in Synoptic, Subseasonal to Seasonal, and Decadal Projections Through Next-Generation Ocean Model Developments, Observations, and Coupled Data Assimilation I

Andrew Wood

NCAR

AGU

12/13/2018 (4:24 - 4:36 PM)

Building a Community of Practice: HEPEX's 15 years of successful collaboration to advance ensemble streamflow forecasting for risk-based decision-making in water management

John Forsythe

CIRA/Colorado State University

Earth and Space Science Informatics

AGU

12/13/2018

Advected Layered and Total Precipitable Water Products and Applications to Forecasting Hazardous Precipitation Events

Mari R Tye, James Done, Heather Lazrus, Rebecca E Morss,  
Erin Towler

NCAR

AGU

12/14/2018 (8:00 AM - 12:20 PM)

Walter E Washington Convention Center - Hall A-C (Poster Hall)

H51X-1678: UDECIDE: Connecting decadal predictive capacity  
to stakeholder needs

Dagmar Budikova, Trent Ford, et al.

Southern Illinois University

AGU

12/14/2018 (1:40 - 6:00 PM)

Hall A-C

Connections Between Increased Incidence of US Summer Heat  
Waves and Sea Ice Decline in Hudson Bay

Hiroyuki Murakami, Tom Delworth, et al.

NOAA/GFDL

AGU

12/14/2018 (1:55 - 2:10 PM)

143 A-C

Real-time Seasonal Prediction of Tropical Cyclones in 2018  
using GFDL High-Resolution Global Coupled Model

DJ Seo

UTA

AGU

12/14/2018 (1:55 - 2:10 PM)

High-Resolution Hydrologic Forecasting for Very Large Urban  
Areas

Jason Furtado et al.  
University of Oklahoma  
AGU  
12/14/2018 (2:25 - 2:40 PM)  
Marriott Marquis, Archives  
Synoptic Precursors to Subseasonal to Seasonal Extreme  
Precipitation Events Across the United States

***For more information on the Office of Weather and Air Quality  
visit: <https://owaq.noaa.gov>.***



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