Workshop on Metrics, Post-Processing, and Products for Subseasonal to Seasonal

Emphasizing, but not restricted to, S2S
28 February - 2 March 2018
National Center for Weather and Climate Prediction
College Park, Maryland

Purpose:
The recent Weather Act directs and authorizes NOAA to improve temperature and rainfall prediction as well as impacts, such as drought, sea-ice extent etc. at two weeks to two years, defined in the Act as sub-seasonal to seasonal (S2S). The act also directs NOAA define operational goals and objectives for these improvements and to reach out to other Agencies, academia and the private sector to help in defining the forecast, observing, monitoring, and research needs to meet these goals and objectives. This workshop is an initial meeting for a broad enterprise discussion of user needs, agency capabilities and products, gaps between needs and capabilities, and potential operational and technological solutions to address those gaps, especially potential post-processing solutions, developer metrics and reliability metrics. Metrics can be categorized in the following groups:

1. Input: observations, their quality, quantity, distribution etc.
2. Process: measuring characterization of physical processes. Can range from detailed (moisture, interface fluxes) to collective (el Nino, TC genesis)
3. Output: specific forecast variables, to include thresholds such as drought, flood, frost, monsoon, TC genesis)
4. Outcome: improved forecasts, increased reliability
5. Impact: user/customer benefit from decisions based on forecasts (safety, economy, preparedness).

This workshop will focus on (2) through (4).

This workshop will also provide an initial opportunity for community input to the draft S2S prediction report that NOAA is preparing in response to the Weather Act of 2017.

Attendance is by broad invitation with representation from all Federal agencies participating in FCMSSR and appropriate representatives from the science and commercial communities.

Expected results:
- Identification of current agency operational capabilities for S2S prediction and how the agencies evaluate them (current metrics they are using)
- Identification of user data (parameters, frequency, availability, reliability) and product needs
- Gaps between current capabilities and needs
- Potential operational solutions to gaps (i.e., more frequent NWP runs, more ensemble members, more output parameters, better product design, etc.)
- Potential technological solutions to gaps (i.e., post processing, analog, statistical/dynamical methods, AI, etc.)
- Discussion of usability, reliability and improved metrics (developer metrics and reliability metrics)
- Identification of required additional research

Key workshop output:
How to define a better approach to address needs of broader user community in support of usability, reliability, and timeliness of S2S products?
Post-workshop: (1) S2S plan outlining post processing and metrics to support the research and operational communities, etc; (2) Communicate to upper management direction for improvement to S2S prediction, and, (3) Identify additional research needed to provide effective S2S products.

**Conference Center Connectivity:**
WiFi: NOAAGuest
Type your email into browser

*If you have difficulty with a particular browser, log in on Internet Explorer or Safari. You may use any browser after login is complete.*

**Remote Access:**
Please register for Workshop on Metrics, Post-Processing, and Products for S2S on Feb 28, 2018 8:00 AM EST at:

https://attendee.gotowebinar.com/register/1510760150751971073

After registering, you will receive a confirmation email containing information about joining the webinar.
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<thead>
<tr>
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<th>Speaker/Contact</th>
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<tbody>
<tr>
<td>8:00</td>
<td>Check-in</td>
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<tr>
<td>9:00</td>
<td>Welcome and Purpose</td>
<td>Jessie Carman, National ESPC</td>
<td>Academic Lecture</td>
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<td>9:15</td>
<td>Next Generation Earth System Prediction:</td>
<td>Raymond Ban, National Academy of</td>
<td>Academic Lecture</td>
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<td></td>
<td>Strategies for S2S Forecasts</td>
<td>Sciences</td>
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<tr>
<td>9:45</td>
<td>The Weather Act/NOAA S2S Report</td>
<td>David DeWitt, NOAA/CPC</td>
<td>Academic Lecture</td>
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<tr>
<td>10:15</td>
<td>Discussion of Purpose</td>
<td>Assembly</td>
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<td>10:45</td>
<td>Morning Break</td>
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<tr>
<td>11:00</td>
<td>Agency capabilities (Products, Post-processing, and Metrics)</td>
<td>Dave DeWitt, NOAA/CPC</td>
<td>Academic Lecture</td>
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<tr>
<td>11:15</td>
<td>CPC Current Capabilities and Metrics and Key Science Challenges to Improving S2S Forecast Skill</td>
<td>Lt Col Rob Branham, USAF Air Staff</td>
<td>Academic Lecture</td>
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<tr>
<td>11:30</td>
<td>14 WS (USAF) Capabilities</td>
<td>Charles Skupniewicz, Navy</td>
<td>Academic Lecture</td>
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<tr>
<td>11:45</td>
<td>NOAA MAPP Program S2S Activities</td>
<td>Annarita Mariotti, NOAA/CPO</td>
<td>Academic Lecture</td>
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<tr>
<td>12:00</td>
<td>DOE Modeling Predictability Interests and Activities</td>
<td>Dorothy Koch, DOE</td>
<td>Academic Lecture</td>
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<td>12:15</td>
<td>NASA</td>
<td>Andrea Molod, NASA</td>
<td>Academic Lecture</td>
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<td>12:30</td>
<td>Lunch</td>
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<td>1:00</td>
<td>User needs</td>
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<td>1:10</td>
<td>Regional Services: Moving into R2S for NOAA’s Product Lines</td>
<td>Ellen Mecray, NOAA/NESDIS</td>
<td>Academic Lecture</td>
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<td>1:20</td>
<td>AF Weather Interest in S2S Climate Prediction</td>
<td>Lt Col Rob Branham, USAF Air Staff</td>
<td>Academic Lecture</td>
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<td>1:30</td>
<td>User Needs: US National Ice Center</td>
<td>CDR Ruth Lane, NIC</td>
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<td>1:40</td>
<td>DHS and FEMA Use of Weather Forecasts</td>
<td>Michael Hurick, FEMA</td>
<td>Academic Lecture</td>
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<td>1:50</td>
<td>Earth Observations and Diplomacy</td>
<td>Fernando Echavarria, DoS</td>
<td>Academic Lecture</td>
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<td>2:00</td>
<td>User Needs: The U.S. Department of Agriculture</td>
<td>Mark Brusberg, USDA</td>
<td>Academic Lecture</td>
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<td>2:10</td>
<td>Improving S2S Precip Forecasting for Water Supply Management</td>
<td>Jeanine Jones, Western States Water Council &amp; CDWR</td>
<td>Academic Lecture</td>
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<td>2:20</td>
<td>Transforming Risk Management with Probability Forecasts: Weeks to a Season or More</td>
<td>John Dutton, Prescient Weather Ltd</td>
<td>Academic Lecture</td>
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<td>2:30</td>
<td>S2S Weather Forecast Data Needs and Climate FieldView</td>
<td>Ricardo Lemos, The Climate Service</td>
<td>Academic Lecture</td>
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<td>2:40</td>
<td>Afternoon Break</td>
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<td>2:55</td>
<td>Breakout Sessions: Capabilities vs. Needs</td>
<td>Breakout Groups A, B, and C</td>
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<td>4:25</td>
<td>Discussion: The Capability-Needs Gap</td>
<td>Session Chairs/Rapporteurs</td>
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<td>5:00</td>
<td>Adjourn Day 1</td>
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<td>6:30</td>
<td>No-host Dinner @ Franklins</td>
<td>5123 Baltimore Ave, Hyattsville, MD 20781</td>
<td>Workshop on Metrics, Post-Processing, and Products for S2S</td>
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<td>8:30</td>
<td>Day 1 Review/Day 2 Goals</td>
<td>Jessie Carman, National ESPC</td>
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<td>8:40</td>
<td>Operational and Technological Solutions</td>
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<td>Potential Operational Capability for S2S Prediction</td>
<td>Yuejian Zhu, NOAA/EMC</td>
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<td>8:50</td>
<td>FNMOC Future S2S Capabilities</td>
<td>Charles Skupniewicz, Navy</td>
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<td>9:00</td>
<td>Developments Needed to Generate High-quality S2S Products through Statistical Postprocessing</td>
<td>Tom Hamill, NOAA/ESRL</td>
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<td>9:10</td>
<td>S2S Technological Improvement: Issues to Consider</td>
<td>Ben Kirtman, Univ. of Miami</td>
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<td>9:20</td>
<td>Weather-to-Decadal Timescales: Enhancing Modeling for Predictions</td>
<td>V. Ramaswamy, NOAA/GFDL</td>
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<td>SubX</td>
<td>Dan Barrie, NOAA/CPO</td>
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<td>Robin Kovach, NASA</td>
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<td>General discussion</td>
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<td>10:15</td>
<td>S2S Opportunities</td>
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<td>Research Opportunities for Advancing S2S Forecast</td>
<td>Chidong Zhang, NOAA/PMEL</td>
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<td>10:45</td>
<td>S2S research opportunities</td>
<td>Annarita Mariotti, CPO/MAPP</td>
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<td>11:00</td>
<td>Breakout Sessions: Solutions</td>
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<td>Group D: Operational solutions and pros/cons</td>
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<td>Group E: Technological solutions and pros/cons</td>
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<td>Group F: Research solutions and pros/cons</td>
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<td>Lunch</td>
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<td>12:45</td>
<td>Discussion: Summary of Solutions</td>
<td>Session Chairs/Rapporteurs</td>
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<td>Summarize and map against identified gaps</td>
<td>Scott Sandgathe, APL Univ. of Washington</td>
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<td>1:45</td>
<td>Reliability and potential metrics for impact events</td>
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<td>Short-term Climate Extremes: Probabilistic Forecasts from a Multi-model Ensemble</td>
<td>Emily Becker</td>
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<td>2:00</td>
<td>S2S Verification Topics at the NOAA Environmental Modeling Center</td>
<td>Jason Levit, NOAA/EMC</td>
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<td>Kathy Pegion, George Mason Univ.</td>
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<td>Afternoon Break</td>
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<td>2:45</td>
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<td>Dan Collins, NOAA</td>
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<td>3:00</td>
<td>Convectively Coupled Equatorial Waves and the MJO in Subseasonal Forecasts</td>
<td>Matthew Janiga, NRL-MRY</td>
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<td>3:15</td>
<td>S2S Verification Approaches: The Challenge to Provide Meaningful Information</td>
<td>Barbara Brown, NCAR</td>
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<td>Caren Marzban, Univ. of Washington</td>
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<td>3:45</td>
<td>S2S Metrics Issues</td>
<td>Ben Kirtman, Univ. of Miami</td>
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<td>4:00</td>
<td>Recommendations on metrics and further work needed to improve them</td>
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<td>Discussion</td>
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Workshop on Metrics, Post-Processing, and Products for S2S
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<tr>
<th>Time</th>
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<th>Presenter(s)</th>
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<tr>
<td>8:30</td>
<td><strong>Workshop Summary/Next Steps</strong></td>
<td>David McCarren, Navy Oceanography</td>
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<td>9:30</td>
<td><strong>Development of an S2S Validation/Verification plan for the needed capability</strong></td>
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<td>Review of gaps</td>
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<td>Review of most fruitful leads</td>
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<td>List of potential operational initiatives</td>
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<td>List of potential research initiatives</td>
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<td>Inputs/comments to draft NOAA S2S plan</td>
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<td>12:00</td>
<td><strong>Adjourn</strong></td>
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