

NOAA Science Challenge Workshop:

Predicting Arctic Weather and Climate and Related Impacts:

Status and Requirements for Progress

Purpose

The overarching purpose of the workshop is to inform NOAA on actions required to address present and anticipated future mission requirements for predictions of Arctic weather and climate and related impacts. The workshop will also define actions needed to determine relationships between Arctic and lower latitude weather and climate variability and their predictive implications, with emphasis on predictions over the sector encompassing North America and adjacent ocean regions. The workshop's primary emphasis will be on steps needed to improve predictions and related services from days to seasons in advance; however, needs and opportunities for developing longer-term prediction products will also be considered. The workshop will place particular emphasis on addressing forecast challenges in the following areas:

- 1) Predictions of Arctic weather and climate, including sea ice.
- 2) Predictions of mid-latitude weather and climate, focusing on the role of higher latitude processes such as variations in Arctic sea ice and the Arctic Oscillation/North Atlantic Oscillation.

The workshop will help define NOAA's specific role and objectives in relation to Arctic research supported by other US agencies and through new international programs. The latter include the WWRP Polar Prediction Project and the WCRP Polar Climate Predictability Initiative, which will contribute to the development of a new Global Integrated Polar Prediction System.

Participation and structure

The workshop will include scientists from across NOAA, cooperative institutes, and the external community. The overall structure is a working meeting in which most time will be devoted to breakout groups. The breakout groups will be preceded by overview presentations on NOAA, national, and international contexts driving needs for improved prediction services of Arctic weather and climate and related impacts. These will be followed by presentations of leading scientists who will provide their perspectives on key science challenges, needs and opportunities for advancing NOAA Arctic prediction capabilities. The breakout groups will then formulate recommendations in specific areas required by NOAA to address its major forecast challenges related to the Arctic.

Meeting objectives

- Identify primary mission drivers that require NOAA to improve its predictions of Arctic weather and climate and related impacts.
- Evaluate forecast verifications and uncertainty estimates in current Arctic predictions to focus attention on priorities for forecast improvements.
- Identify major gaps and define steps needed by NOAA, working together with its partners, to improve predictions of Arctic weather and climate and Arctic-midlatitude connections, and associated NOAA services.

- Identify opportunities for NOAA to work together with other agencies, the external community, and international programs to accelerate progress in advancing scientific understanding and predictions of Arctic weather and climate and related impacts, and to deliver useful information and products that would improve decision-making.

Deliverable

A white paper will be delivered to the NOAA Research Council within three months of the completion of the workshop. This white paper will summarize the workshop proceedings and recommendations on specific actions needed by NOAA to improve predictions of Arctic weather and climate and related impacts. This report will inform the subsequent development of a research and operational services implementation plan in this area.

Proposed Workshop Location and Dates

Workshop Location: Boulder, CO

Local Hosts: NOAA ESRL and CU CIRES

Dates (tentative): May 13-15, 2014

NOAA Organizing Committee

| | |
|------------------------------|--------------------------------|
| Randall Dole (OAR, co-chair) | Fiona Horsfall (NWS, co-chair) |
| Aimee Devaris (NWS) | David Easterling (NESDIS) |
| Chris Fairall (OAR) | Janet Intrieri (OAR) |
| David Legler (OAR) | James Overland (OAR) |
| Michael Sigler (NMFS) | Arun Kumar (NWS) |

Program Committee – NOAA Organizing Committee and

| | |
|----------------------|---|
| Waleed Abdalati | University of Colorado, CIRES |
| Uma Bhatt | University of Alaska, Fairbanks |
| David Bromwich | Ohio State University, Byrd Polar Research Center |
| Pablo Clemente-Colon | National Ice Center |
| Dan Eleuterio | DOD, ONR, Earth System Prediction Capability |
| John Farrell | US Arctic Research Commission |
| Scott Harper | DOD ONR, Interagency Arctic Research Policy Committee |

Time line

1. Identify NOAA Organizing Committee and co-chairs (Done, Sept. 2013)
2. OC identifies scope of workshop, creates a prospectus for review by the NOAA Research Council. (Draft prospectus briefed to NOAA Research Council on Sept. 30)
3. OC revises draft prospectus following Research Council comments (by end of November)
3. OC proposes members of a Program Committee that includes external partners, proposes Workshop co-chairs
4. Program Committee develops Workshop Program, speaker and participant invitations (see charge below, February-April)
5. Workshop (May 13-15 2014)
6. Workshop report completed and presented to NOAA Research Council (by August 2014).

Roles and Responsibilities of the Organizing /Program Committee

Organizing Committee:

- Define scope of workshop
- Create a workshop prospectus for review by the NOAA Research Council
- Identify a program committee to include external partners and workshop co-chairs
- Develop budget estimate for workshop

Program Committee:

- Develop program for workshop
- Identify invitees to workshop and transmit invitations
- Identify session chairs, rapporteurs
- Identify/serve as team responsible for drafting white paper