Arctic Climate Predictions Group II

Services:

Statement: The critical and desirable services are well identified.

Expectation Management is required for both clients AND NOAA leadership.

Action Item: Develop a visionary schedule of Arctic Predictability improvement milestones based upon a realistic assessment of current capabilities.

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Models:

Statement: Weather, ice (and presumably ocean models) in the Arctic perform unacceptably to provide desirable services. Since Wx models need better sea-ice output from sea-ice models, and sea-Ice models need better output from Wx models, it is clear that a coupled improvement effort is necessary. NOAA internally runs between 400 and 500 models.

Question – Are we running the WRONG (i.e. ROW* adjusted) models in the Arctic, or could current model performance be significantly improved by a higher density and quality of observation inputs? (e.g. surface pressure measurement for initialization).

Action Item: Identify and coordinate NOAA modeling groups that will participate in, and contribute to the GIPPS (In particular PPP)

*In Arctic Speak ROW = **R**est **o**f the **W**orld

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Processes and Observations:

Statement: Data scarcity, especially in the central Arctic Ocean is a problem in the Arctic, however, it is clear that a tremendous inventory of data is unused due to lost inventories, lack of accessibility, lack of interoperable standards, and principal investigator hoarding. NOAA is the world leader in leading and supporting the development of federated, surface-based global observing systems with data sharing standards.

Action Item: Identify and coordinate NOAA observation AND data management groups that will participate in, and contribute to AON/SAON and GIPPS (In particular PPP)

Action Item: NOAA will actively monitor the evolution of the ecology, biology and physical characteristics of the Arctic Ocean and Surrounding Seas and contribute to GEO Arctic-BON.

NOAA actively participates in the GIPPS **PPP (YOPP)** +PCPI (NGGPS)

NOAA actively participates in and contributes to the design and execution of AON/SAON

Develop Coordination

What actions recommended for climate predictions and related services between now and 2020?

NOAA actively monitors the evolution of the ecology, biology and physical characteristics of the Arctic Ocean and Surrounding Seas (GEO Arctic-BON)

Some Personal Thoughts/Opinions

- NOAA should apply its many talents in an integrated way to fulfill its vision of the "US is an Arctic Nation".
- Develop a coupled atmosphere-land-ocean-sea ice regional model of the greater Arctic to focus on the many unique challenges/processes. To better match its Arctic mandate, add biophysical, trace gases, ecology +???
- Expand regional reanalysis for the same region to understand the ongoing changes in a more comprehensive and integrated manner.
- One additional data source that might be available for YOPP is the COSMIC 2 Polar constellation.

- Initiate a climate process team focused on mixed phase clouds
- Model based sensitivity studies
- Better NOAA program manager representation on the IARPC collaboration teams
- Federate observed Arctic surface-atmosphere coupling parameters
- Establish sustained observational capacity for modeling support and operational community
- Improve atmospheric forecasts tailored to improving sea-ice forecast
- Sustain and expand ongoing modeling activities at GFDL
- Complete build out and enhancement of the Alaska CRN including increasing density, measurement capacity and cold weather hardening.
- Coordinate and expand CRN outside of U.S. territories
- Integrated plan for sustained marine observation plan for the Bering and U.S. Arctic ocean waters with Fisheries, OAR, NOS (DBO)
- Establish an AON interagency MoU
- Continue the process of establishing MoUs wih commercial partners
- Establish process to establish and receive feedback from stakeholders
- Engage in Arctic region weather forecasting comparison project (NMME)
- Exploit use of existing data including satellite
- Data rescue for reanalysis
- Establish U.S – Russia- Canada intensive rawinsonde campaign during the PPP
- Establish system for research to operations for observation sustainability
- Data management support for IASOA/GCW
- Supports MOSAiC
- Establish DOIs for NOAA datasets (obs and model outputs)