Arctic-lower latitude linkages (Day 2)

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Eclectic:

of, denoting, or belonging to a class of ancient philosophers who did not belong to, or found, any recognized school of thought but selected such doctrines as they wished from various schools.

-- Free Online Dictionary

Focusing the topic:

What is the Arctic climate response to Arctic sea ice change?

What is the regional to global response to Arctic sea ice change?

Consider the above in a broader context (i.e. Arctic amplification)

1. What are actions recommended for NOAA needed to determine relationships between Arctic and lower latitude weather and climate variability and their predictive implications between now and 2020?

1. NOAA should coordinate a synthesis effort (3-5yr) on Arctic-midlatitude linkages

- **a. Assess the current state of knowledge**
- **b. Implement "Linkages Diagnosis" Portal, providing access to**
  - **- Model outputs, e.g. ESRL's ongoing 3-part global model experiment.**
  - **- Reanalysees**
  - **- Archived forecasts**
  - **- Links to In-situ data**
  - **- Tools for exploring relationships**
- **c. Coordinate process diagnostic studies (NOAA-led Climate Process Team)**

  Consider other tools – more creative approaches – to circumvent model problems, e.g. those that handle clouds better

2. NOAA should be a major player in PPP/YOPP (3-5yr)

- **a. NOAA should lead the North American focus**

3. NOAA should adopt a CESM-style paradigm for experimenting with NCEP models (e.g., CFS)

***Ancillary questions*:**

What would be more definitive diagnostic, experimental, sensitivity, or predictability/ prediction tests for the Arctic? What are the crucial model deficiencies – are they fatal?

Purview of Climate Process Team (1.1.c) -- candidate foci:

- **Test for a stratospheric pathway; low top/high top comparison**
- **Evaluate the cloud radiation forcing in the models**
- **Assess model resolution-dependence via case studies using high-resolution regional model(s)**

2. How can NOAA work together with partners to achieve this progress?

- **Engage actively in PPP/YOPP (previous slide)**
- **Participate in International Arctic Science Committee (IASC)**
- **Interact with university community, UCAR**
- **Active role in Earth System Prediction Capability (ESPC)**

3. What are the three highest priority actions that your group has identified?

- **Synthesis Report**
- **Coordinated experiments with shared model/data capacity -- can extend to hierarchy of models**
- **Convey state of knowledge about Arctic linkages to broader audiences (public, stakeholders, policy community) through information/outreach efforts – products such as a "fact sheet", Arctic Report Card, . . .**

4. What would be suggested metrics of success that NOAA has made progress in these areas?

- **Completion of the synthesis (report)**
- **Quantification of the the impact of sea ice on extra-tropical predictability**
- **Bibliometrics**

5. What are initial recommended actions?

- **Formation of the NOAA synthesis coordination team (1.1a)**
- **Chapman conference to provide state of knowledge assessment**
- **Initiate access to data from ESRL model experiments**
- **NOAA's Climate Program Office needs to do an RFP with new monies on these topics**