

## IASOA Transport Working Group

April 13, 2016

**Attendees:** Sara Crepinsek, Sandy Starkweather, Taneil Uttal, Timo Vihma, Irina Petropavlovskikh, Matt Newman, Lantao Sun, Jessie Creamean, Matthew Shupe, Xiangdong Zhang, Audra McClure, Alexander Makshtas, Amy Solomon, Judah Cohen, Chris Cox, Bill Neff, Ann Jefferson

### Introduction of group members

*Lantao Sun Presentation* – ERA-interim trend (24 years) pattern in winter temperatures and what is causing the recent “Warm Arctic, Cold Continents”, warm Arctic causing reactions in lower latitudes, does recent Arctic change significantly affect the jet stream?, examine climate model simulations: ERA-interim, AMIP (70), CMIP (58), findings: recent mid-latitude cooling trend is not a forced response (either to GHG forcing or the additive effects by SST and sea ice concentrations), the observed cooling trend more likely reflects the atmospheric internal variability, AMIP SLP trend pattern associated with mid-latitude cooling, 2m – T/SLP trend for individual ensembles showed with ERA-interim, CLIM\_POLAR AMIP = observed SST, GHGs and sea ice 1979-1989 climatology, Historical AMIP = observed GHGs, SST and sea ice conditions, Change\_ice = Historical AMIP – CLIM\_POLAR AMIP, Arctic sea ice loss reduces daily temperature variability and reduces cold extremes, observed recent cooling trend in central/east Asia and central North America is not a forced response, recent sea ice loss contribute to the warming in the Arctic but not cooling over mid-latitude continents, Arctic amplification does affect mid-latitude weather however by reducing daily variability and reducing cold extremes

- Coupled problem is hard to separate out and should reduce variability and not increase variability
- Suggestion of partial coupling model runs
- Pre-supposed Arctic sea ice is captured correctly, which isn't true, so cold events are not captured by models
- Natural vs. non-natural variables
- Possible to use IASOA observations for verification in trends

### *Transport Working Group Details:*

- How can observations contribute to model agreement trends?
- Look at costal stations to represent affects between land and ocean trends
- Identify important cases of heat transport to help verify model results
- Models struggle to represent surface heat fluxes, so can we trust models for these large scale results/trends
- Dust aerosols contribute to these transports due to feedback mechanisms that can be used as a test for models: surface albedo
- Large contributions from other IASOA groups: integrate processes, need a design for how working group can move forward with research goals/objectives

### **Action Items:**

- Need to address potential science questions:

- Understand how changes in the Arctic affect mid-latitudes
- Understand how changes in the Arctic affect climate
- How forcing from mid/low latitudes affect the Arctic
- Understanding physical processes to identify issues
- Name of working group to be changed to: Regional Processes and Transports
- What is group most interested in studying with respect to IASOA stations:
  - How do models compare to data
  - Working with modeling community to see where weak links are
  - Linkages with Arctic and mid-latitude transports