

Breakout group2, Modeling, May 13 2014:

What are the primary challenges for model predictions in the Arctic now?

Wave, ice, and tides/interactions and dynamic processes need to be implemented into model

There are lots of unknowns about where to make improvements – need validation/testing of various components of models, i.e., in atmosphere, forcing over sea ice, do we know if forcing is correct? Atmospheric radiation due to clouds – impacts on net surface flux? There are case studies we can do; improvements to buoys.

Better wind measurements

Better ice drift measurements

Need to examine and verification of coupled systems; flux corrections between the atmosphere and ocean

#1 challenge -- Validation and observations!!!!!!!!!!!!!! How can we get remote based observations that match model forecasts that are well linked to sensible forecasts? Alaska is not going to get \$40 million for an observation network!

What is required to address these challenges (improved representation of key processes, data assimilation, higher horizontal or vertical resolution, etc.)?

Yes to everything in parentheses

Vertical mixing in ocean and atmosphere

Handling of leads and land-fast ice

Higher resolution models for both atmosphere and ocean

Representation of clouds and radiative impacts

What advances in observations or process understanding would likely have the largest impacts on improving predictions of the Arctic coupled system?

RAOBs over the Arctic

Arctic COSMIC

Flying Global Hawk 3 times a week