# Break Out Group 4

Model Improvement Plan

Tuesday, Feb 2

# What model improvements are being planned?

- Activities in all aspects – model components, model coupling, parameterizations

- Example of model components – LANL building MPAS sea ice; similar to CICE but on MPAS grid – allows regional refinement

- Parameterizations – land fast ice, wave-ice interactions, ocean mixing, cloud physics, etc.

- Coupling of models – using existing components within standard coupling framework (NEMS, etc).

- Modularity of models and parameterizations was highlighted

# Are ensembles runs begin considered?

- Yes. They are already being done in operational cases.
- Most are initial condition ensembles
- Parameter uncertainty ensembles also discussed for better understanding model and needed improvements
- Discussion of ensemble system design; ensemble spread
- Consensus on the need for ensembles for customer information

# What model products are most useful?

- Need for sea ice concentration/thickness
- Need for forecasts on the timing of ice events
- Wave height
- Freezing spray
- Land-fast ice – hazard for coastal cities and issue for transportation
- Many things hard to validate and so need for more observations
- Output of model needs to be combined with information on decision support for a useful product

# Should we propose an Arctic testbed exercise?

- General consensus that a coordinated effort to document and compile forecast model skill from different centers would be useful
- Something like SIPN on shorter timescales
- Need for balance between level of effort and usefulness of available information
  - Discussion of how coordinated (i.e. same forcing data); what scores provided; whether to provide raw forecast data;
  - General feeling that need to start simple (so no ensembles as an initial requirement)
  - Comparing different initializations and making those available as well

# Next field season validation opportunities?

- Need for better communication of field measurements and data availability

- Interest in not just sharing of raw data but also some common QC and common data grid

- DTC doing some archiving of data but not doing a complete historical lookback

- Effort to do a new (longer) Arctic reanalysis