

# Weather/Hazards and Climate Prediction

## Breakout Group 1

Day 1

**Challenge 1:** Sea ice and other data to improve forecasts through better Model Initialization

**Service:** a) One-stop shop to obtain hourly high-resolution sea ice concentration for North America for use in RUC model.

**Solution:** Dave Jackson to have modeling chief contact Stan Benjamin.

b) More observations (clouds, moisture) to improve model initializations. **Solution:** Include more commercial aircraft data,

**Modeling Challenge & Process and Observations:**

Parameterizations for stable BL and cloud microphysics and aerosols in the Arctic.

## **Challenge 2: Coastal Storm Surge Forecasts**

**Service:** Longer lead time for coastal storm forecasts

**Modeling Challenge:** Models have not made it as far north as Alaska yet.

- Accurate storm/wind forecast for the Bering Sea is need to inform wave model.
- Need Tide/wave model deliverables that can then inform a coast surge model.

**Process and Observations:** Fast ice, updated DEMs (bathymetry), and increase tide/water level observations;

### **Challenge 3: Short-term Forecasts (hours+)**

**Service:** Detailed information on ice character, freeze-up, ice edge forecasting etc. needs; understanding the evolving thresholds of high impacts events which are greater than in the past (e.g. flash freezes, ice pressure, bergs, etc.)

**Modeling Challenge:** Ensemble forecasts? RR ensemble would be great in Alaska. Better collaboration with Canada.

**Process and Observations:**

## **Challenge 4: MIZ and Aviation activities increasing in the Arctic**

**Service:** Marginal Ice Zone forecast at higher resolution, ceiling and icing issues for aircraft

### **Modeling Challenge:**

- Better representation of the MIZ in sea ice models
- Cloud microphysics
- In-line Chem model included in HRRR, etc. – can also help with AQ implications fire weather season.

**Process and Observations:** cloud microphysics, obtain observations on icing from small-airplane pilots (FAA help), Humidity, Observations using *unmanned vehicles* (2020)

## **Challenge 5: Sea-ice travel Safety**

**Service:** Fast-ice break-up breakup warning

### **Modeling Challenge:**

- Not included in most sea ice models at present

### **Process and Observations:**

- Seismic array has detected changes in landfast ice grounding, develop this further