Gultepe et al.

Proposed experiment on polar ice clouds (PIC3)

POLAR ICE CLOUDS AND CLIMATE CHANGE (PIC3)

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ASR-CAPI breakout session

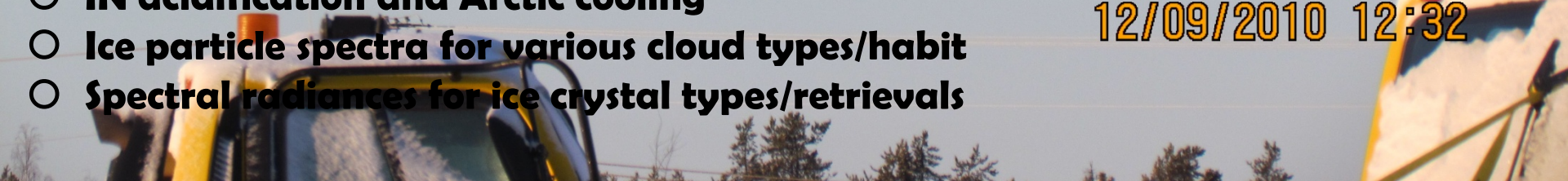
CURRENT ISSUES RELATED TO ICE CLOUDS/SNOW PRECIP

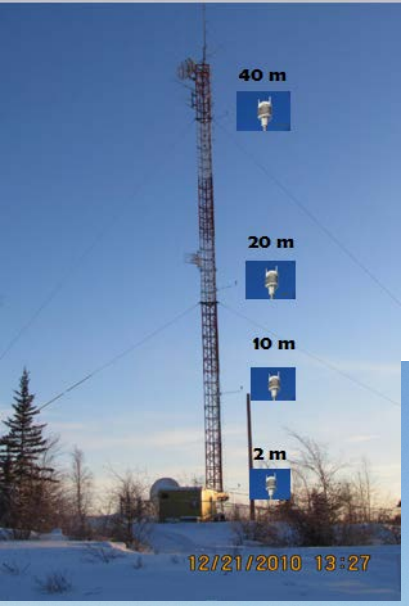
SITES

- NSA, Barrow, AL, US
- Yellowknife, NWT, CA
- AWI Polar-5 aircraft
- AMF2 mobile unit

- **Overall, ice clouds and snow are important part of the hydrometeorological cycle, and they are directly related.**

- **Ice crystal concentration parameterizations and issues related small ice crystals, and nucleation processes**
- **PR cannot be measured accurately if it is less than 0.5 mm/hr (~10 W m-2); snow rate is about 0.5 mm/hr overall in continental Arctic regions. Arctic precip rate will increase 3-4 times more than this of midlatitudes.**
- **Ice crystal habit effects on mass and optical properties**
- **Autoconversion from IWC to SWC**
- **Ice crystal concentrations with size<100 micron**
- **Usually low vertical air velocities**
- **IN acidification and Arctic cooling**
- **Ice particle spectra for various cloud types/habit**
- **Spectral radiances for ice crystal types/retrievals**





Yellowknife to Barrow

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Snow precipitation in Arctic regions

- Precip rates cannot be measured accurately if it is less than 0.5 mm/hr

- Weighing gauges do not work accurately in the Arctic regions because of their sensitivity to particle size and density, and wind effects

- Optical gauges are better than weighing gauges because their sensitivity is directly related to individual particle in a sampling volume

- Snow density is not well known during the precipitation to obtain accurate SWE.

- Hot plates (or capacitance sensors) can work better than others but no particle density info is provided