

Instrument Systems

Instrument NSA ● AMF3 ●

Surface Meteorology

-Meteorology tower (MET)	●	●
-Eddy Corr. Flux (ECOR)	●	●
-Ameriflux (AMC)	●	●
-Multi-angle Snow Camera		●

Atmospheric Profiling

-Balloon Sounding (SONDE)	●	●
-Automated SONDE	●	
-Tethered Balloons (TBS)		●
-Unmanned Aerials (UAVs)		●

Cloud Properties

-Micropulse Lidar (MPL)	●	●
-Microwave Radiometer HF	●	
-Microwave Radiometer 3Chan		●
-Total Sky Imager (TSI)	●	●
-Vaisala Ceilometer (VCEIL)	●	●
-Ka-band Scanning Cloud Radar	●	●
-W-band Scanning Cloud Radar	●	●
-Ka-band Zenith Radar	●	●
-X-band Scanning Precip. Radar	●	●
-Radar Wind Profiler (RWP)	●	●
-Doppler Lidar (DL)	●	●
-Raman Lidar (HSRL/RL)	●	●

Radiant Flux Measurements

-Atmos. Emitted Rad. Interf.	●	●
-Infrared Thermometer (IRT)	●	●
-Multifilter Shadowband Rad.	●	●
-Upwelling Radiation (GRNDRAD)	●	●
-Downwelling Radiation (SKYRAD)	●	●
-Multifilter Radiometer (MFR)	●	●
-Cimel Sunphotometer (CSPHOT)	●	●

New in 2016

-AOS shelter/instruments		●
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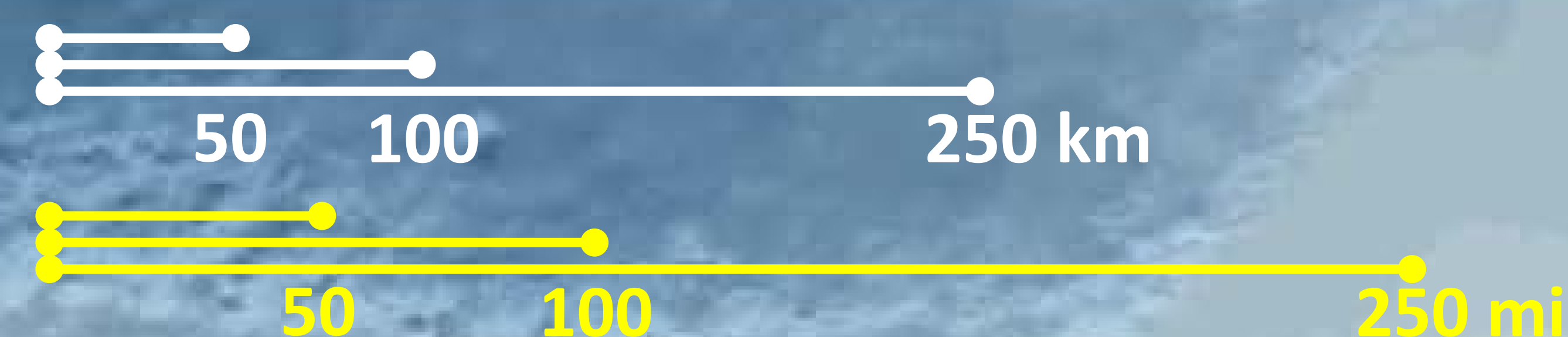
Chukchi Sea

Barrow/NSA

Oliktok Point

Beaufort Sea

Atqasuk



Barrow (1998-present)



Barrow/NSA main site



Great White: ARM instruments



User Shelter: for guest use/instruments



Barrow Duplex: lodging for all users



Maintenance Building

Atqasuk (1999-2010)



Atqasuk Site Aerial View
(Credit: Mike Worley, BLM)



Pumpkin Shelter
(Credit: Will Shaw, Jim Barnard)

Oliktok Point/AMF3 (2013-present)



Oliktok Point/AMF3 mobile shelters



Oliktok Point/AMF3 skydeck instruments



Tethered Balloons



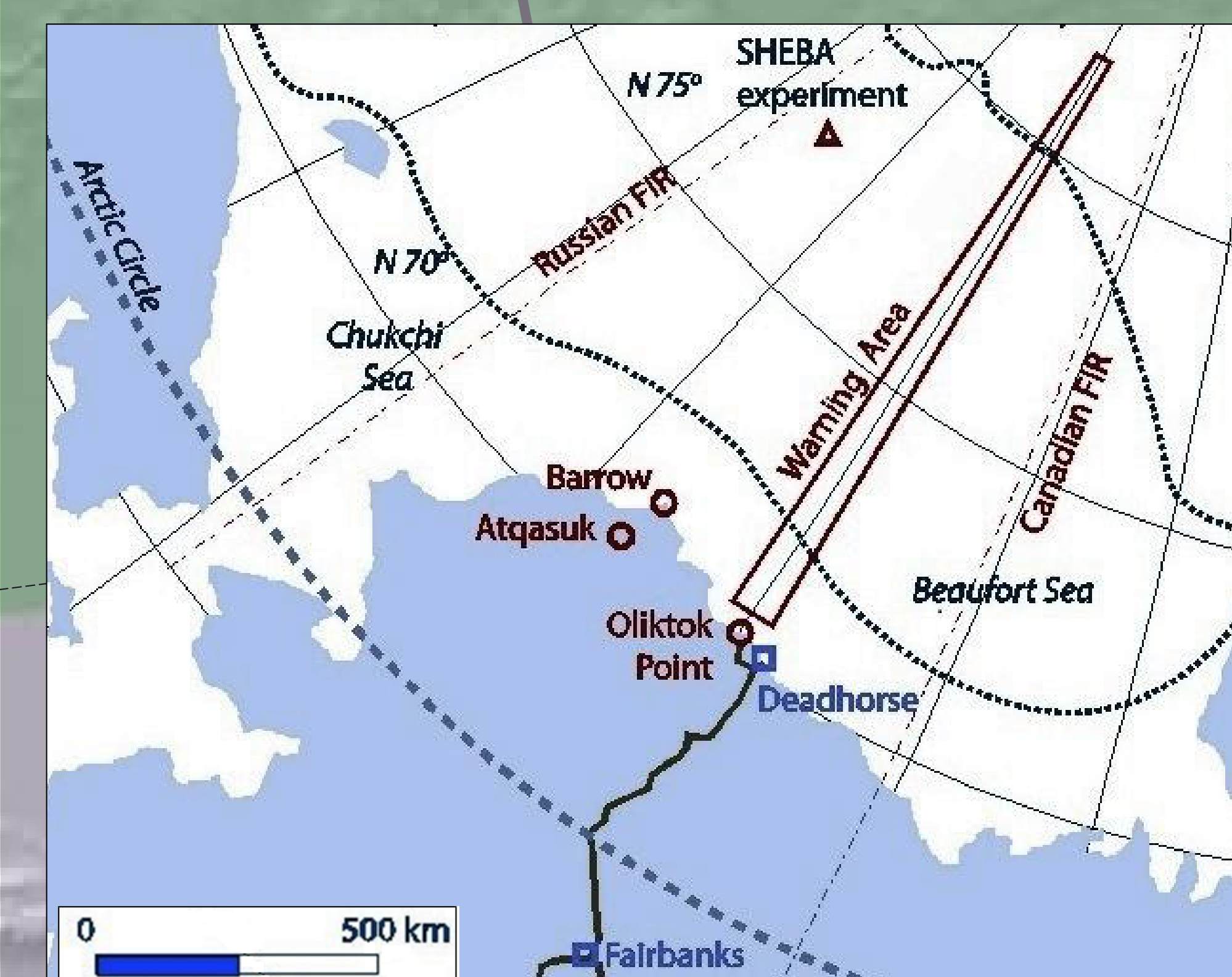
Arctic Entry: heated space



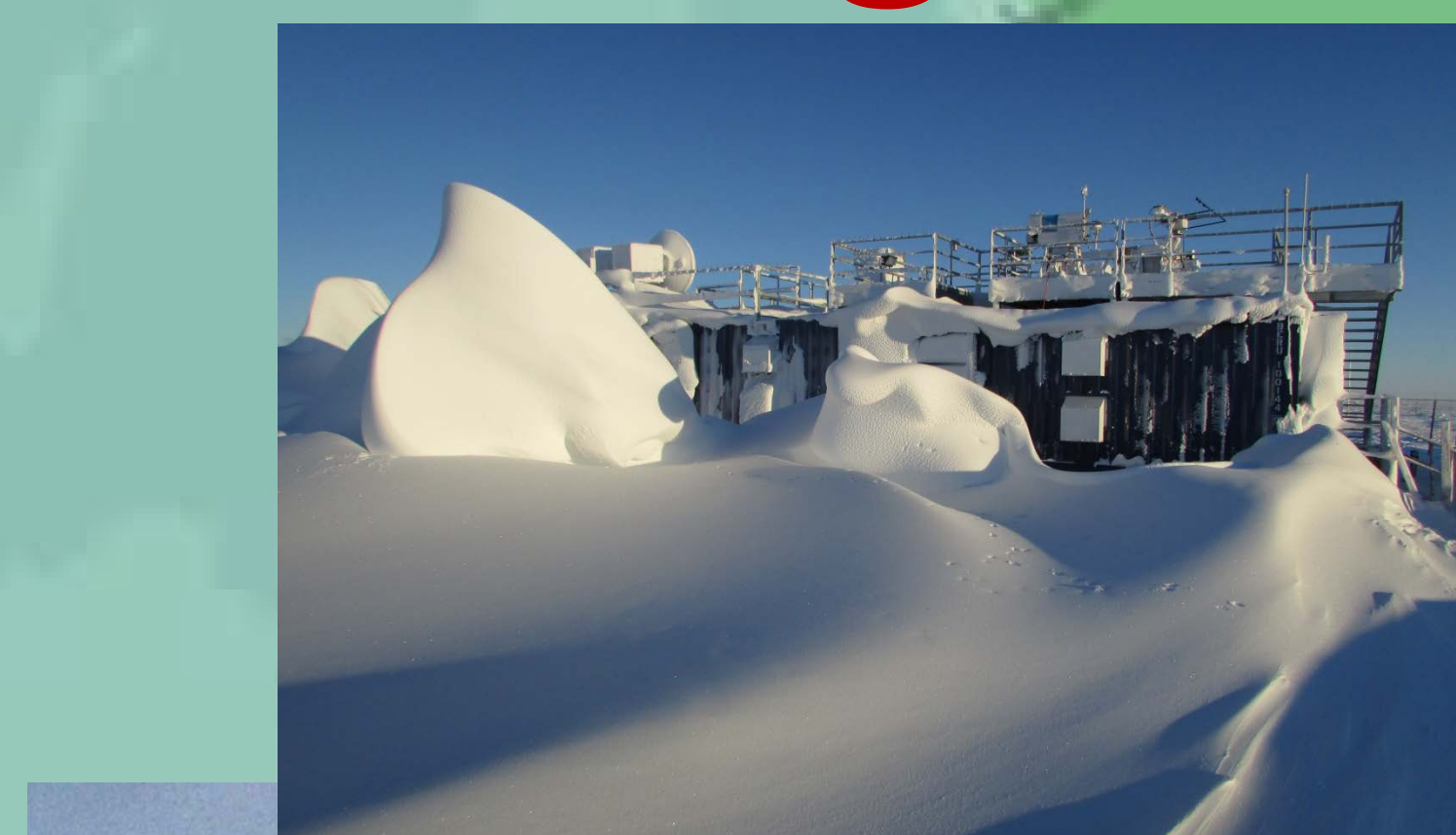
Jim's Jail: Jailbird Mather

Future Plans

- Severe Weather hardening/procedures
- Infrastructure improvements/backups
- Sprung structure for UASs, prep space
- Streamline UAS safety review process
- Regular UAV and TBS flights
- AOS instruments shelter
- Oliktok Point Science Camp



Challenges



Snow Drifts



Wind



Fog, Cold and Remote



Hoarfrost on Instruments



Coastal Tundra, Permafrost melt



Hooligans



Scarce Infrastructure



Wildlife



Retreating Shore/Sea Ice

Anchorage

Alaska
Canada

Jasper(Joe) Hardesty • Mark Ivey • Fred Helsel • Dan Lucero • Al Bendure • Darielle Dexheimer • Todd Houchens • Dean Archuleta • Valerie Sparks