Norwegian Space Activities

Agency report

CEOS WGCV-37, ESRIN

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NORWEGIAN SPACE CENTRE

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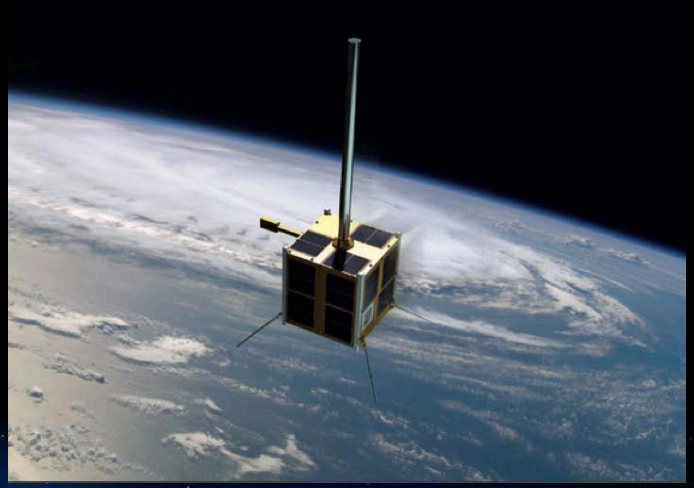
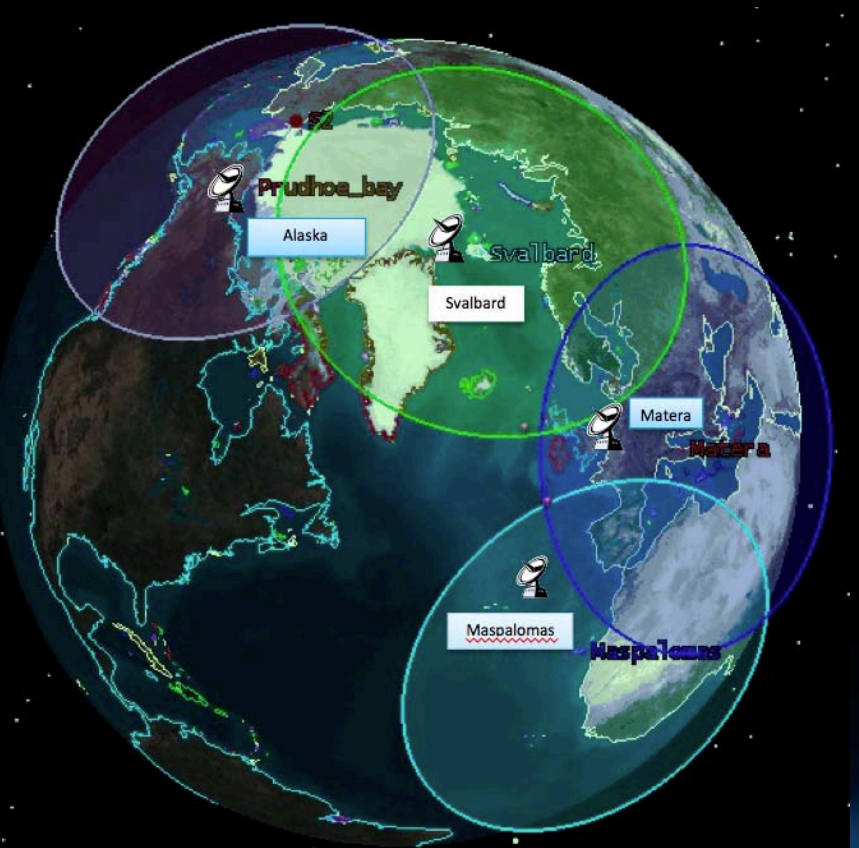
A growing political focus



Norway and Copernicus

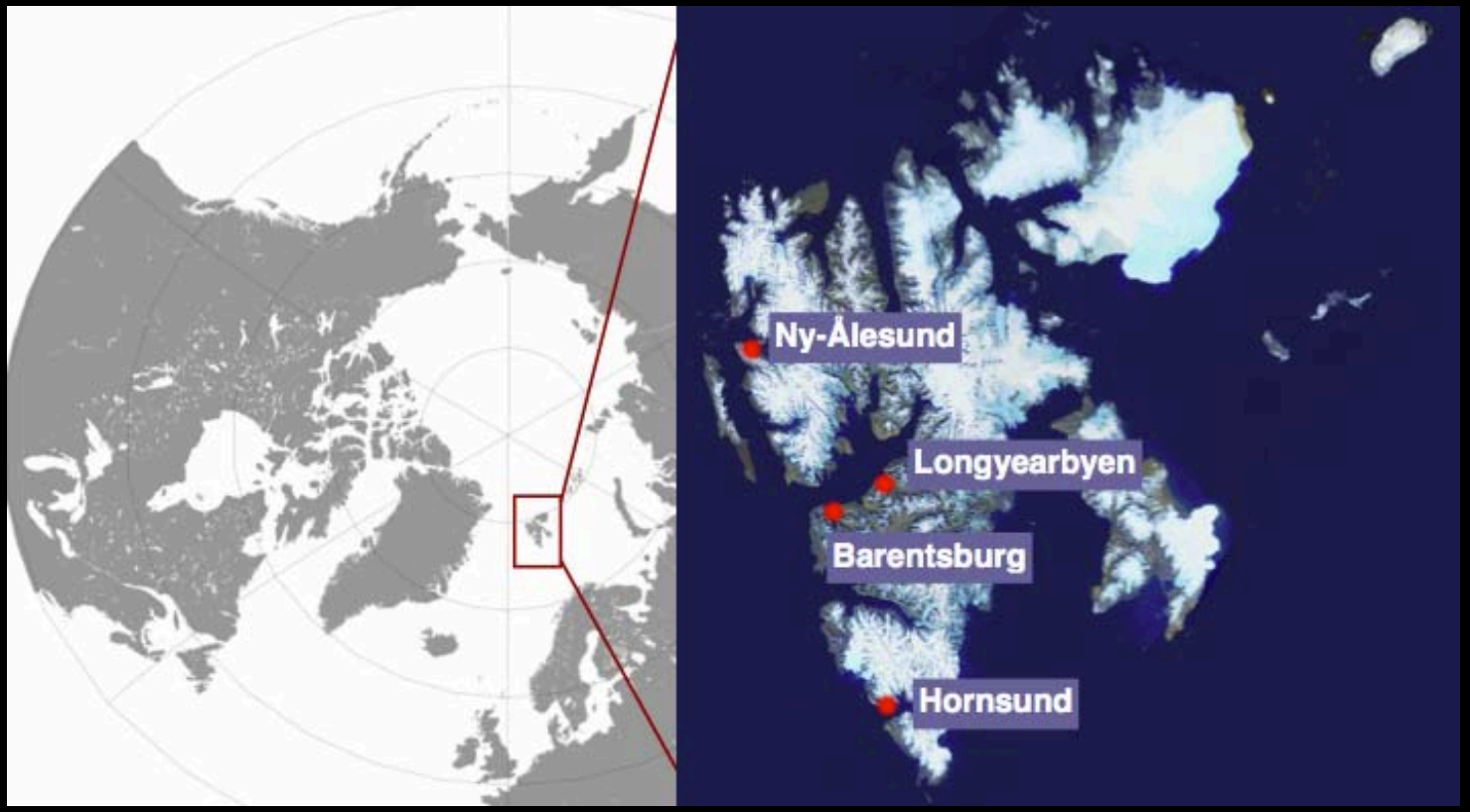
- KSAT will operate the northern core ground segment for A versions of Sentinel 1, 2 and 3
- Norway makes significant investment in a national ground segment
  - which will be a key supporter of remote sensing services in SIOS



- Ensuring faster data downlink and national tailored processing of Sentinel data
- In 2014: Demonstrate pilot services on
  - oil spill detection
  - ship detection
  - deliver basic data for landslide mapping

SIOS - Svalbard Integrated Arctic Earth Observing System

Integrating space into Svalbard research



Calibration and validation of satellite instruments and -products are identified as an important area the remote sensing service shall address

SIOS

- Research infrastructure on Svalbard offers a unique possibility for performing ground-based validation of satellite data for multidisciplinary research
- Tasks in the Preparatory Phase:
  - Inventory of available/relevant satellite instruments and observations
  - Validation needs in the Arctic
  - Long-term validation and cooperation agreements with satellite owners
  - Integration of SIOS in international remote sensing long-term strategies
  - UAV, rocket- and balloon-based observations

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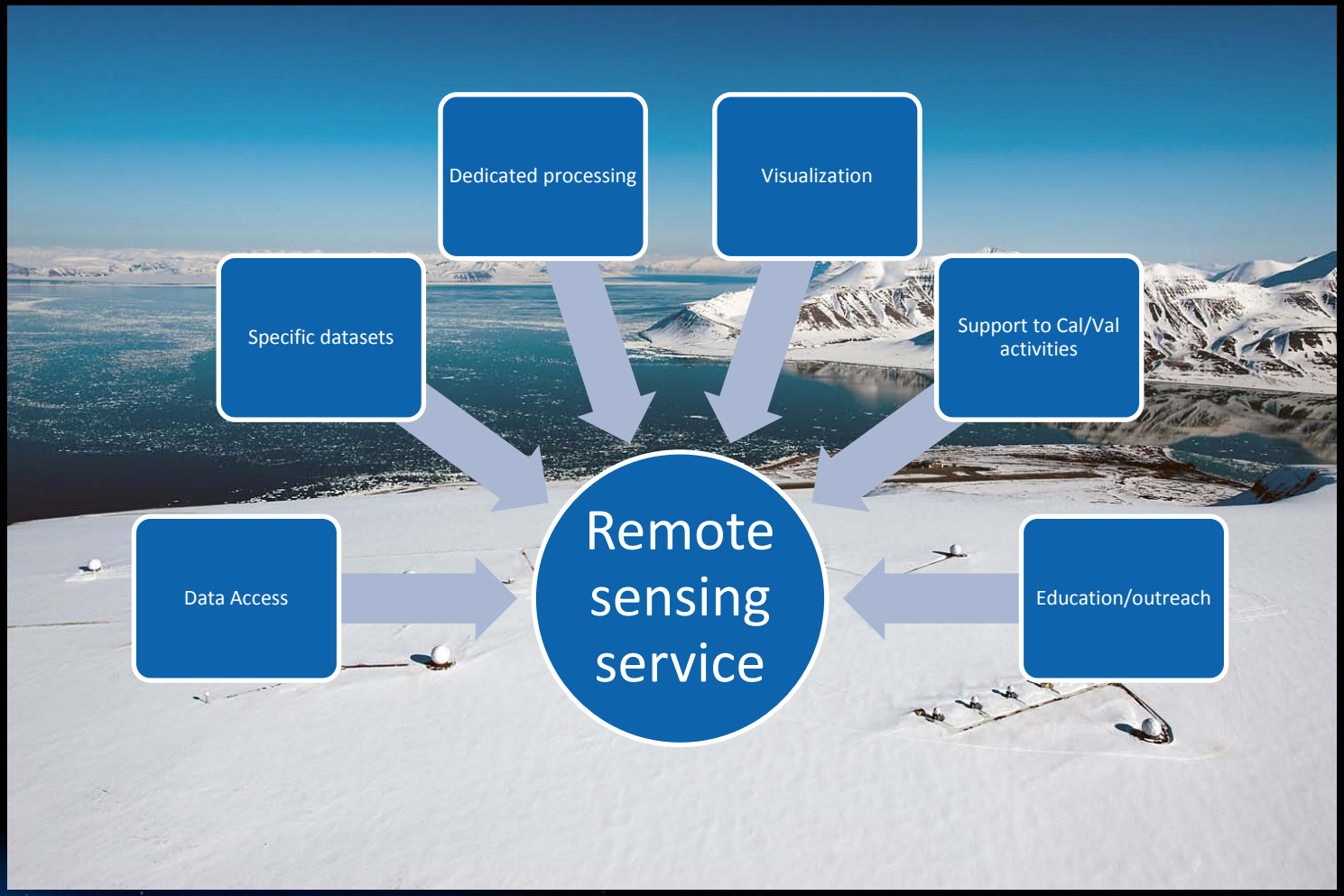
The Remote Sensing Services



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Objectives

Ensure that field work and other surface scientific investigations can be covered with the relevant information provided from space;

Provide satellite owners the best possible high arctic surface measurements for calibration and validation;

Promote the integration of satellite data from different space platforms.

Implementation of service

- 3 years (2015 – 2017)
- Main actors and potential data providers
- Detailed needs and cost estimation

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SIOS

NIVAs Ferrybox network

Validation of future satellite missions for Ocean Colour, atmospheric quantities and skin-temperature.

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Map of Ferrybox systems in Europe in MyOcean

- Core sensor available on most ships relevant for validation
  - Temperature and salinity
  - Chl-a fluorescence (proxy for Chl-a)
  - Turbidity (proxy for TSM)
- Some ships have water sampler for collection of validation samples
  - Chl-a, apig/bpa
  - CDOM, TSM
- A few ship has reflectance
- Can be used for SST validation, but instrumentation needed.
- NIVA has the QA on all the European Ferrrybox systems (MyOcean)

Norwegian LIDAR operations by ALOMAR

Sandra Blindheim, Head of ALOMAR Observatory
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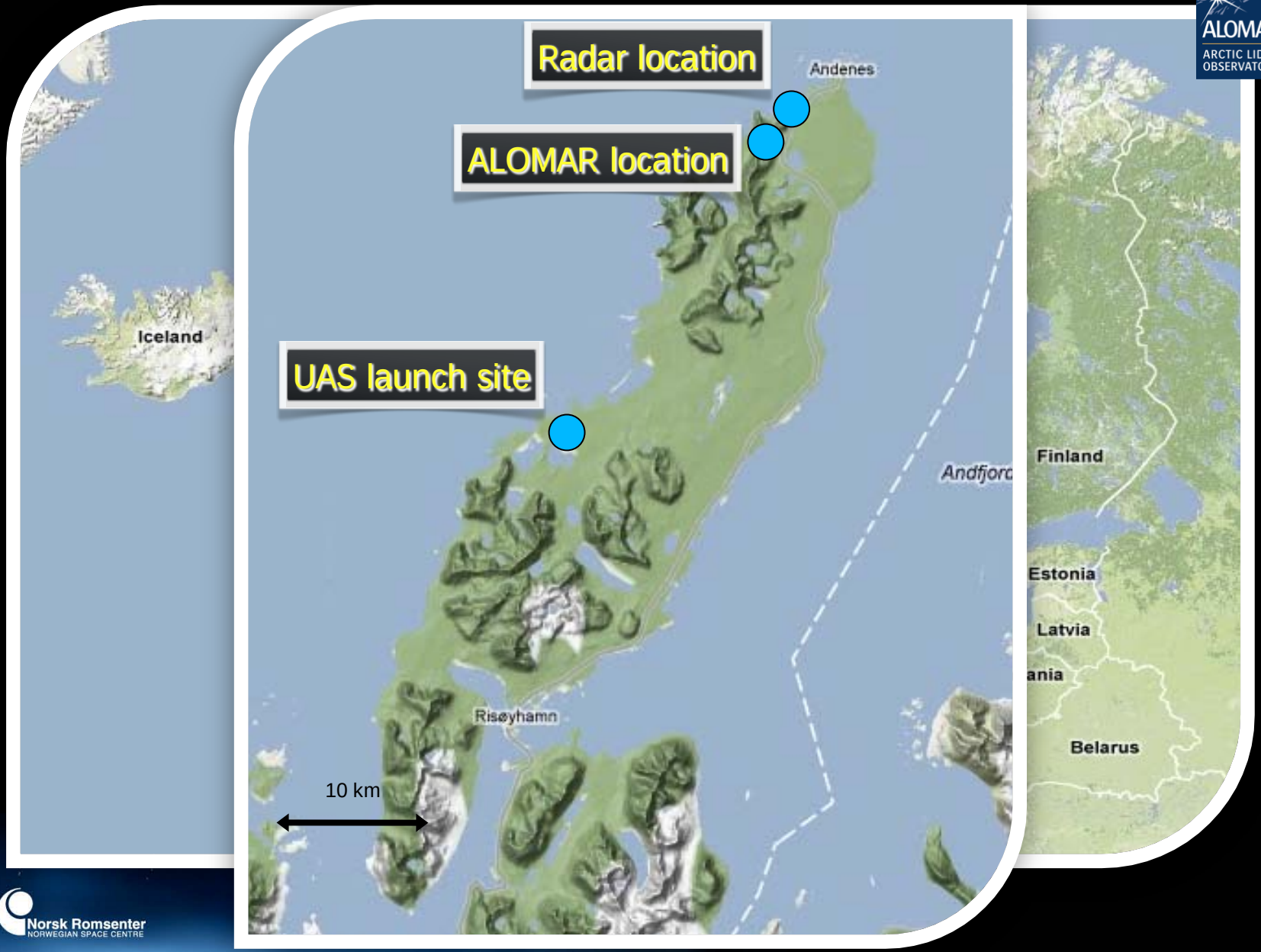
Andøya location



ALOMAR
ARCTIC LIDAR OBSERVATORY

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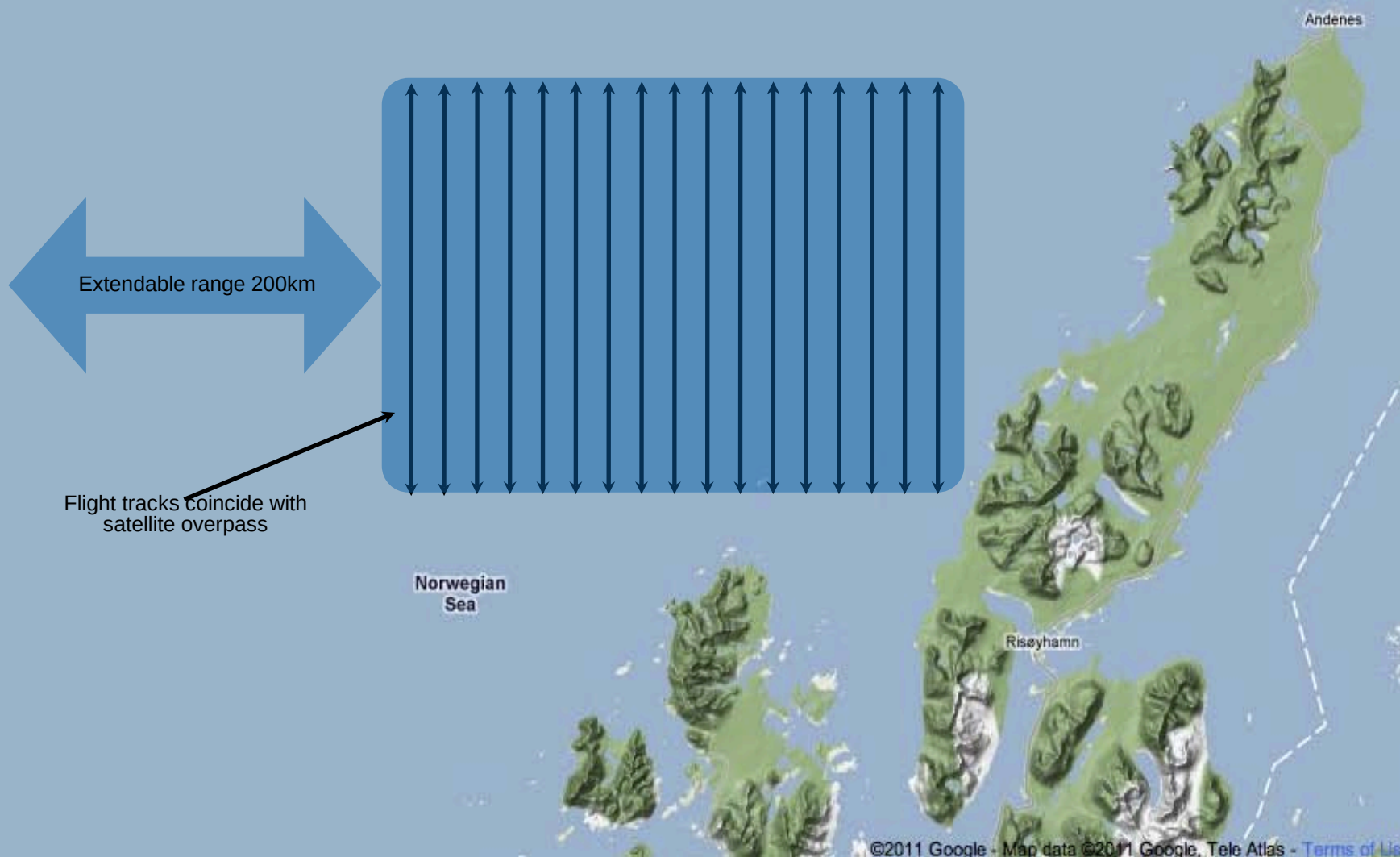
Andøya location

Possible flight pattern and flight area for wind and aerosol measurements



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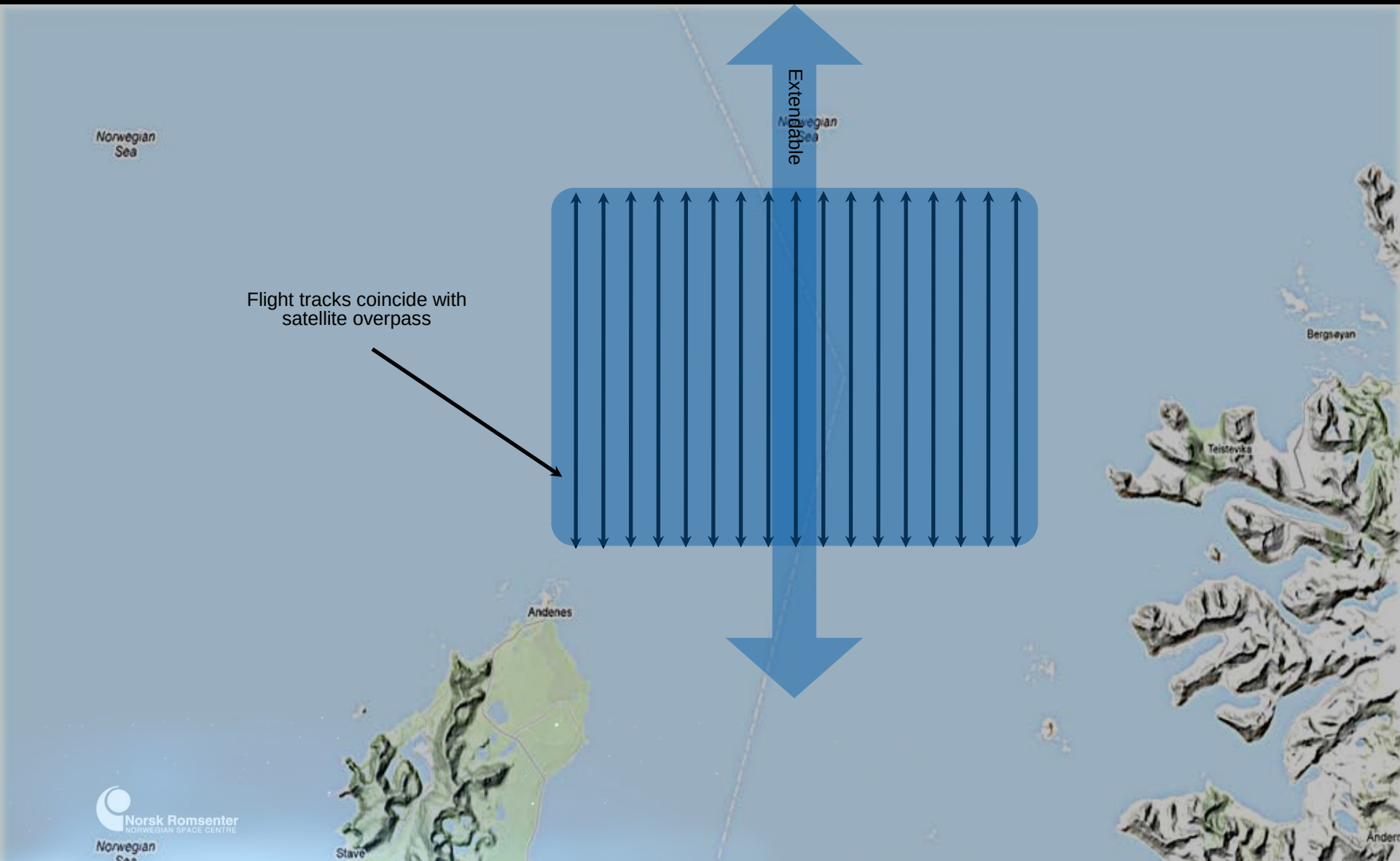
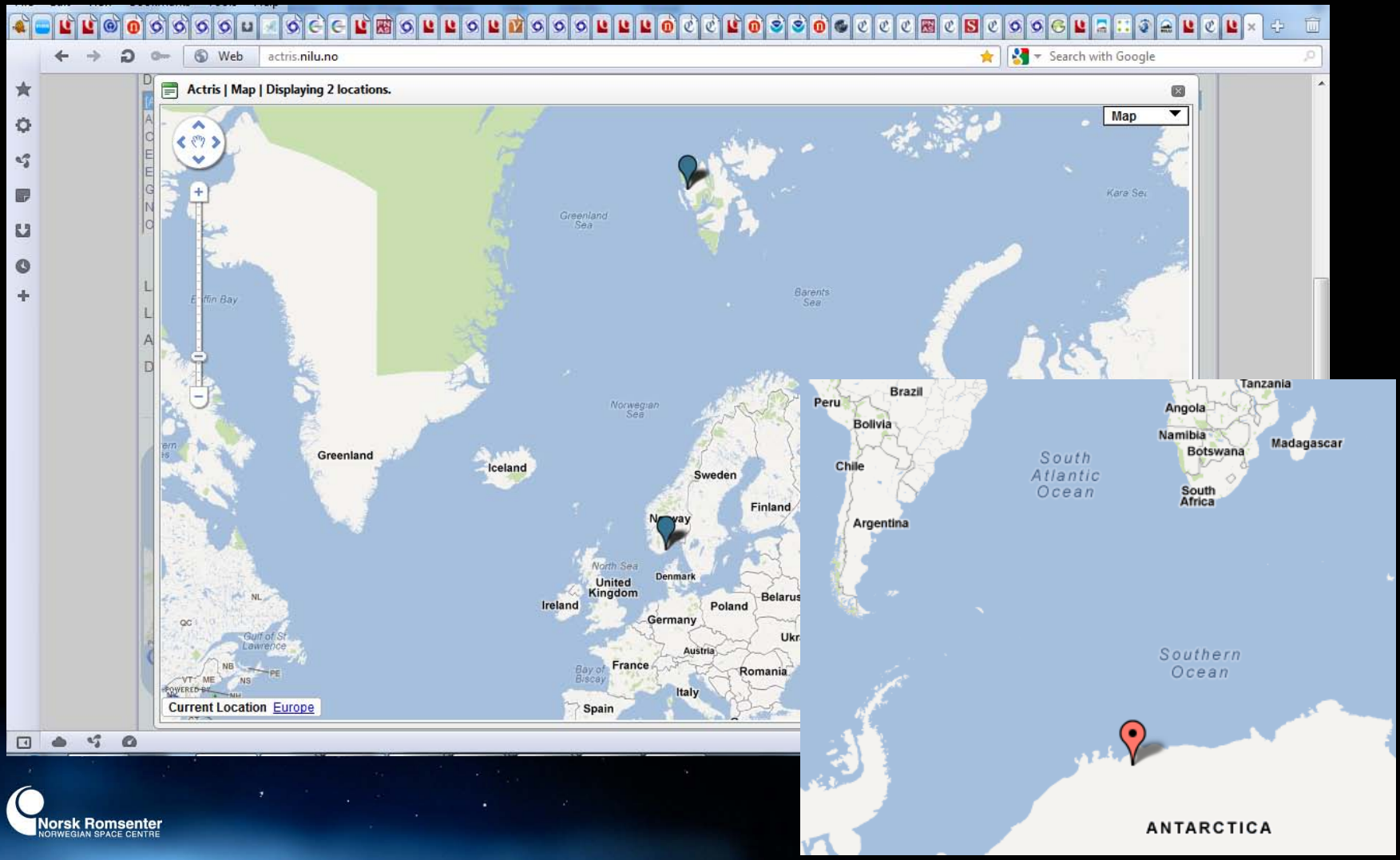


Status/update from NILU (Norwegian Institute for Air Research)



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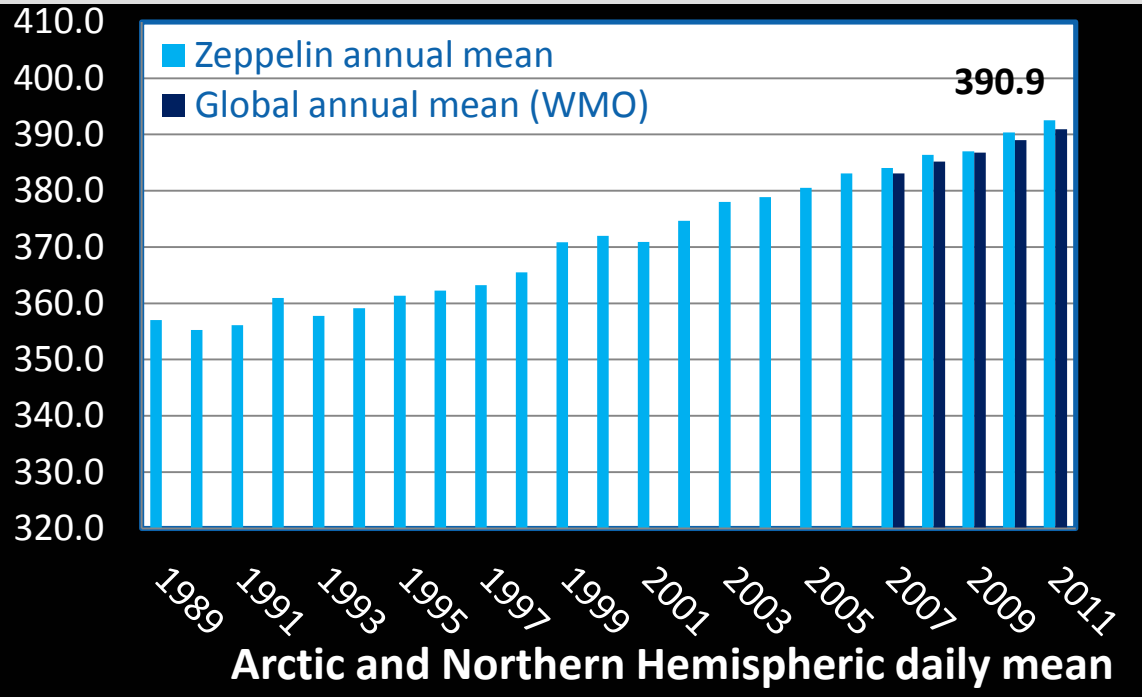
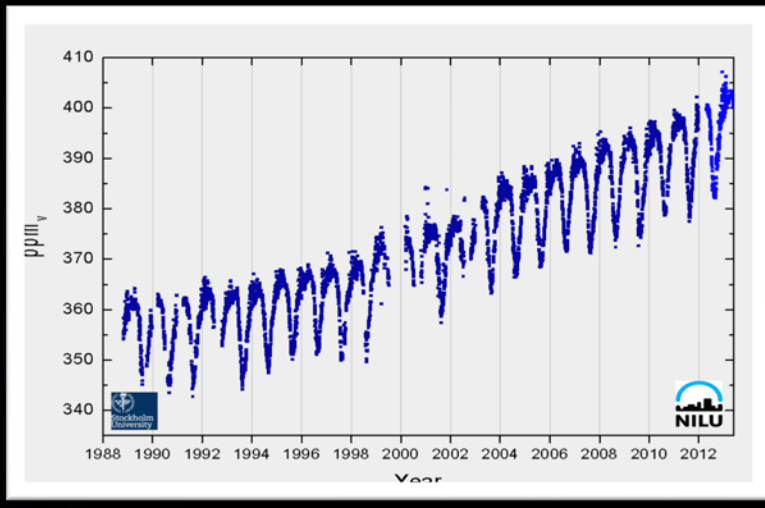
Recent observations at Zeppelin CO_2 1988-2011

- SU maintains a continuous infrared CO_2 instrument: 1988-2011
- NILU: New CO/CO_2 Picarro instrument since spring 2012 in parallel
- Weekly flask sampling programme lead by NOAA CMDL



Arctic and Northern Hemispheric daily mean



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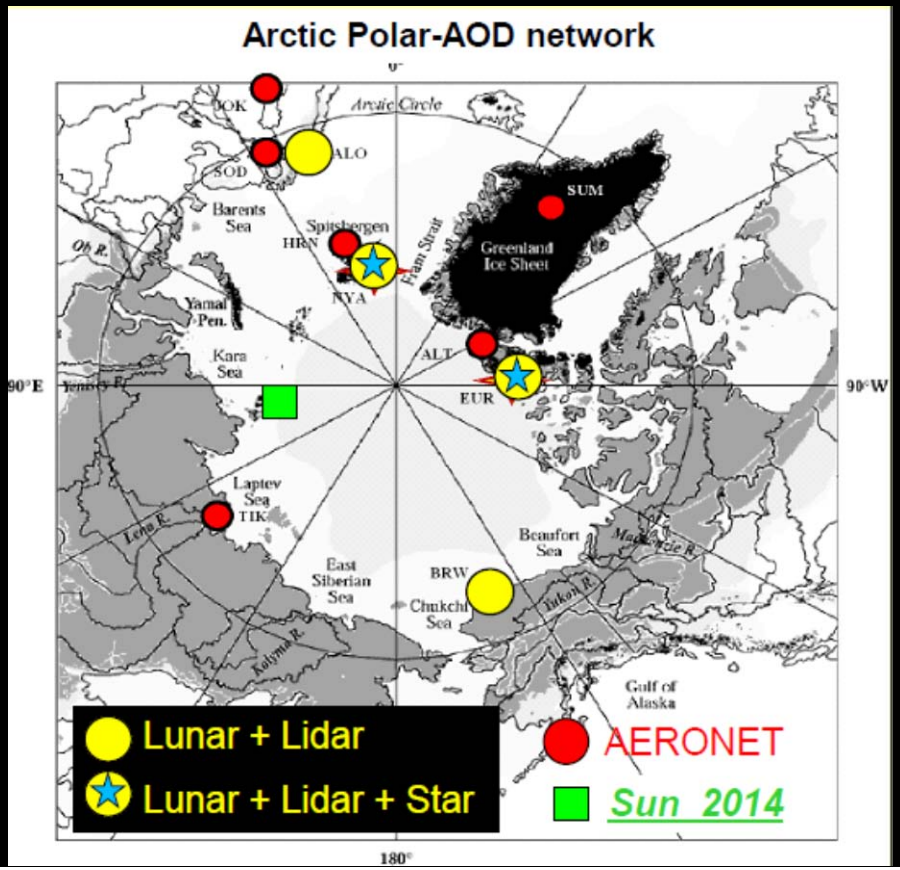
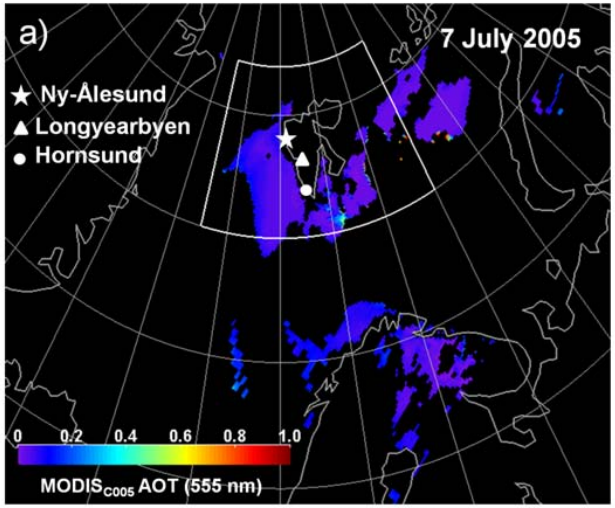
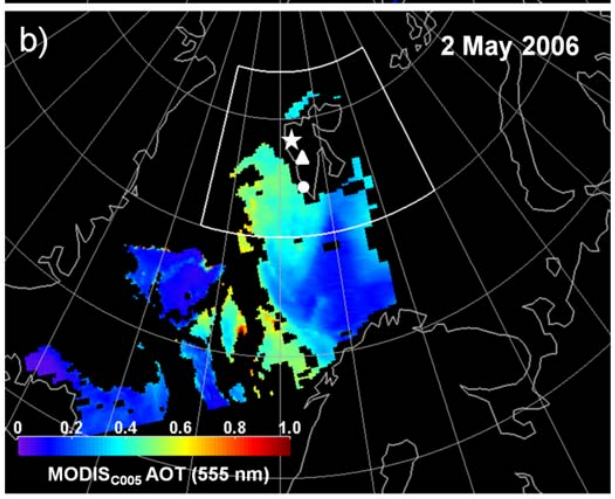
Arctic validation capacities - aerosols







Initiative to implement lunar photometer for night-time AOD observations (PMOD/WRC, NOAA/CIRES, ISAC-CNR, AWI, NILU, GOA-UVA and others)

CryoVex 2014

- UiO and NPI
- Campaign on Austfonna
- Providing Cal/Val data for Cryosat-2 and ASIRAS
- Maintaining existing network of mass balance stakes and meteorological sensors for future Cal/Val activities