

Italian activities in the Arctic: actual status and near-future perspectives

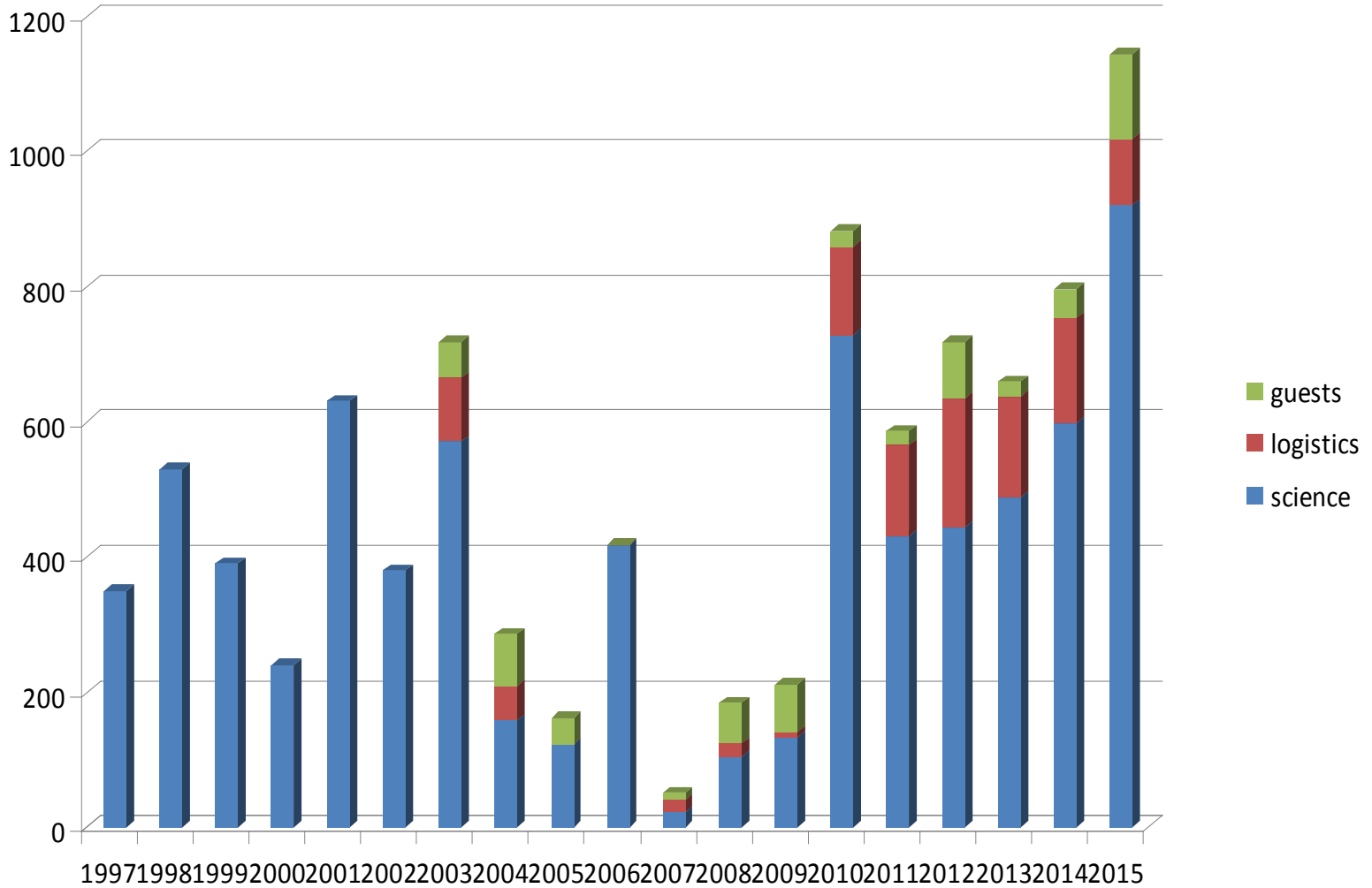
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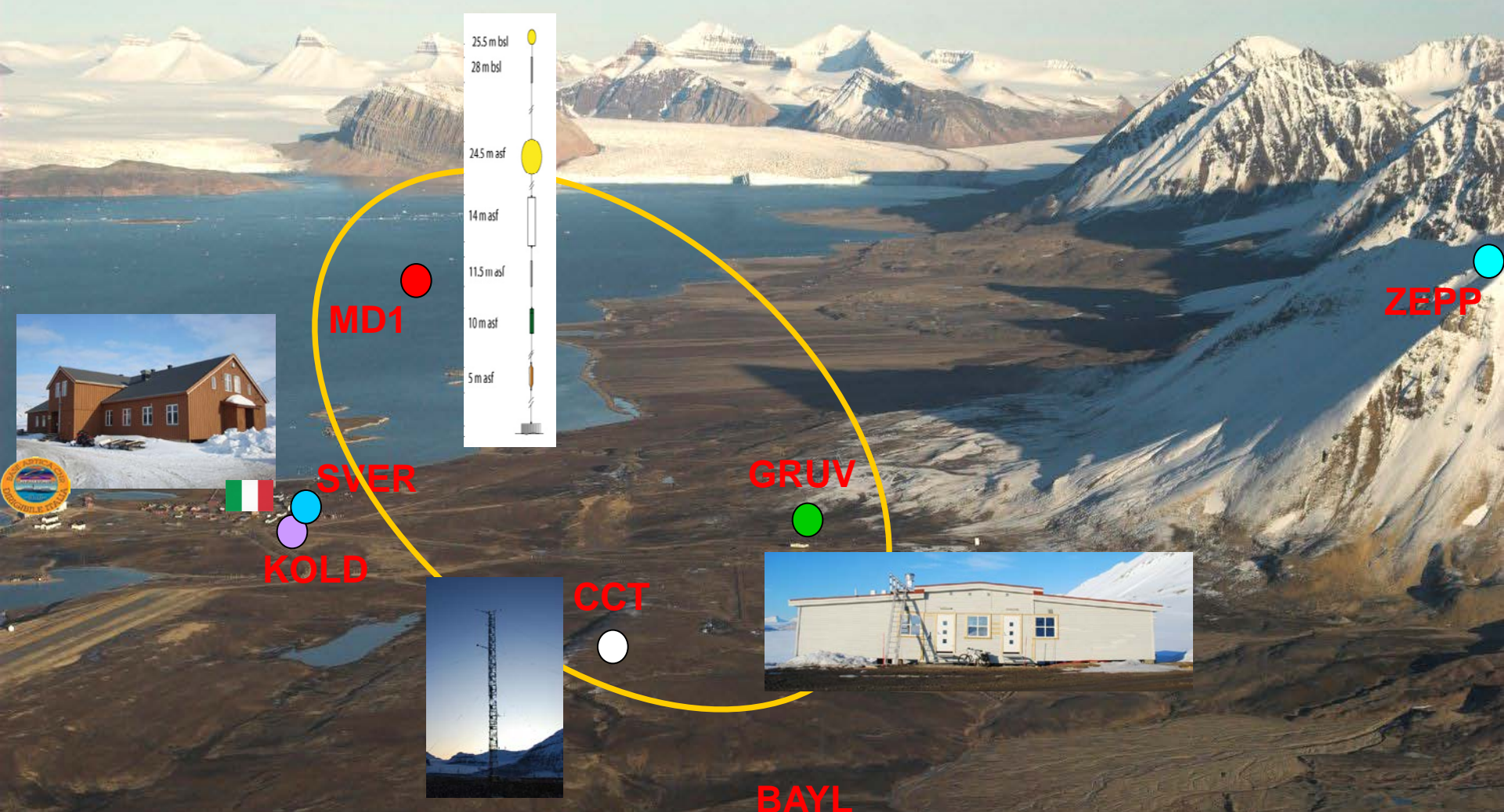


Activity at Dirigibile Italia (1997–2015)



Dirigibile Italia Station

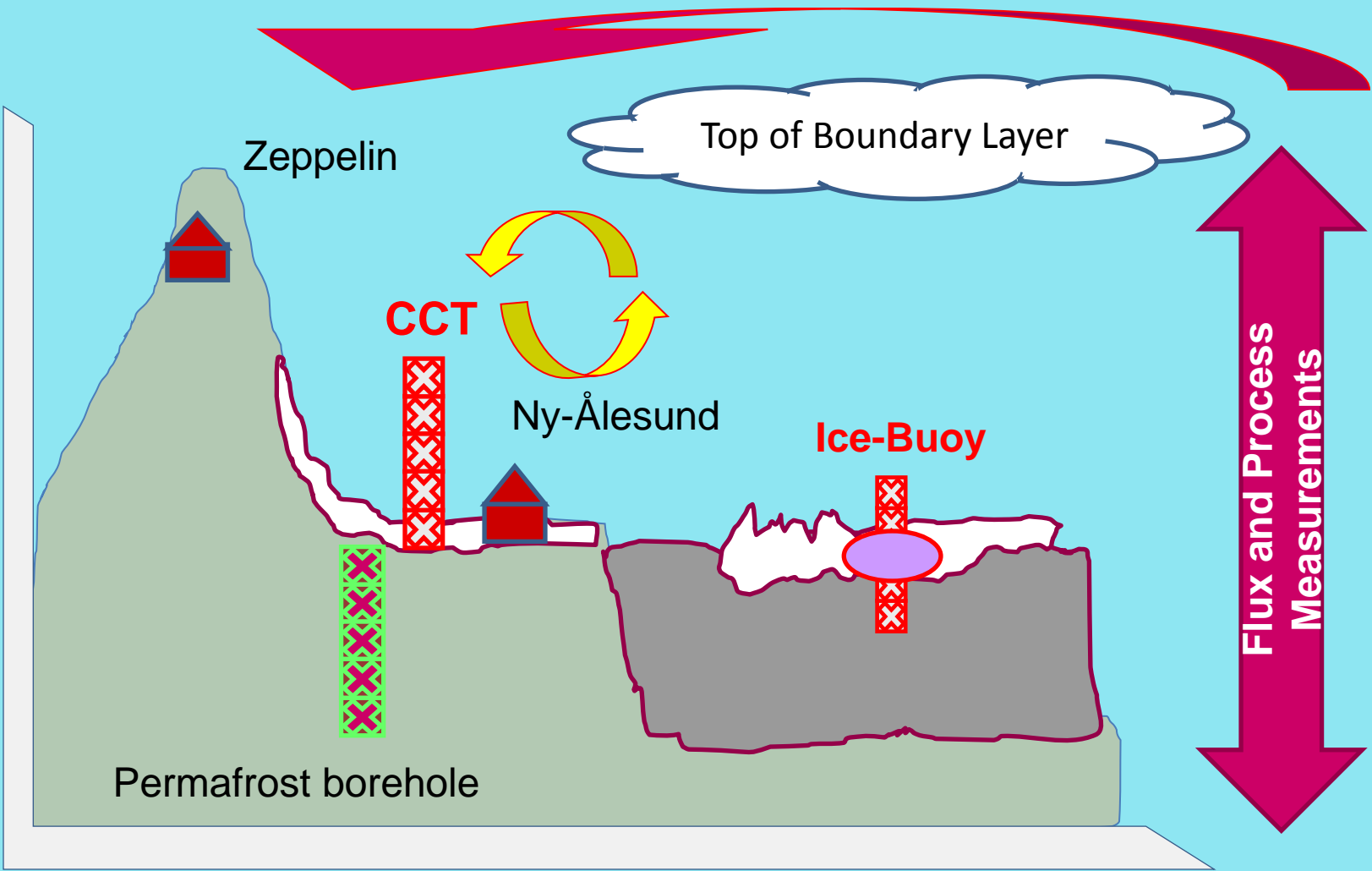
500 m



Since 2009, several observing platforms have been implemented mainly to address in a comprehensive way coupling processes at interfaces and in ABL.

courtesy of Julia Boike, AWI

The Climate Change Tower Integrated Project (CCT- IP)

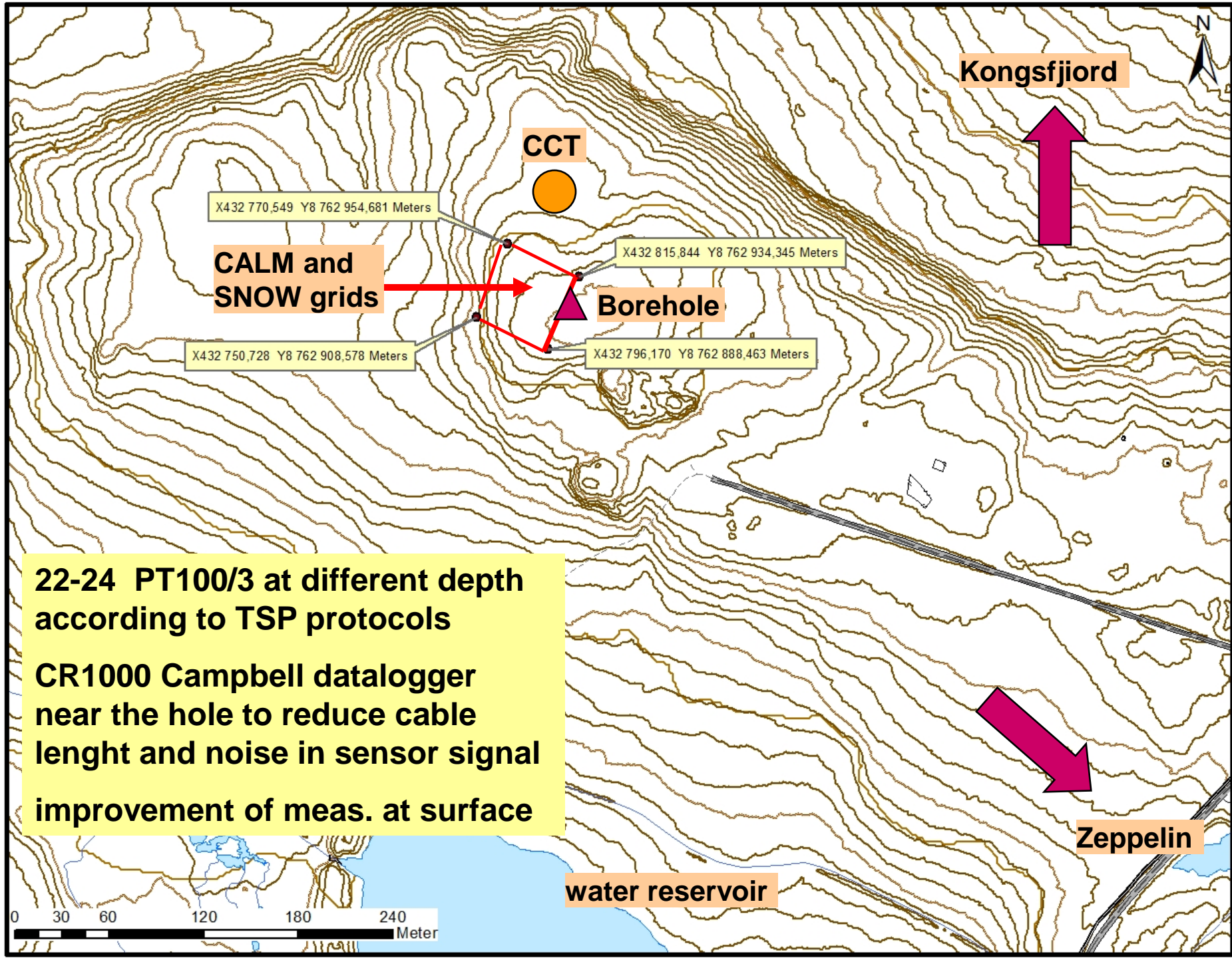


<http://www.isac.cnr.it/~radiclim/CCTower>



FARO meeting, Fairbanks, March 12, United States





Kongsfjord

CCT

X432 770,549 Y8 762 954,681 Meters

CALM and
SNOW grids

X432 815,844 Y8 762 934,345 Meters

Borehole

X432 750,728 Y8 762 908,578 Meters

X432 796,170 Y8 762 888,463 Meters

22-24 PT100/3 at different depth according to TSP protocols
CR1000 Campbell datalogger near the hole to reduce cable length and noise in sensor signal
improvement of meas. at surface

Zeppelin

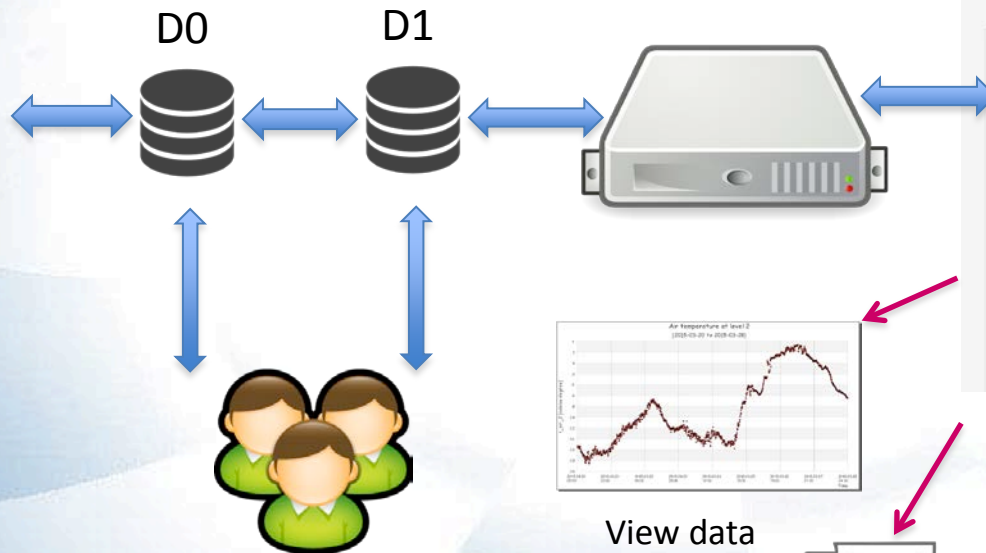
water reservoir

0 30 60 120 180 240 Meter

Research topics

- Atmospheric physics/Climate
- Permafrost and terrestrial ecosystems
- Marine Biology/Biodiversity
- Oceanography
- Paleoclimate
- Earth Observation
- Ionosphere/Sun-Earth interactions
- Astrophysics (cosmic background radiation)

Networking activity at national level very important to sustain a so broad range of research topics.



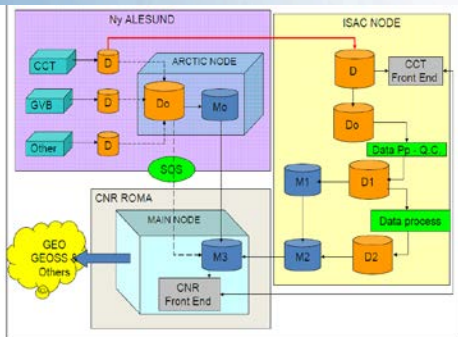
Validation
QA/QC
Data Analysis

View data

Download data

Metadata data

Register data

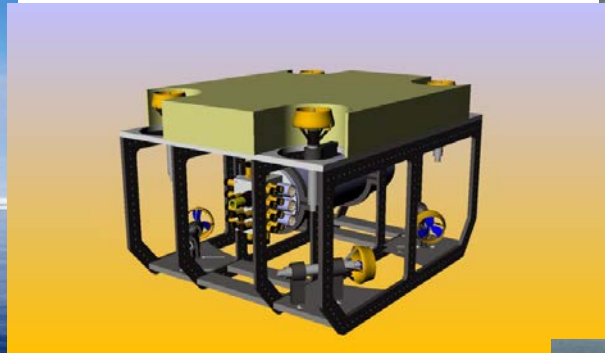


Permanent and mobile robotic monitoring systems

“research” vehicles and systems designed to have an “open architecture” that allows an easy on board integration of other devices (sensor/actuators/etc.)



Romeo ROV ready for the exploration of the Campbell Glacier's ice tongue (Ross Sea, Antarctica)



Europe will be a brand new ROV/AUV with small dimensions (1 m x 0.80 m x 0.50 m) and weight (about 100 Kg) and an operating depth of 200 m.



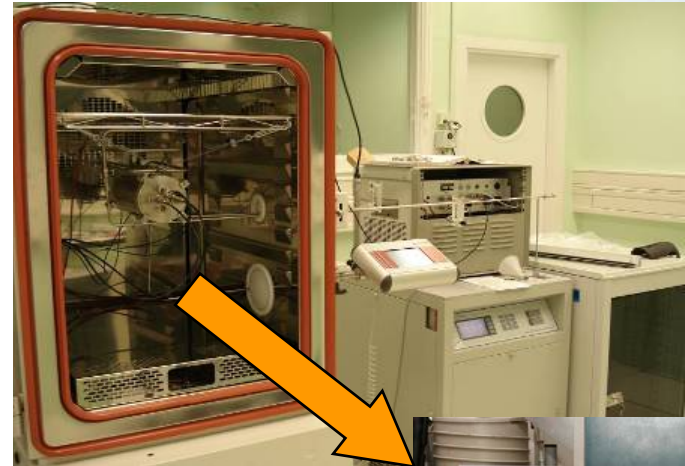
Charlie USV sampling the surface micro-layer and immediate sub-surface water along paths specified by the scientific end-user (Tethis Bay - Antarctica)

Toward a permanent calibration laboratory at Ny Alesund.

Unique standard calibration procedures for instrument operating in the same peculiar environment

avoid different national approaches to introduce further discrepancies and uncertainties, incrementing the comparability of the instruments response.

A central infrastructure to benefit all researchers operating in the area, with a common implementation plan.

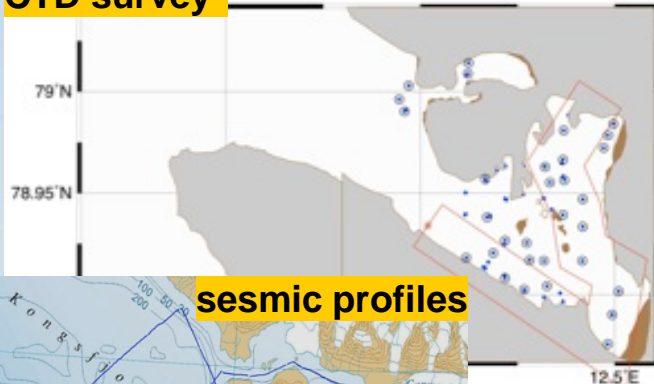


Kongsfjorden

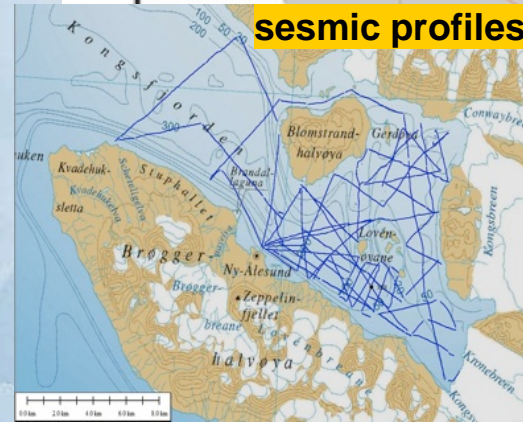
Marine activities

Fram Strait

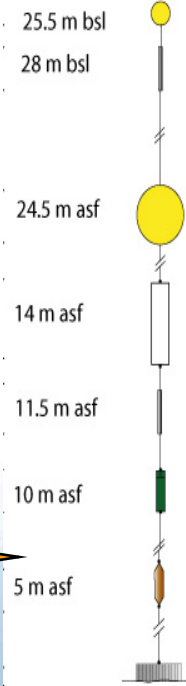
CTD survey



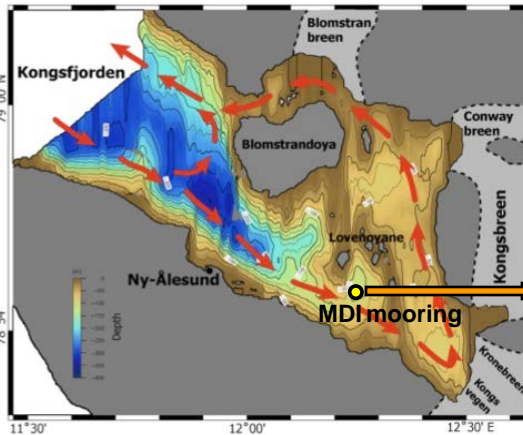
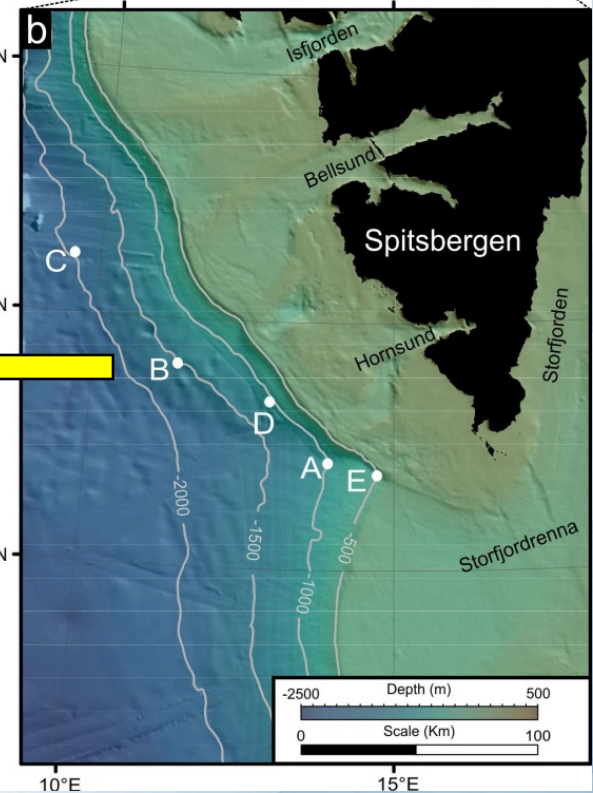
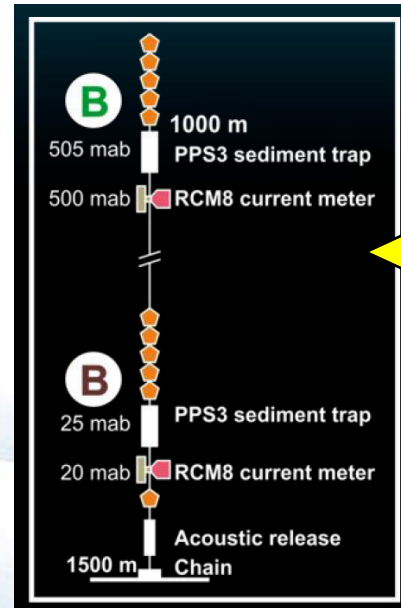
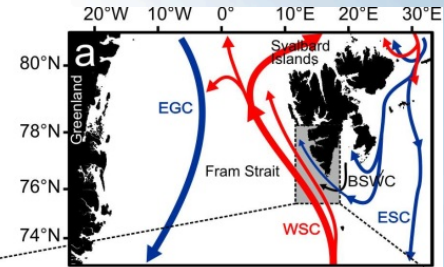
seismic profiles



MD1 mooring



Deployment of 4 moorings in collaboration with UiT, Univ. Barcelona, CEFREM-CNRS



Added value of SIOS for Italy

- **SIOS will be able to enlarge our perspectives to Svalbard:**
 - (i) through the access to other stations,
 - (ii) contributing to their upgrade in coherence with the SIOS development plan.
- **SIOS will be relevant to reinforce bilateral and multi-lateral cooperation at NYA, Svalbard and beyond**
- **SIOS will sustain implementation of NEW activities (e.g remote sensing cal/val, technologies, etc.)**
- **Last but not least, we expect that SIOS could strongly contribute to simplify our logistics and optimize costs.**

Italian Monitoring activities in the Arctic

**TransAtlantic
Cooperation
(CHARS, AON,
BELMONT, ...)**

Thule

Ny Alesund

**Russia (RFBR,
RAS, AARI,
PEEX, ...)**

**Fennoscandia and
Europe (SIOS, PEEX,
EU-polarnet, ICE-ARC,
ENVRIPLUS, MOSAIC,
YOPP, ...)**



Keywords

- **Supersites**
(as place where to investigate system complexity)
- **Multidisciplinarity**
(as necessary to understand climate change)
- **Technological Development**
(to reduce footprint, extend obs., increase sustainability)
- **Cooperation**
(national, european, pan-arctic, bilateral, multilateral)

INTERNATIONAL ENGAGEMENTS

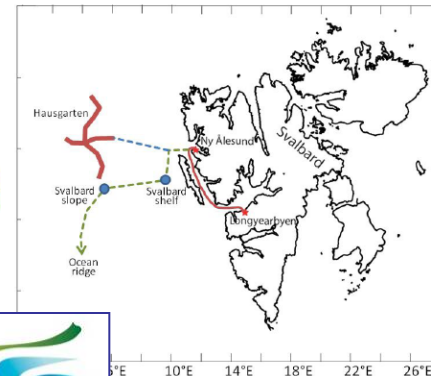
GEO GROUP ON EARTH OBSERVATIONS



- GEO/Ecosystems Task
- GEO/Cold Regions
- GEO/GNOME (Global Network for Observations and Information in Mountain Environments).

SAON

SUSTAINING ARCTIC OBSERVING NETWORKS



ECRA
European Climate Research Alliance



emso
european multidisciplinary seafloor observatory

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY



NYSMAC

Eurofleets

ESSEM COST Action ES1404:
A European network for a harmonised monitoring of snow for the benefit of climate change scenarios, hydrology and numerical weather prediction

GMOS
Global Mercury Observation System

Polar View

ICE-ARC
ICE • CLIMATE • ECONOMICS



FARO meeting, Fairbanks, March 12, United States



Towards an Italian strategy for the Arctic



[Italy in the Arctic: more than a century of history](#)

[Italy in the Arctic: the political dimension](#)

[Environmental and human dimension](#)

[The scientific dimension](#)



ITALY IN THE ARCTIC

Italy and the Ministry of Foreign Affairs, has drafted a strategy for the Arctic region.

The strategy, which is the result of a process of consultation with the relevant departments, aims to increase Italy's presence in the Arctic region.

The strategy was approved in 2013 with the aim of strengthening Italy's presence in the Arctic region, inaugurating a process of international cooperation and excellence and promoting Italy's scientific and technological excellence.

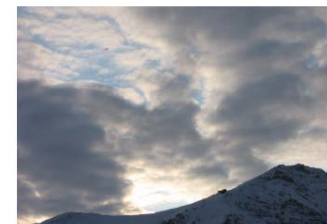
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Consiglio Nazionale delle Ricerche
Dipartimento Terra e Ambiente

La ricerca italiana per lo studio dei cambiamenti climatici nella regione Artica e il loro impatto alle medie latitudini

linee strategiche e prospettive del CNR per il 2015-2020



TOWARDS AN ITALIAN STRATEGY FOR THE ARCTIC

NATIONAL GUIDELINES

MINISTRY OF FOREIGN AFFAIRS

AND INTERNATIONAL COOPERATION

2015

Thank you for your attention



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