FARO Annual Meeting 2018

Country presentations

Forum of Arctic Research Operators

Country presentation order:

1. Canada
2. China
3. Czech Republic
4. Finland
5. France
6. Germany
7. Greenland/Denmark
8. Japan
9. Korea
10. Norway
11. Poland
12. Portugal
13. Sweden
14. United Kingdom
15. United States

Forum of Arctic Research Operators

Canada

Next: China

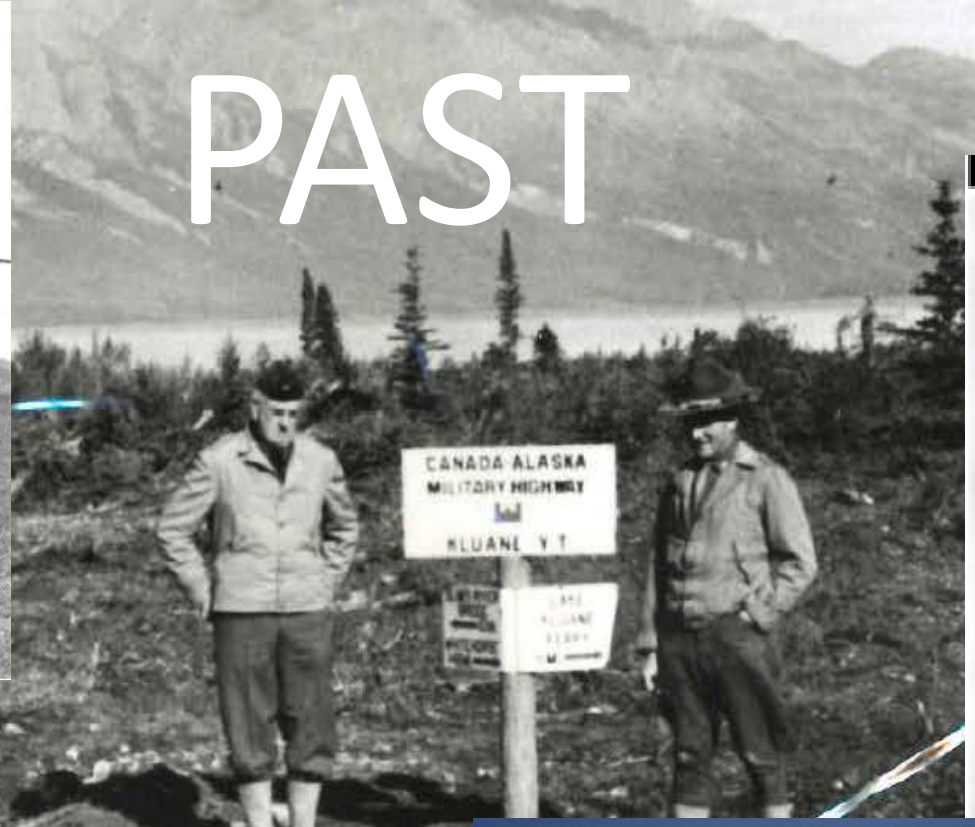
FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

PAST

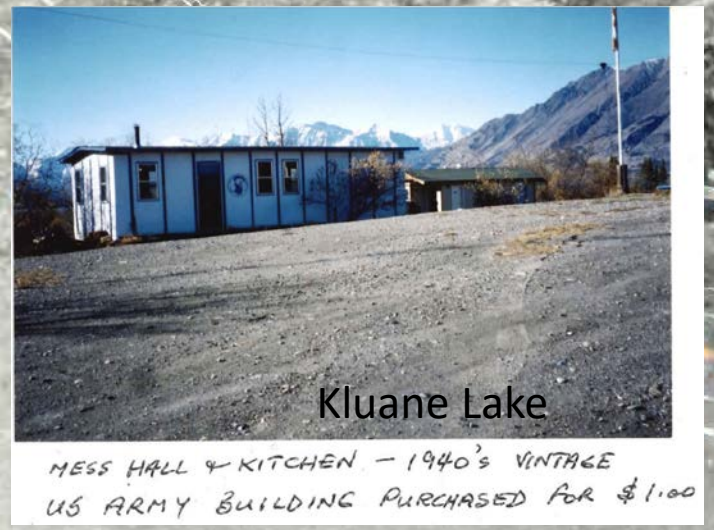
the Canadian Arctic Expedition: 1913-1918

http://www.science.gc.ca/eic/site/063.nsf/eng/97260.html

Sikorski S-55.
Operation Franklin, 1955.



http://www.northernstrategy.gc.ca/sov/cae-eng.asp



Kluane Lake

MESS HALL & KITCHEN – 1940's VINTAGE
US ARMY BUILDING PURCHASED FOR $1.00

http://www.science.gc.ca/eic/site/063.nsf/eng/97260.html

Dr. Art Collin in charge of field operations 1960 and Denis St-Onge

http://www.drdc-rddc.gc.ca/en/dynamic-article.page?doc=a-legacy-of-research-in-a-harsh-environment/i8oa2yly

25-42-9

MILE 1054 ALASKA HIGHWAY – 1942.

PRESENT

PCSP Arctic logistics hub in Resolute

Polar Environment Atmospheric Research Laboratory (PEARL), Eureka, 80N

Canadian High Arctic Research Station (CHARS), Cambridge Bay (69N)

FUTURE

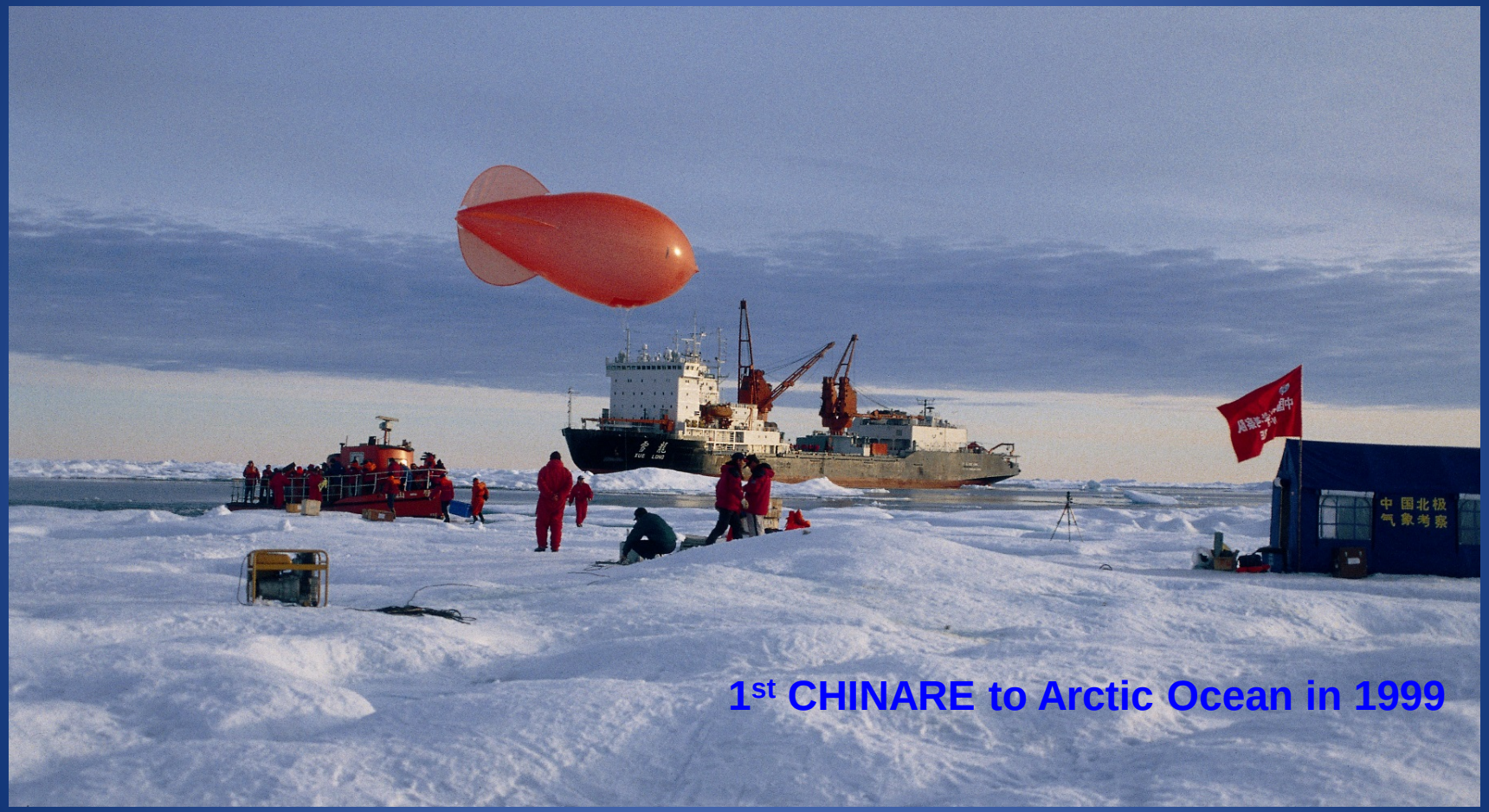
Concept of the new Polar Icebreaker, *CCGS John G. Diefenbaker*

Forum of Arctic Research Operators

China

Next: Czech Republic

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018



1st CHINARE to Arctic Ocean in 1999

THE PAST

THE PRESENT

Chinese Yellow River Station
at Ny-Ålesund, Svalbard
Established in 2004

R/V Xuelong
Renovation in 2013

THE FUTURE

Basler BT-67

R/V Xuelong

R/V Xuelong 2

The China-Iceland Arctic Science Observatory in Iceland

Chinese Yellow River Station at Ny-Ålesund, Svalbard

Czech Republic

Next: Finland

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

Czech Arctic Research Infrastructure of Josef Svoboda

Alex Bernardová
Longyearbyen & Petuniabukta, Svalbard
University of South Bohemia in Ceske Budejovice, Czech Republic

Research base in LYR
(Payer's house)

Research vessel
(Clione)

Field station in
Petuniabukta
(Nostoc houses)

Czech Arctic Research Infrastructure of Josef Svoboda

FUTURE

- secured funding for running the station and research
- stable research and management team
- year round operation (now limited for spring and summer season)
- satisfied users of the facilities

Polar.prf.jcu.cz

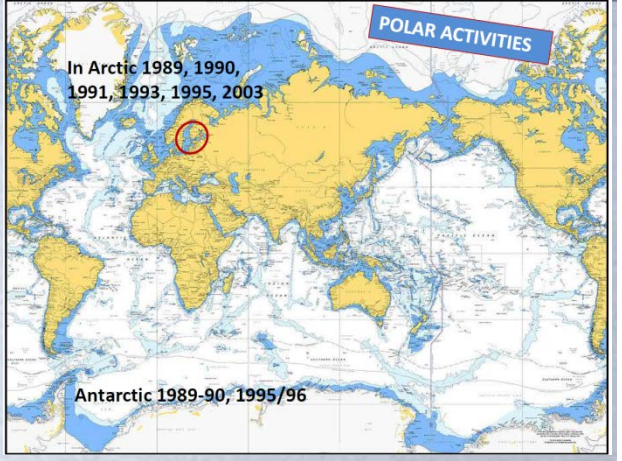
Alex.bernardova@gmail.com

Finland

Next: France

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

R/V Aranda in 1980's and 1990's



R/V Aranda in 2017

R/V Aranda 2018 ready for the Baltic Sea and the Arctic Ocean

Number of persons:

Scientists	27
Crew	14

Endurance:
20/60 days
8 000 nm, 12 knots

Lenght	66.30 m
Breadth	14.10 m
Draft	4.60 m
Grosstonnage	1969 RT
Ligthweight	1 509 m tons
Deadweight	531 m tons

Forum of Arctic Research Operators

France

Next: Germany

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

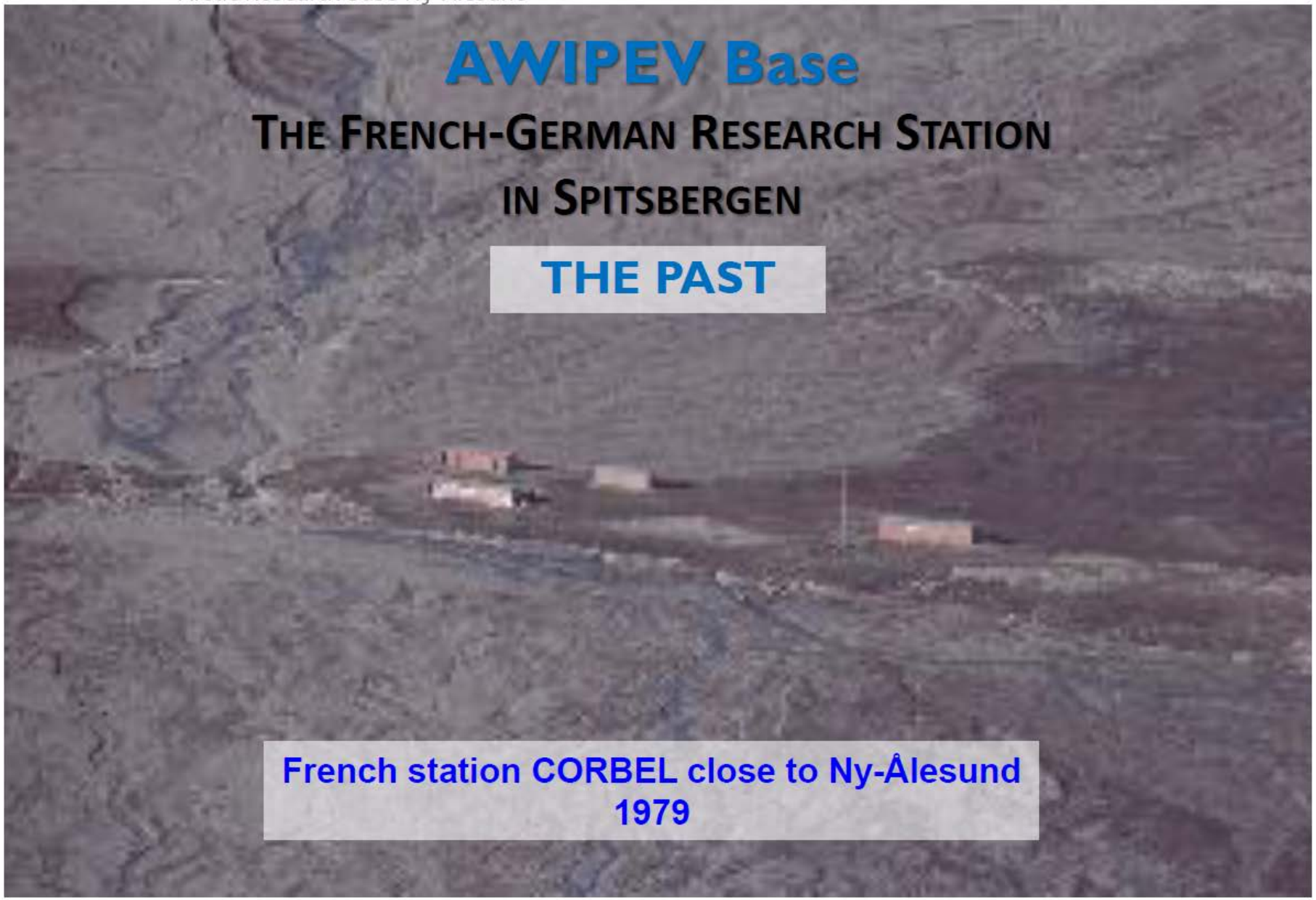
AWIPEV 79°N

Arctic Research Base Ny-Ålesund

AWIPEV Base

THE FRENCH-GERMAN RESEARCH STATION IN SPITSBERGEN

THE PAST



French station CORBEL close to Ny-Ålesund
1979

AWIPEV 79°N
Arctic Research Base Ny-Ålesund

AWIPEV Base

THE FRENCH-GERMAN RESEARCH STATION IN SPITSBERGEN

THE PRESENT

Rabot station at Ny-Ålesund
2018

French station CORBEL close to Ny-Ålesund
2018

AWIPEV 79°N

Arctic Research Base Ny-Ålesund

New building project at Ny-Ålesund

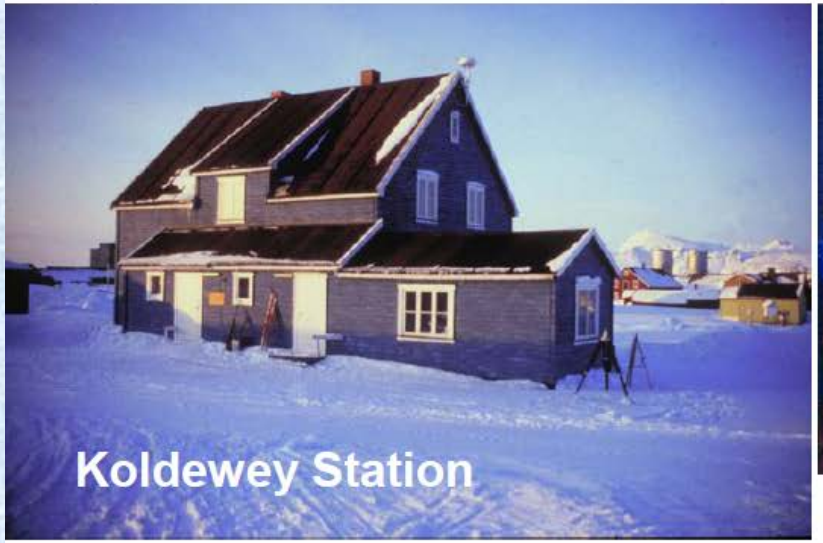
Forum of Arctic Research Operators

Germany

Next: Greenland/Denmark

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

Past


Koldewey Station


Koldewey - Station


Research Station
Samoylov
Lena-Delta-Reservat and Alfred-Wegener-Institut
72°22' North - 126°29' East

AWIPEV 79°N

Arctic Research Base Ny-Ålesund

AWI

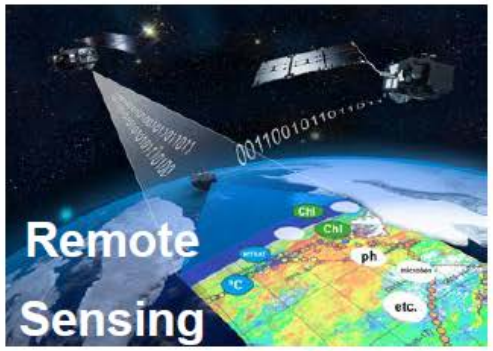
Present

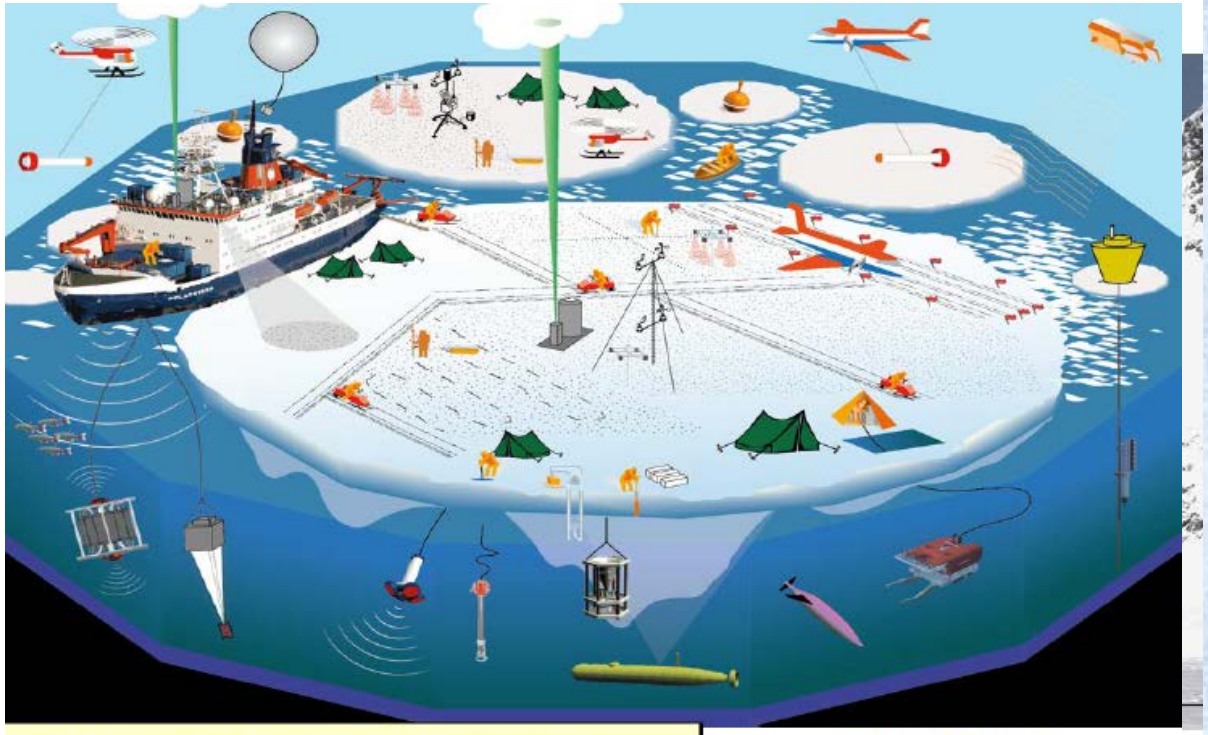
HELMHOLTZ

FRAM

Future

AWI





www.awi.de/en/expedition/observatories/ocean-fram.html

www.mosaic-expedition.org

HELMHOLTZ

Greenland
Denmark

Next: Japan

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

Greenland/Denmark – Past, Present and Future,

Morten Rasch and Steen Lund

Arctic Station is a research station situated in Qeqertarsuaq, West Greenland. It was established, as one of the first arctic research stations, in 1906 by the Danish botanist Morten Porsild. Today the station belongs to University of Copenhagen. It has been extended over the years, and there are currently plans for a new extension and modernisation. However, the station still remains in the protected area, where it originally was established.

Greenland/Denmark – Past, Present and Future,

Morten Rasch and Steen Lund

- Of course, partly meant as a joke ☺

- However, it is important that we maintain infrastructures, that we secure continuity and that we acknowledge that we stand on the shoulders of knowledge developed by former colleagues.

- Research topics, questions and instrumentation change.

- Research Infrastructure needs to be maintained and developed - but not necessarily to change.

PAST

PRESENT

FUTURE

Greenland/Denmark – Past, Present and Future,

Morten Rasch and Sten Lund

- For different reasons, much new research infrastructure is currently being established in the Arctic.

- It is however important that we also remember to use and maintain the older research infrastructure.

- Because long-time series of data and the knowledge being established through generations in itself has a value – which often exceeds at least the economic value of new infrastructure.

Forum of Arctic Research Operators

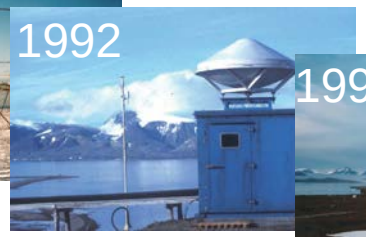
Japan

Next: Korea

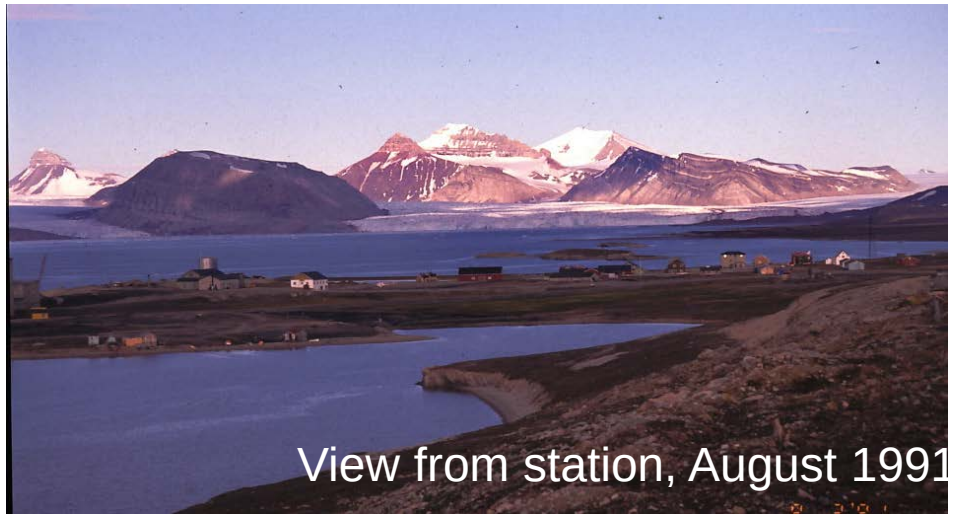
FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

Japanese Station at Ny-Ålesund in 1991

NIPR has been operating Research Station (Rabben) in Ny-Ålesund for continuously observing to atmosphere, cloud, GHG, ecosystem, etc., since 1991.

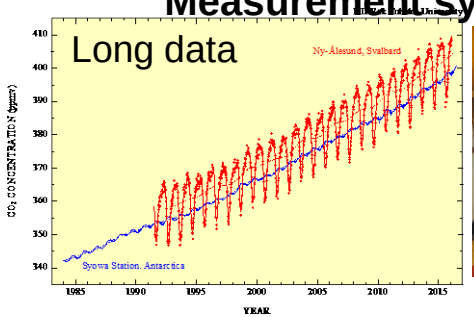


Early station diary



Japanese Station at Ny-Ålesund, at present

Measurement system for GHG

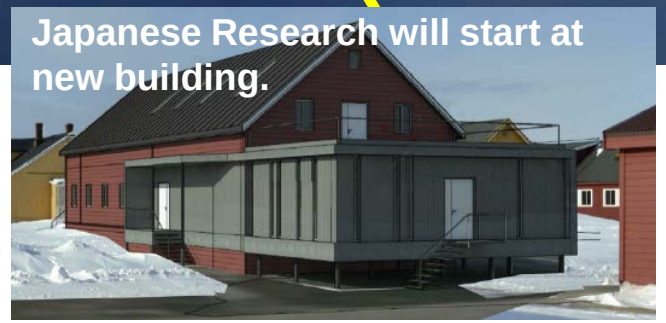


Soil CO2 Flux

Lidar/MPL

Japanese Station at Ny-Ålesund in Future

New Research building is now under construction at the central area of Ny-Ålesund in cooperation with the Government of Norway. NIPR will move to the new station to start a new research at the station, and to promote collaboration with other countries' stations.



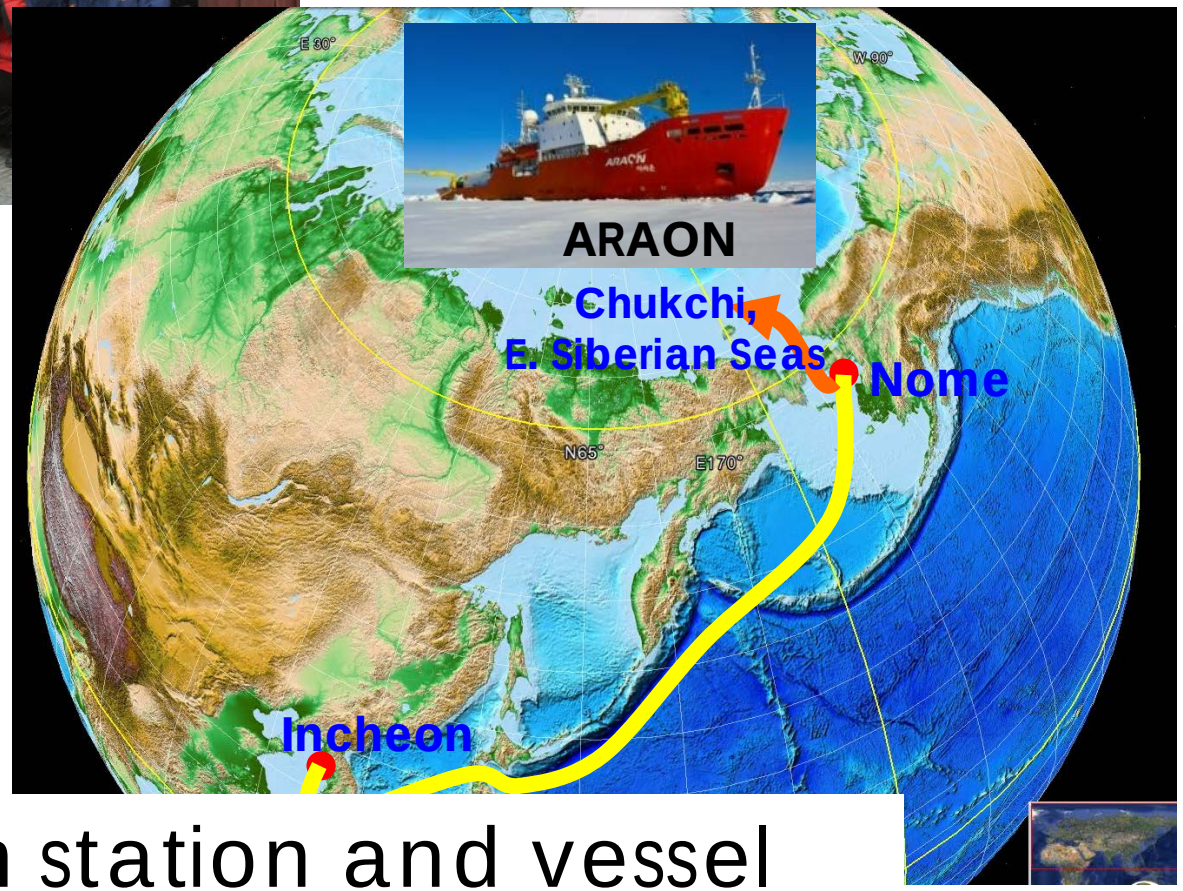
Forum of Arctic Research Operators

Korea

Next: Norway

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

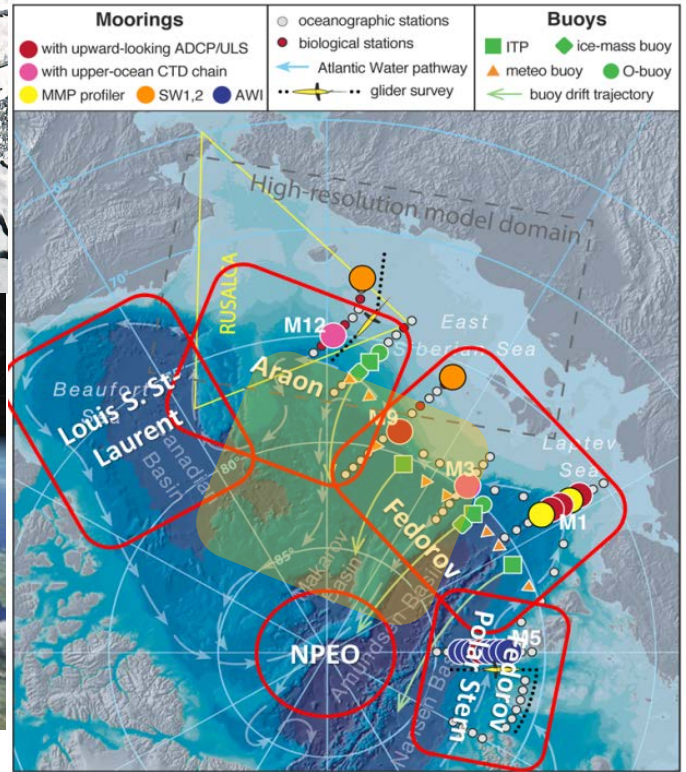
Past; begun on foreign platform



Present; our own station and vessel

Future; circum-Arctic and into the uncharted Central Arctic

With recent addition of Cape Baranova Russia



Forum of Arctic Research Operators

Norway

Next: Poland

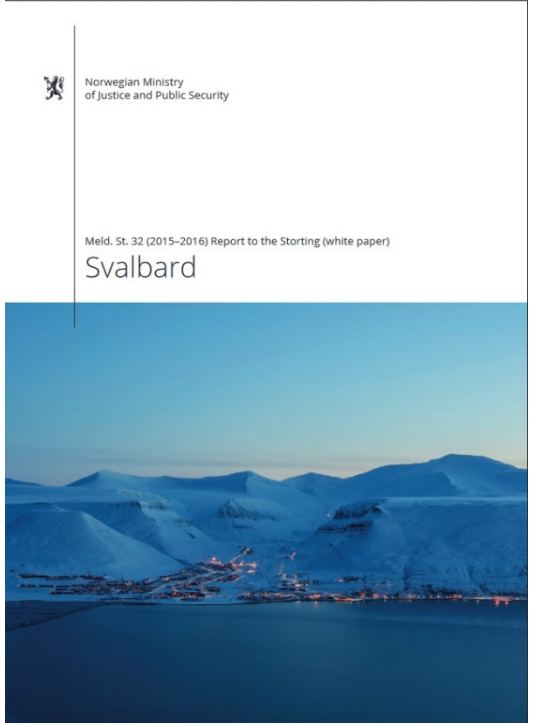
FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

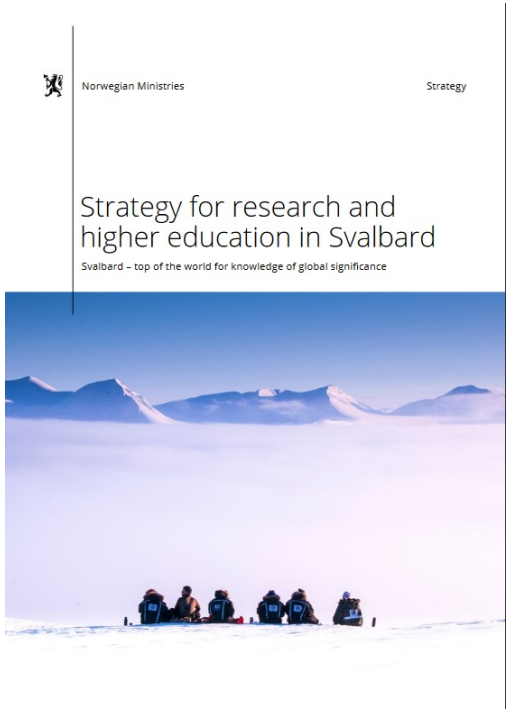
The Past

Otto Sverdrup`s II. Fram expedition (1898-1902)

The Present

Ny-Ålesund Research Station





The Future

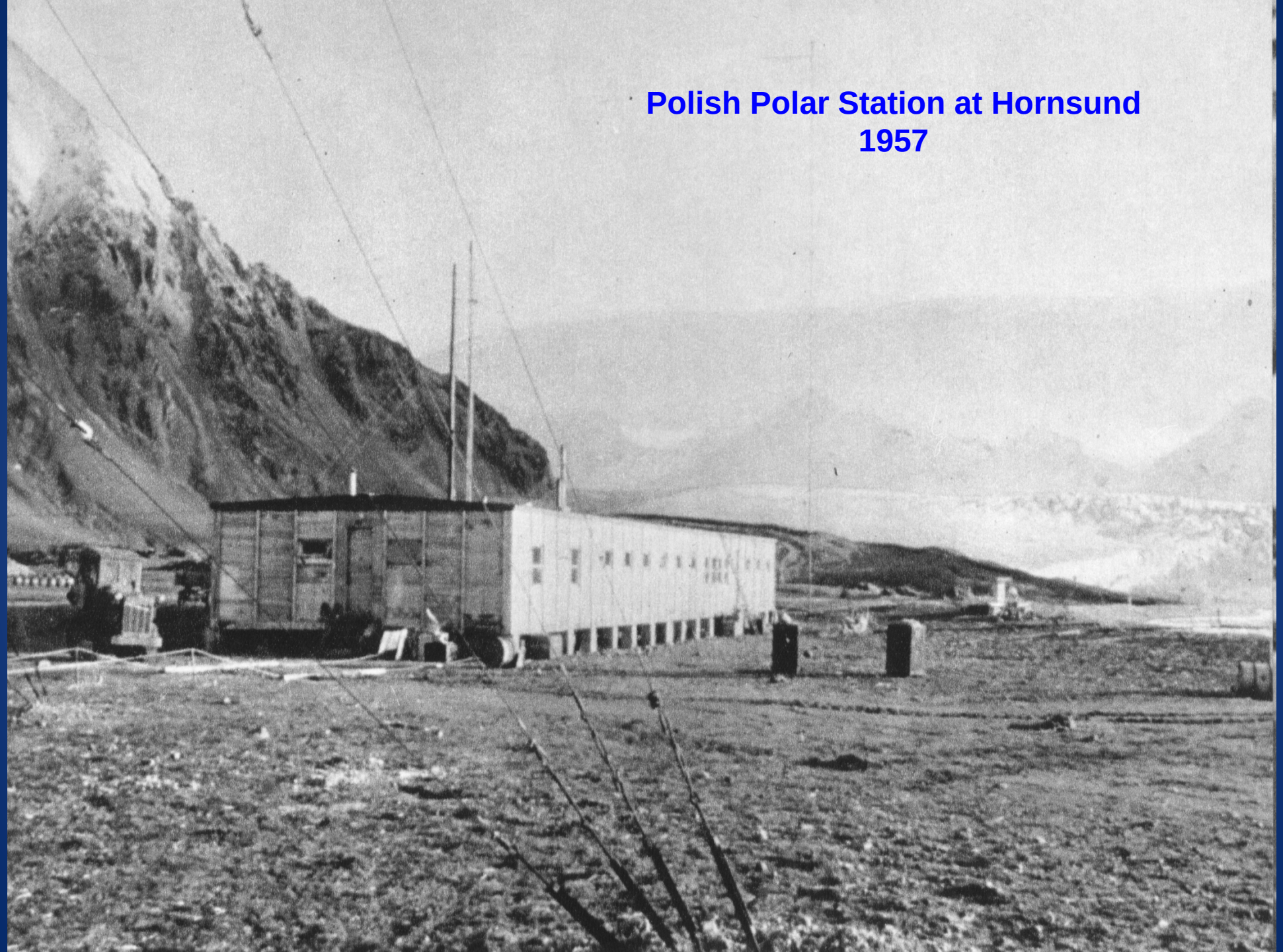
https://www.youtube.com/watch?v=ok6KWKznzXo&feature=youtu.be

http://www.npolar.no/en/about-us/stations-vessels/kronprins-haakon/

Poland

Next: Portugal

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018


Polish Polar Station at Hornsund
1957

Polish Polar Station at Hornsund
1980


Polish Polar Station at Hornsund
2017

Polish Polar Station at Hornsund
2018

Portugal

Next: Sweden

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

PAST

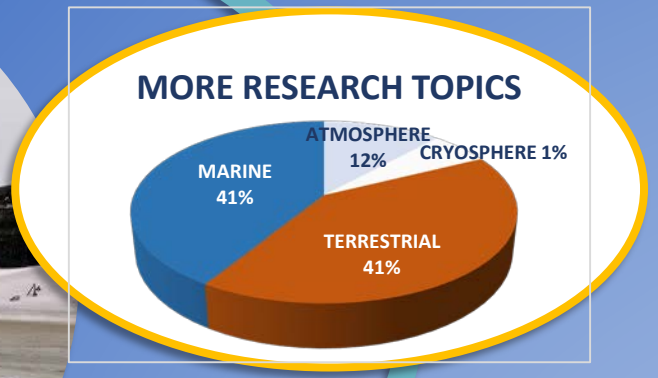
PORTUGAL

PORTUGUESE RESEARCH IN THE ARCTIC

PROPOLAR

PRESENT

PORTUGAL



PORTUGUESE RESEARCH IN THE ARCTIC

PROPOLAR

FUTURE

PORTUGAL

PROPOLAR

Forum of Arctic Research Operators

Sweden

Next: United Kingdom

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

The ice-breaker Oden, 1998 to present

- From container based to permanent labs
- Sea-water intake
- Two A-frames
- Multi-beam sonar
- More berths (for scientists)

The Abisko Scientific Research Station, 2010 to present

- Completely renovated labs
- Electronics workshop
- Extended monitoring (w. modems for communicat.)
- Geothermal heating
- New meeting rooms and “social areas”

Plans for the future

I/B Oden

» New ship?

Abisko

» New labs – DNA?, Dendrochronology (paleoclimatology)?

» Power supply – solar & wind

» Further extend monitoring, e.g.

- *Photos (cameras, drones, satellite)*
- *Hydrology for whole basins*
- *More weather stations (regionally & gradients)*
- *DNA archives (microbiota)*

» Data portal - SITES

United Kingdom

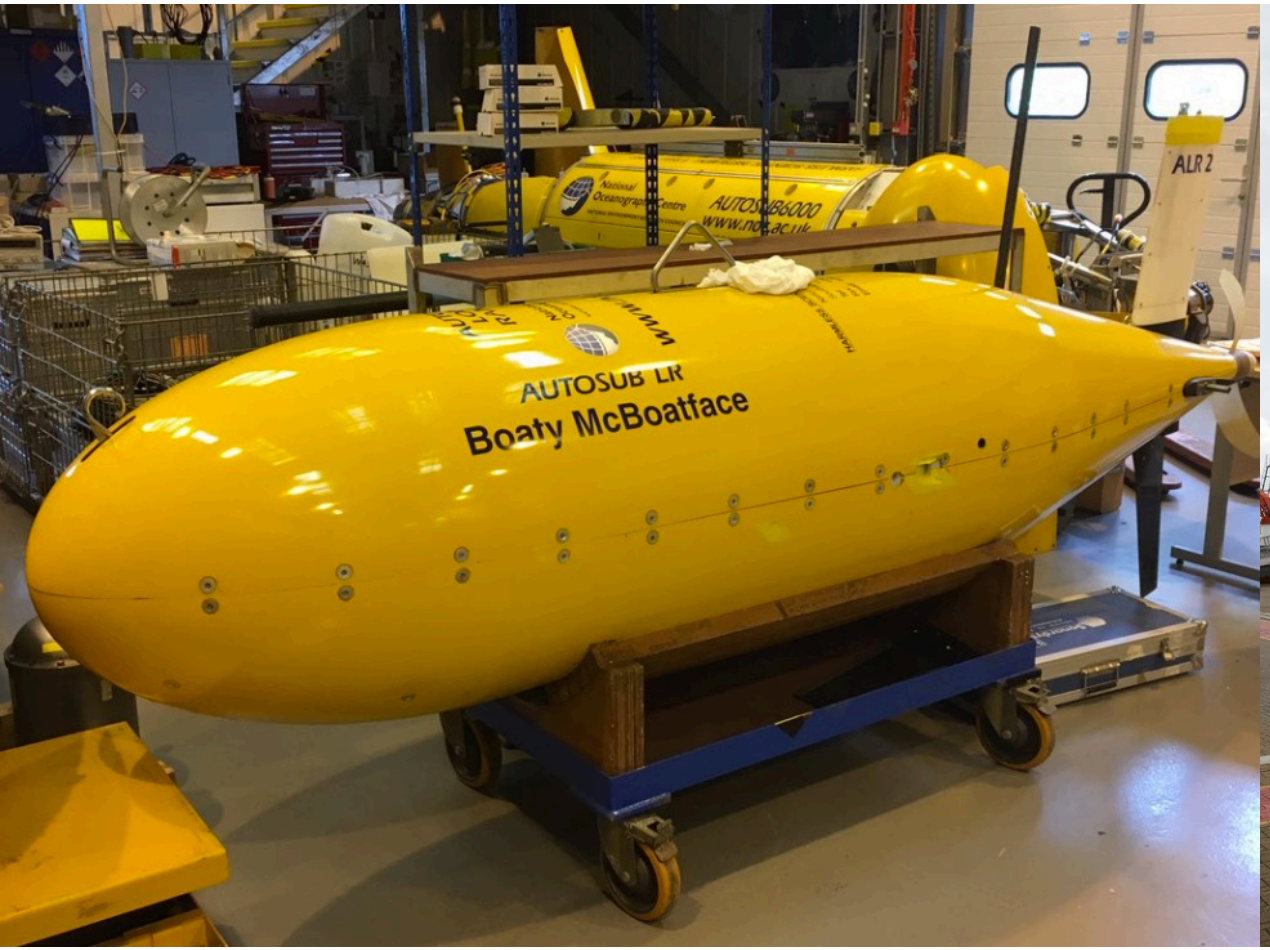
Next: United States

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

Past: Opening-up new fields and locations for Arctic research

Researchers from the United Kingdom and beyond working around Svalbard in the 1980s. Prior to the 1991 NERC Station in Ny-Ålesund.

Present: Safe and innovative Marine Autonomous Systems



Significant investment in remotely-operated and autonomous systems, increasing capacity to understand the polar oceans.

Future: New research capacity - RRS *Sir David Attenborough*

The next-generation polar marine science platform. Berths for 60 scientists. Entering service in 2019. International cooperation is key.

Forum of Arctic Research Operators

United States

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018

USA Arctic Infrastructure and Research Operations - Past

1997 US Arctic Research Commission report outlined logistics recommendations for improved U.S. Arctic research capability

- NSF established an Arctic Research Support & Logistics program in 1999 with Simon Stephenson as first program manager
- Program Vision -
  - Responsive to Arctic Researcher needs and seeks to increase access to the arctic, improve efficiency and promote safety in arctic research through innovative approaches
  - Enhance arctic research through services, facilities and relationships with organizations, agencies and national research programs

USA Arctic Infrastructure and Research Operations - Present

- Replacing aged infrastructure, eye towards energy efficiency
- Elevated or towable structures to mitigate snow drift, permafrost capable foundations
- Many data networks, but not connected to each other for easy leveraging
- Limited data transmission capability
- Risk management revisions responding to changing Arctic (sea ice, crevasses, bear ranges)
- Strong eye towards interagency and international coordination/collaboration (such as with vessels)






USA Arctic Infrastructure and Research Operations - Future

Navigating the New Arctic – One of NSF's 10 Big Ideas

- Systems based science
- Leveraging large data sets
- Knowledge co-production w/local communities
- Public participation
- International partnerships

Resilient infrastructure

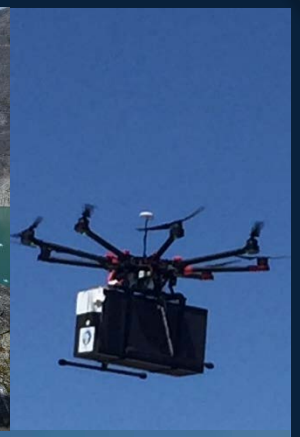
- Efficient, flexible, consolidated footprints to meet changing requirements
- State-of-the-art enabling year-round measurements made autonomously or with minimal human presence

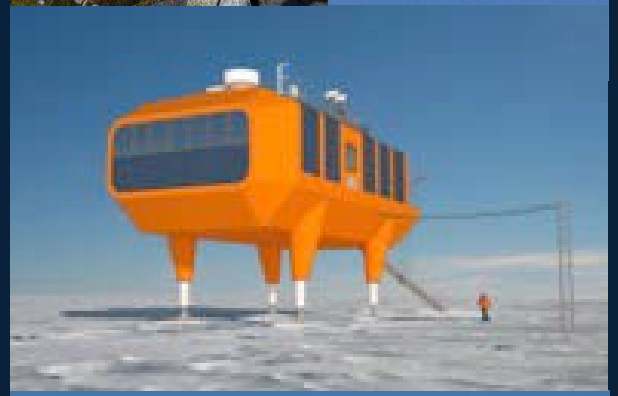
Multi-agency and multi-national Collaborations

- MOSAiC, YOPP, SODA

Hubs

- Data (also interconnected networks), Scholarly, Logistics





The End

FARO Annual Meeting 2018
ASSW, Davos, Switzerland
18 June 2018