Norwegian Meteorological Institute

WP 3 Campaign measurements by automatic weather stations (AWS) at four sites on Svalbard

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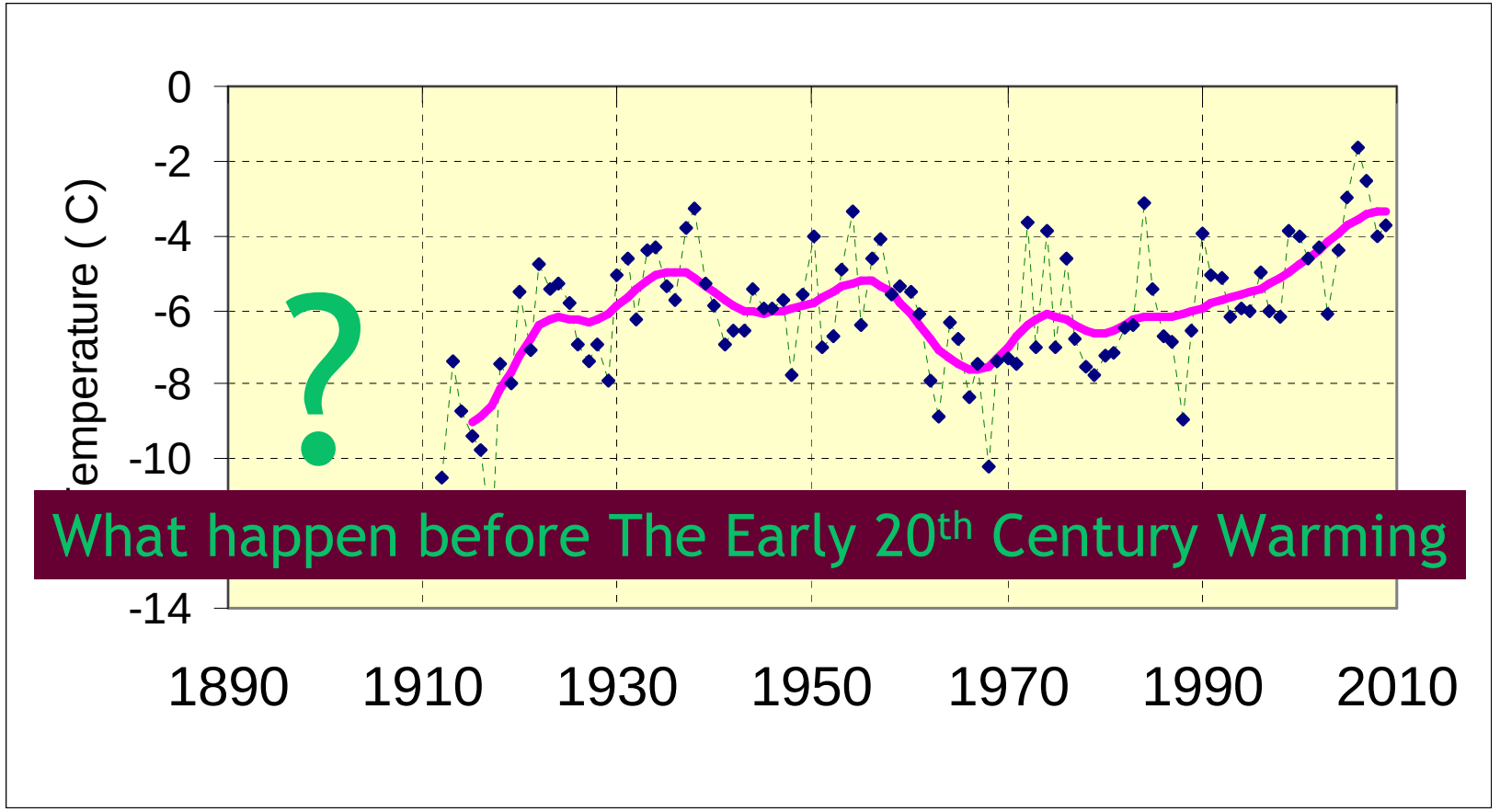
Sopot, 4-5 November 2010

Main objective: Prolong the Svalbard temperature series back to the end of the 19th century.

Sub-goals:

- To validate historical datasets in the Svalbard area.
- To improve the knowledge of the spatial climate variability in the area.
- To validate pressure datasets in the area.

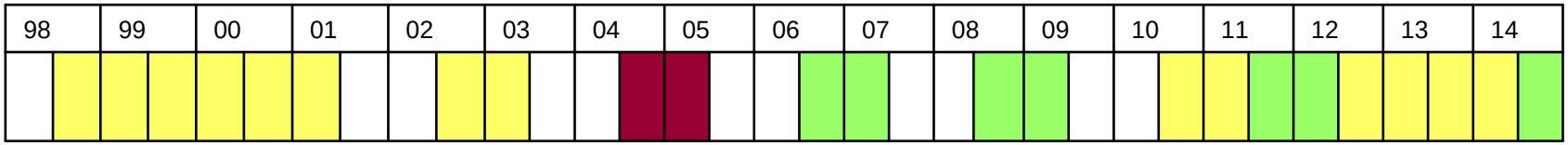
Temperature variations on Svalbard based on permanent stations



Non-permanent observations may give the answer

Meteorological data from over-wintering hunters as well as from scientific expeditions

Period: 1898 -1914



One station

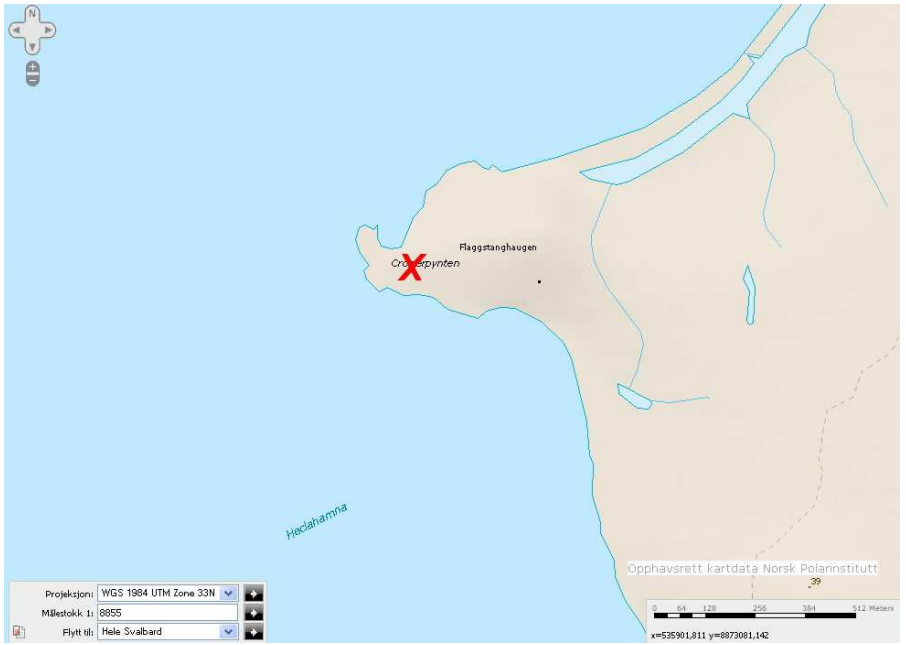
Two stations

Three stations

Four stations

Scientific expedition at Sorgfjorden (Swedish Russian expedition 1899/1900)

Official name: **Crozierpynten**



Remnants from the old station

Modern station

Modern station 99737 Crozierpynten

The station has only temperature observations without satellite transmission.

Data from this station will be analysed together with data from the near by station Verlegenhuken

Seen from the north

Measurements by overwintering hunters on Edgeøya

Svarttangen, 1904-1905, 1906-1907,1908-1909

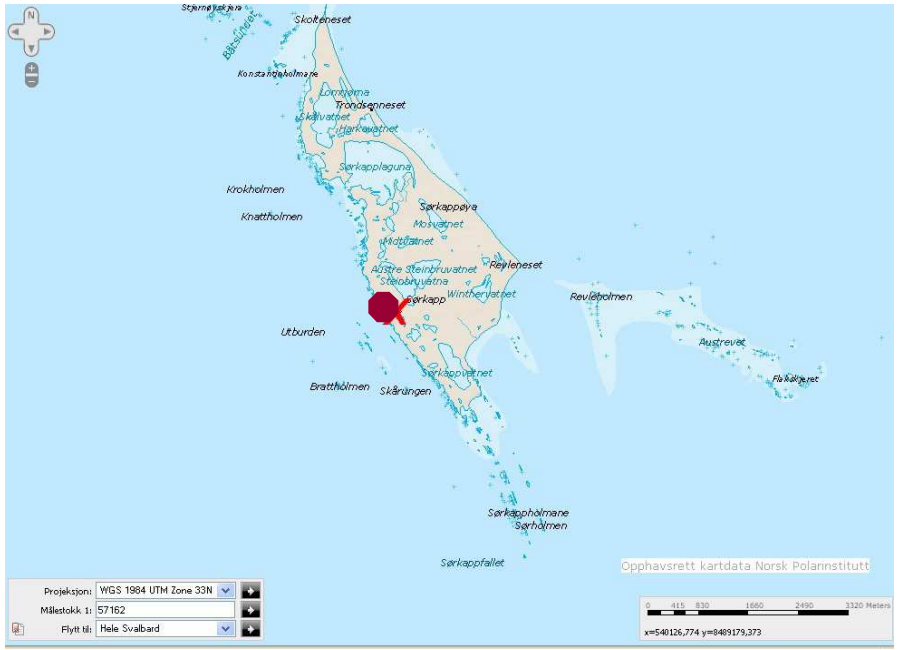
Remnants of the old cottage

Modern station 99737 Svarttangen

- Pressure and temperature measurements
- Satellite transmission

Measurements by overwintering hunters on the island at the southern tip of Spitsbergen

Sørkappøya, 1908-1909, 1911-1912, 1914-1915



Modern station
99752 Sørkappøya

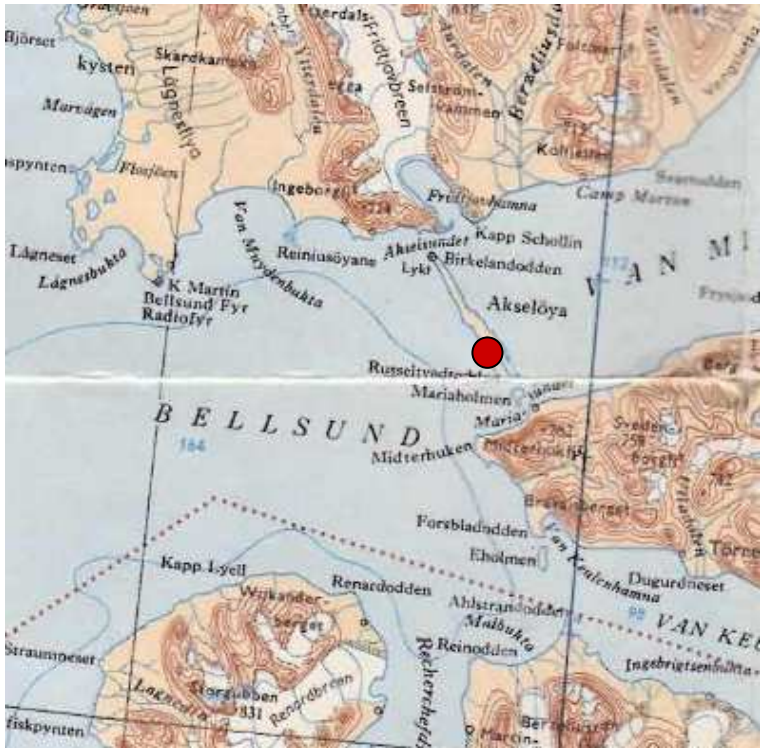
Pressure, temperature, humidity and wind measurements

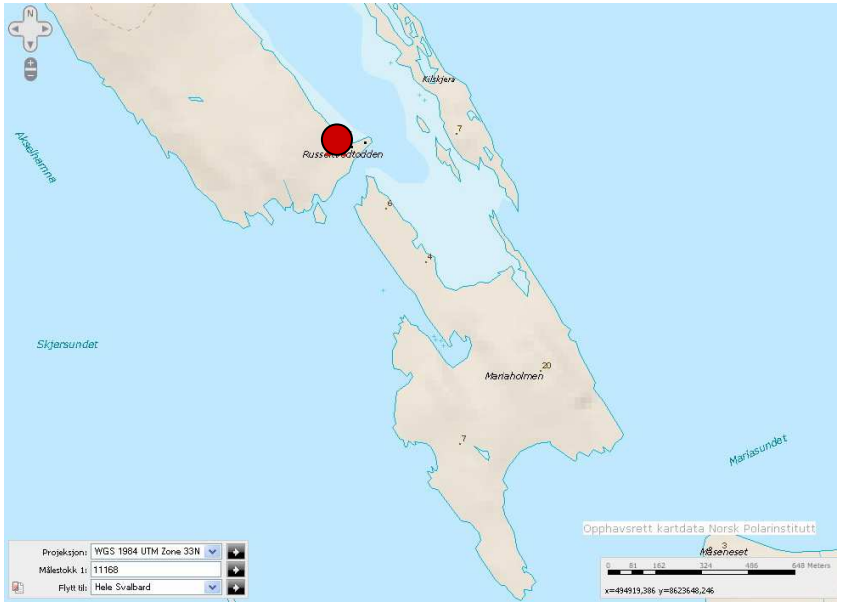
Satellite transmission

Bad weather during launching of the station

Measurements by over-wintering hunters and scientists on the island Akseløya at Bellsund

Akseløya, 1898-1899, 1900-1901, 1902-1903, 1904-1905, 1910-1911





Modern station: 99765 Akseløya

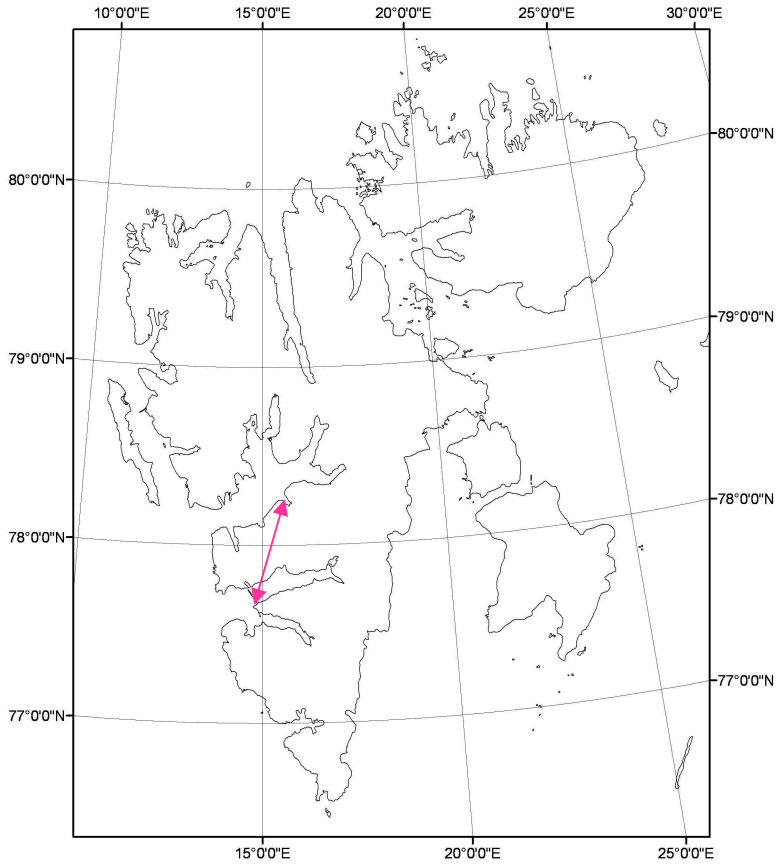
Pressure, temperature and wind measurements

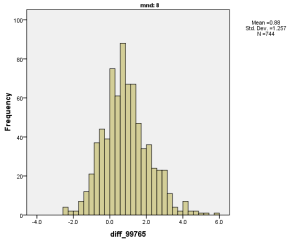
Satellite transmission

Why is spatial temperature differences important?

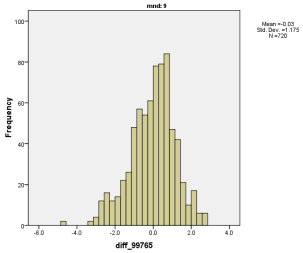
- It may be the key for understanding the Svalbard climate
- Crucial for homogenisation of the shorter Svalbard series, and thus also for the prolongation of the Svalbard airport series back to the end of 19th century

Spatial differences:
Svalbard Airport - Akseløya

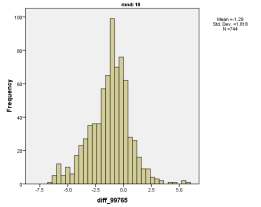




August: 0.9 °C

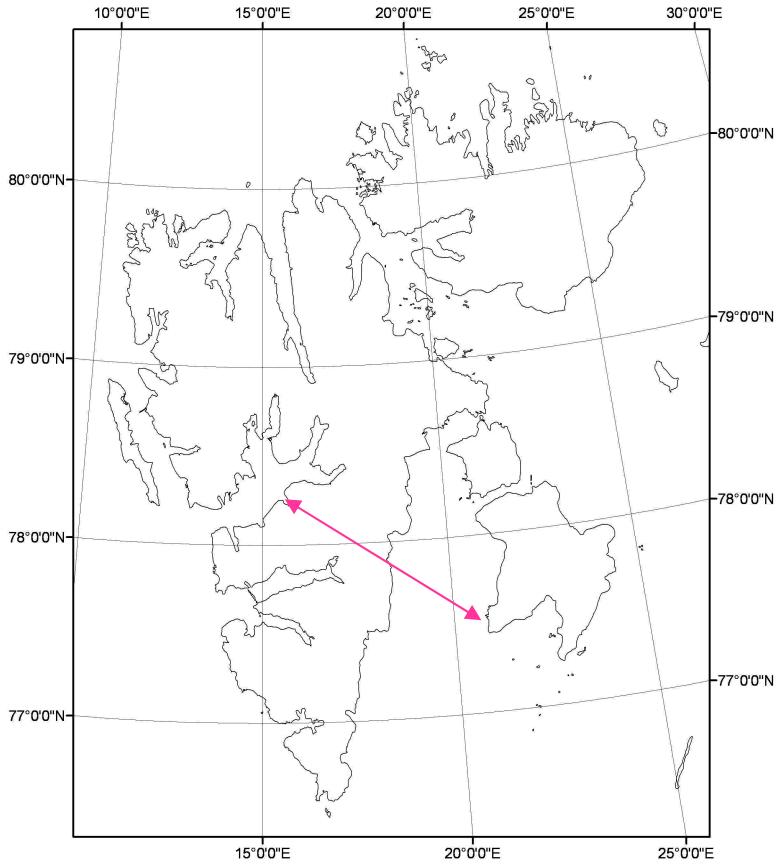


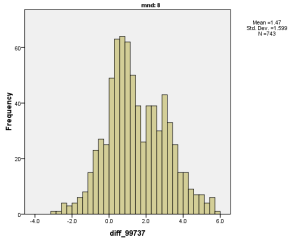
September: 0.0 °C



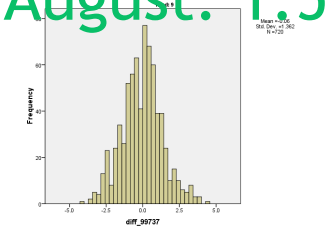
October: -1.3 °C

Spatial differences:
Svalbard Airport - Svarttangen

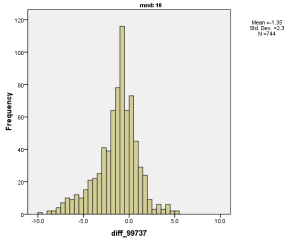




August: 1.5 °C

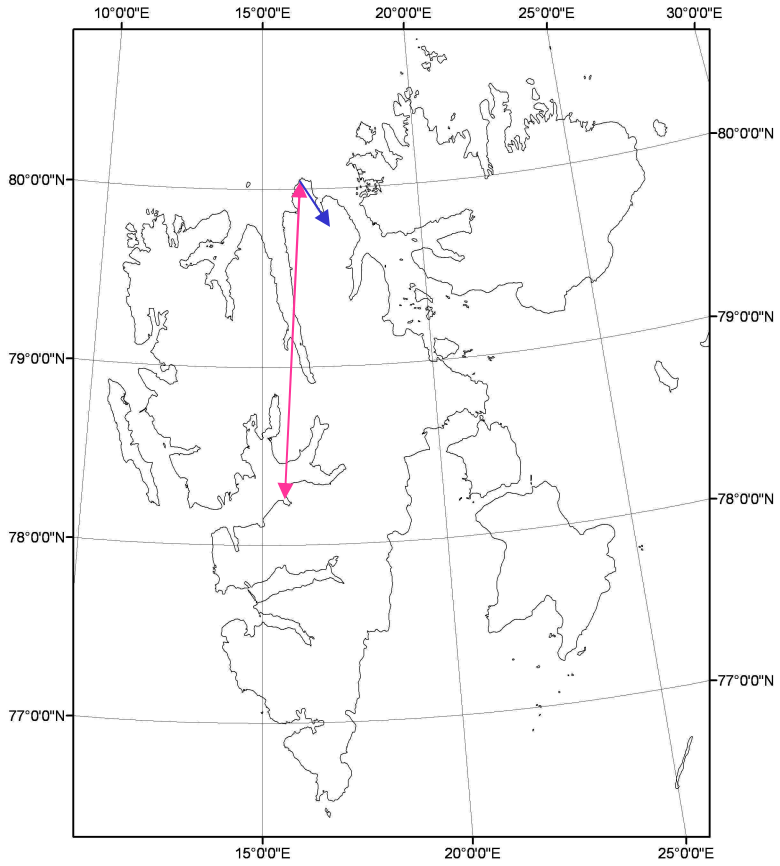


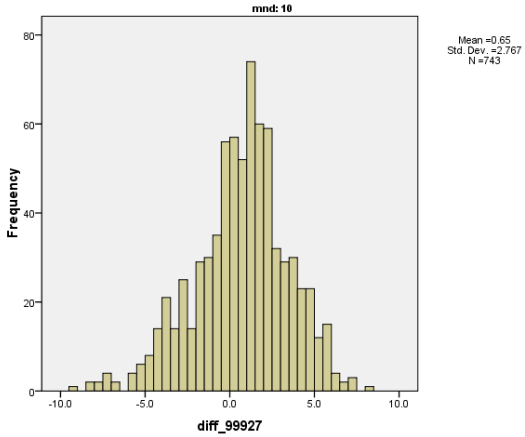
September: -0.1 °C



October: -1.4 °C

Spatial differences:
Svalbard Airport - Verlegenhuken



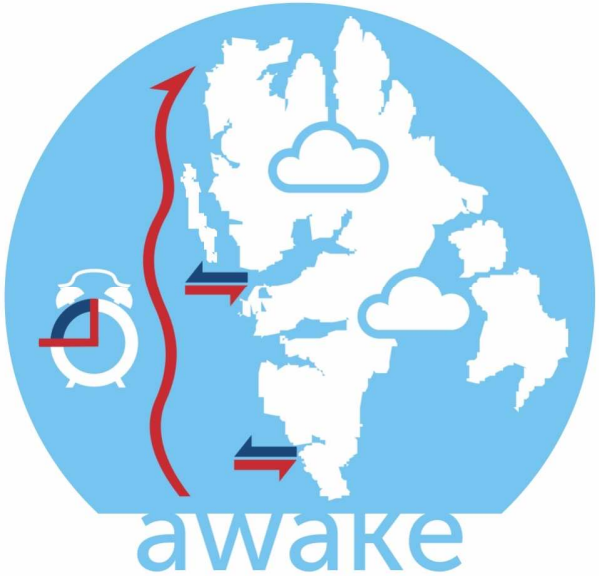


October: 0.7 °C

Data storage and NOAA's reanalysis

- The old pressure data from the hunting expeditions (1898-1911) have been subject special analysis using available metadata.
- The analysed pressure data are sent to NOAA in order to strengthen the reanalysis in the Svalbard area
- All data from the hunting expeditions as well as the new data from the same sites are stored in the data base of The Norwegian Meteorological Institute

Thank you for listening!



AWAKE-project

Polish-Norwegian Research Fund

and

norway grants