

# Glaciers fronts imaging in the Arctic

*Hornsund fjord, Spitsbergen, Arctic*

27.07.2014 – 05.08.2014



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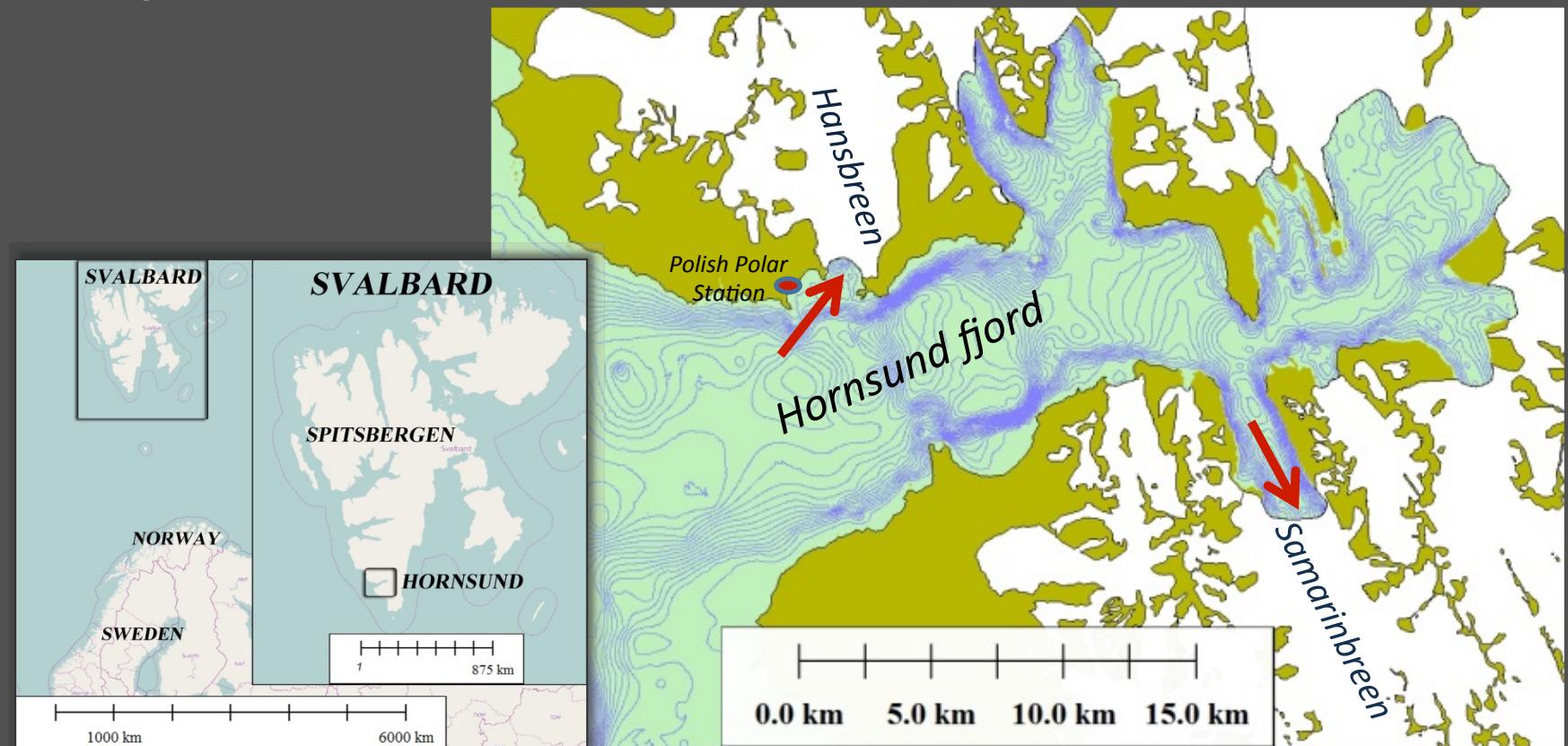


# Hornsund fjord glaciers mapping

## Summer, 2014, Spitsbergen, Arctic

### Survey purposes:

- test Norbit compact MBES in difficult, Arctic conditions;
- map tideglaciers front walls and measure bathymetry of postglacial bays;
- tideglaciers underwater outflows detection based on MBES water column data.



# Polish Polar Station, Hornsund Fjord

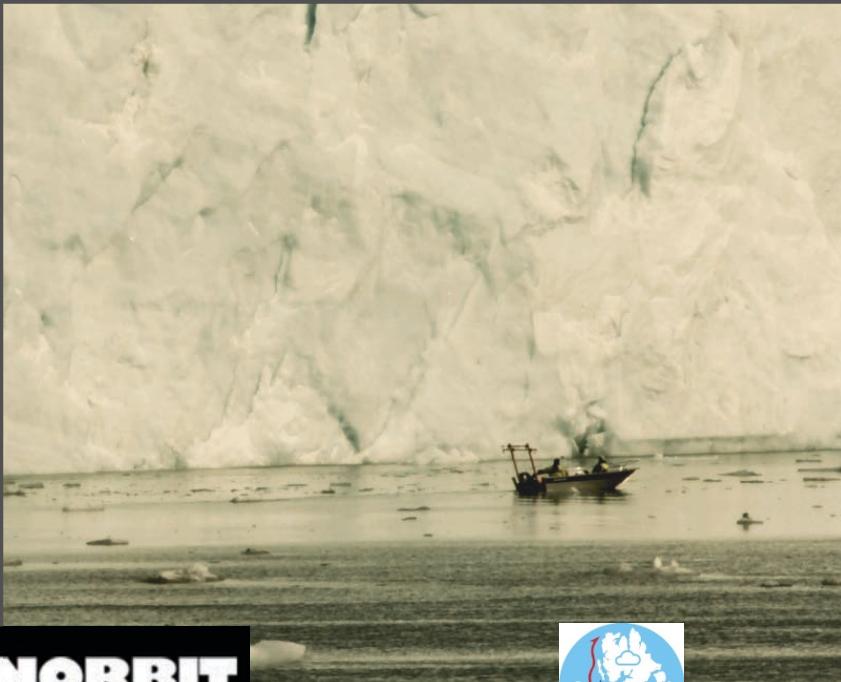


The works were conducted in frames of the Polish-Norwegian projects AWAKE2 and GLAERE in the Polish Polar Station in Hornsund (Svalbard)



# Equipment

- survey was conducted from an aluminum, small boat;
- Norbit integrated wideband multibeam sonar (iWBMS) was pole mounted;
- POSMV antennas mounted on the pole and on the boat;
- QINSY software was used for acquisition and data processing;
- laptop and MBES were powered by Honda 20i generator.

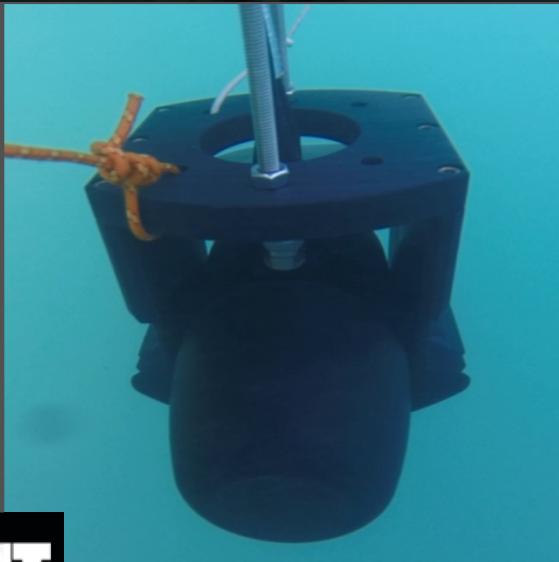


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# Quick Setup of Norbit MBES

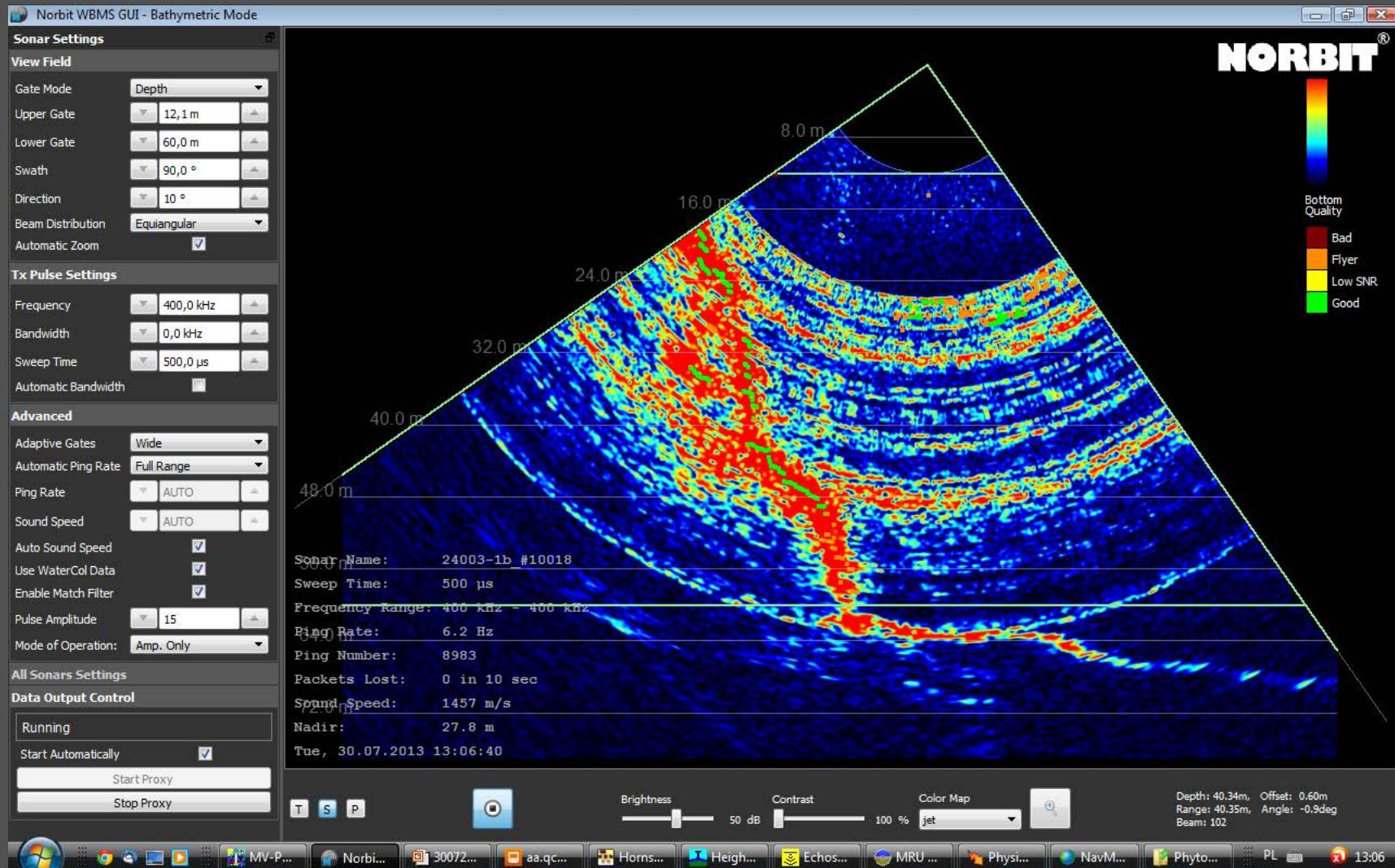


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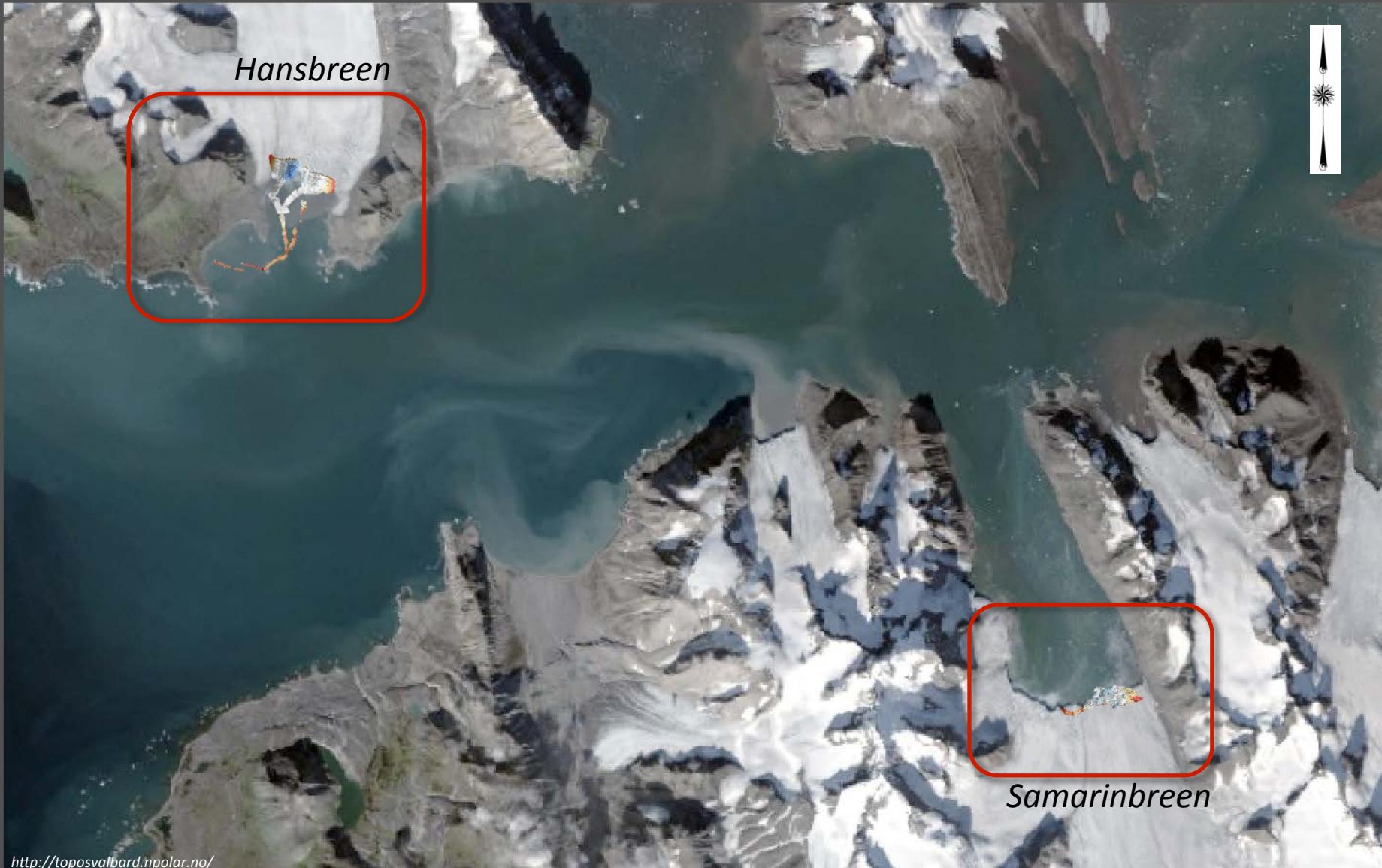
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# MBES settings

Focusing on water column data we used: Amp. only mode with CW impuls, 400kHz, 10° tilt (nearby glacier's wall) and equiangular beam distribution.



# Hornsund fjord and the survey areas



<http://toposvalbard.npolar.no/>

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# Survey



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# Hansbukta



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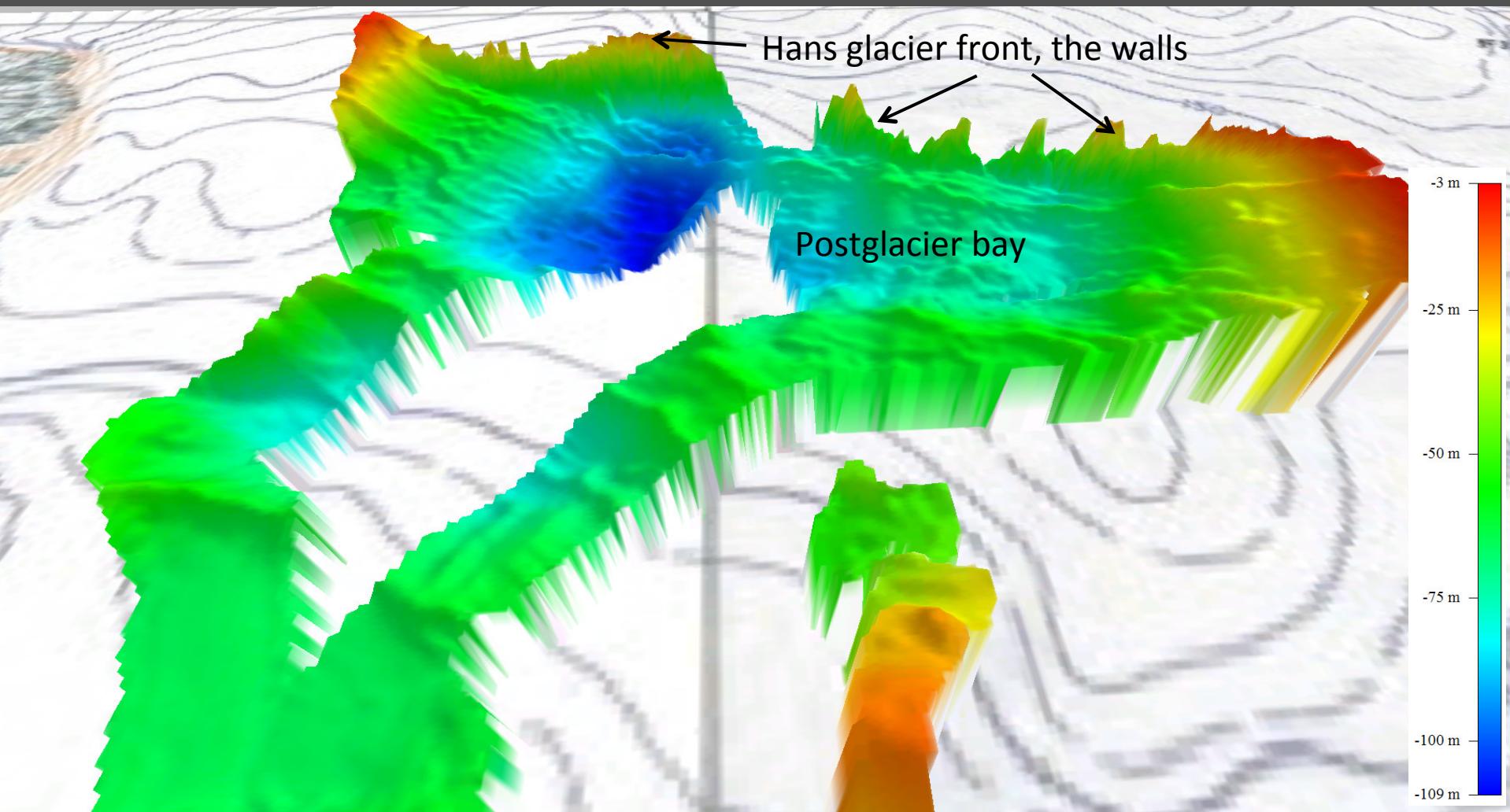
# Hansbreen



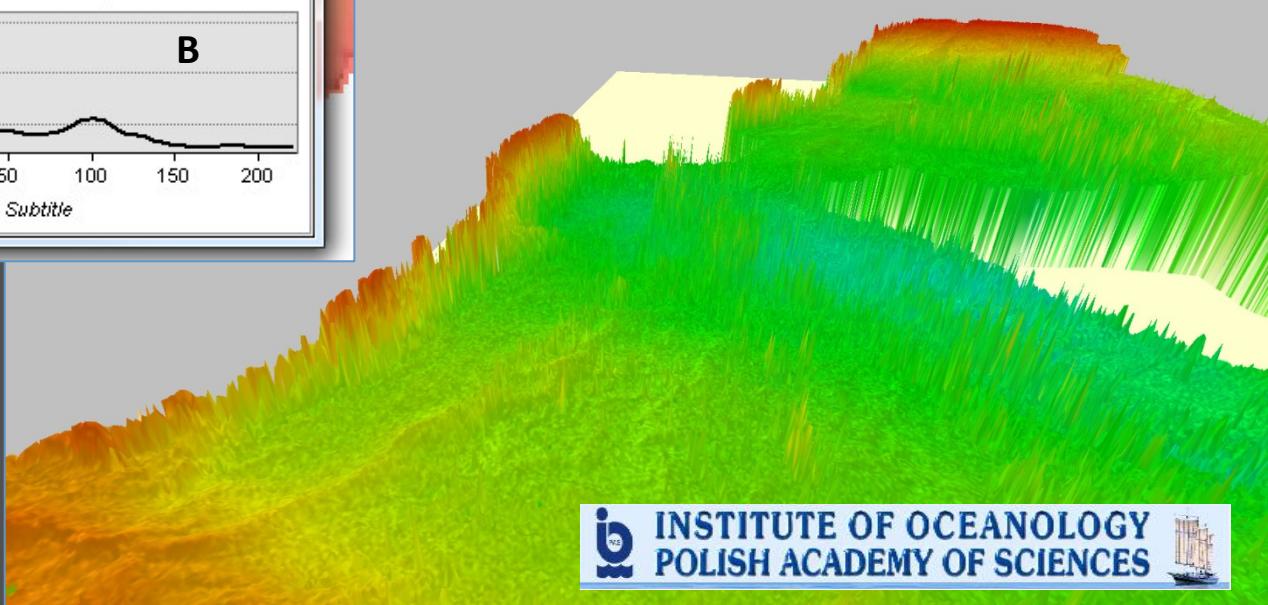
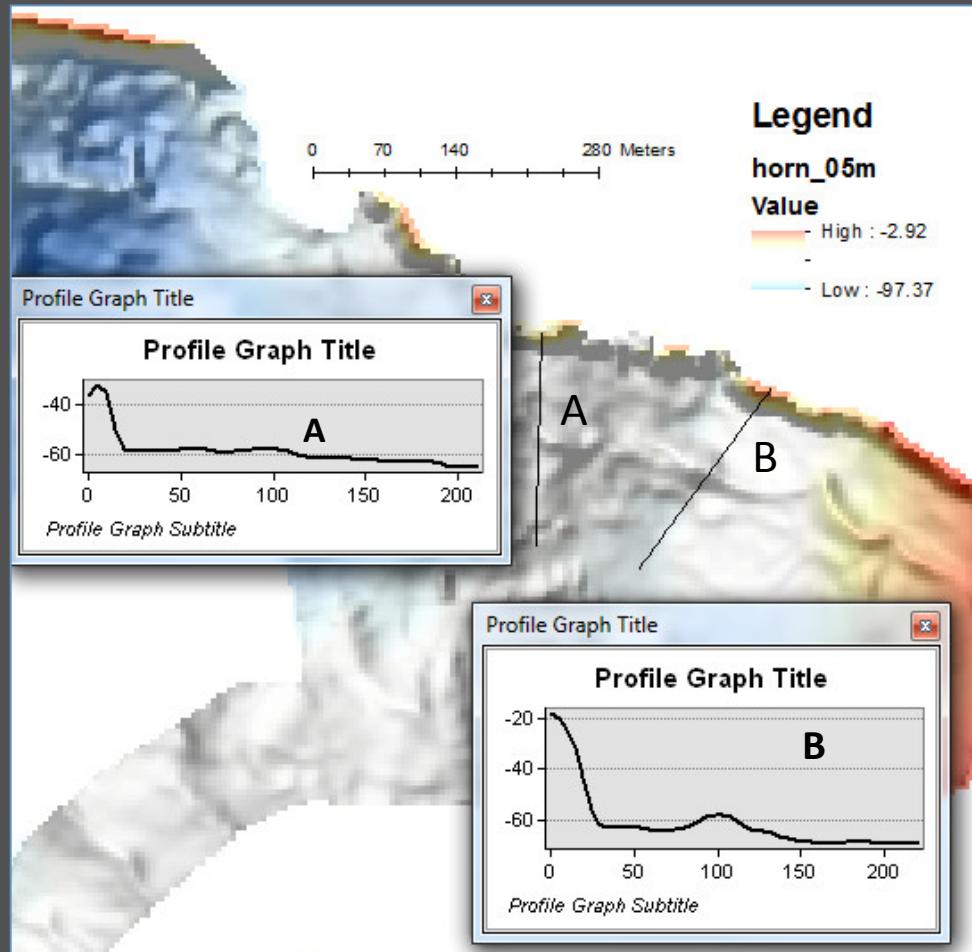
Hans glacier front, the walls

Postglacier bay

# Hansbreen



# Hansbreen walls and bathymetry

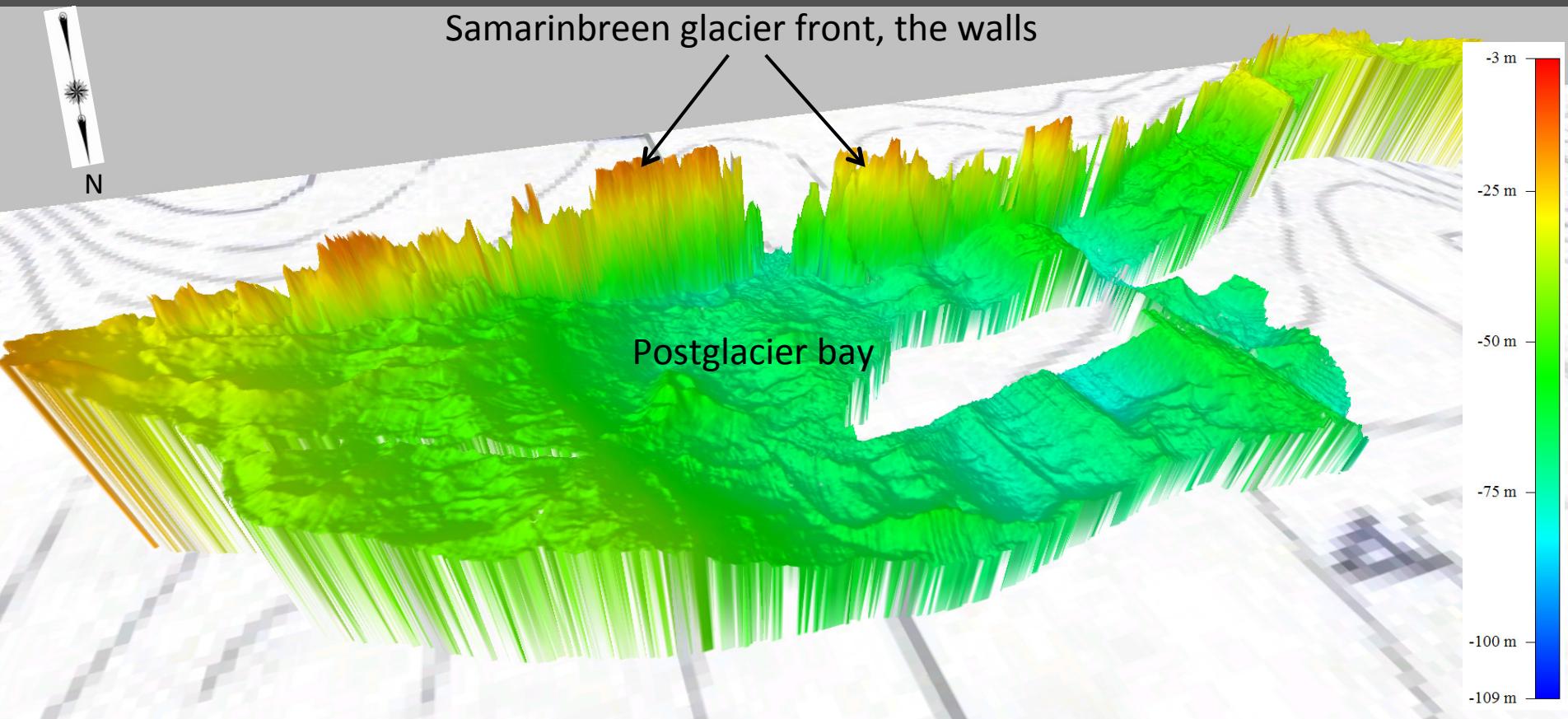


# Samarinbreen

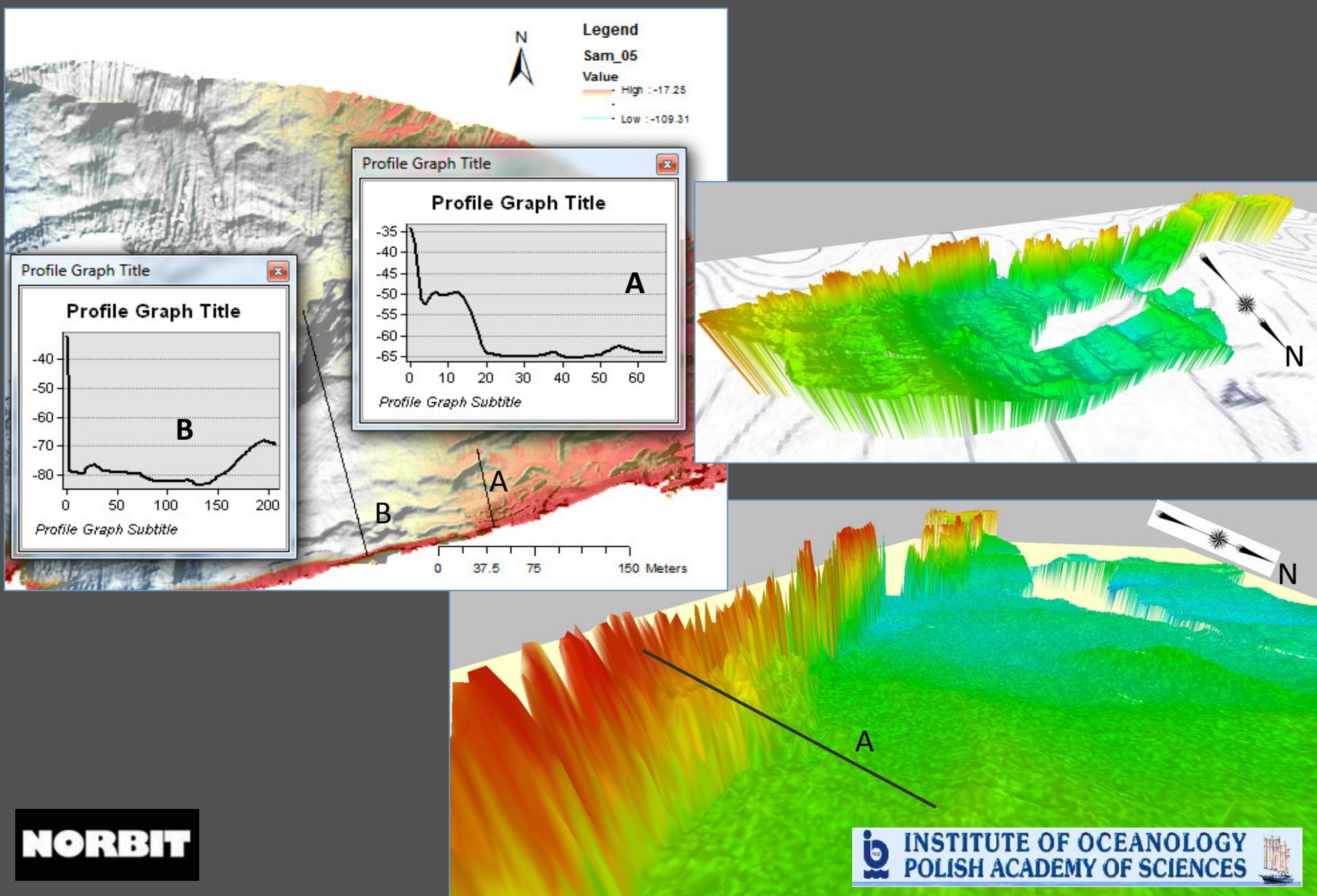
Samarinbreen glacier front, the walls

Postglacier bay

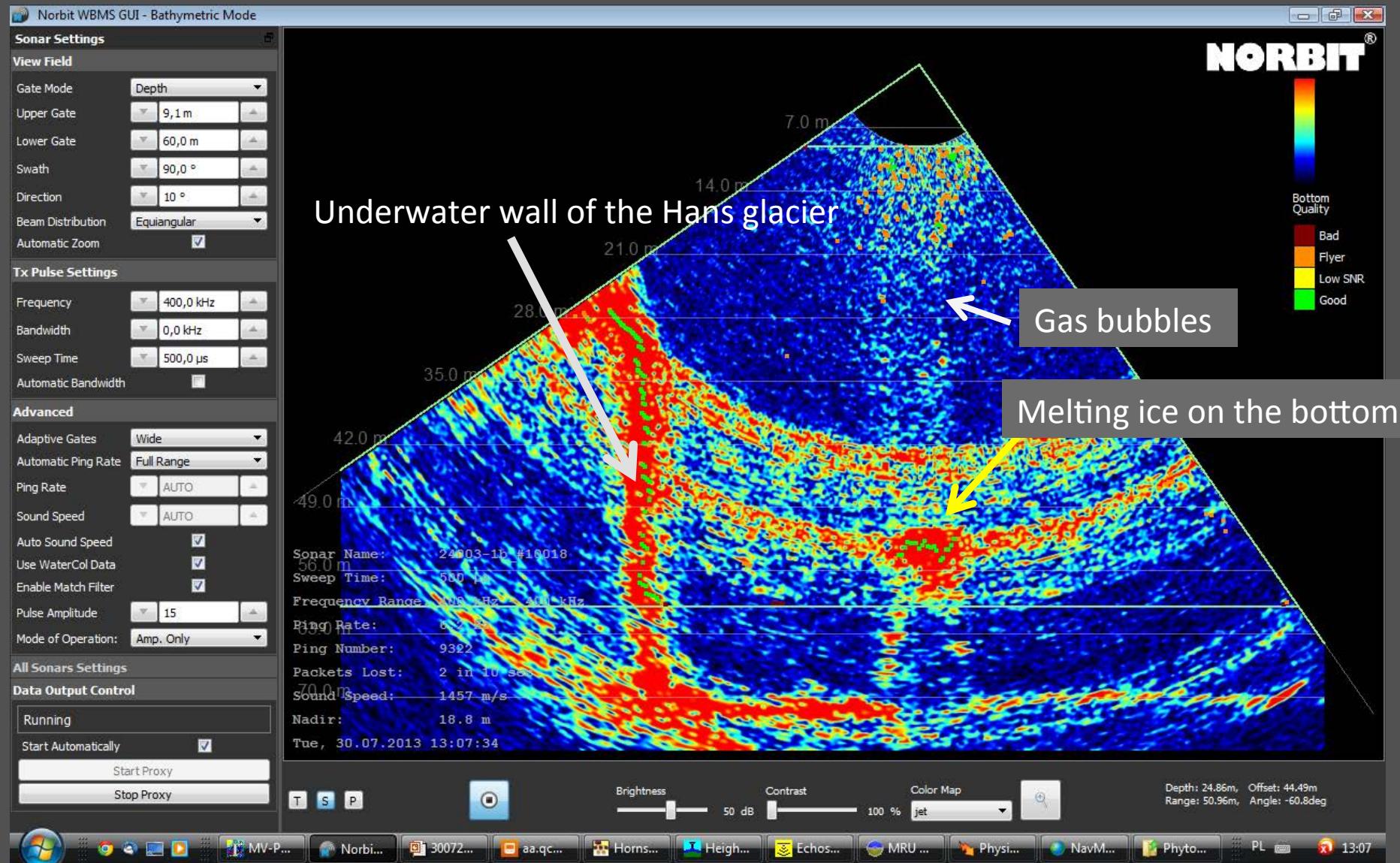
# Samarinbreen



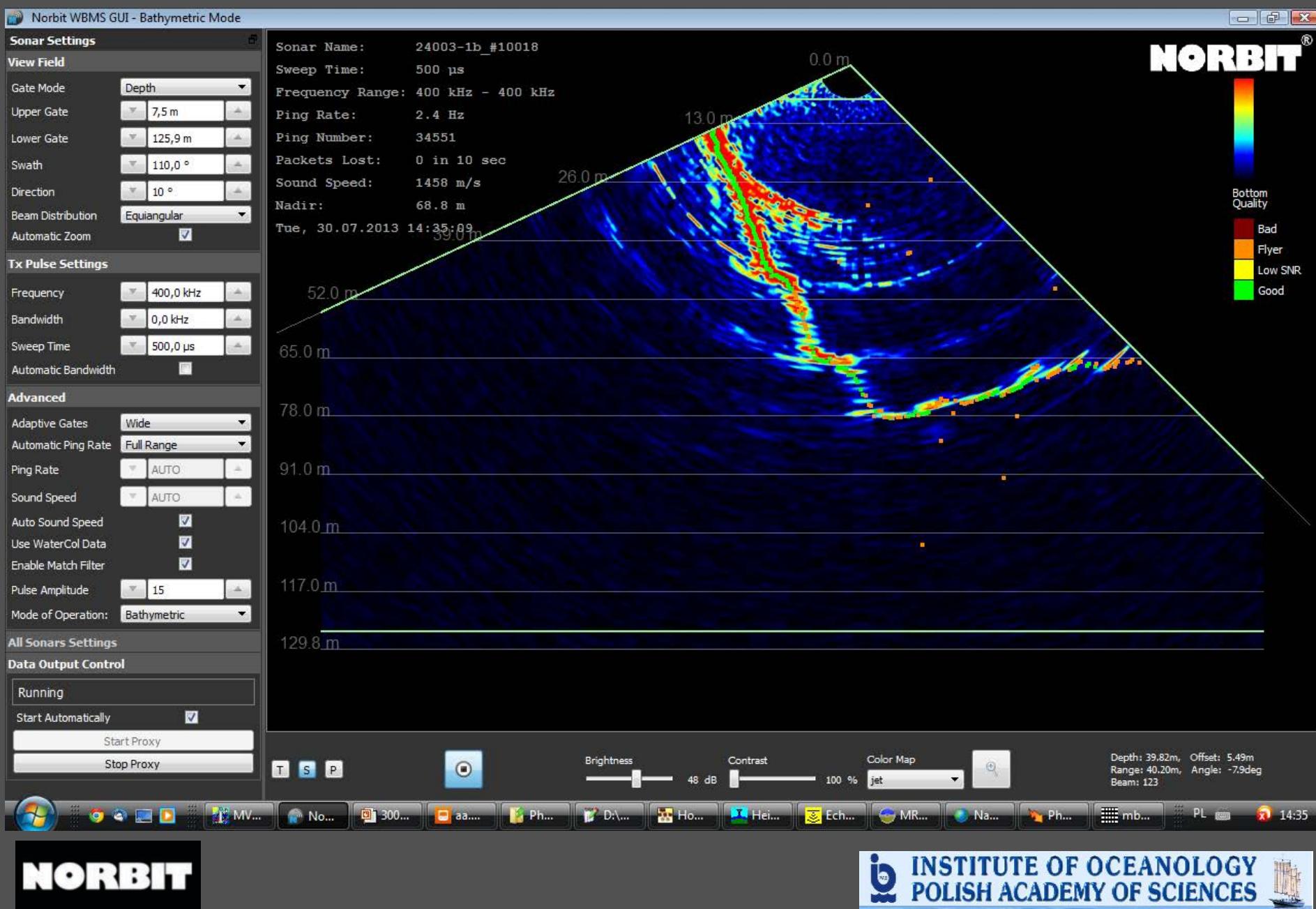
# Samarinbreen walls and bathymetry



# Water column data



# Glacier's wall with ice steps



# Results

Two of the main glaciers in Hornsund fjord were mapped, bathymetry as well as underwater walls structure.

We obtained very promising results of water column data analysis for future detection of freshwater outflows from below the glacier.

## Experience with Norbit MBES

- easy and quick installation, crucial in Arctic conditions while repeating every day
- straight forward software setup
- very good quality of data for scientific purposes
- very efficient support team



END

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