



Att.: The Seabed 2030 Project

Greenland Crowd Sourced Bathymetry project

Pinngortitaleriffik, Greenland Institute of Natural Resources, is running a subproject of Seabed 2030 on collecting crowd sourced bathymetry from vessels located in Greenland.

Activities

The project team has travelled to the towns Kullorsuaq, Ilulissat, Sisimiut, Qaqortoq, Tasiilaq and Nuuk in Greenland, which can only be reached by air or sea. Here we have been in contact to local navigators, often fishermen and marine hunters, to explain the goals, efforts and results of The Seabed 2030 Project, and the potential of crowd sourced bathymetry. Some were willing to collaborate while others were more reluctant.

We have disseminated leaflets in Danish and Greenlandic, published newspaper articles in the national papers, held public meetings with the interest groups, been available at the quayside and onboard vessels assisting the locals with technical issues considering their sonar and positioning instruments.

On board the vessels, we've installed NMEA loggers and extracted XYZ location and depth information from their navigational systems.

The collaborators have been provided with updated and accurate maps with bathymetry, which there is a great lack of in Greenland. The maps included an accurate and detailed coastline and model data from IBCAO and scientific cruises such as Ocean Melting Greenland (NASA), British Antarctic Survey, Greenland Institute of Natural Resources and other institutions. The collaborators expressed great interest in the maps and have since stated the great value of insight into bathymetric data never known to them before during fishing operations from small boats.

The processes and intermediate results of the subproject has been displayed to scientific meetings and workshops in Greenland and internationally, and methods of crowd sourced bathymetry have been discussed with the Danish Hydrographic Office.

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Results

- A. Data:
 - a. XYZ data from 11 vessels.
 - b. NMEA logger on 4 vessels, data from 2. The other 2 are recently sunken.
- B. Dissemination:
 - a. Citizen meetings in Nuuk, Kullorsuaq, Qaqortoq, Ilulissat and Tasiilaq.
 - b. Newspaper article and TV-interviews in national media, Facebook postings.
 - c. Leaflet for stakeholders in Greenlandic and Danish
 - d. Data (XYZ) to Danish Hydrographic Office
 - e. Data to IBCAO, Seabed 2030 Arctic and North Pacific Centre.
 - f. 13 maps on Avenza Maps Smartphone app, c. 3000 downloads
 - g. Oral presentations for/at:
 - i. Arctic Ocean Workshop 2024, Nuuk
 - ii. Arctic-Antarctic Mapping Meeting, 2023, Bremen
 - iii. Greenland Science Week 2023, Nuuk
 - iv. Greenland Mapping Oceans Workshop, Nuuk
 - v. ARHC CSB Working Group, online
 - vi. Teaching for Fishery Licence Officers, 2023, Nuuk
 - vii. Avannaata Municipality for Technical Director and staff
 - viii. Ministry of Housing and Infrastructure, 2024, Nuuk.



Figures



Figure 1: Community meeting in Ilulissat where local fishermen and hunters experience with wealth of bathymetric data gathered through Seabed 2030 and IBCAO and realising the potential for collaboration.



Figure 2: Fishing boats in Ilulissat collaborating with Seabed 2030.

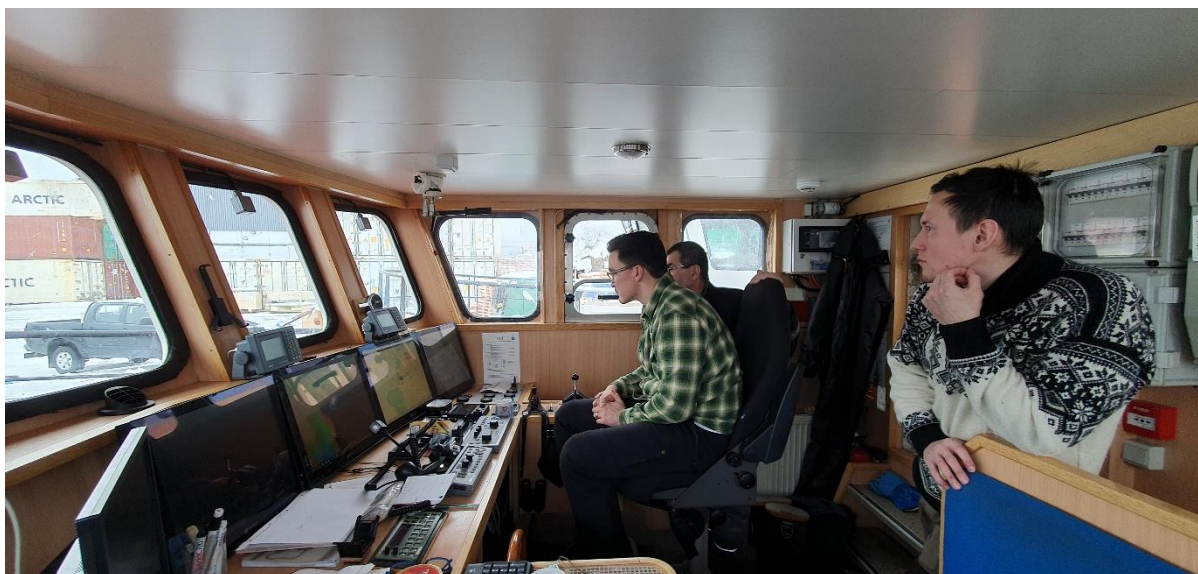


Figure 3: Onboard a local vessel in Ilulissat working with the crew and the navigation and sonar system

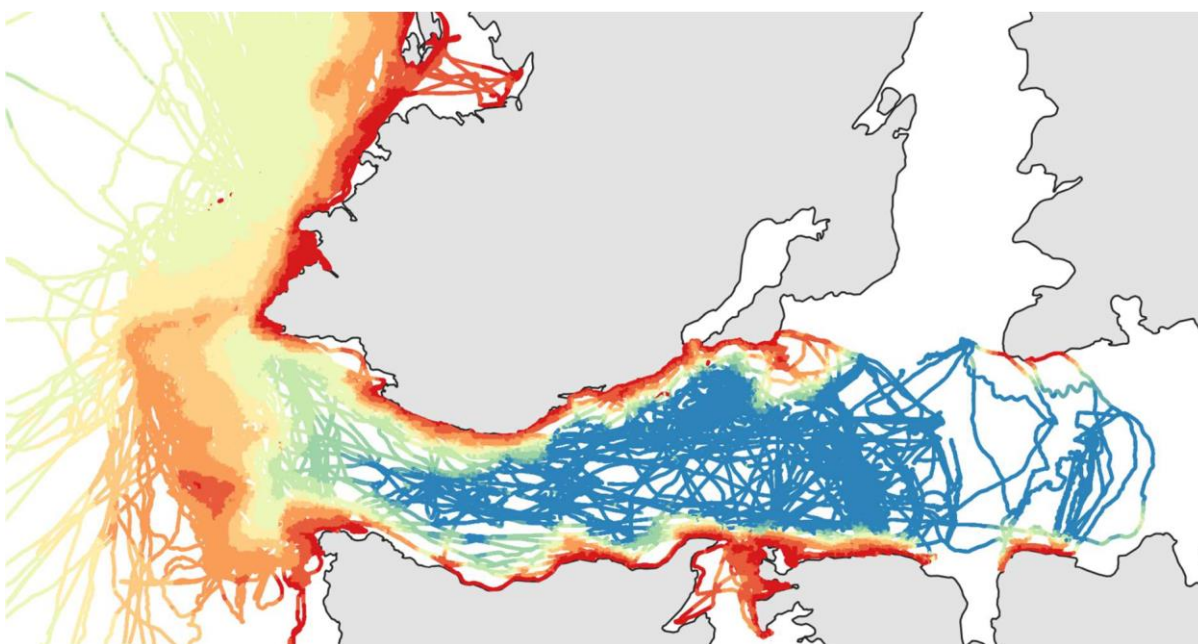


Figure 4: Data from the Ilulissat Icefjord UNESCO World Heritage Site - from only a single vessel

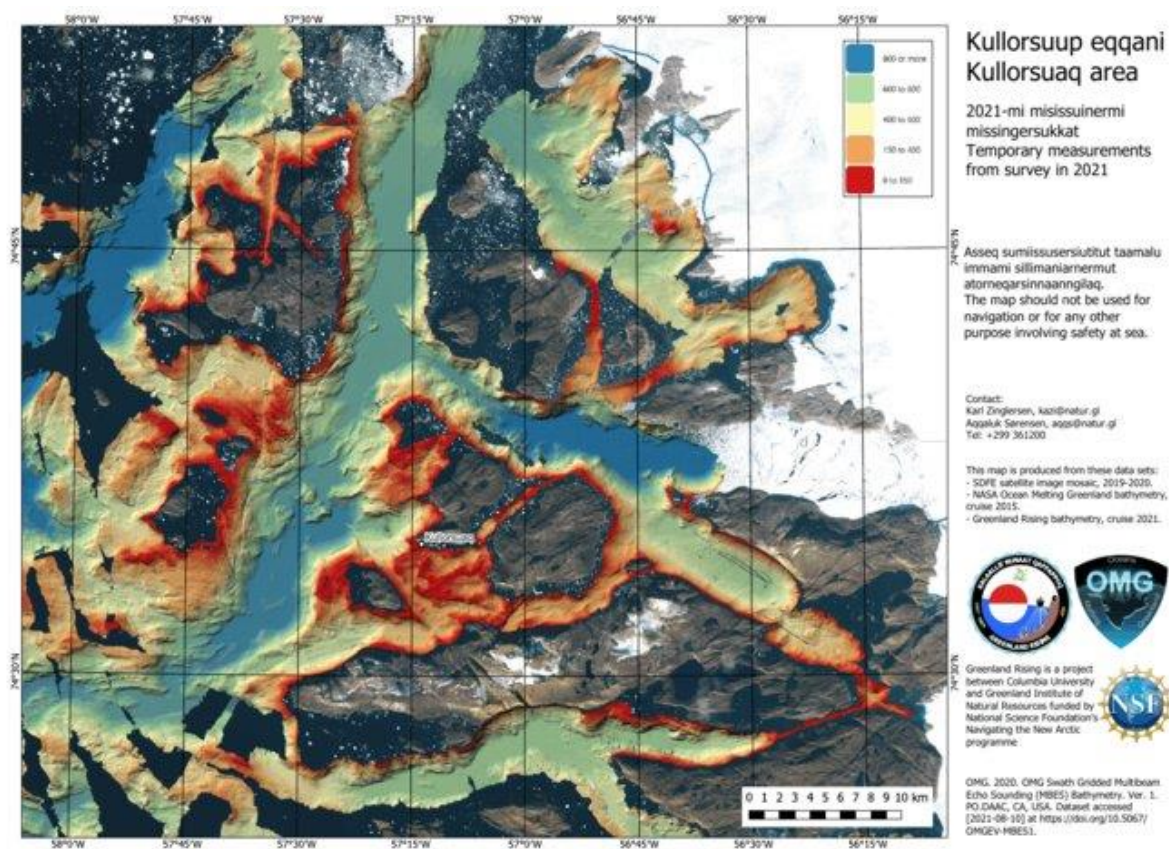


Figure 5: GeoPDF map for smartphone on the Avenza Map app displaying high-resolution bathymetric data from related scientific projects.