



Karl Brix Zinglarsen, presenter
Aqqaluk David Sørensen, geophysicist
Diana Krawczyk, scientist
Teunis Jansen, professor



PINNGORTITALERIFFIK
GRØNLANDS NATURINSTITUT
GREENLAND INSTITUTE OF
NATURAL RESOURCES

Acoustic Sensors for Science in Greenland



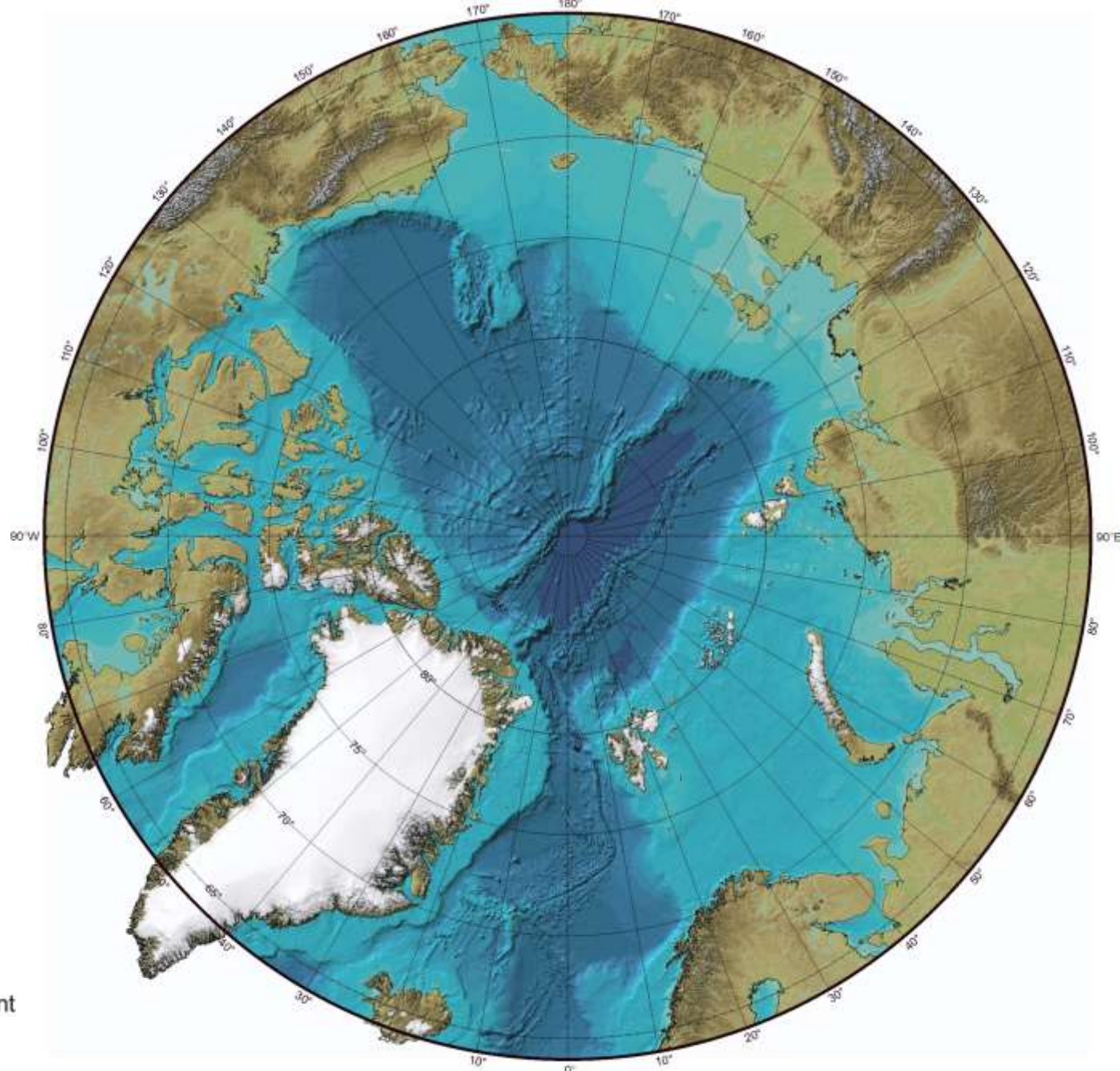




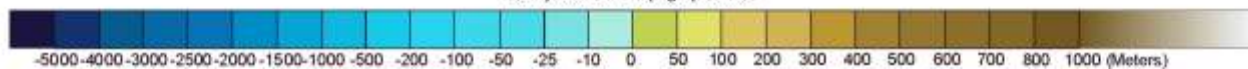


THE NIPPON FOUNDATION-GEBCO

SEABED 2030



Bathymetric and topographic tints



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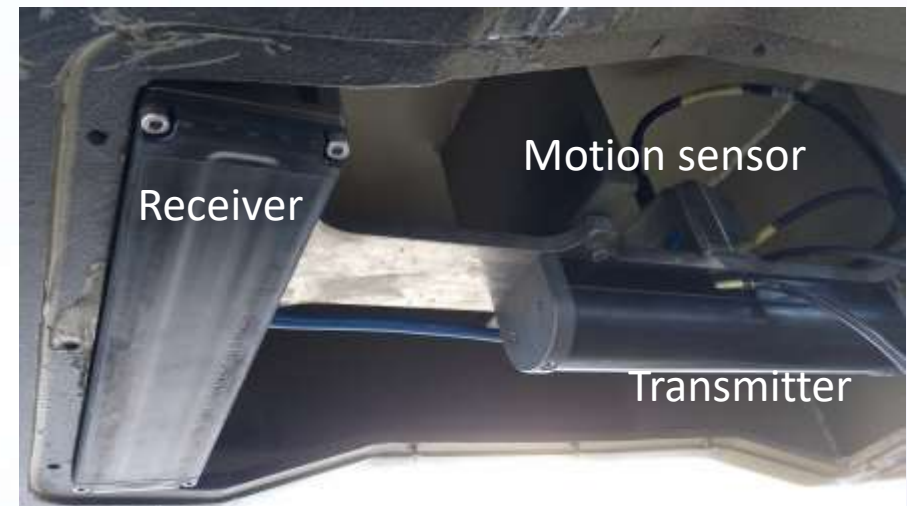
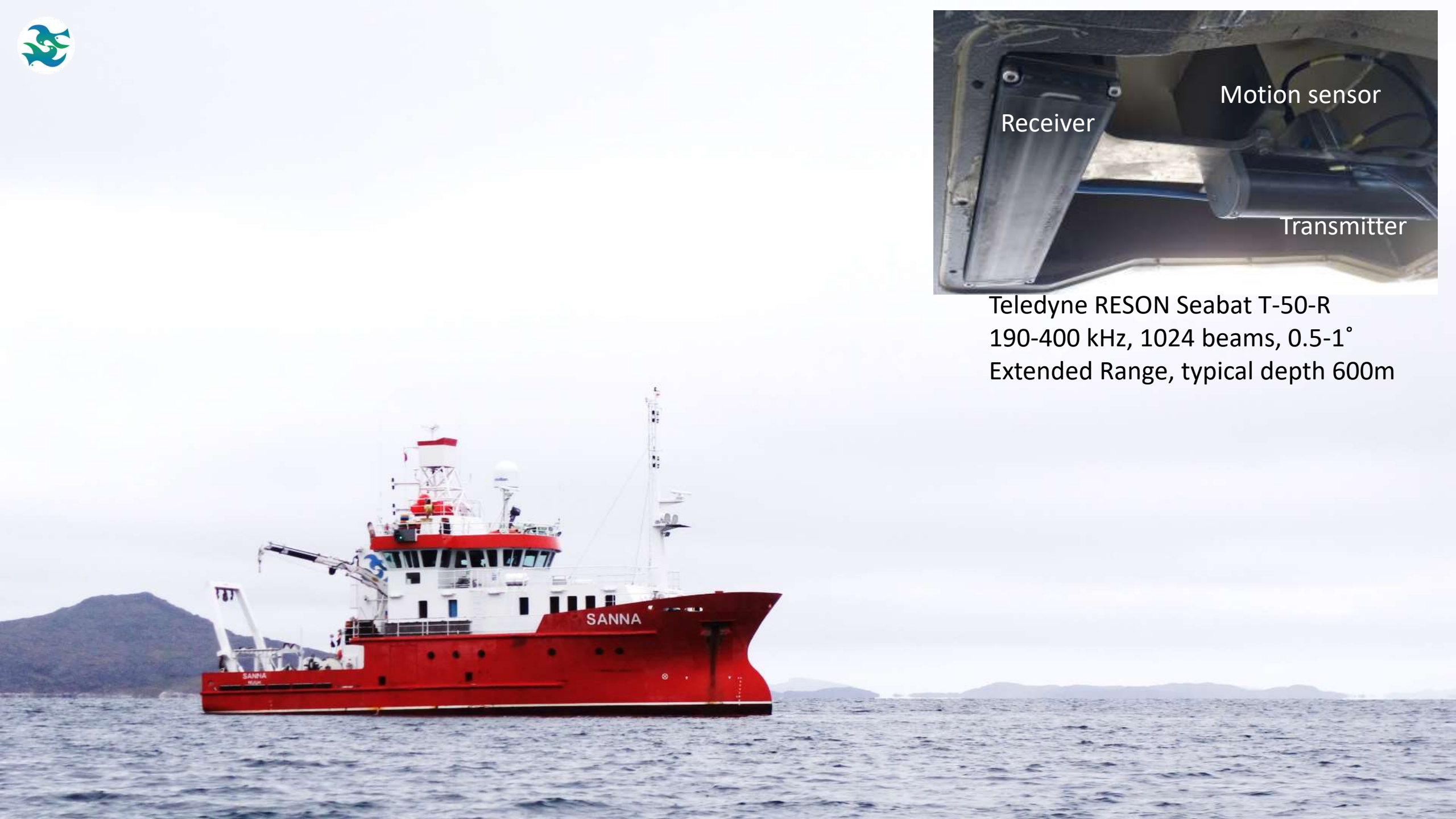

unesco
Intergovernmental
Oceanographic
Commission



2021
2030 United Nations Decade
of Ocean Science
for Sustainable Development


IHO
International
Hydrographic
Organization





Teledyne RESON Seabat T-50-R
190-400 kHz, 1024 beams, 0.5-1°
Extended Range, typical depth 600m



R/V Tarajoq

61.4 m, 2841 GT Fishery Research Vessel
Trawling, Acoustics, sampling platform
A-frame, 2 cranes, 26 winches
Dynamic Positioning System
Hydrography hangar
12 berths for scientists
Working labs and wetlabs
Server and sonar rooms

Teledyne RESON Seabat 7160
Applanix OceanMaster IMU
Trimble GNSS antennas
Trimble GeoPoint RTX
Innomar Sub-bottom Profiler
Simrad EK80 sonar suite
Simrad EC150 ADCP
Sound velocity sensor
Sound velocity profiler
Meteorological station
CTD rosette



Photo: Julius Nielsen





Teledyne RESON Seabat 7160
44 kHz, 512 beams, 1.5x2.0°
Typical depth to 2500 m

Simrad SU93
omnidirectional
sonar

Receiver

Transmitter





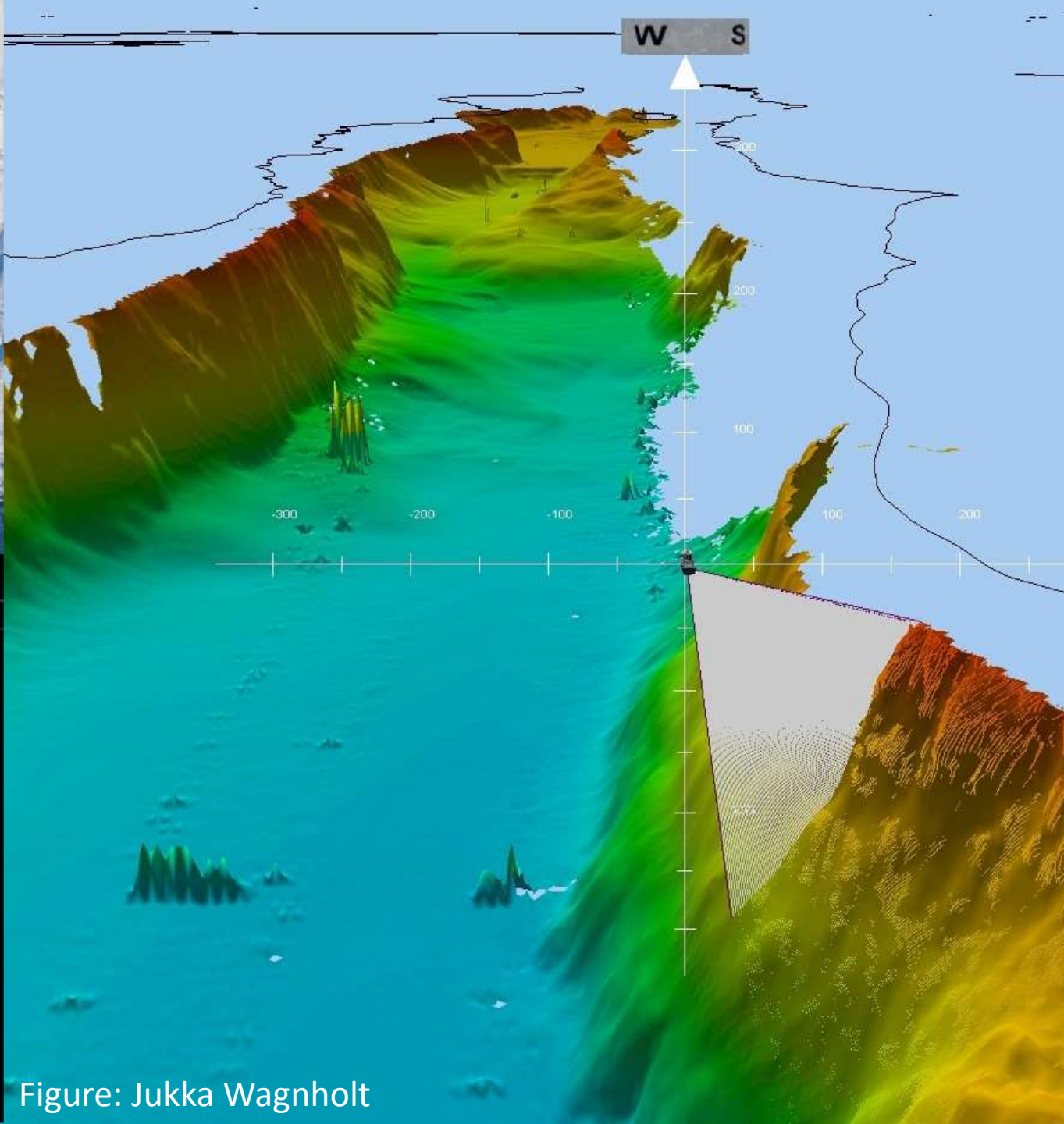
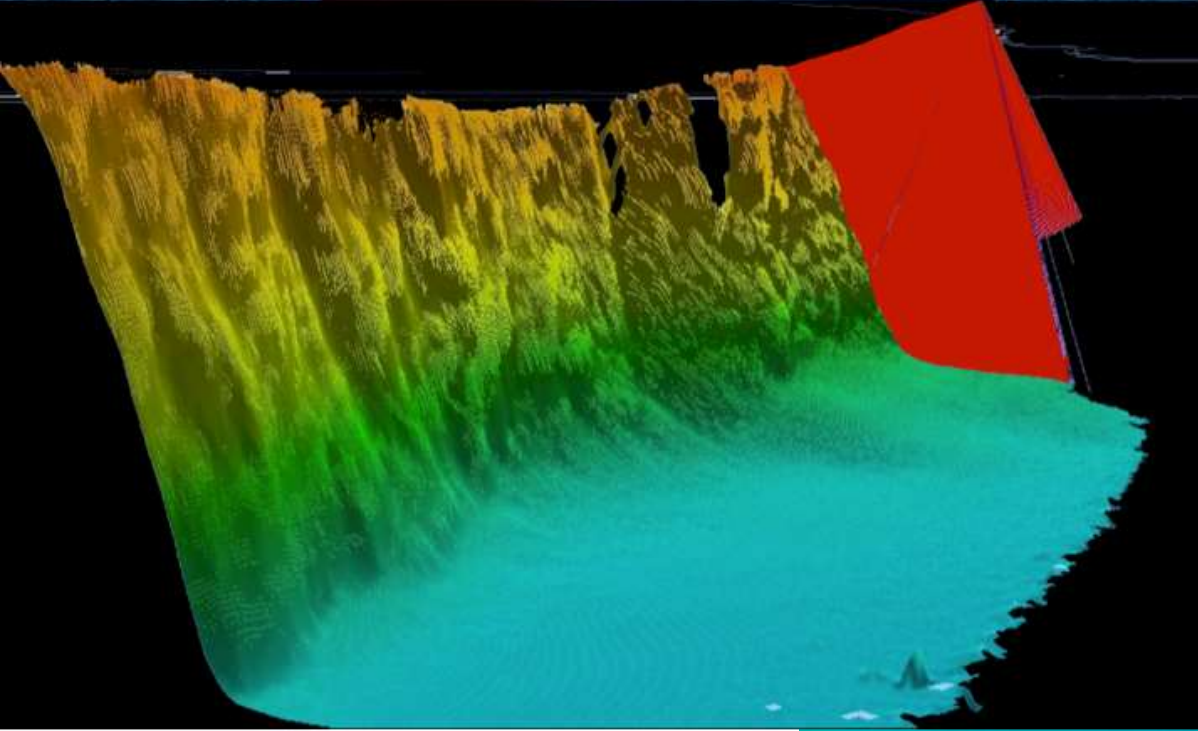
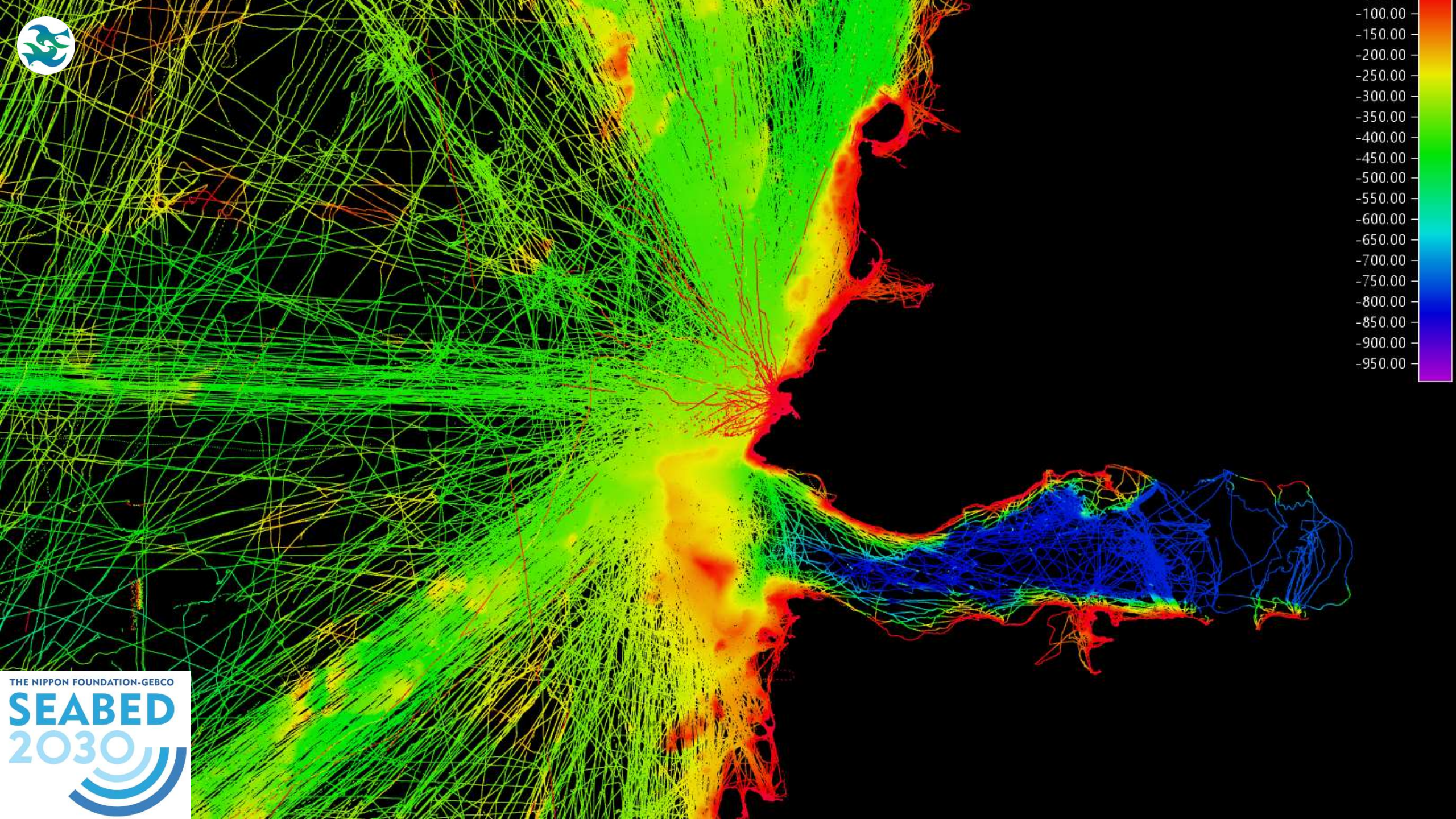


Figure: Jukka Wagnholt



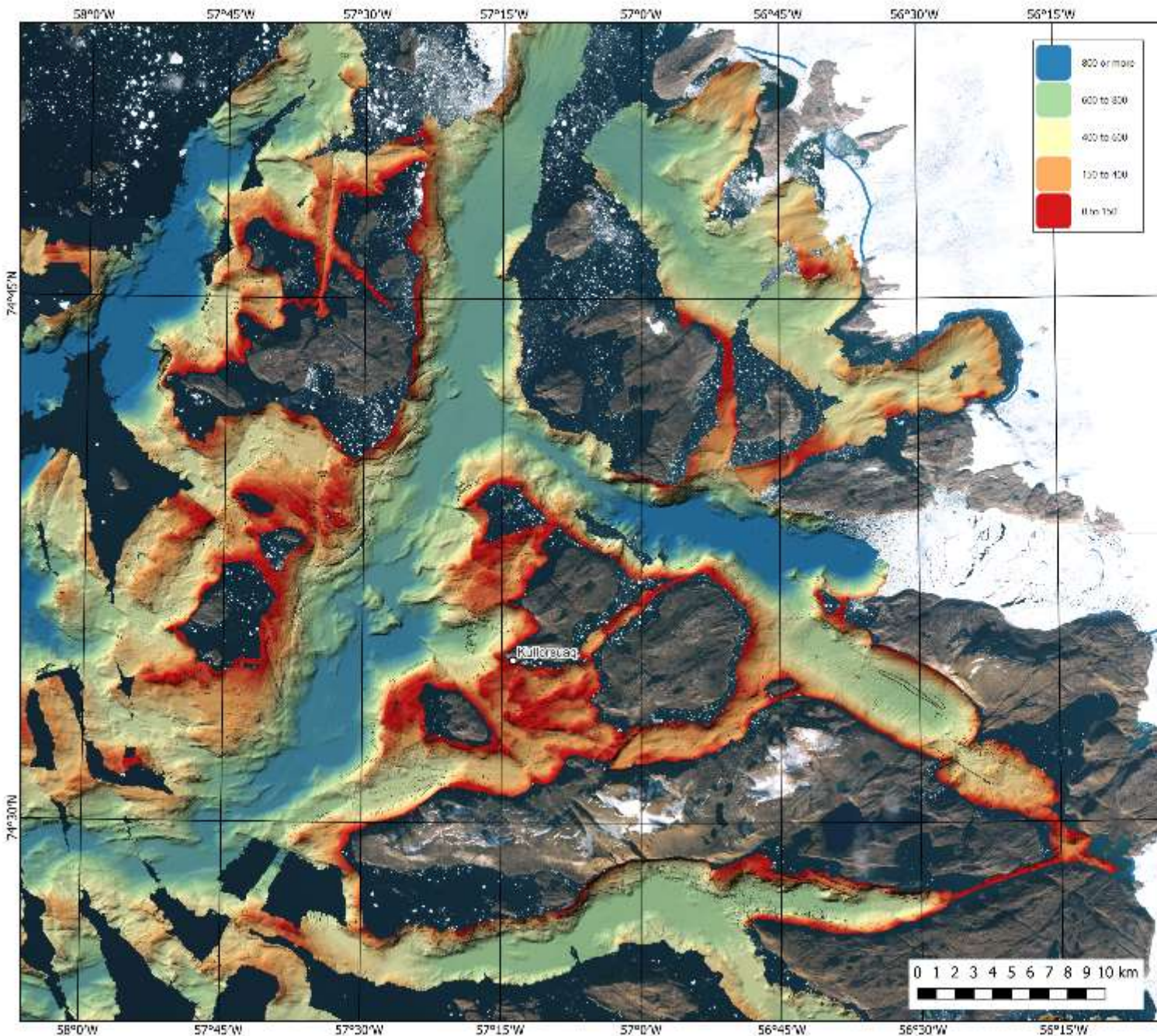






-100.00
-150.00
-200.00
-250.00
-300.00
-350.00
-400.00
-450.00
-500.00
-550.00
-600.00
-650.00
-700.00
-750.00
-800.00
-850.00
-900.00
-950.00





Kullorsuup eqqani Kullorsuaq area

2021-mi misissuinermi
missingersukkat
Temporary measurements
from survey in 2021

Asseq sumiissusersiubut taamalu
immami sillimaniamermut
atorneqarsinnaanngilaq.
The map should not be used for
navigation or for any other
purpose involving safety at sea.

Contact:
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Aqpaluk Sarosen, aqps@natur.gl
Tel: +299 361200

This map is produced from these data sets:
- SDFE satellite image mosaic, 2019-2020.
- NASA Ocean Melting Greenland bathymetry,
cruise 2015.
- Greenland Rising bathymetry, cruise 2021.



Greenland Rising is a project
between Columbia University
and Greenland Institute of
Natural Resources funded by
National Science Foundation's
Navigating the New Arctic
programme



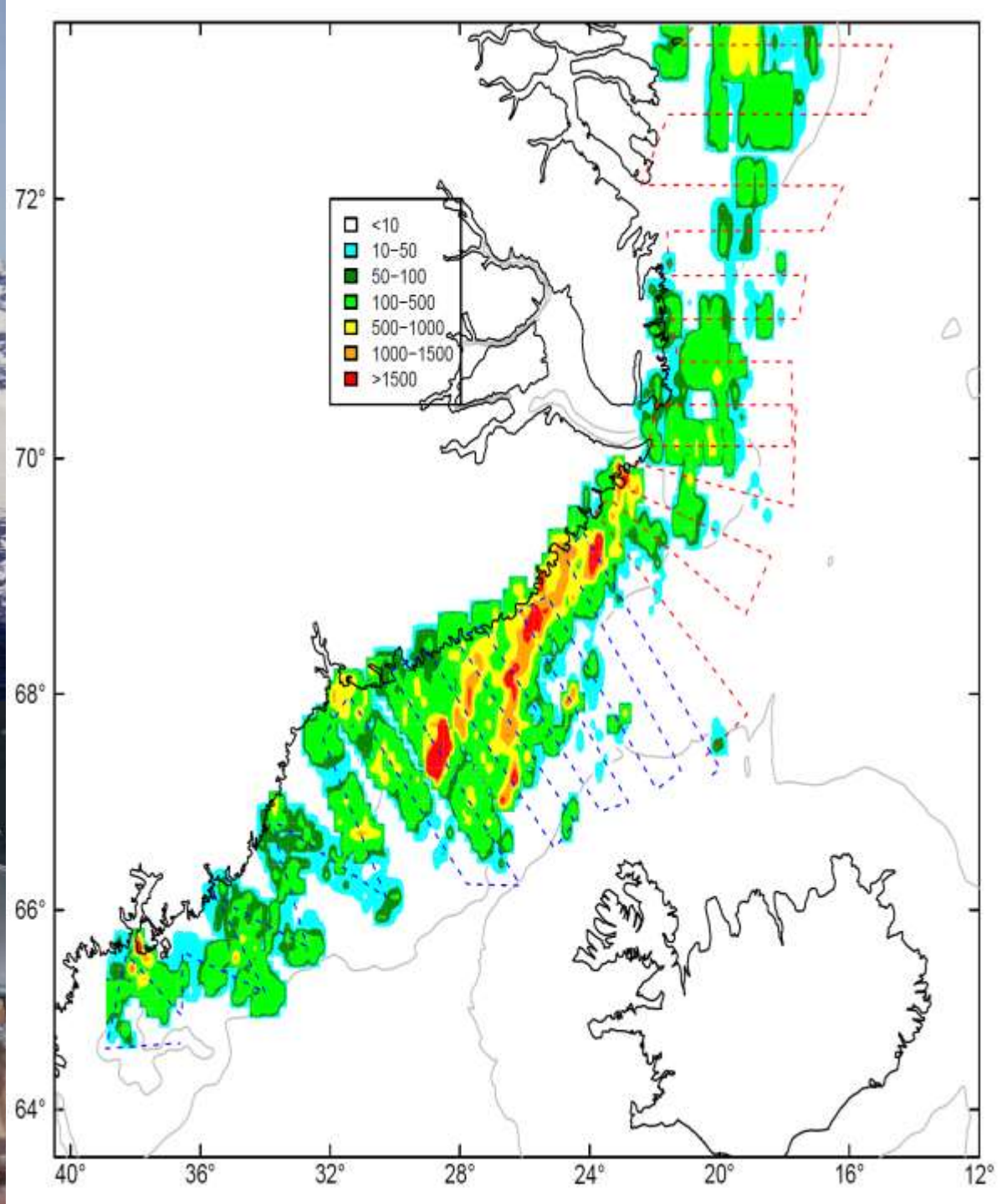
OMG, 2020. OMG Swath Gridded Multibeam
Echo Sounding (MBES) Bathymetry, Ver. 1.
PO, DAAC, CA, USA. Dataset accessed
[2021-06-10] at <https://doi.org/10.5067/OMGEV-MBES1>.



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ES38 (38 kHz)

ES200-7C 200kHz

ES200-7C 333kHz

ES120 (120 kHz)

ES70 (70 kHz)

12 & 18 kHz



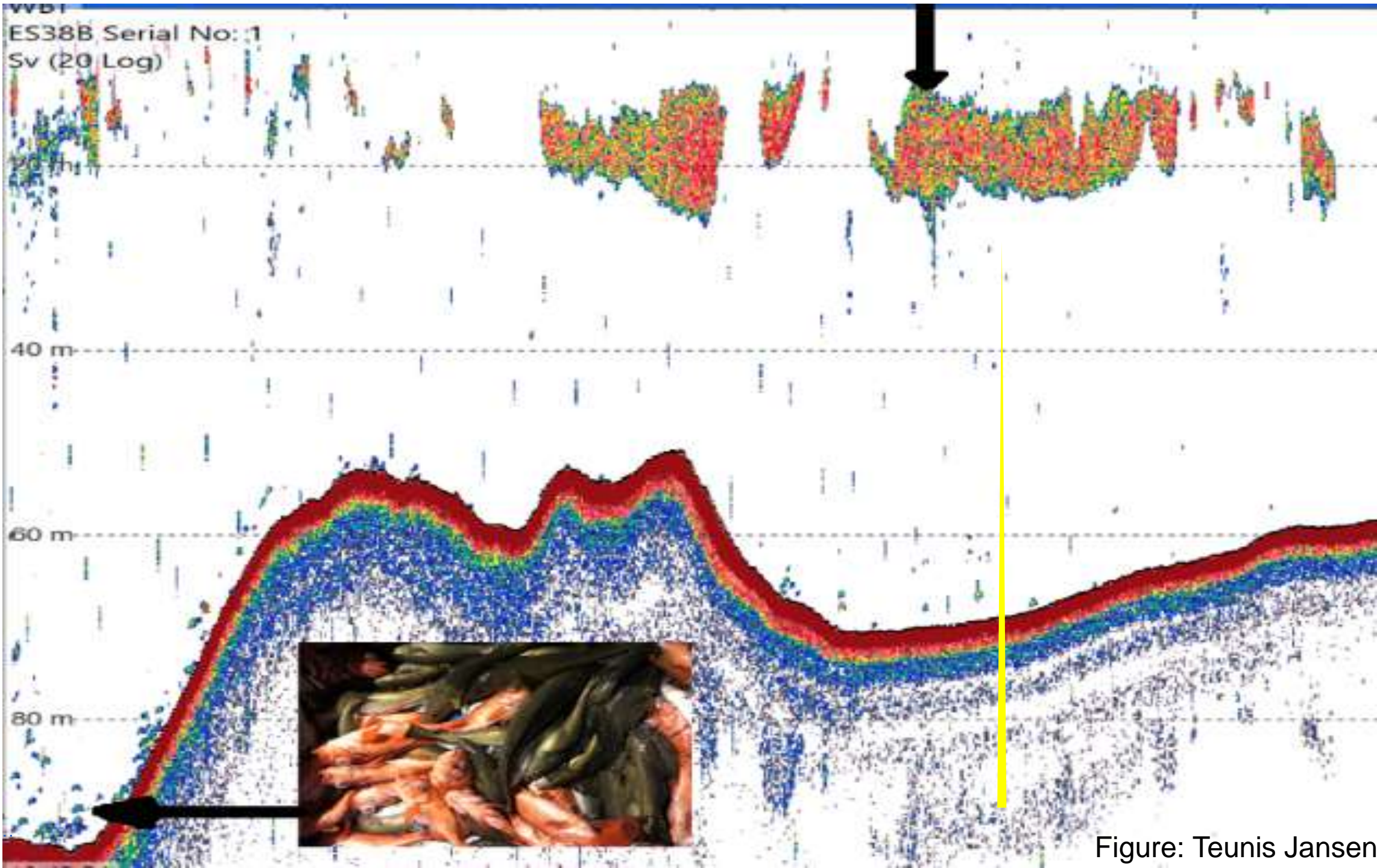


Figure: Teunis Jansen

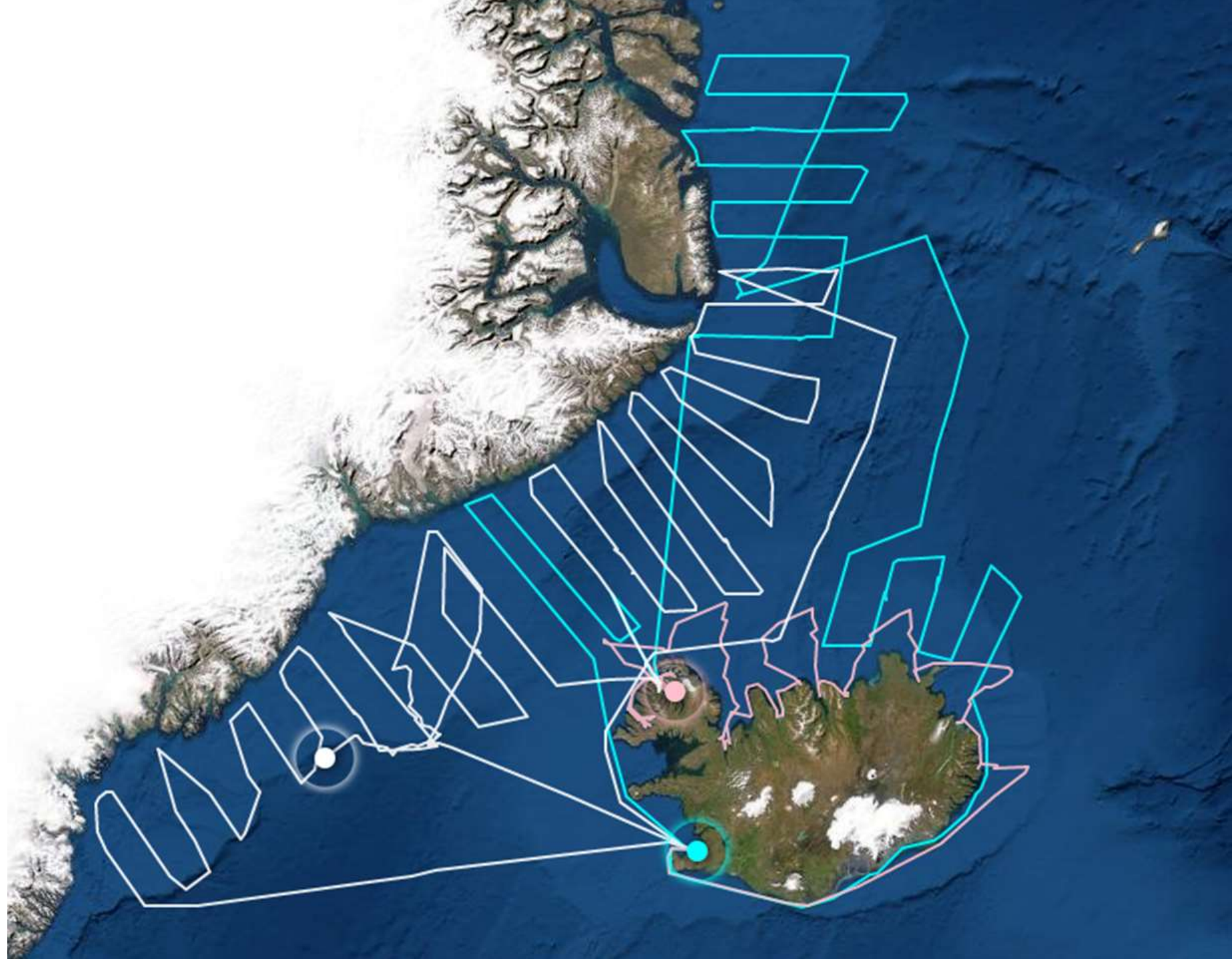
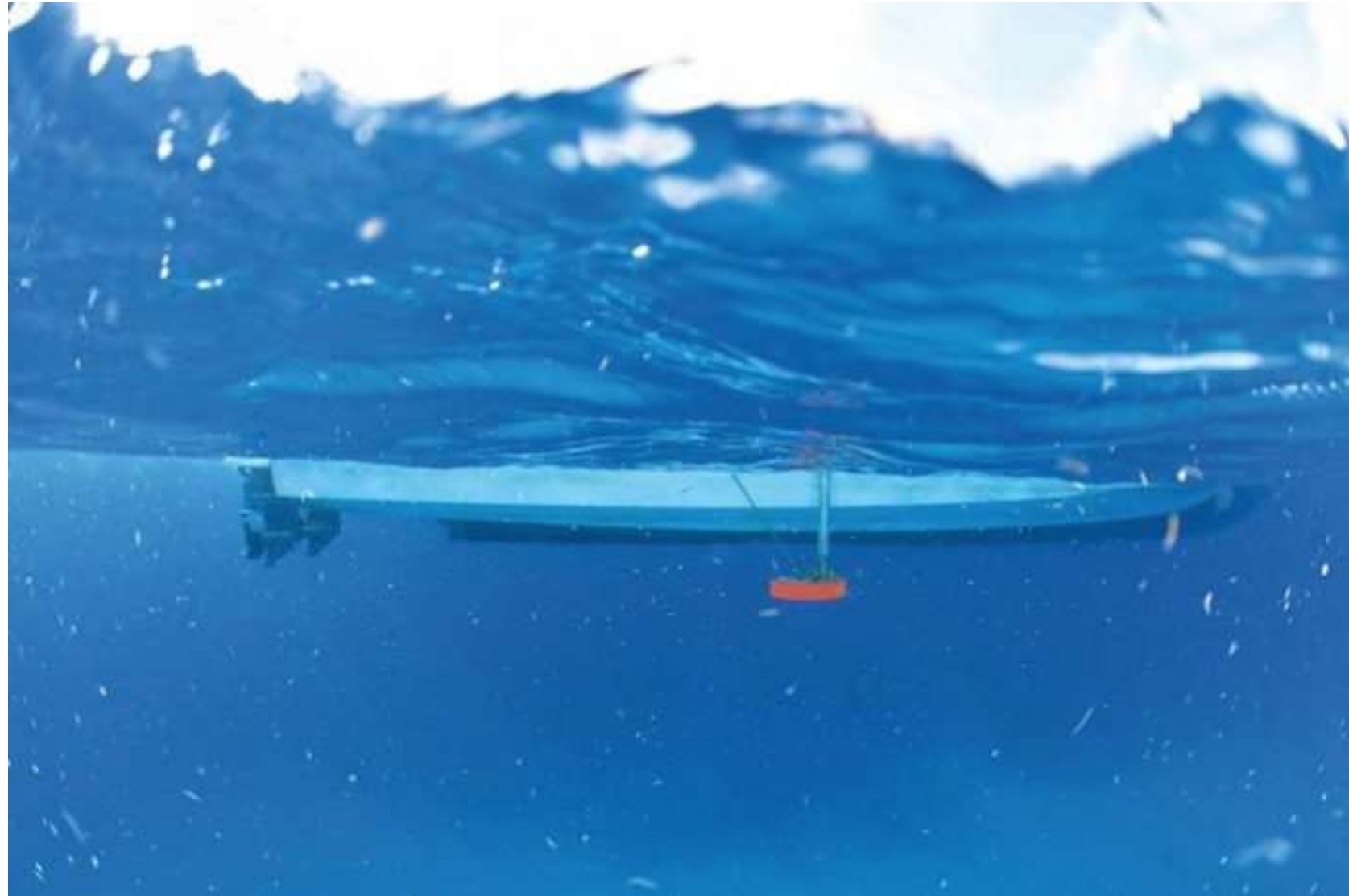


Figure: Teunis Jansen



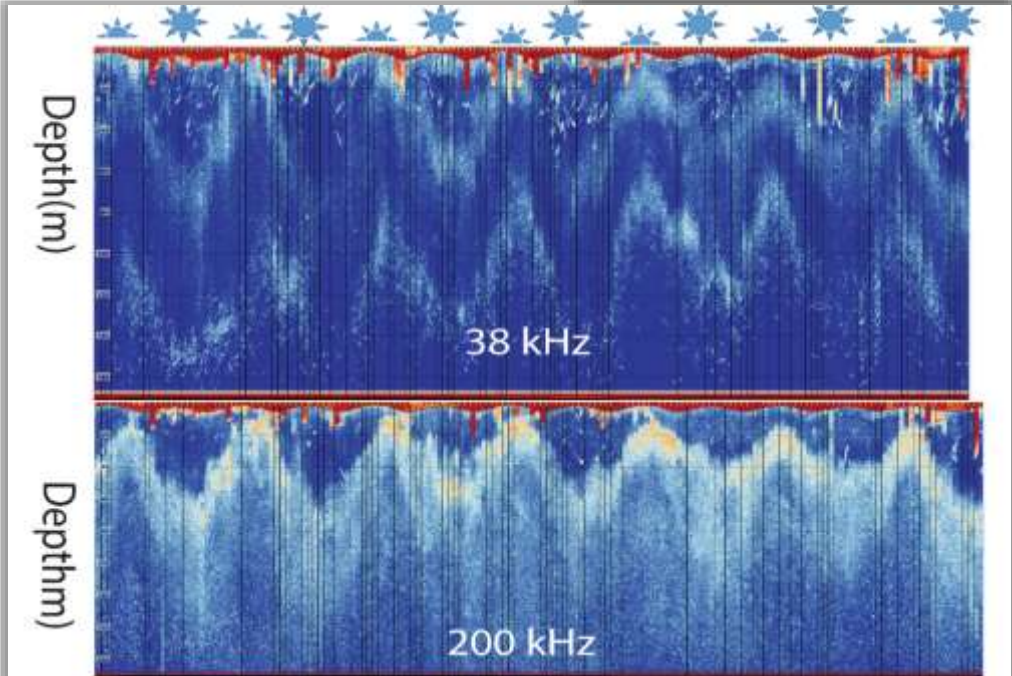
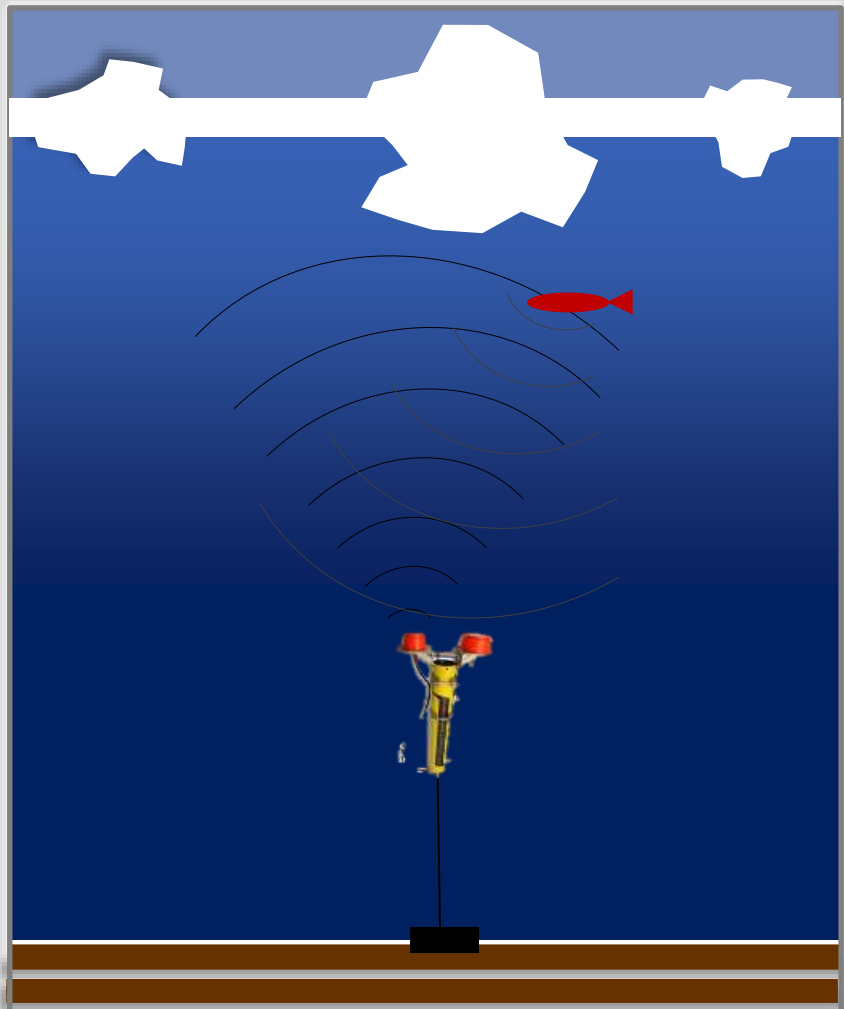
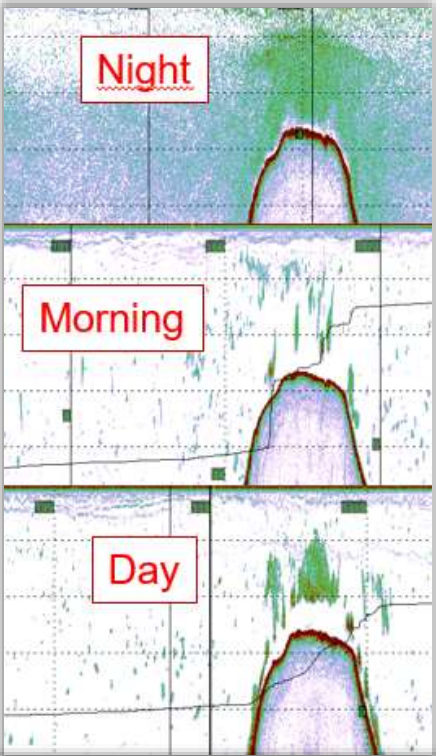




Frequency range: 30 – 500 kHz
Pulse duration: 64 – 2048 μ s
Pulse forms: CW + FM (Linear up-sweep)
Maximum transmit power: 1000 W @ 55 Ω
Number of channels: 4 , Single beam

Moored echosounders (WBATs)

- Monitoring over time
- Cycles: Year, Moon, Tidal currents, Light (Day/Night/clouds)
- Events: Storms, Ice, Vessel avoidance



SAILDRONE INC.

Probable future for our
mapping and monitoring
efforts



Exail Inc.





This project is supported by:

The NATO Science for Peace and Security Programme

NATO SPS Project G5970



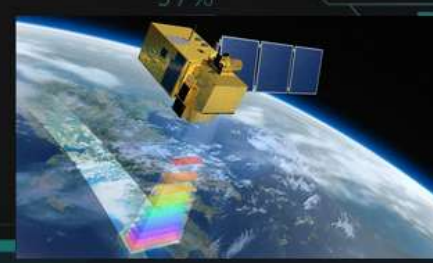
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Cube4envsec.org

Cube4EnvSec

Geo insight when you need it, where you need it.

A **NATO SPS** Multi-Year Project

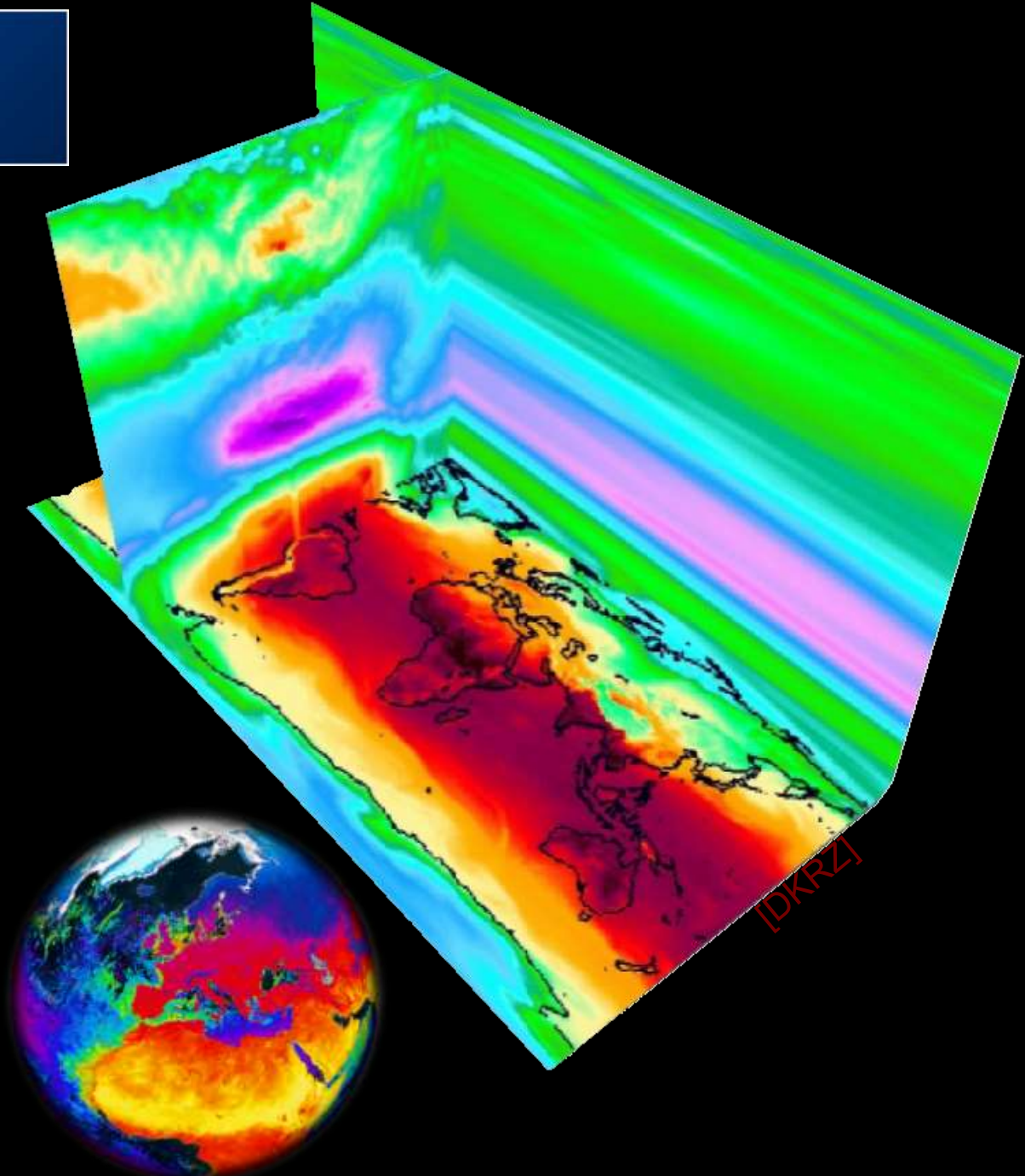
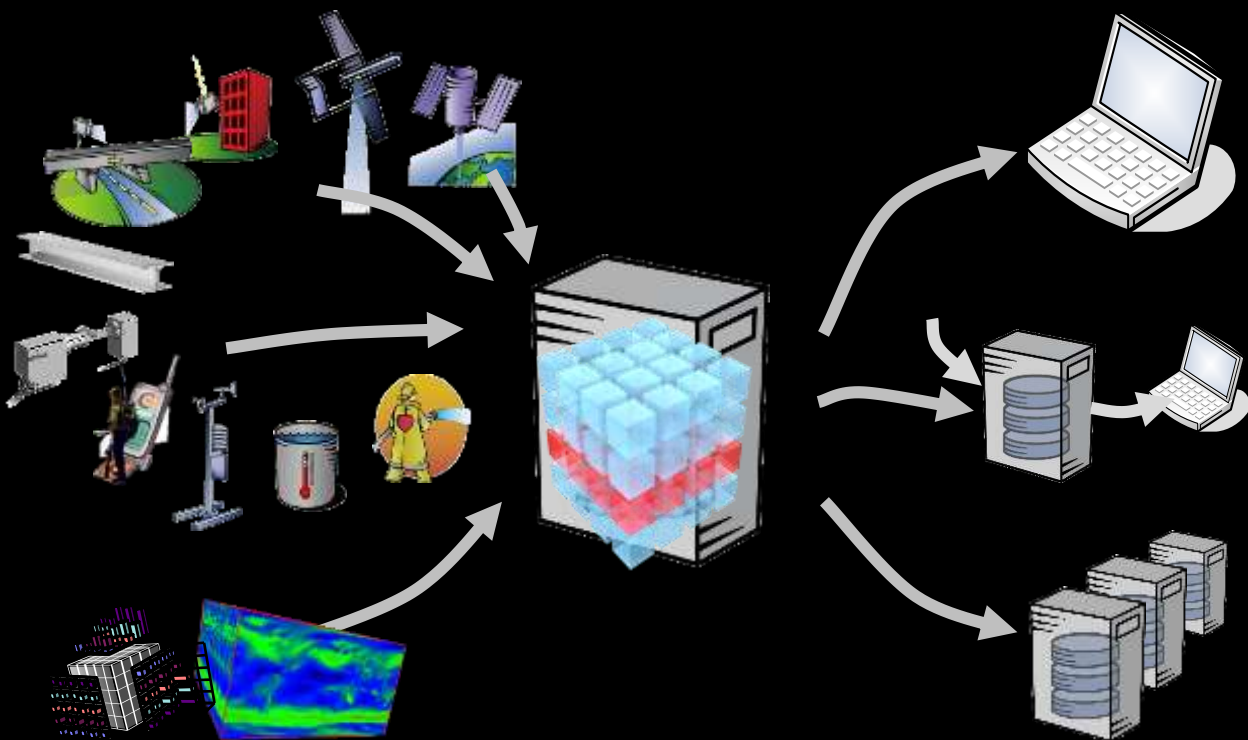




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