Bathymetric data for Nautilus 3D

Magic Instinct Software Ltd

www.justmagic.com

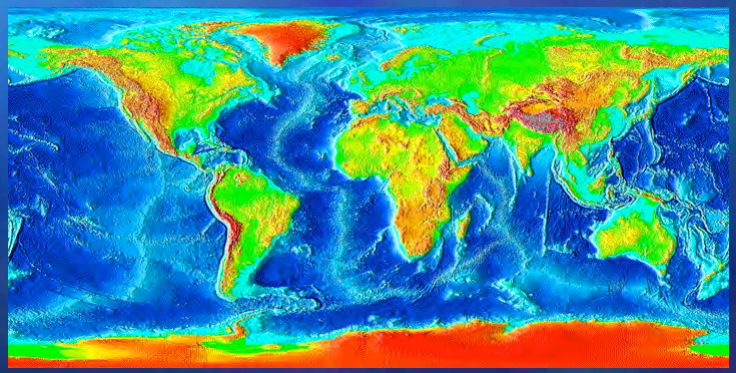
Construction of Digital Bathymetry

- **Mission :**

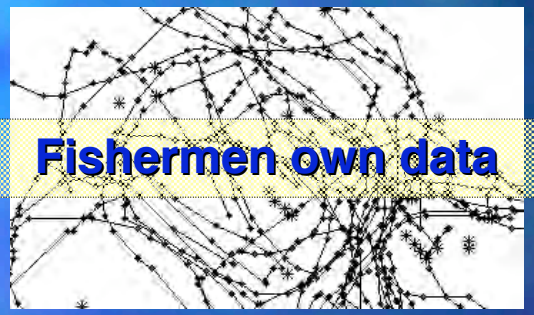
  development of bathymetry datasets for Nautilus 3D

- **Concept :**

  construction of the best gridded products possible using available digital bathymetry datasets

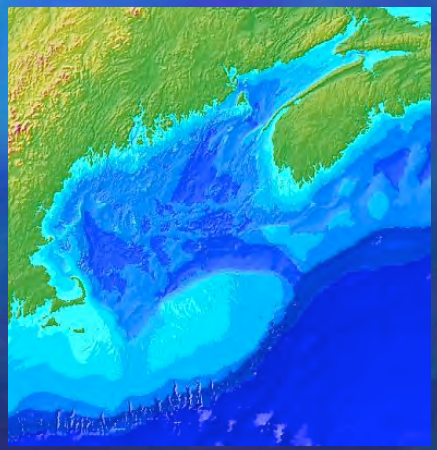


A composite bathymetric dataset



THE DEEP IMPACT

Magic
Gridder engine



Bottom line :
seamless seafloor mapping

real depth information for any chart position
and not only bathymetric lines

Assembling the Input Data (1)

- **Data collected from available sources on the Web and from CD-ROM products**
  - Digital sounding data, digitized contour line data and previously gridded products
  - Sources:
    - NOAA Hydrographic Survey Data
    - NGDC Marine Trackline Geophysics Data
    - Naval Oceanographic Office (Digital Bathymetric Data Base)
    - Defense Mapping Agency ETOPO5
    - GEBCO General Bathymetric Chart of the Oceans
    - Scripps Inst. (Marine Gravity from Satellite Altimetry)
    - Oceanographic Universities (processed data from swath multibeam)
    - USGS GTOPO30 land topography

Assembling the Input Data (2)

- **Data collected from fishermen**
  - service gathering all the possible ECS track files
  - implementation of a general database

    with the processed sounding files containing date, latitude, longitude, and depth

The method in deep

- **Method:**

  Downloading ---> **E**diting ---> **E**xtracting ---> **P**rocessing

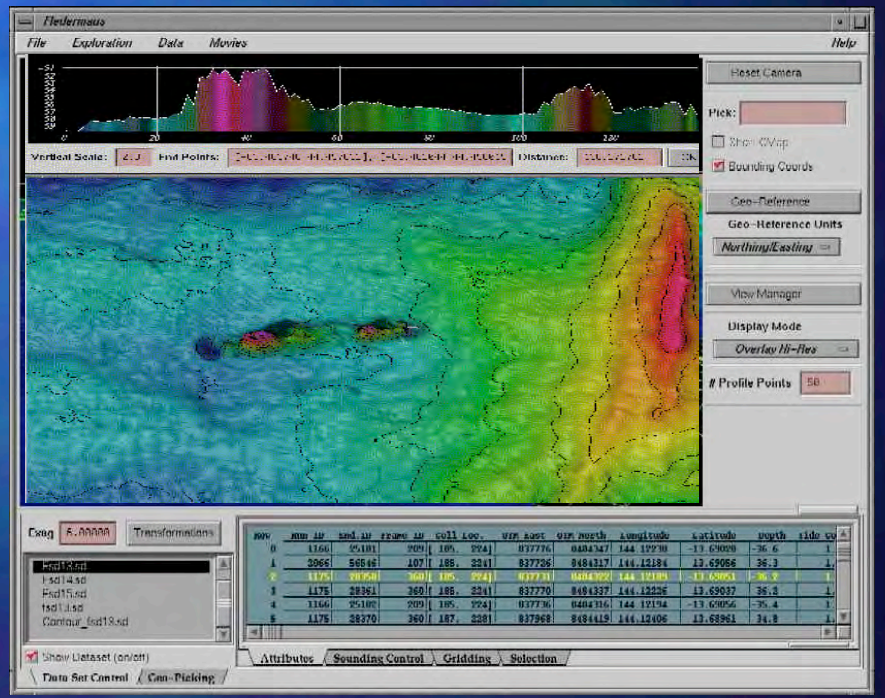
  collecting data — *formatting* — *sorting & filtering* — *gridding*

- **Strategy:**
  - Integrates the variety of input data and the specific characteristics of each dataset before incorporation in the general database
    - Multiplicity of data coverage
    - Method of collection
    - Survey resolution (sampling frequency)
    - Method and units of navigational positioning
    - Horizontal and vertical datum
    - Tidal parameters used for corrections
    - Interpolation procedure

The partners for the project

Interactive Visualization Systems :

- Specialized in interactive 3D visualization software and services
- Tools for preparation and interactive exploration of 3D data sets:
  Fledermaus software
  on powerful SGI workstations



University New Brunswick :

Ocean Mapping Group

focused on developing new and innovative techniques and tools for the management, processing, and interpretation of bathymetry and other ocean mapping data.

Generating the Grids

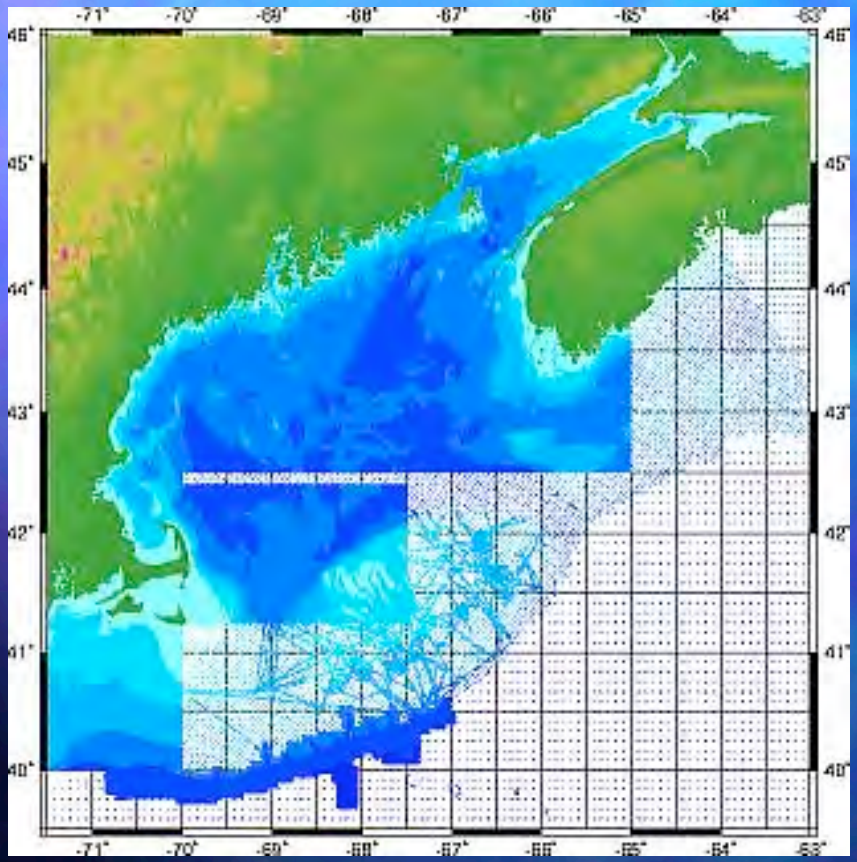
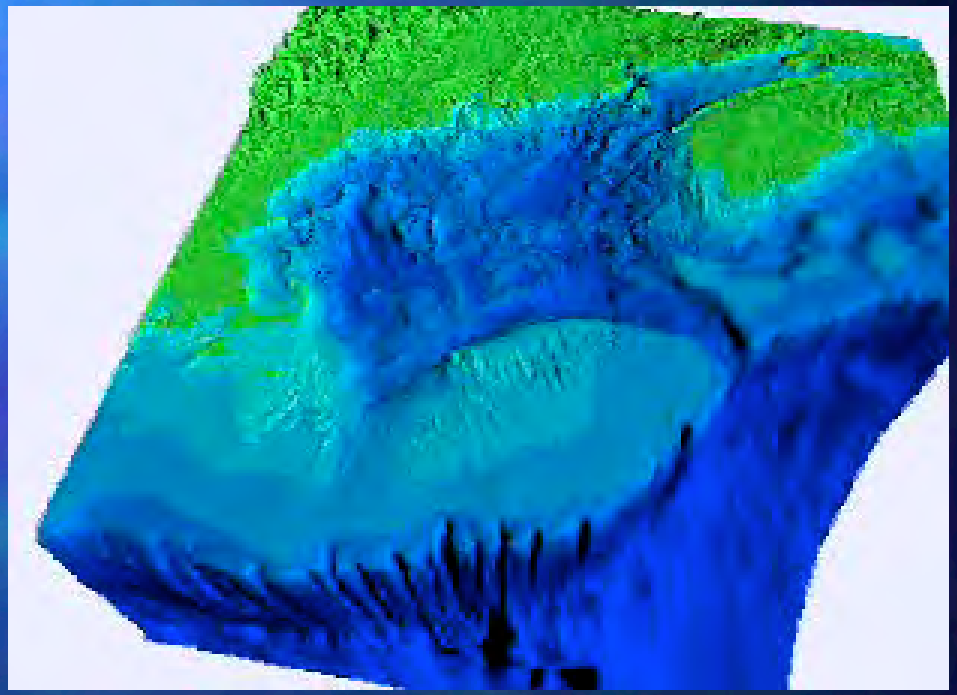


Image showing the combined data coverage from the 7 data suppliers (USGS source)

" the way to the Third Dimension "



3D *Fly-By Movie of the Gulf of Maine*

The Icelandic bathy project

- **Project manager:**

  Radiomidun, *Reykjavik*

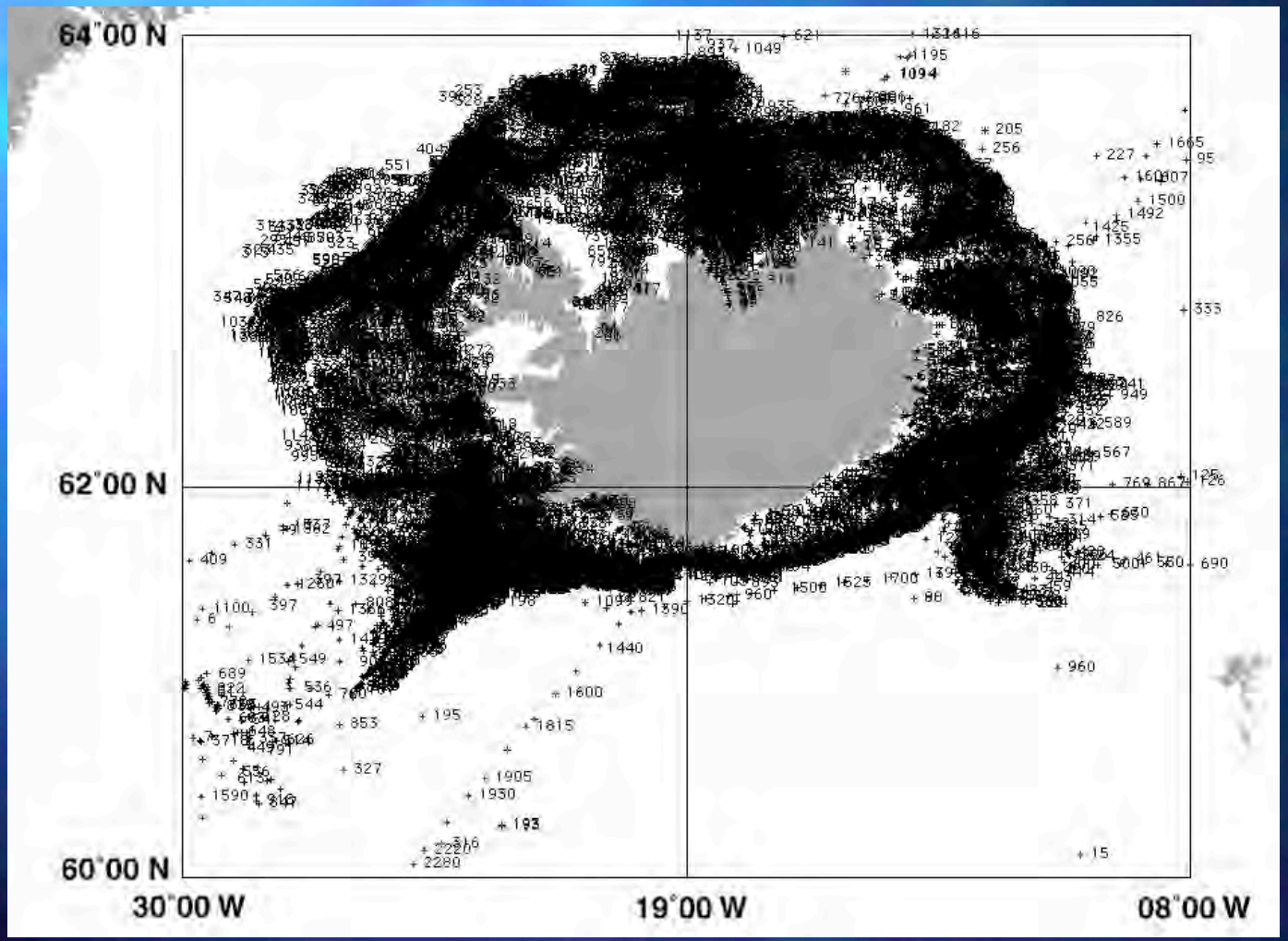
- **Mission:**

  Database creation with collection of
  ECS fishing plans including depth data info

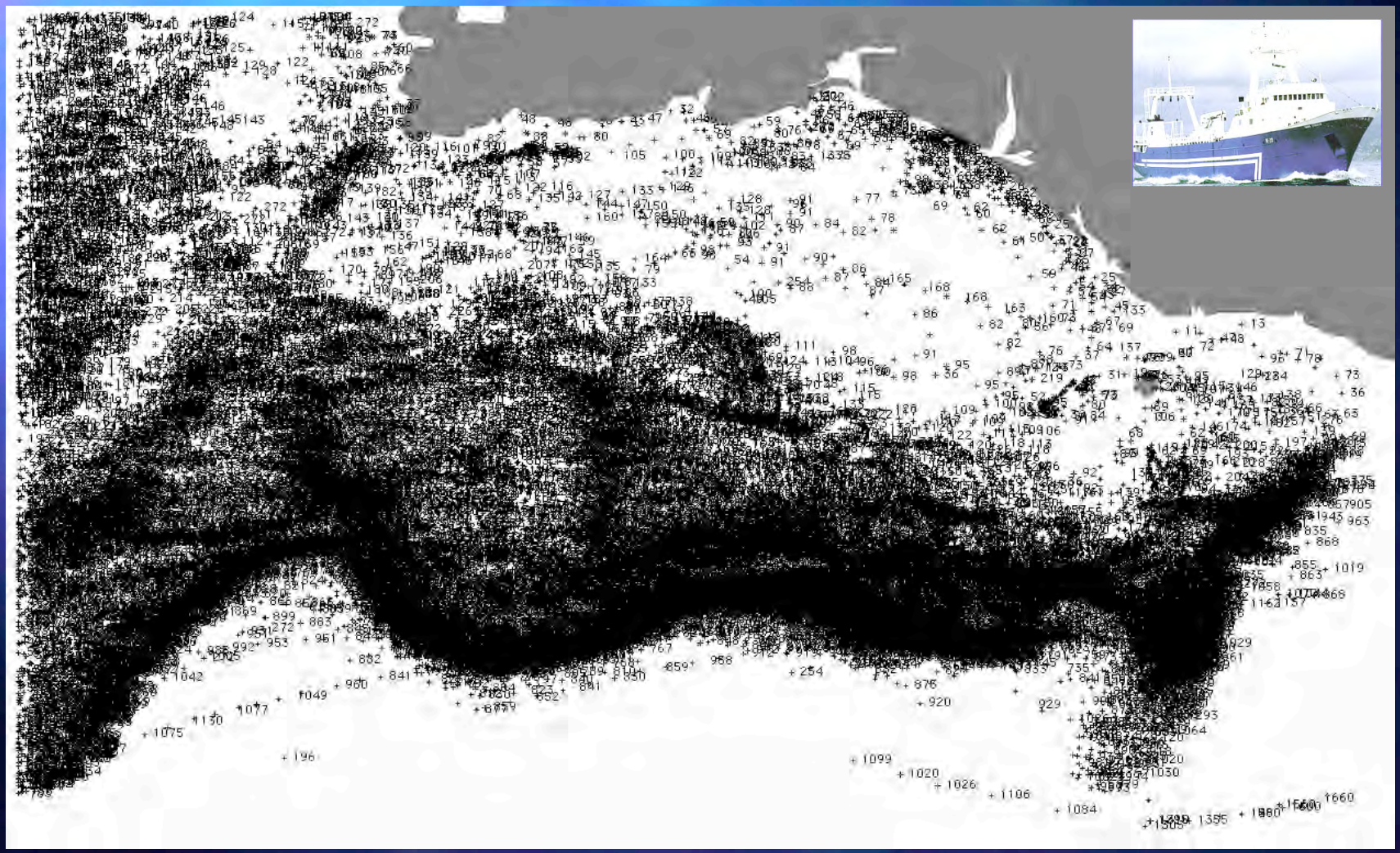
  – more than 3500 selected fishing plans
  – more than **5 M** geo points with measured depth info after lat/lon/depth extraction in the area

Result: about **3 Millions** selected geographical points
(after duplicate/double filtering and wrong points eliminating)

Fishermen data collection (Iceland)

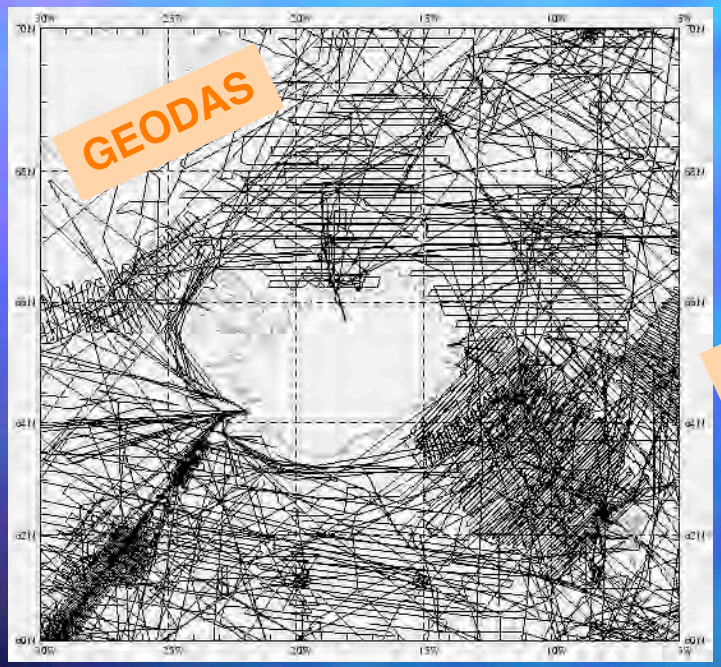


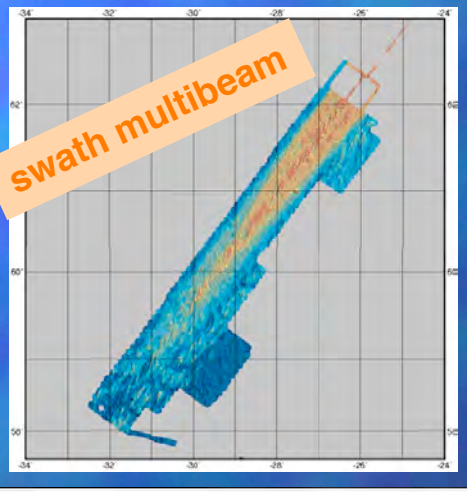
Fishermen data collection (Iceland SW)

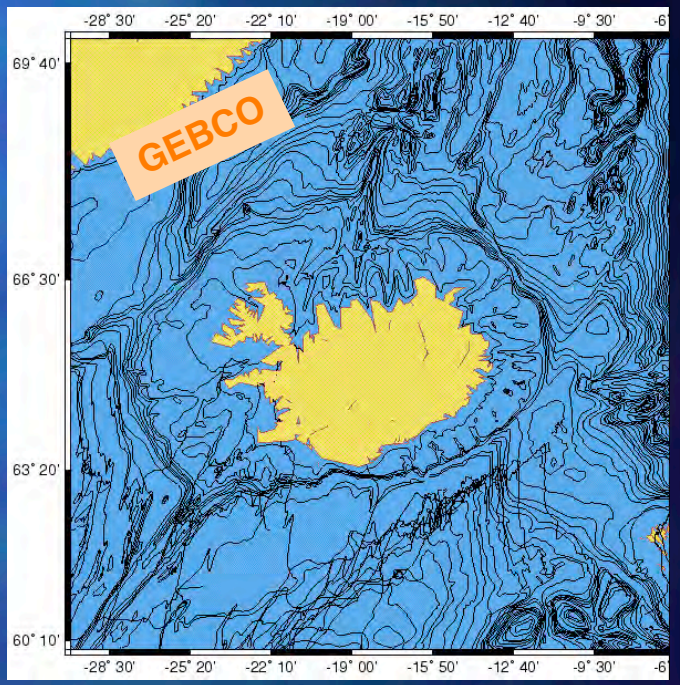


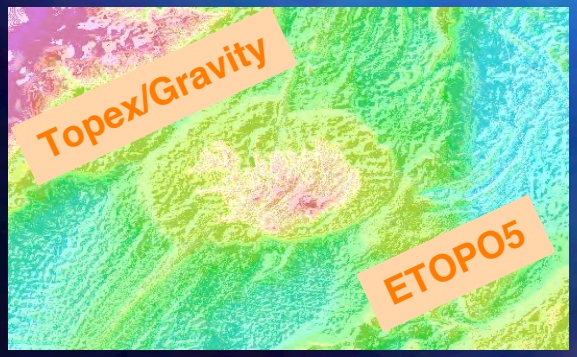
Spatial distribution example *(detailed)*

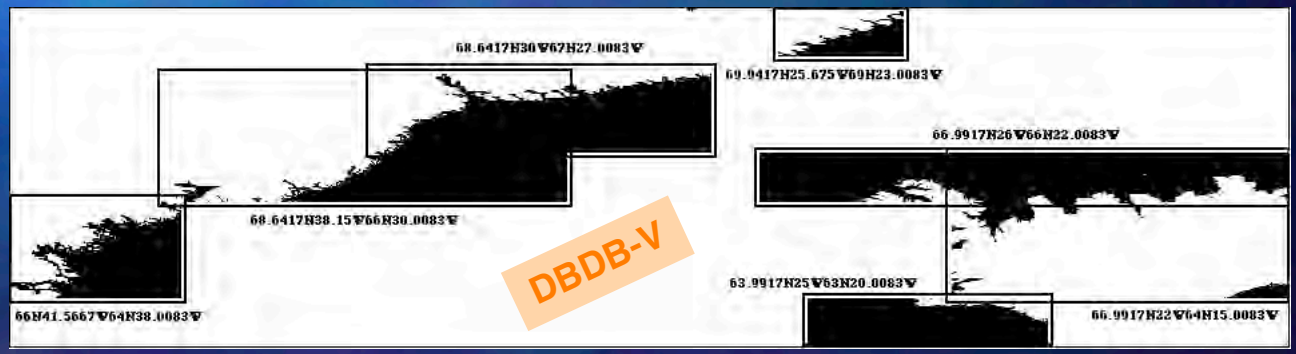
Hydrographic data sources for Iceland



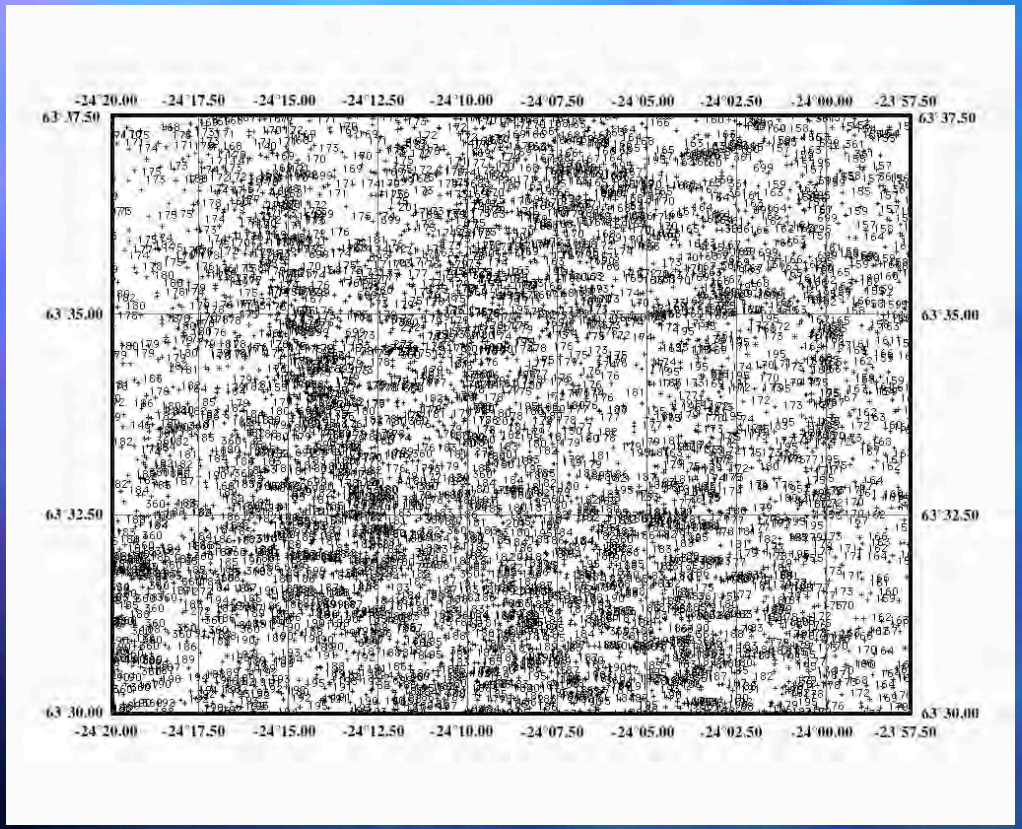


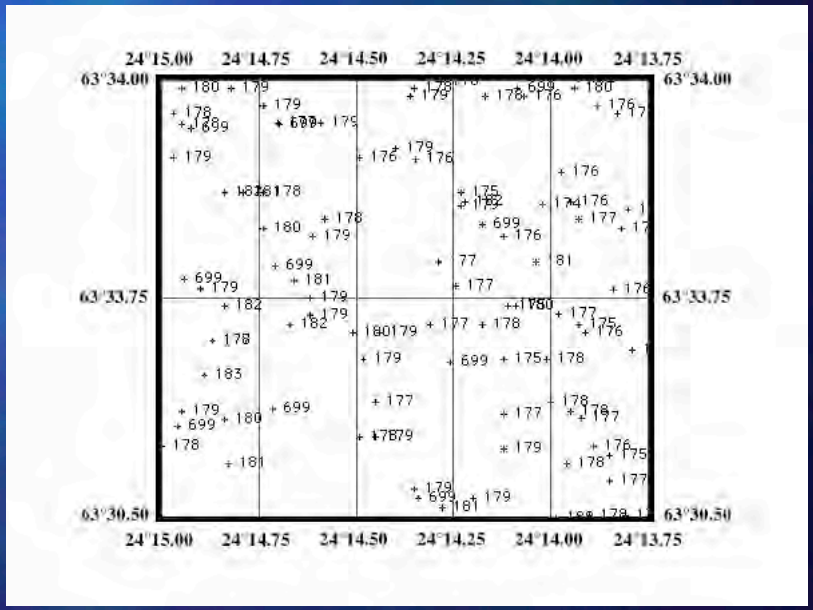






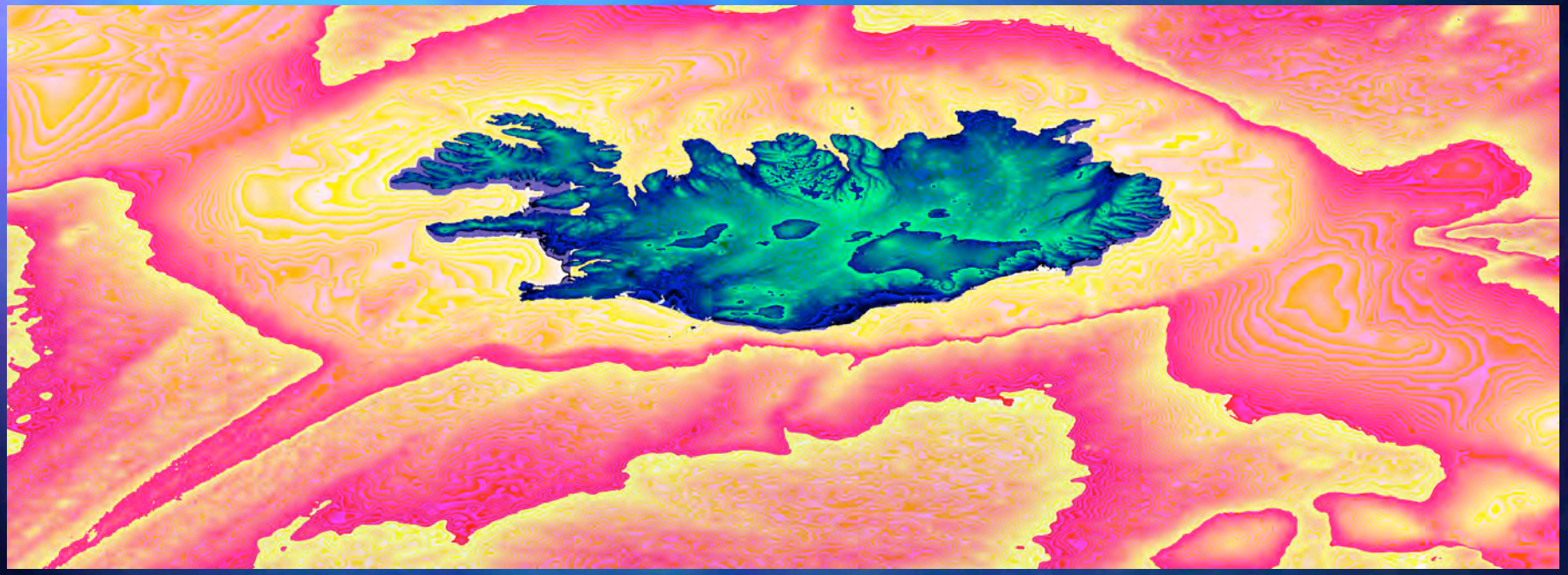
Bottom line : higher resolution





"a resolution of less of 500 m (15 s)"

3D seamless Icelandic bathymetry



3D views examples of the created grid