Updating the GEBCO grid

Pauline Weatherall, GEBCO Digital Atlas Manager
British Oceanographic Data Centre (BODC)

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British Oceanographic Data Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

NERC SCIENCE OF THE ENVIRONMENT

Updating the GEBCO grid

GEBCO_2014 released in December 2014

- **Global grid at 30 arc-second intervals**
- **An update to the GEBCO_08 Grid***
- **Accompanied by a Source Identifier (SID) Grid**
- **Includes a large number of new data sets**

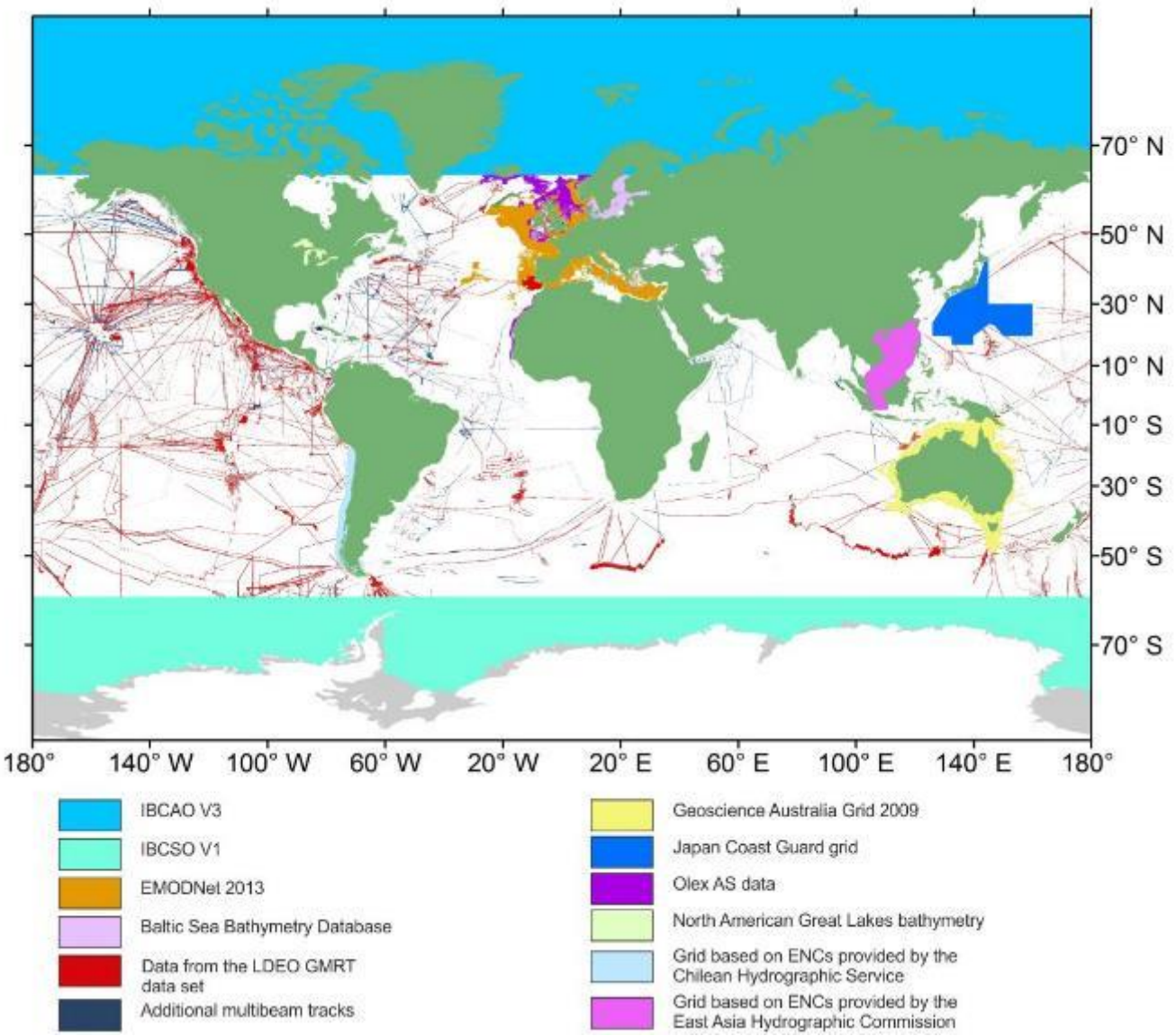
***GEBCO_08 Grid – largely based on SRTM30 plus v5 but with updates included from IBCAO v2.23; gridded data set for Weddell Sea region and Black Sea and Caspian Sea grids

Updating the GEBCO grid

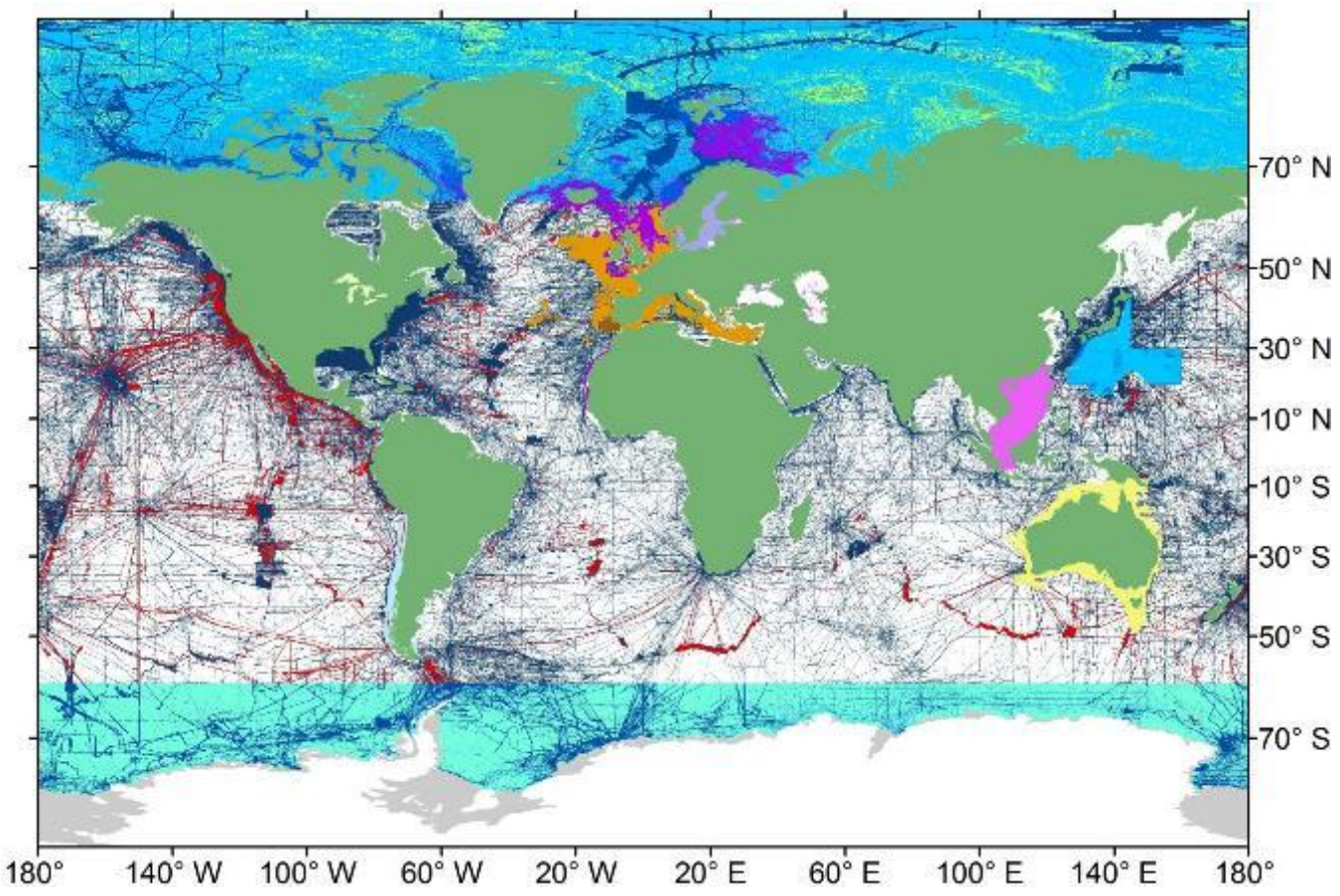
New data sets included in GEBCO_2014

- International Bathymetric Chart of the Southern Ocean (IBCSO) v1
- International Bathymetric Chart of the Arctic Ocean (IBCAO) v3
- European Marine Observation and Data Network (EMODnet) Bathymetry 2013 data set
- Baltic Sea Bathymetry Database (BSBD)
- Australian Bathymetry and Topography Grid, June 2009
- Global Multi-Resolution Topography (GMRT) Synthesis
- Japan Coast Guard Grid for the North Western Pacific Ocean region
- Updates based on ENC data for the South China Sea Region and waters off Chile
- Bathymetry of the North American Great Lakes
- North Atlantic Ocean, Gulf of Cadiz region
- Indian Ocean region off Sumatra
- Olex data included for: waters off the west coast of Africa and Northwest European Continental Shelf region
- South Pacific Ocean, Coral Sea region – update for ‘Sandy Island’
- Additional multibeam data sets

Coverage of the new data sets included in GEBCO_2014



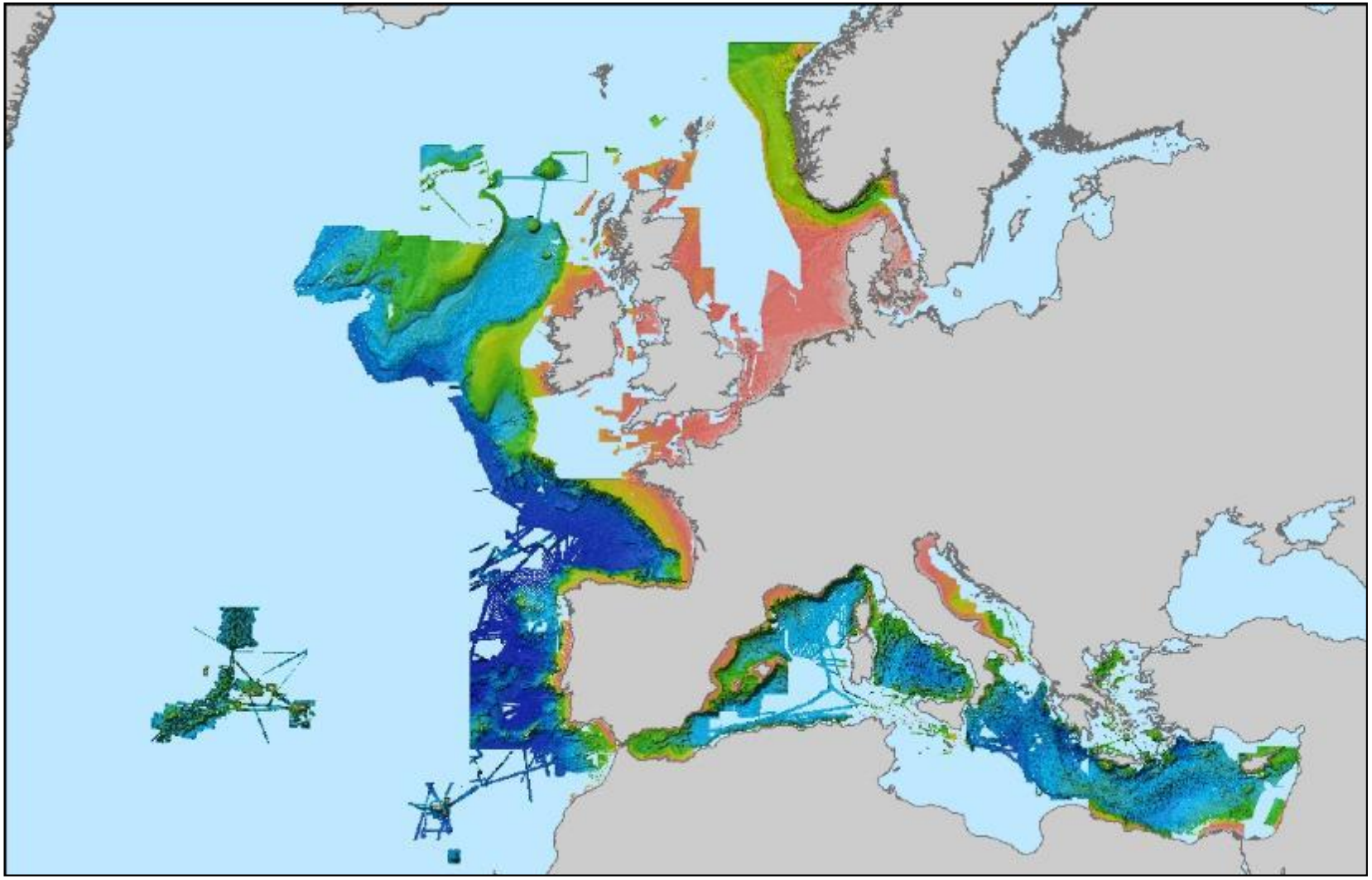
All trackline coverage in GEBCO_2014



GEBCO_2014 Grid

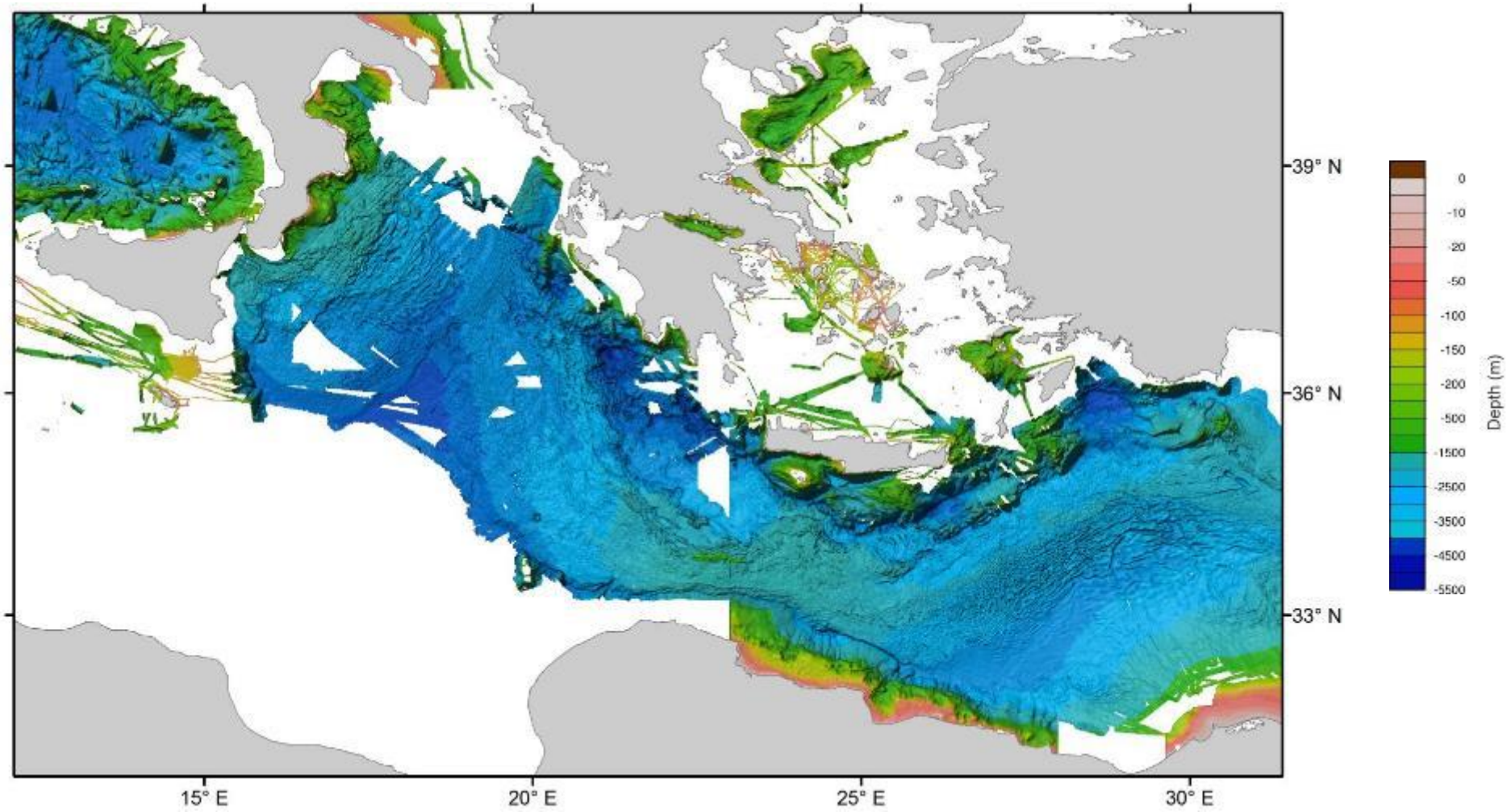
GEBCO_2014 is a significant update to GEBCO_08. The following highlights some of the improvements (some of the data sets included since last TSCOM/SCRUM meetings)

EMODnet data set



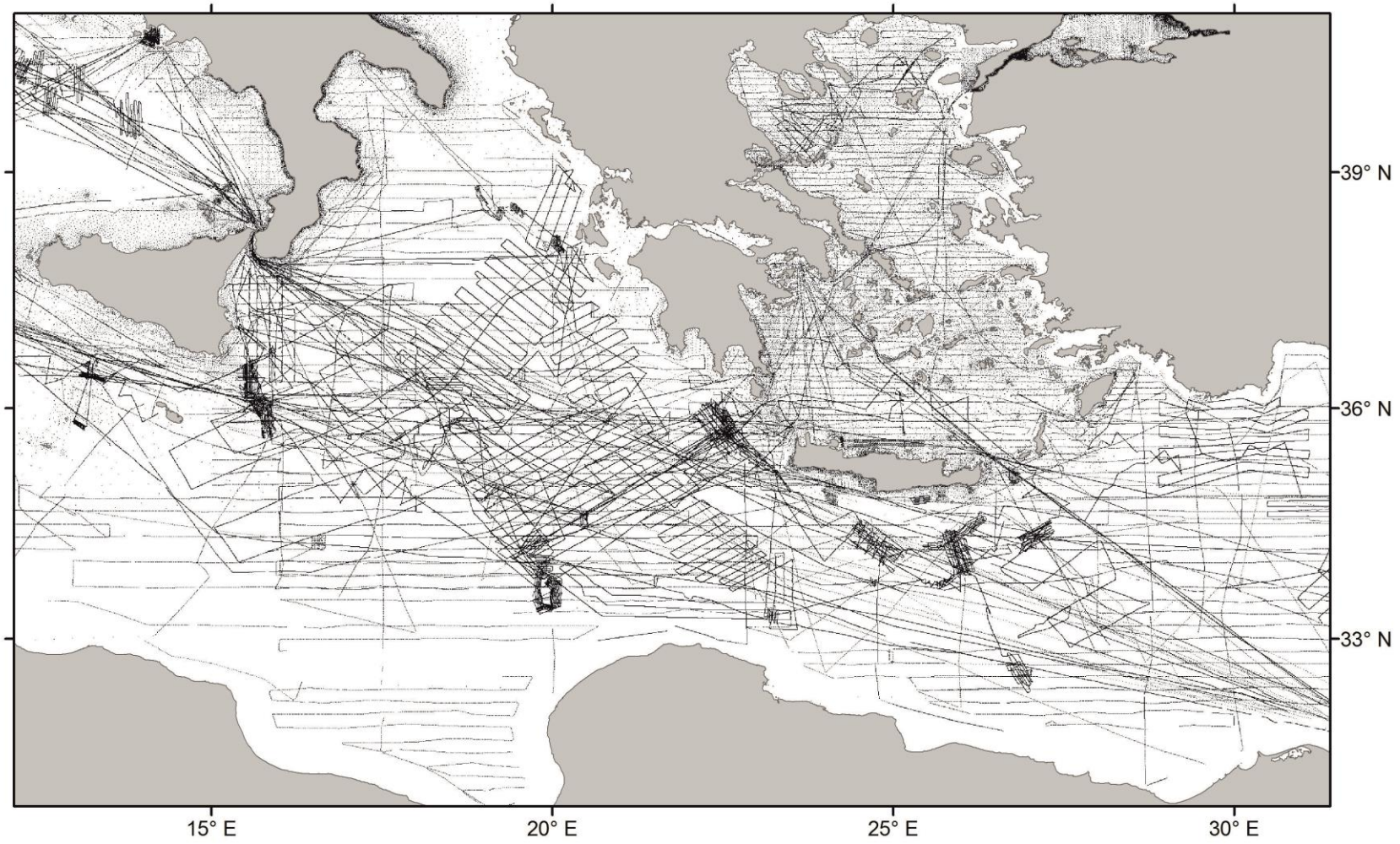
Coverage of EMODnet 2013 grid submitted for inclusion into the GEBCO grid

EMODnet-GEBCO merging work



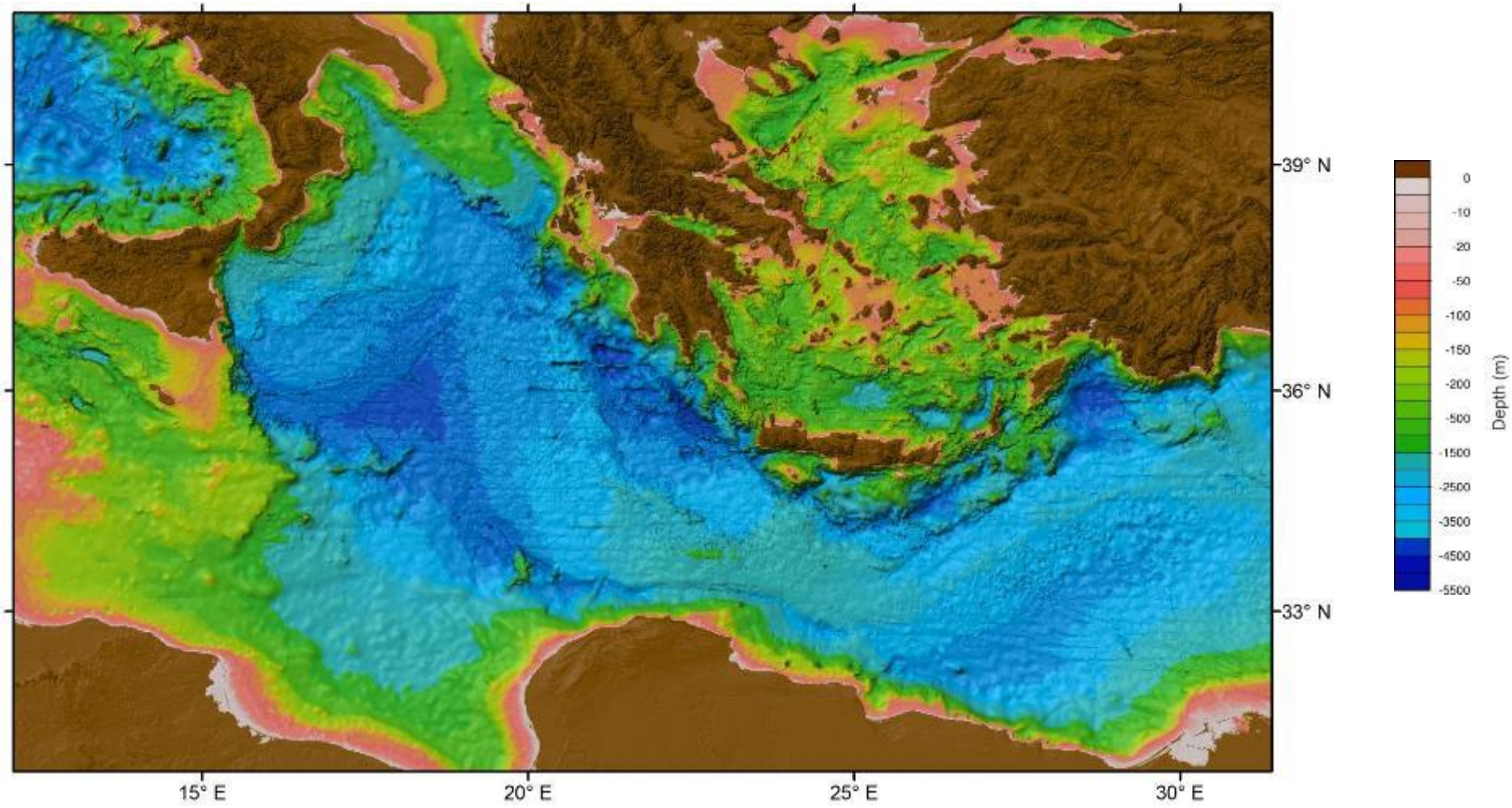
EMODNet 2013 data coverage – central Mediterranean Sea

EMODnet-GEBCO merging work



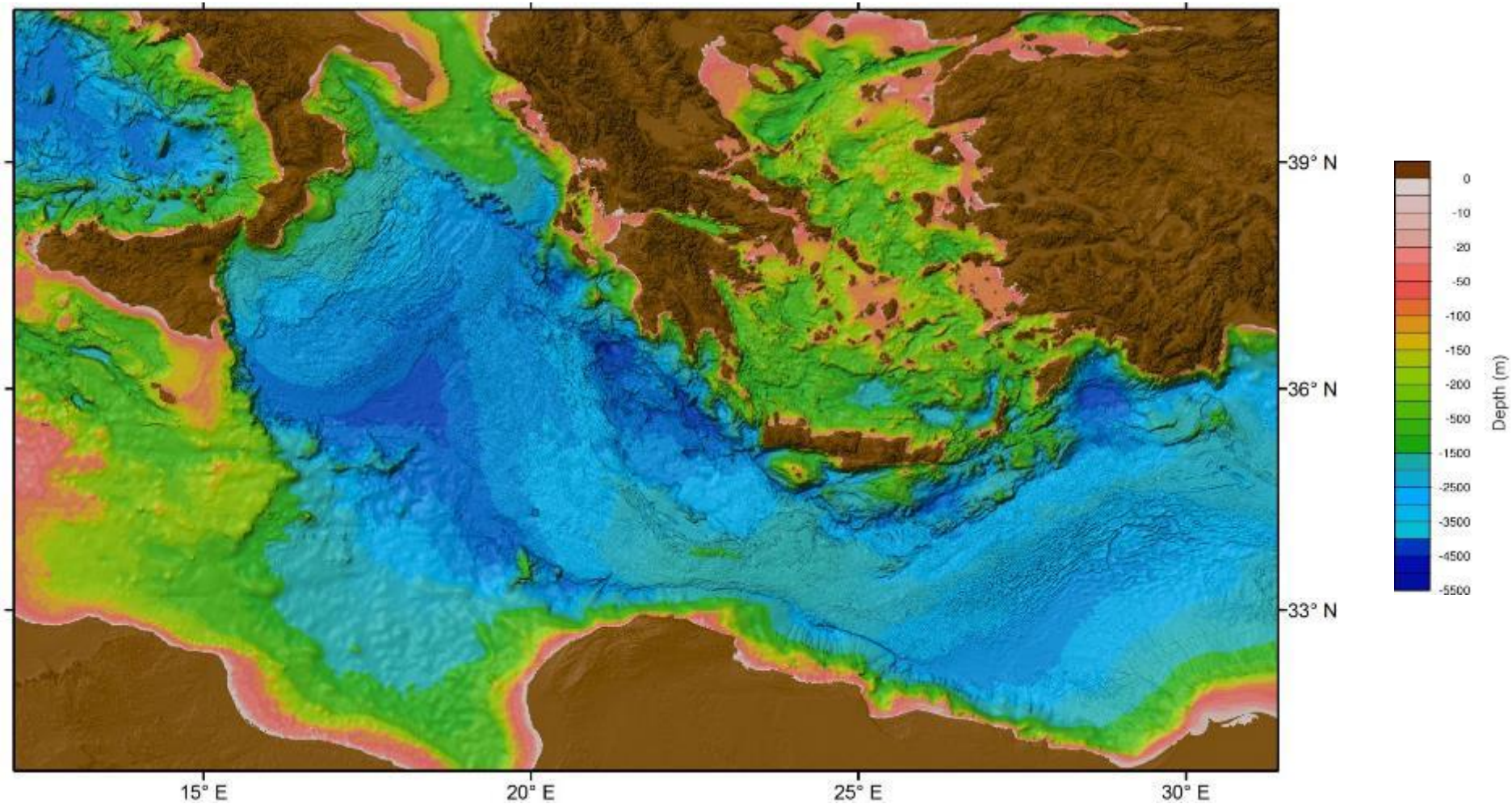
GEBCO_08 – trackline control coverage

EMODnet-GEBCO merging work



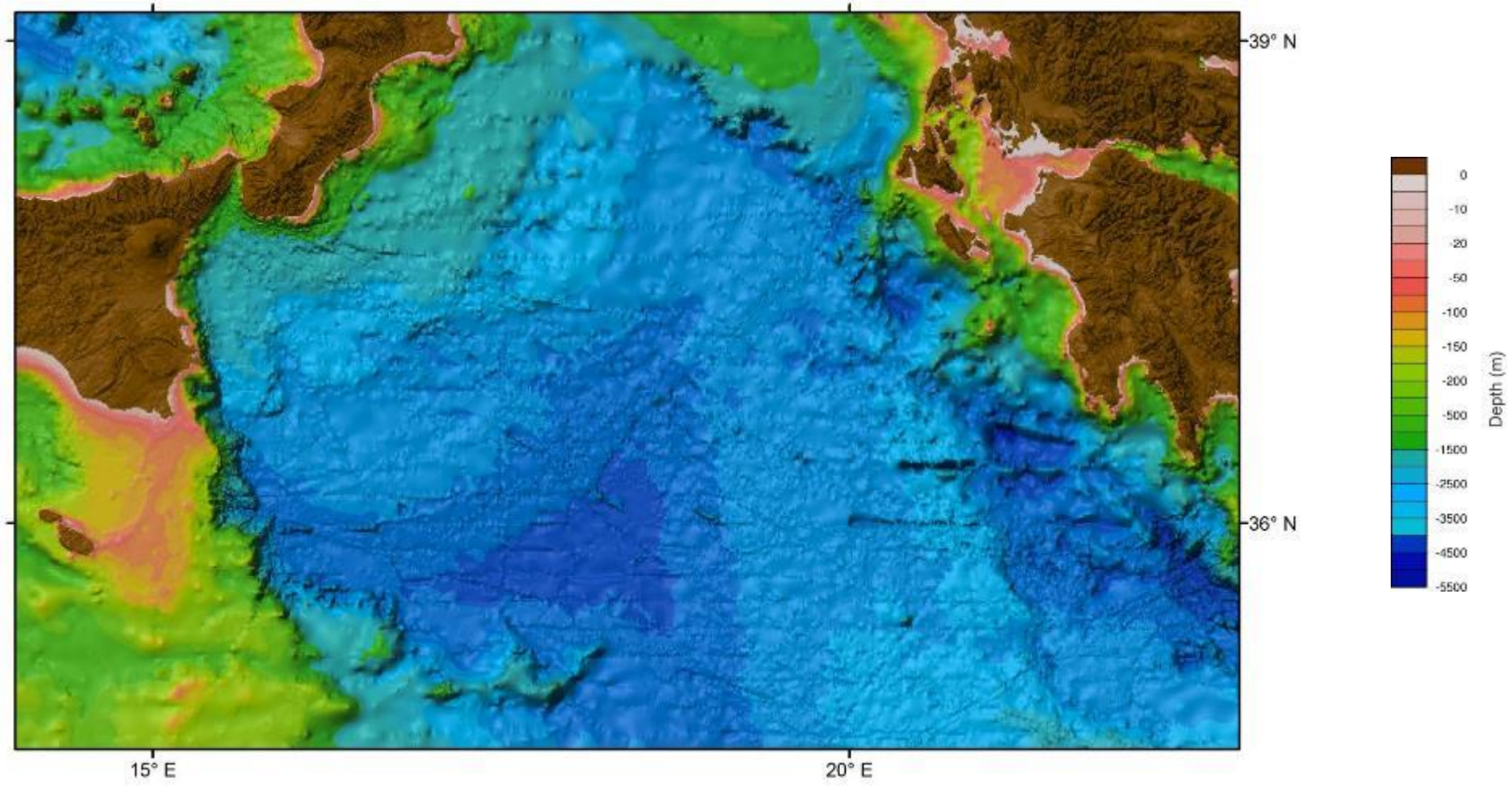
GEBCO_08 Grid

EMODnet-GEBCO merging work



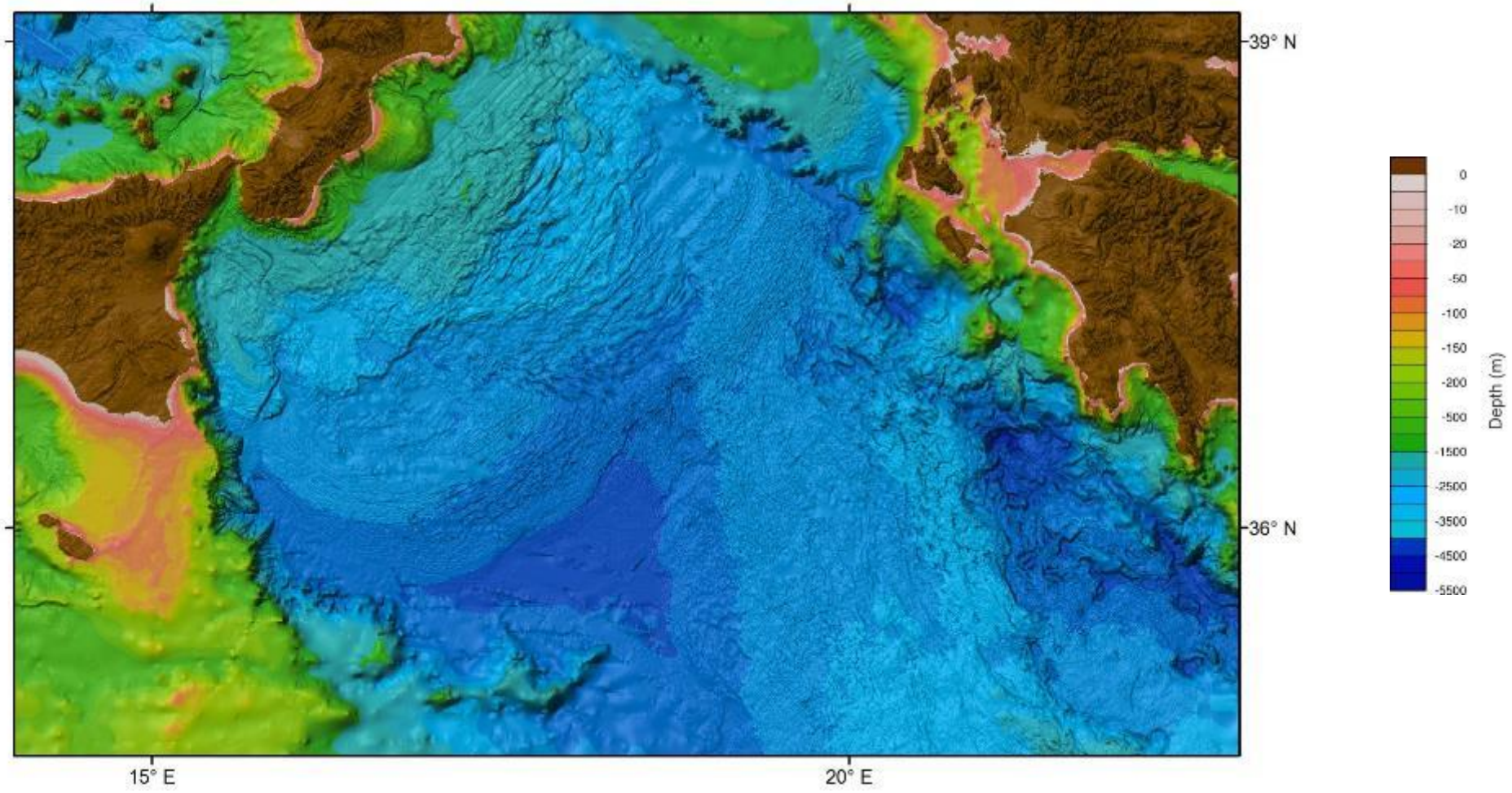
GEBCO_2014 Grid generated by merging the GEBCO and EMODnet grids

EMODnet-GEBCO merging work



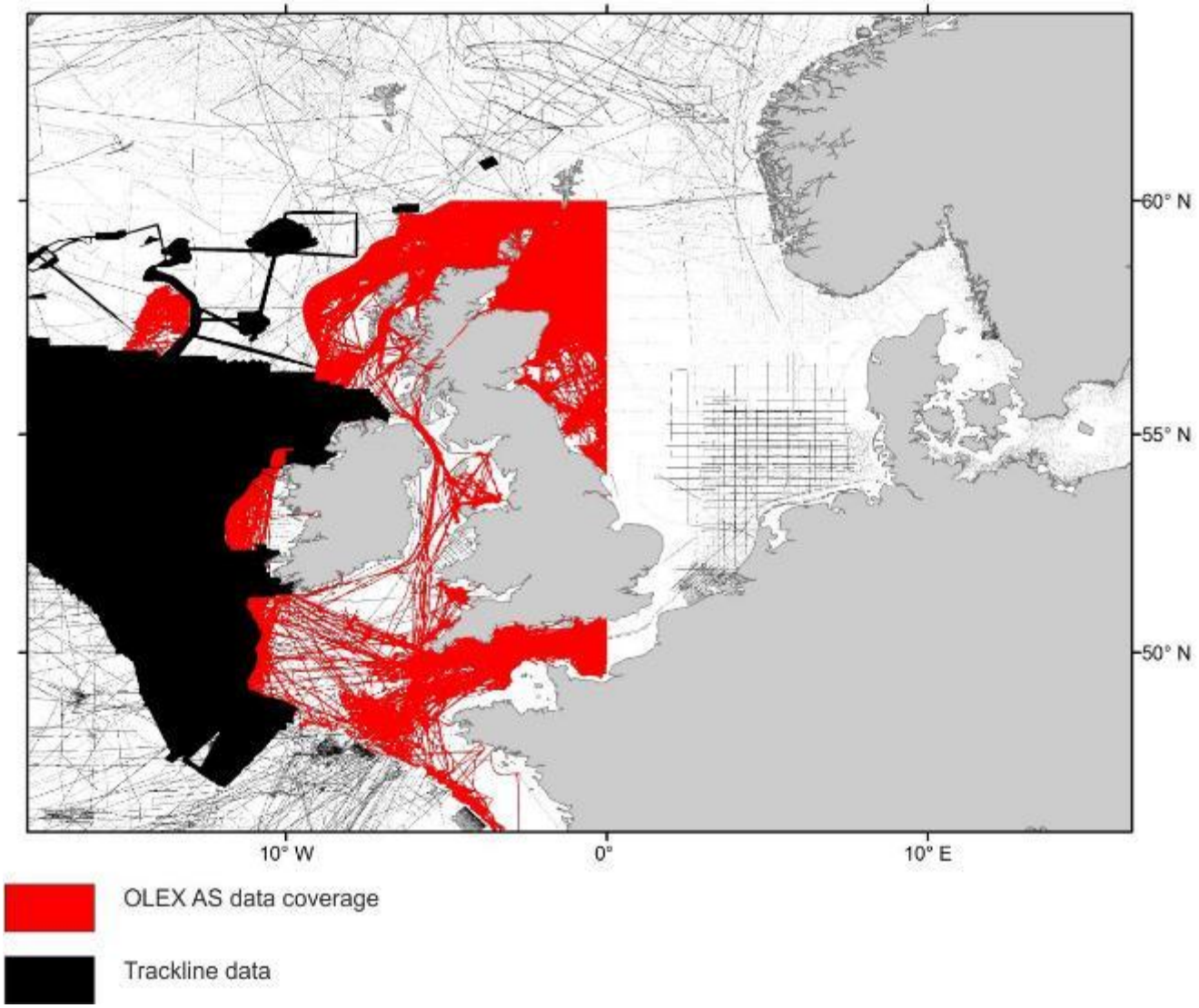
GEBCO_08 Grid for Mediterranean Sea off Sicily

EMODnet-GEBCO merging work

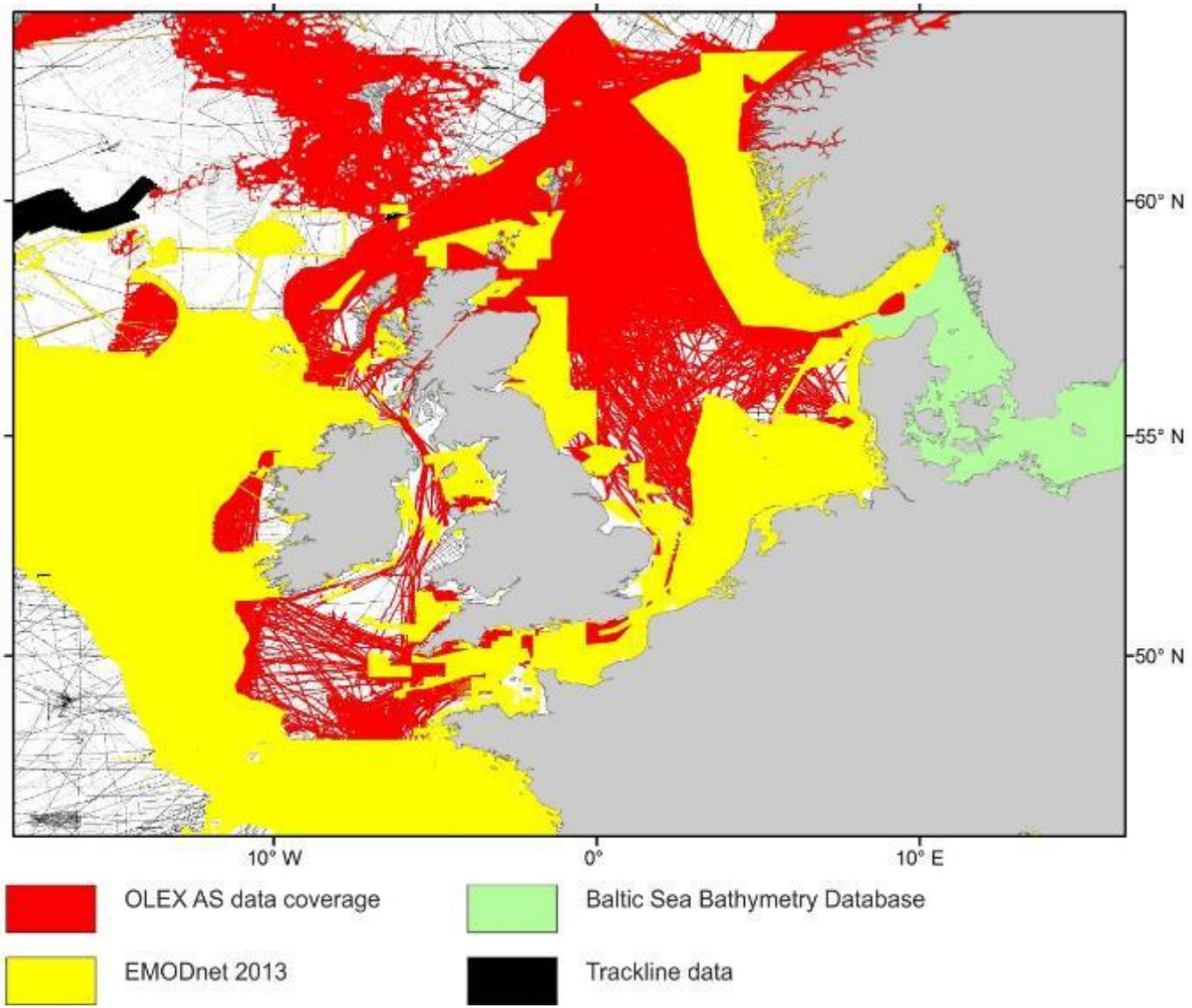


GEBCO_2014

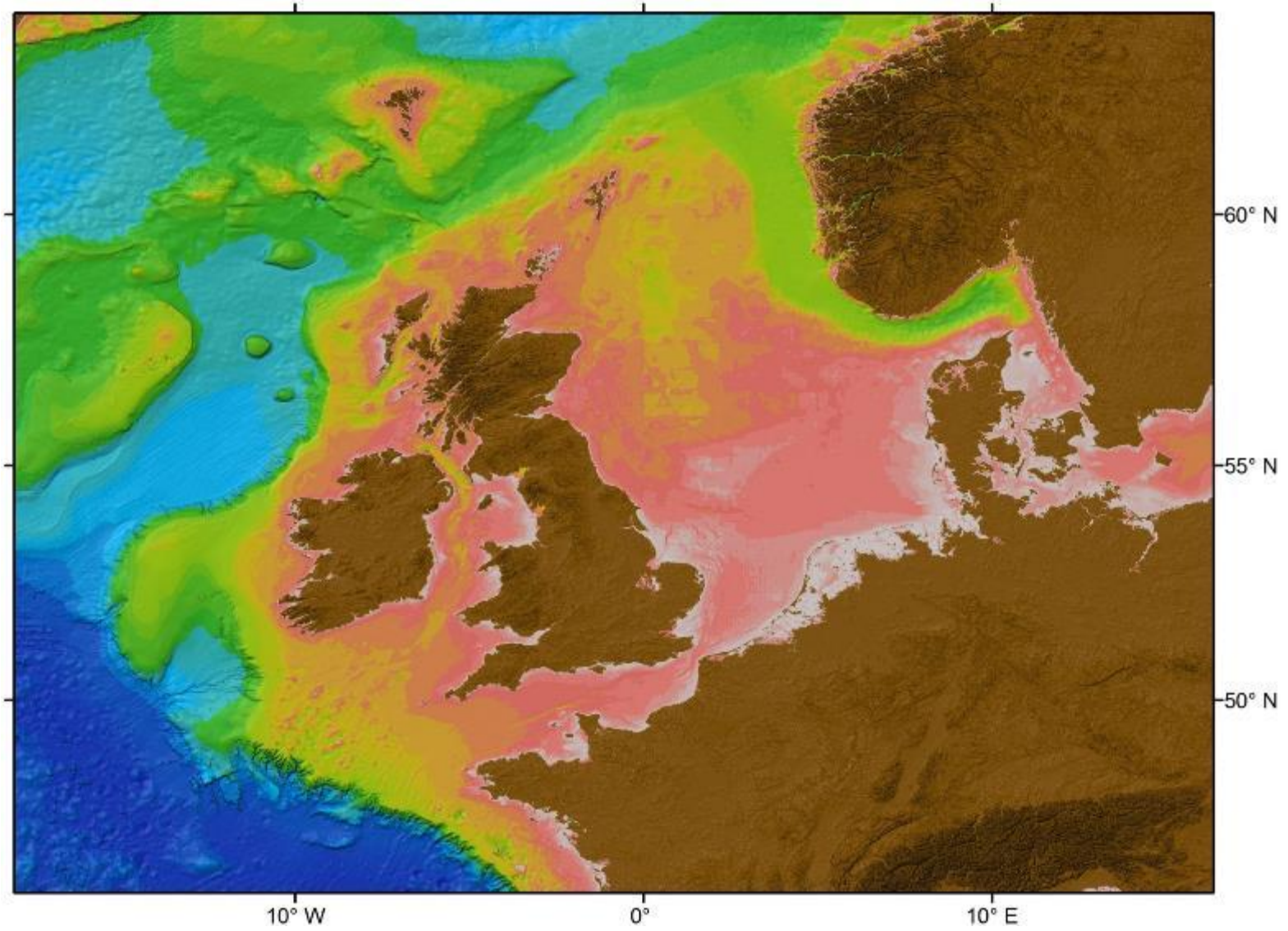
GEBCO_08 Grid of NW Europe – source data coverage



GEBCO_08 Grid of NW Europe – source data coverage

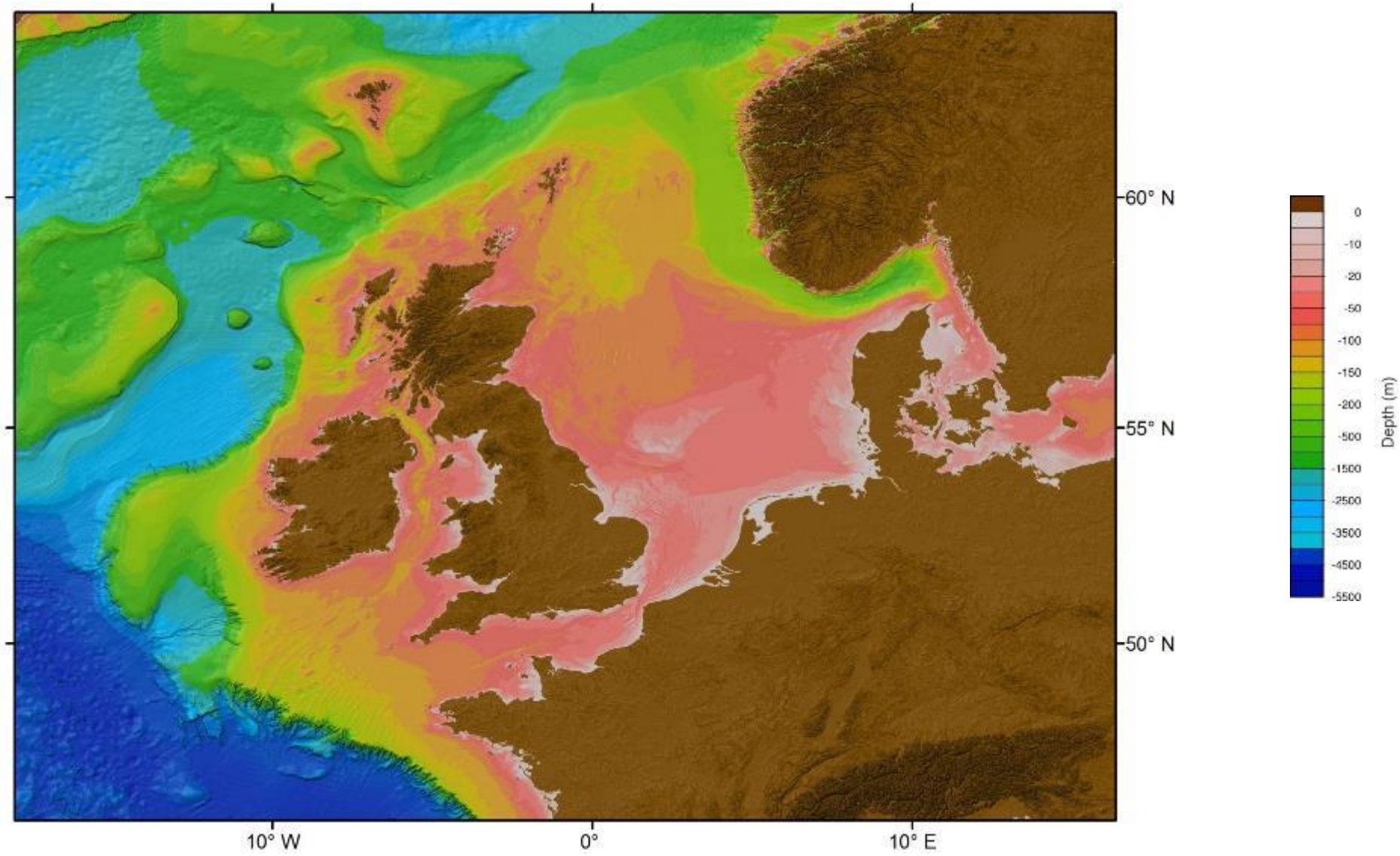


North West Europe area



GEBCO_08

North West Europe area



GEBCO_2014

Making GEBCO's grids available

- The new grid is available to download via the internet (http://www.gebco.net/data_and_products/gridded_bathymetry_data/) and also as part of the GEBCO Digital Atlas.

- Via the internet, the grid is available as a complete global grid file or for user-defined sub areas.

- It is planned that the web application for delivering GEBCO's grids will also be included on GEBCO's web site.

- The application has been updated and extended, allowing the 'cutting' of user-selected areas to be done in the background so that the data can be collected later - useful when selecting data for a large geographic area.

- The grid is made available in netCDF, using Climate and Forecast (CF) metadata conventions – a means of including metadata within the netCDF data file.

- Work is in progress to make the data sets available in Esri ASCII raster and data Geotiff for user-defined areas

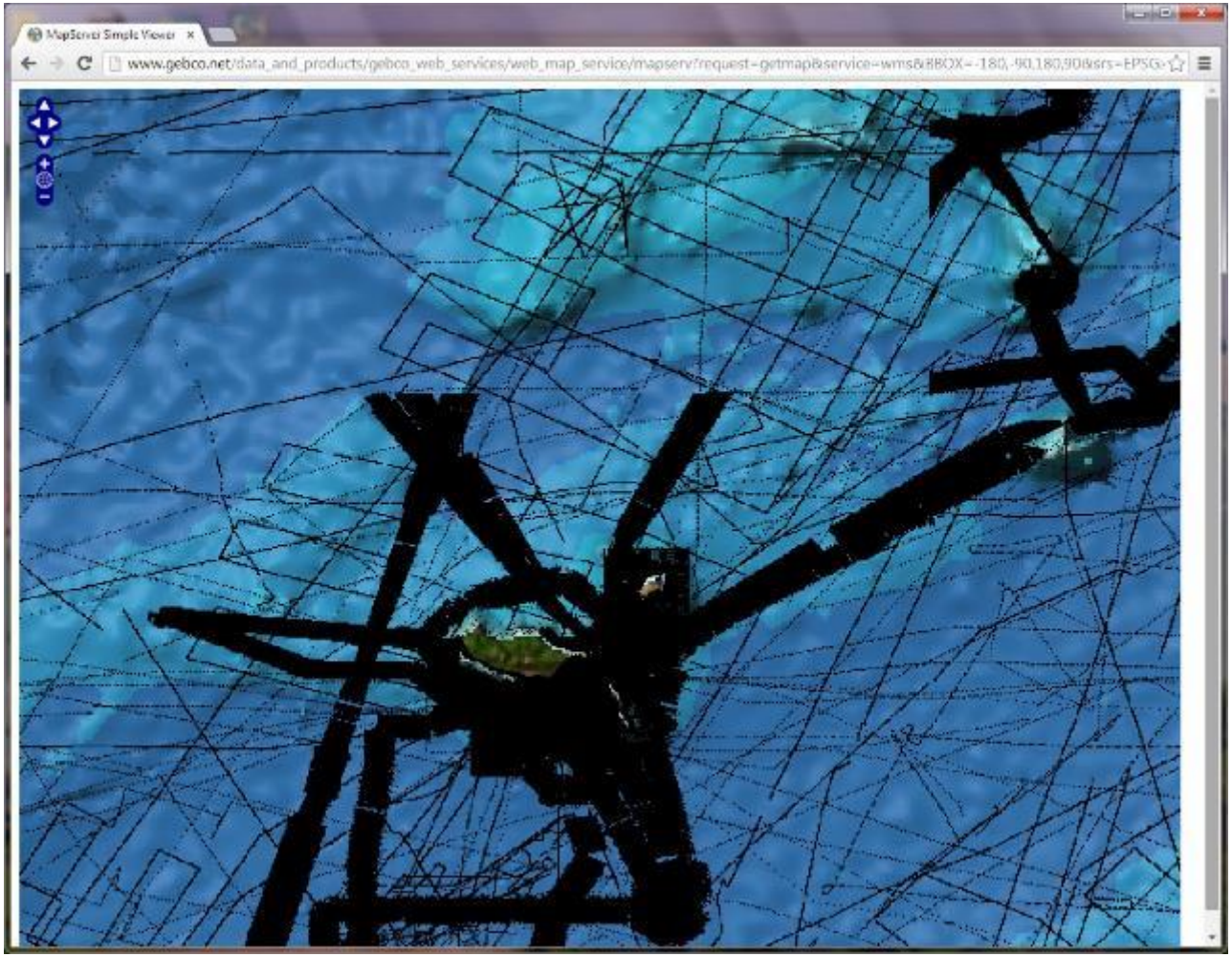
GEBCO's Web Map Service

- A new version of the GEBCO Web Map Service (WMS) has been developed - based on the GEBCO_2014 Grid

- The web services Includes the GEBCO Source Identifier (SID) grid

http://www.gebco.net/data_and_products/gebco_web_services/web_map_service/

GEBCO's Web Map Service



GEBCO WMS with the SID grid layer plotted on top of the GEBCO_2014 Grid shaded relief image layer

Updating the GEBCO base grid

• The updating work was done by merging new – generally gridded data sets - on top of the original GEBCO_08 base grid.

• This work was done largely using the ‘remove-restore’ procedure

i.e. comparing a new data set with an existing base grid. This involves creating a difference grid and then adding the differences back on top of the base grid

Other methods used

- Blending data sets at overlapping edges using ‘mosaicking’ routines - Esri ArcGIS desktop software packages
- Feather blending routines from Global Mapper
- Creating ‘buffer zones’ between areas of pre-gridded data and using interpolation routines such as ‘surface’ from GMT to interpolate across the buffer zone.

Updating the GEBCO base grid

- ‘remove-restore’ works well for areas of pre-gridded data

- For regions of single track/isolated sounding points – other methods are needed – i.e. Firstly creating a grid using gridding algorithms such as ‘surface’ from Generic Mapping Tools and then adding the newly created grid onto the existing base grid using one of the methods outlined above.

For future GEBCO grid updating work

- Do we continue to update the existing GEBCO base grid?
- How do we add additional single track data to the grid?
- Do we continue to use procedures such as ‘remove-restore’ and blending routines to add in new data sets?