EMODnet
European Marine Observation and Data Network

Your gateway to marine data in Europe

EMODnet Bathymetry

SBD Day, Herrsching

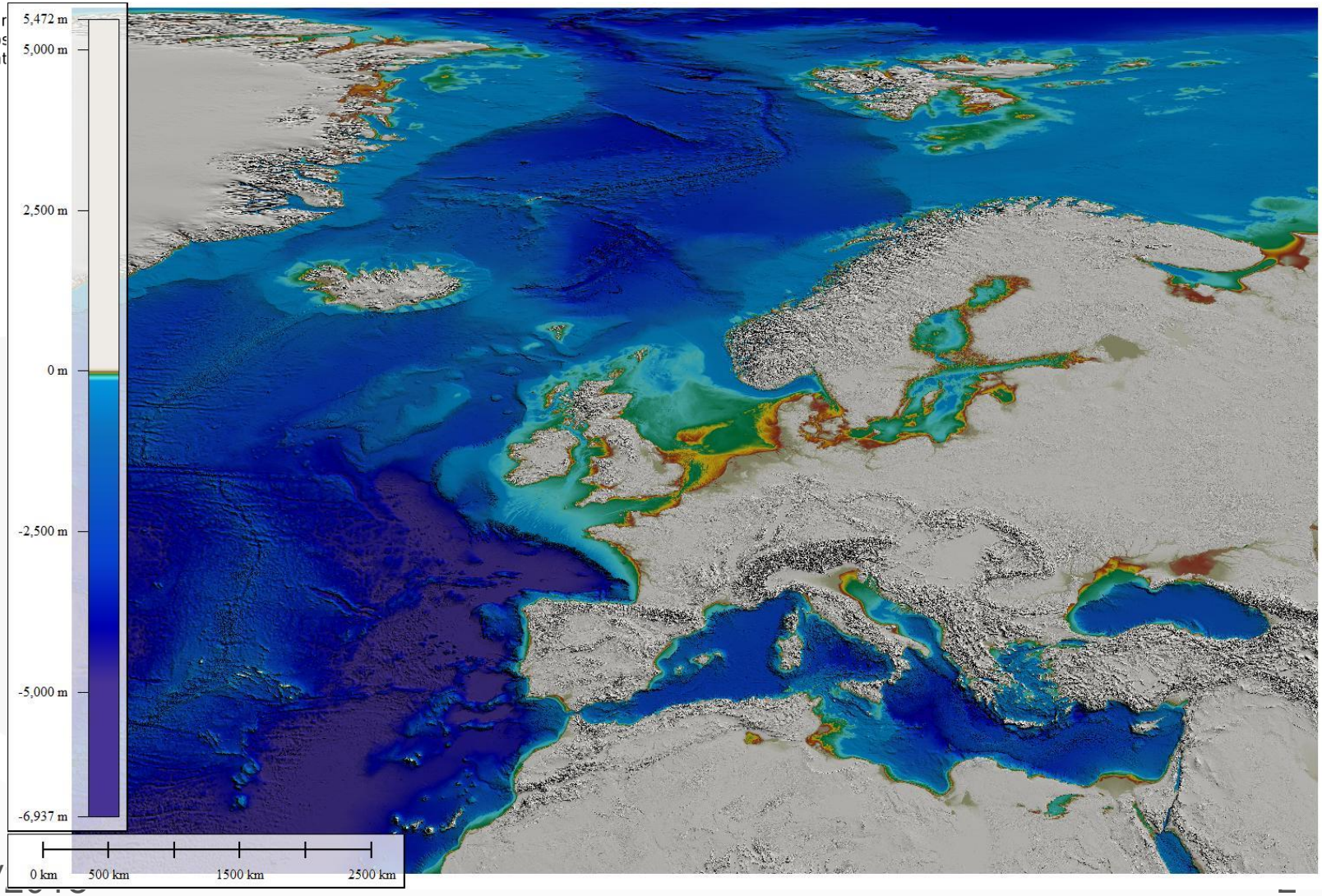
Schmitt Thierry (SHOM)
Knut Hartmann (EOMAP)
Benoit Loubrieu (Ifremer)
Vivi Drakopoulou (HCMR)
Sandra Aguilar, Martin Verlan (Deltares)
Dick Schaap (MARIS)
All the EMODnet HRSM consortium

The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund.

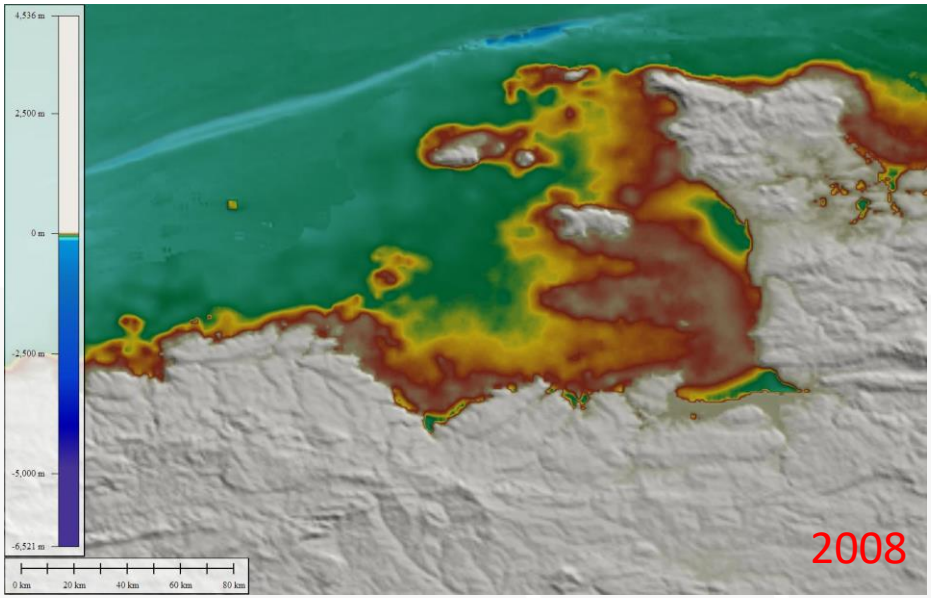
A brief history of bathymetric DEM

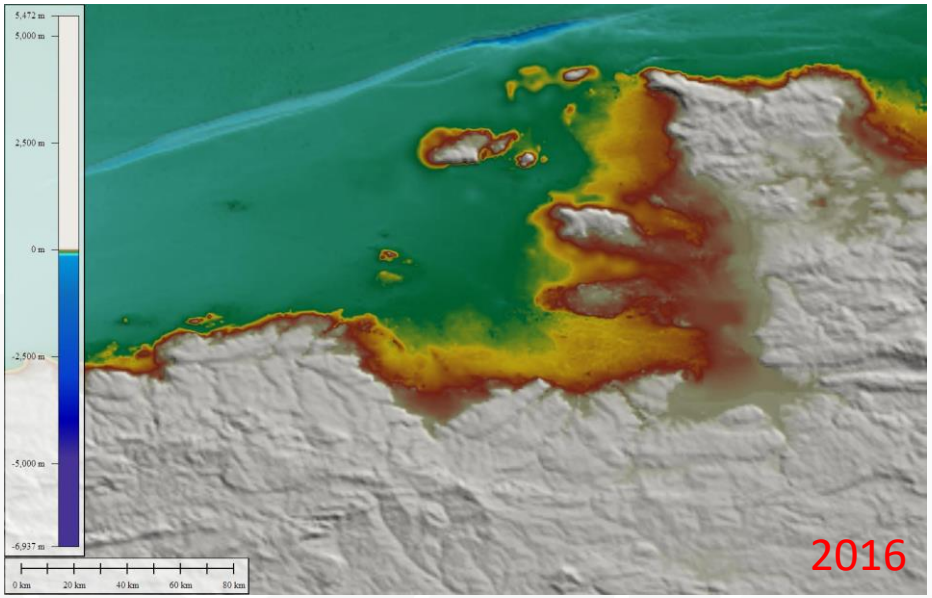
EMODnet

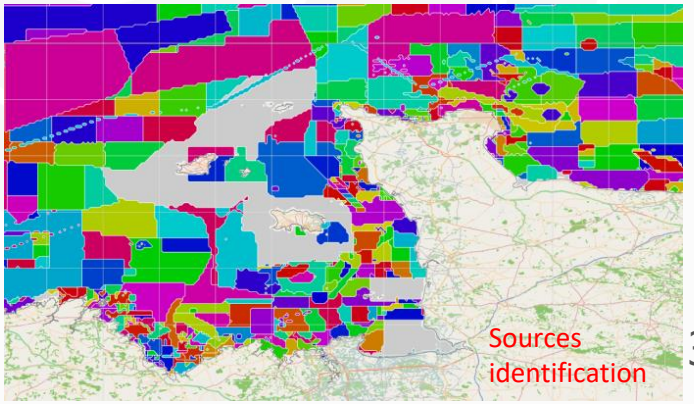
Eur
Obs
Dat



EMODnet
European Marine Observation and Data Network

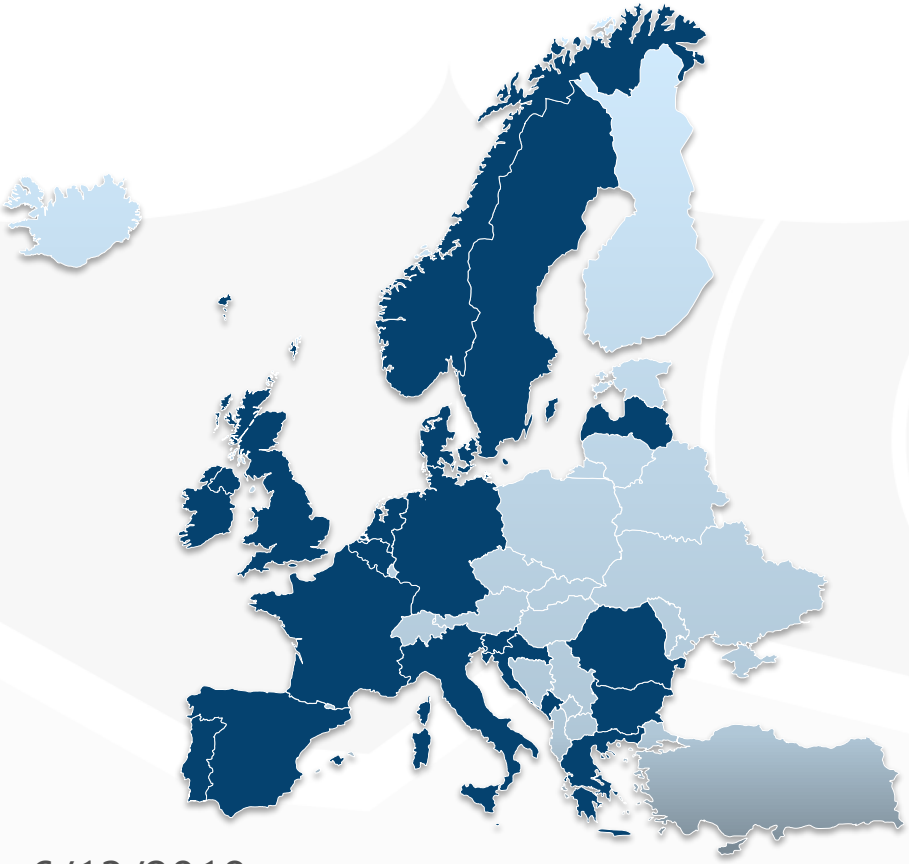






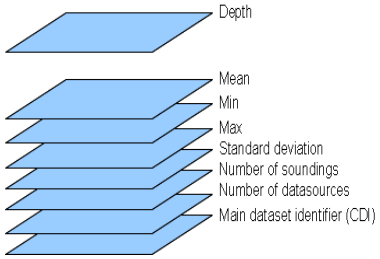
EMODnet
European Marine Observation and Data Network

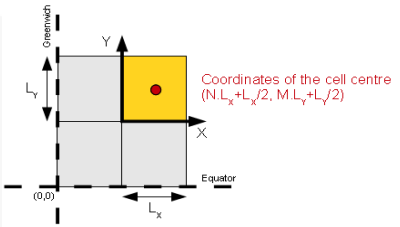
EMODnet Bathymetry Consortium



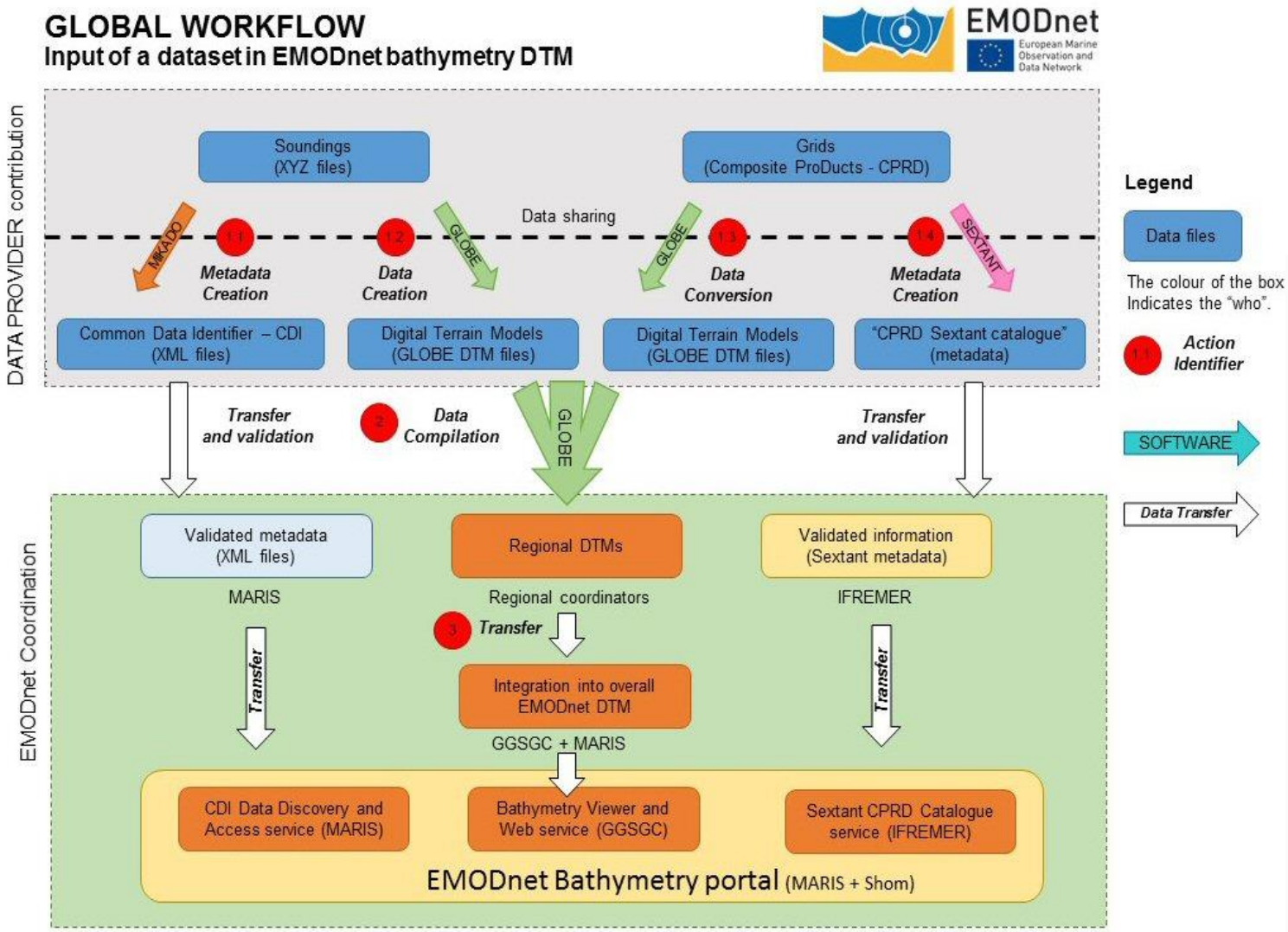
Summary: Global workflow

EMODnet
European Marine Observation and Data Network



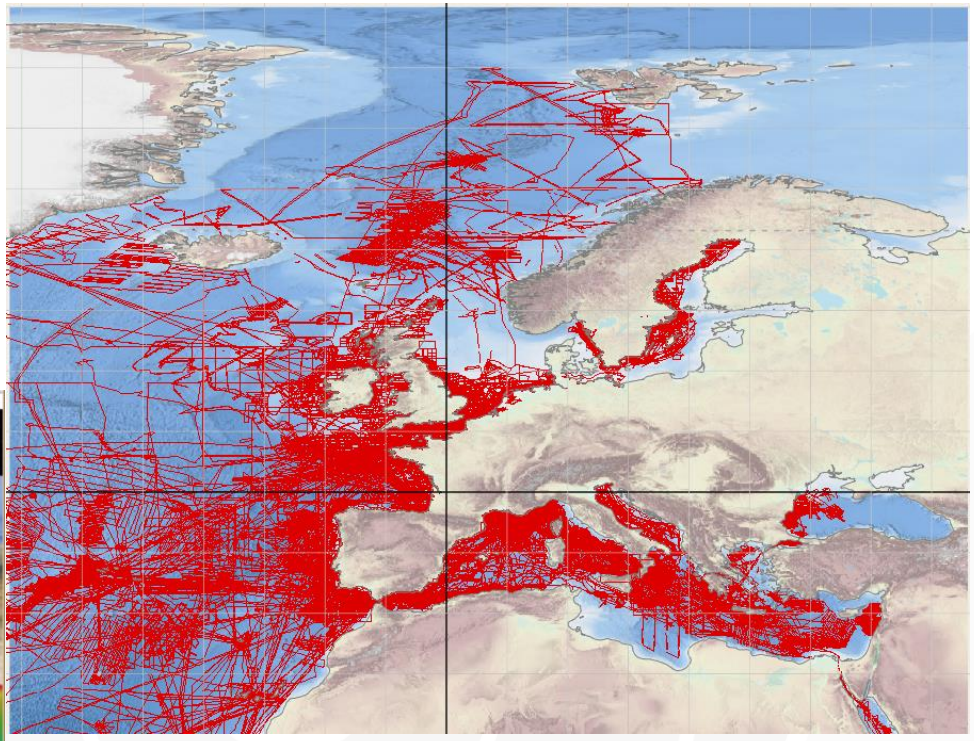


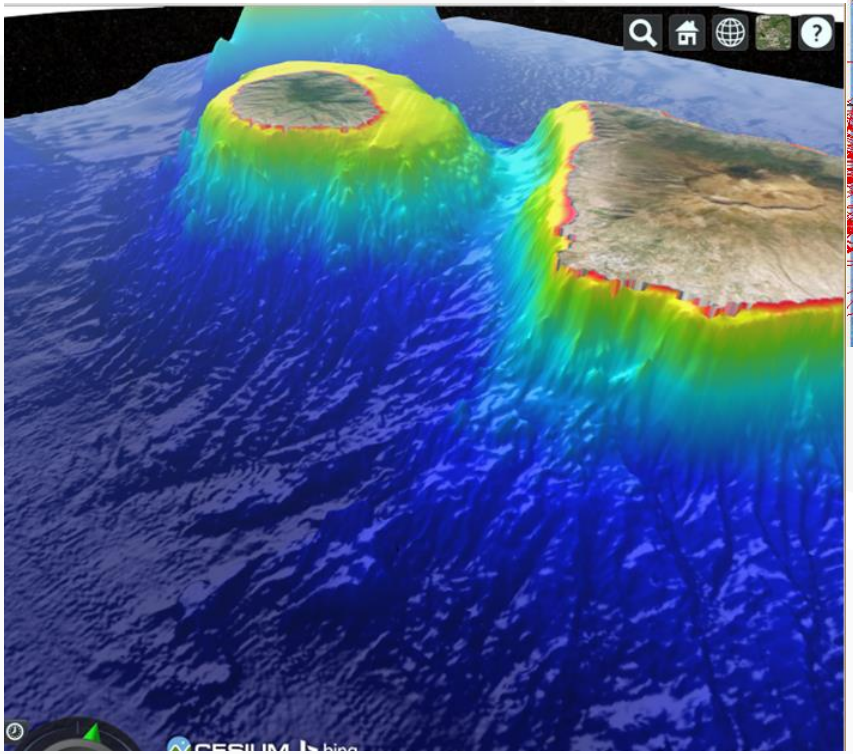
Mesh size in fraction of minute of arc	Corresponding value in meter
1	1852,00
4	463,00
16	115,75
64	28,94
256	7,23
1024	1,81
4096	0,45



EMODnet
European Marine Observation and Data Network

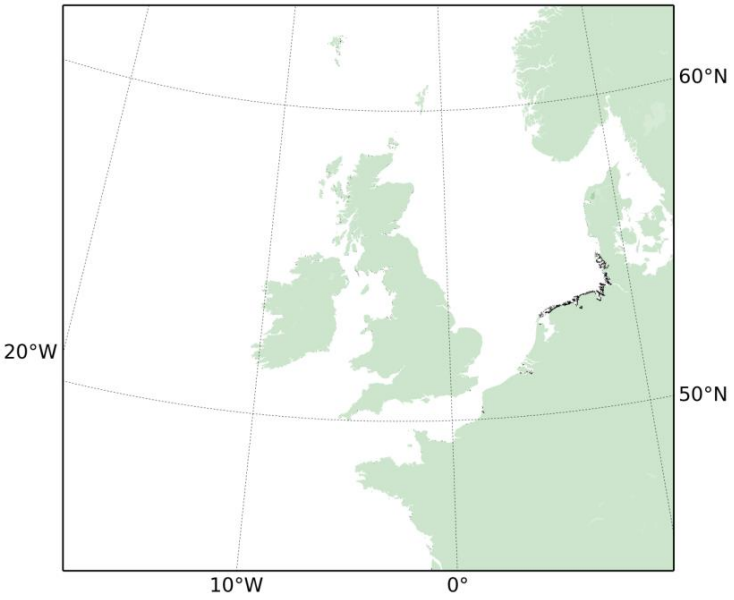
www.emodnet-bathymetry.eu

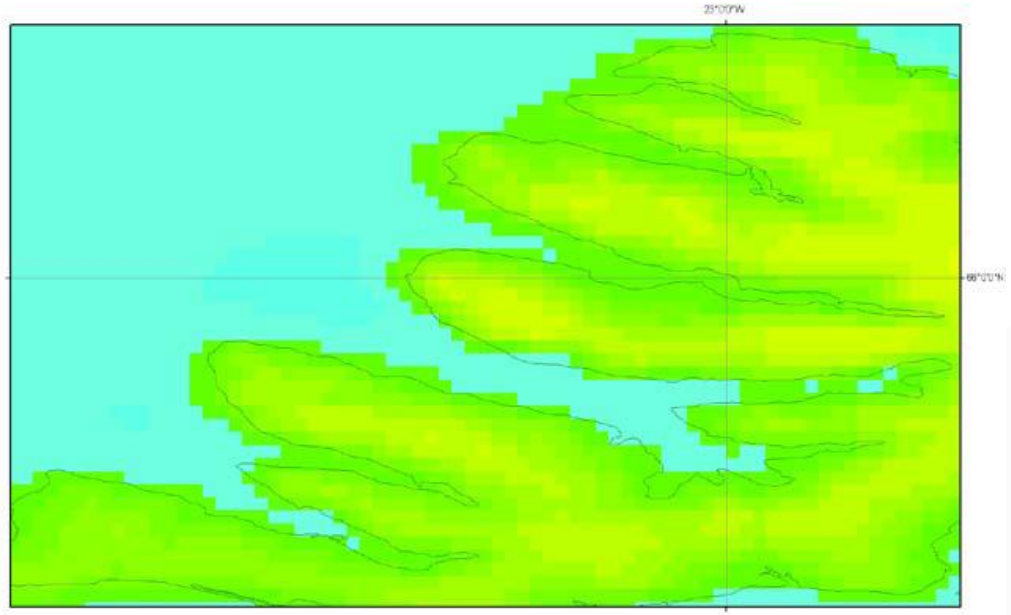




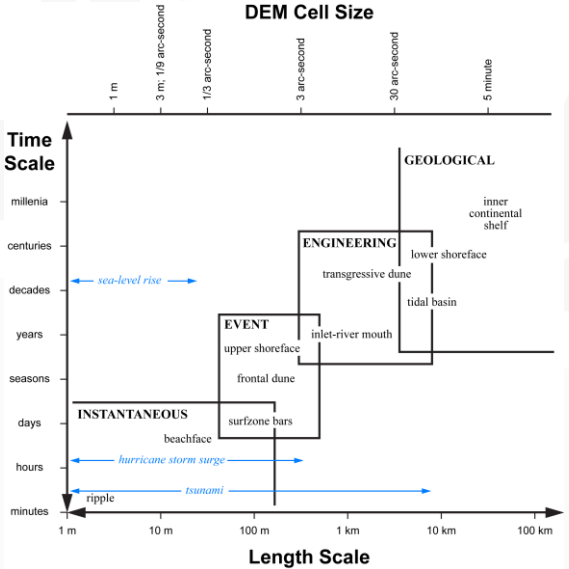
Limitations in the coastal areas

EMODnet
European Marine Observation and Data Network





From Eakins et al. [2014]

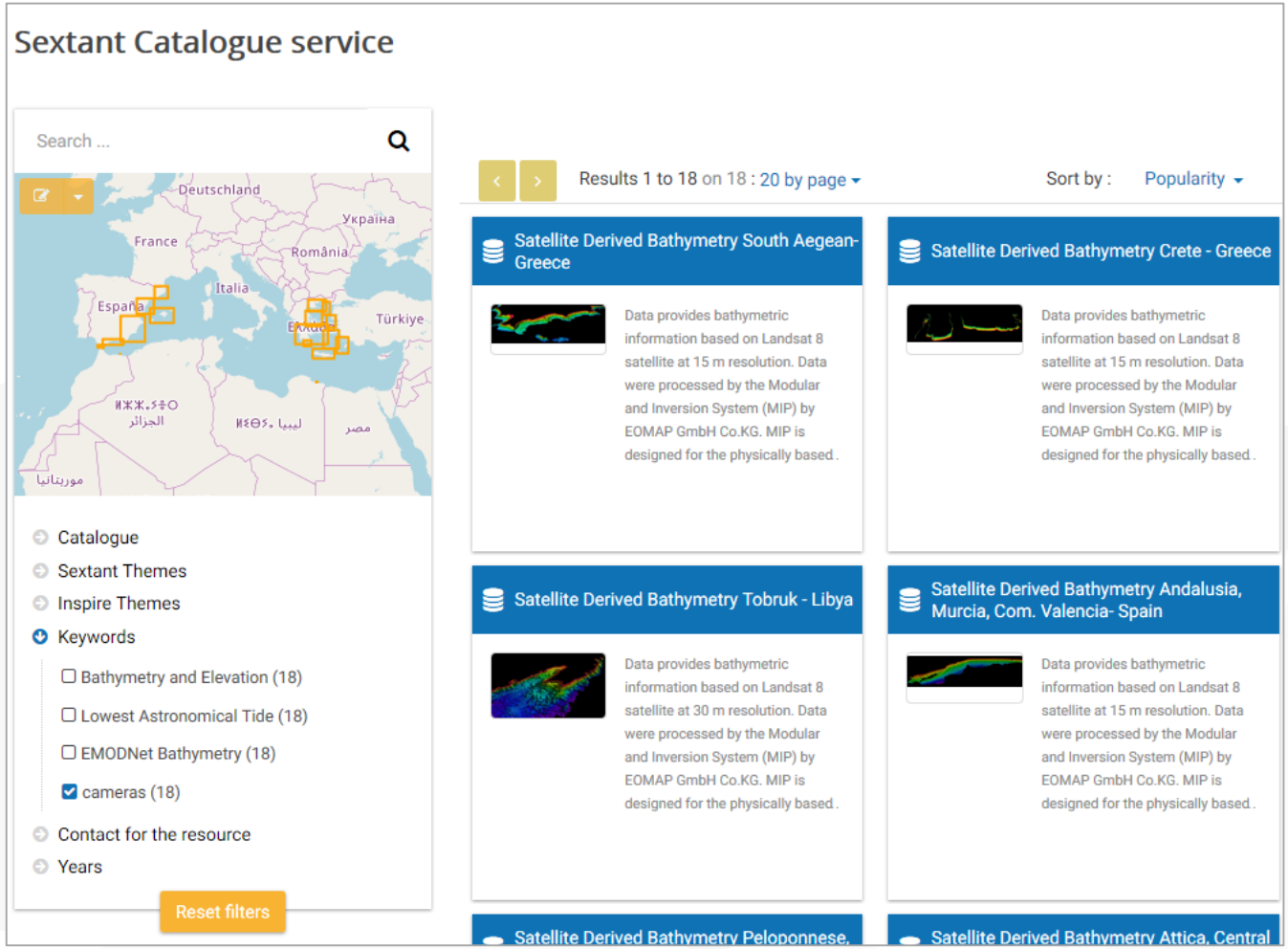


Modified after Cowell and Thom [1997].

EMODnet
European Marine Observation and Data Network

SDB data provided to EMODnet Bathymetry by EOMAP

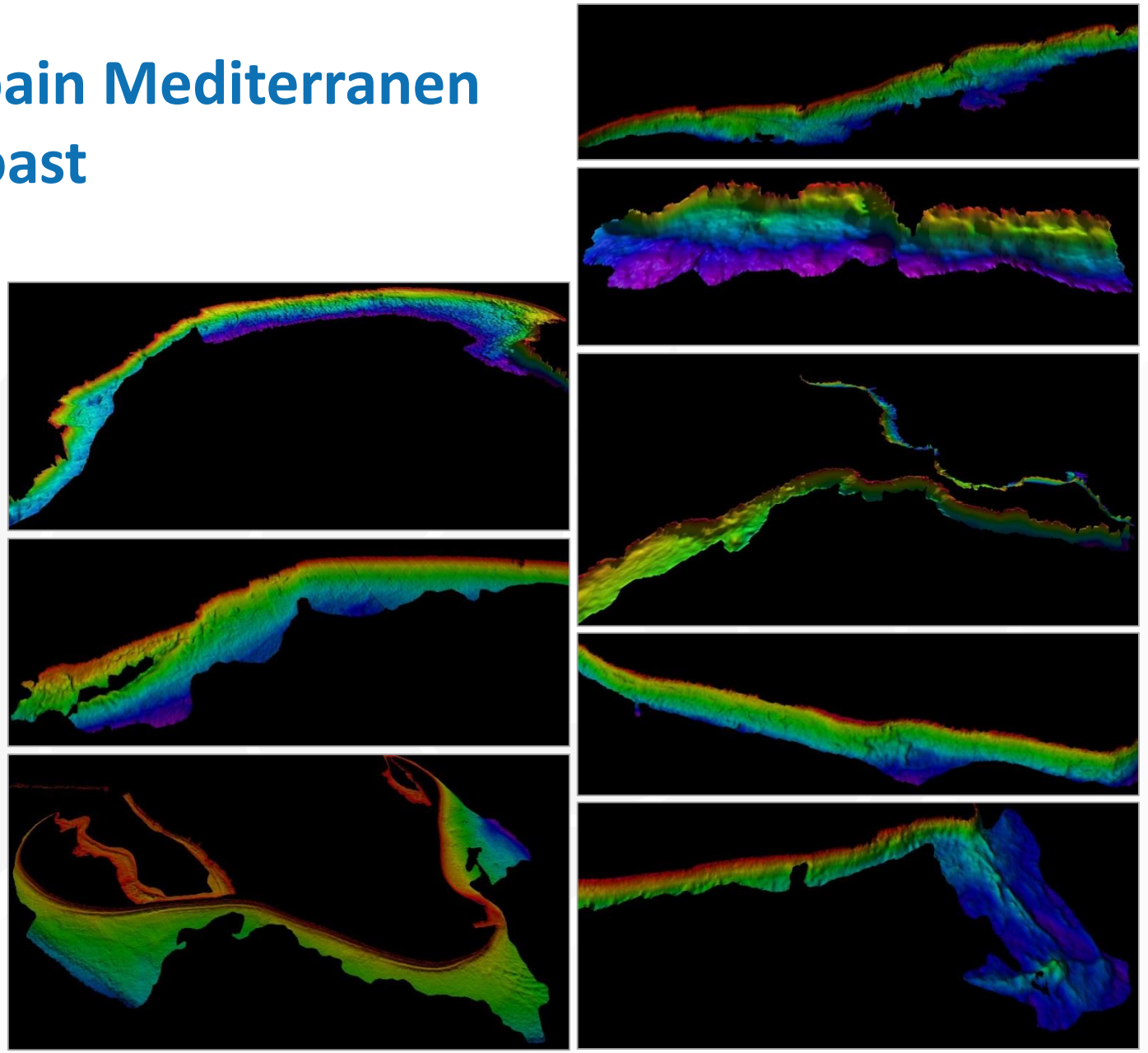
Metadata Catalogue



EMODnet
European Marine Observation and Data Network

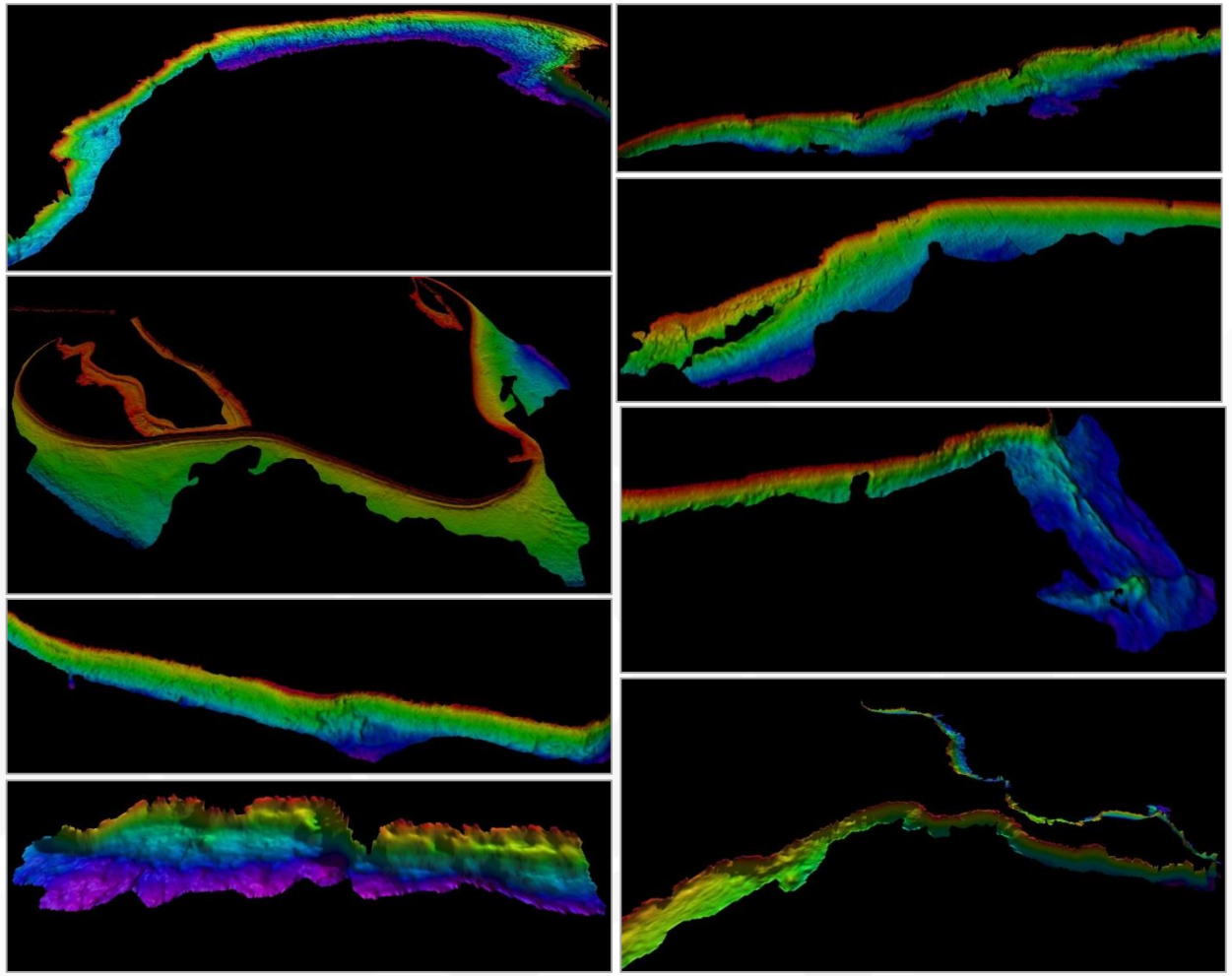
Spain Mediterranen Coast

8 CPRD dataset for Spain Med. coast, including Ceuta and Melilla Average bathymetric data coverage down to 15m



EMODnet
European Marine Observation and Data Network

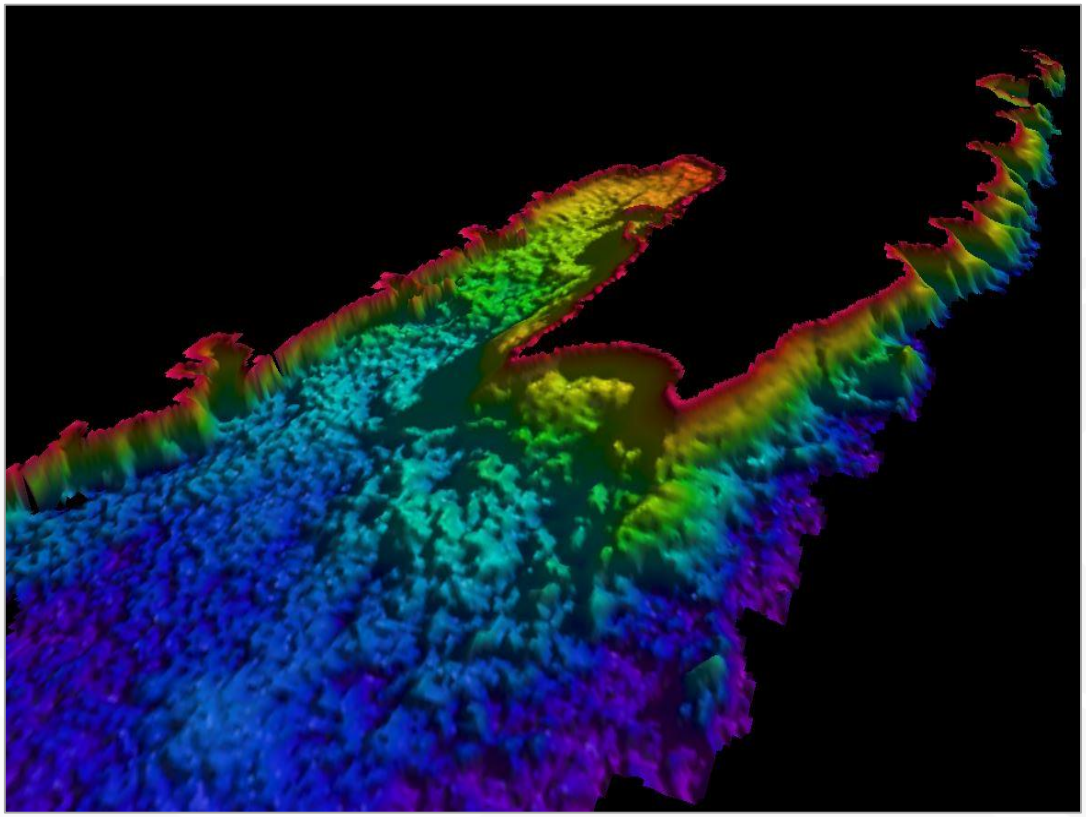
Aegean Sea and Peloponnes



9 CPRD dataset for Greece Agean Sea and Peloponnes. Average bathymetric data coverage down to 18m

EMODnet
European Marine Observation and Data Network

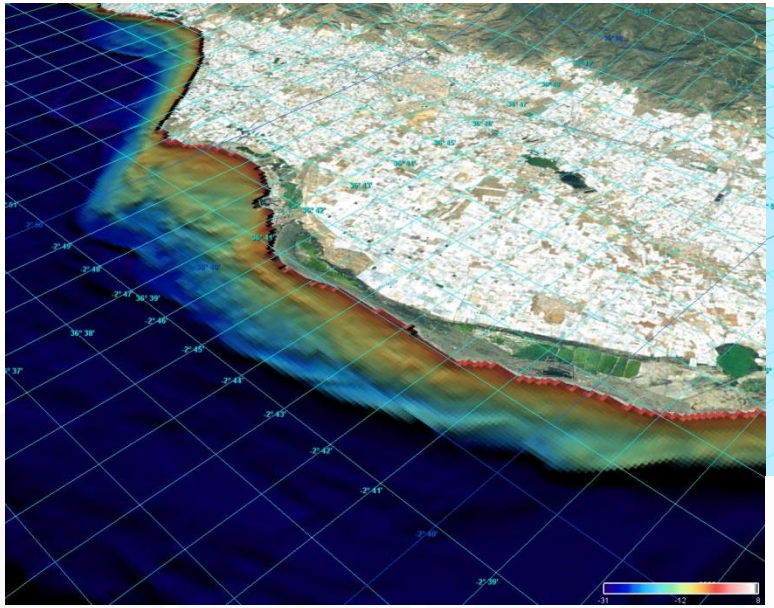
Aegean Sea and Peloponnes

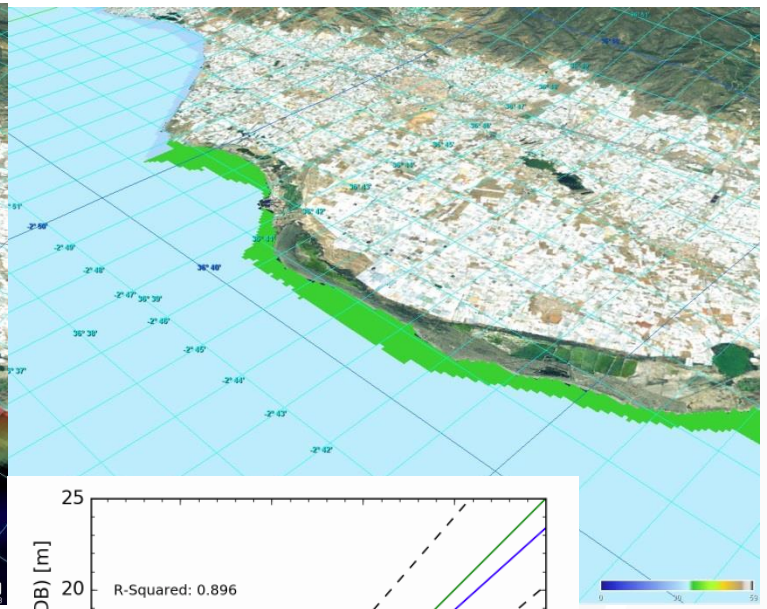


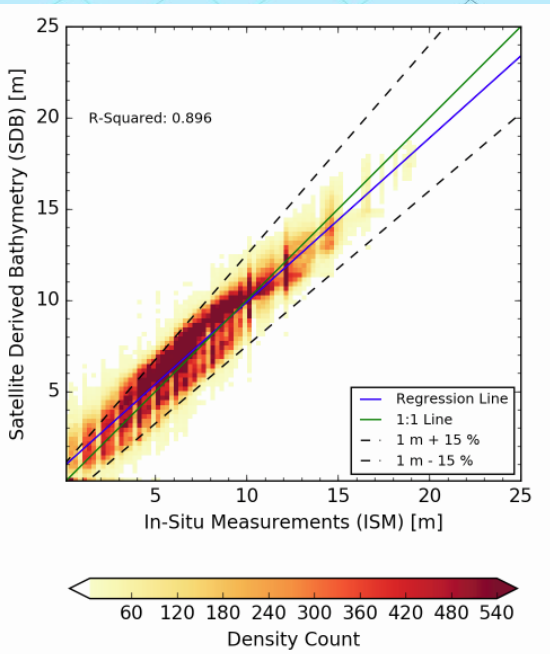
1 CPRD dataset for Lybia, Tobruk area. Average bathymetric data coverage down to 20m

EMODnet
European Marine Observation and Data Network

Western Mediterrannean





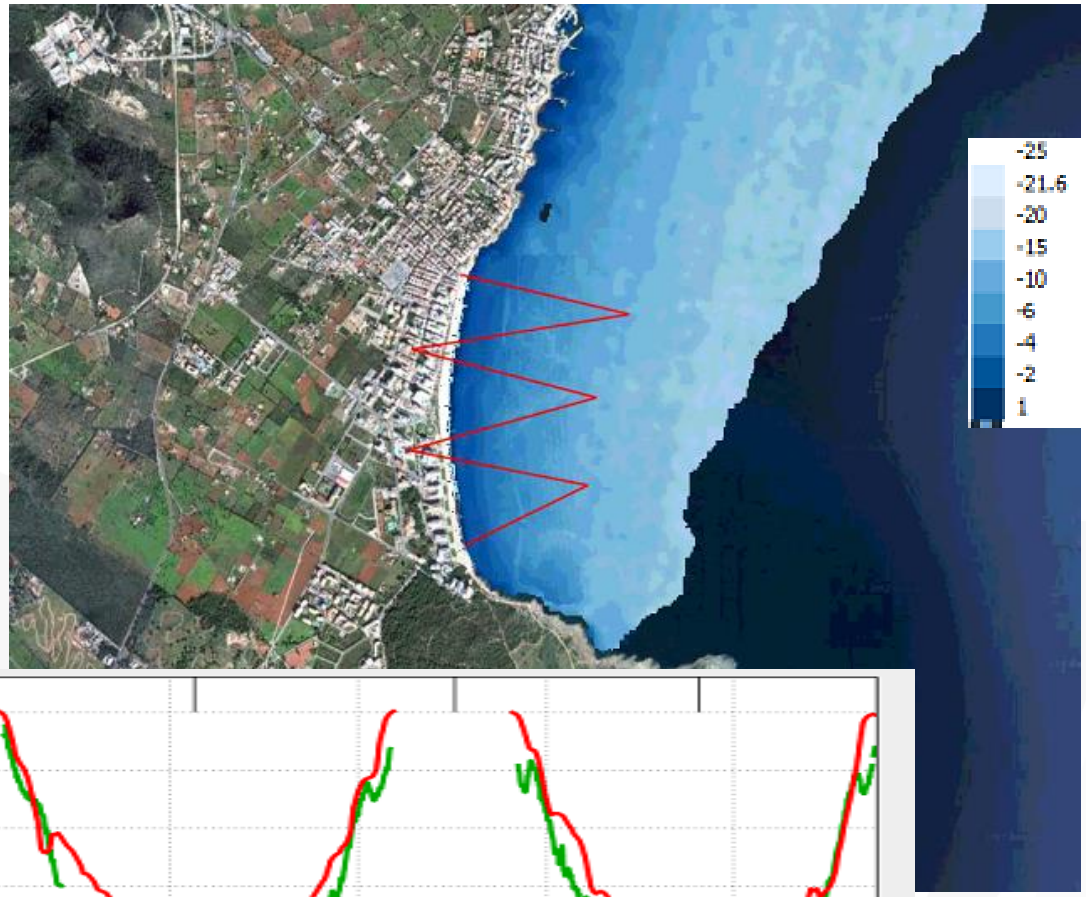


Scatterplot of Satellite Derived Bathymetry vs. approx. 4 million acoustic survey point datasets and 0.4 million charting points for the Spanish Mediterranean coastline, showing a coherent fit with vertical uncertainties better than ZOC category C (2 + 5%waterdepth).

EMODnet
European Marine Observation and Data Network

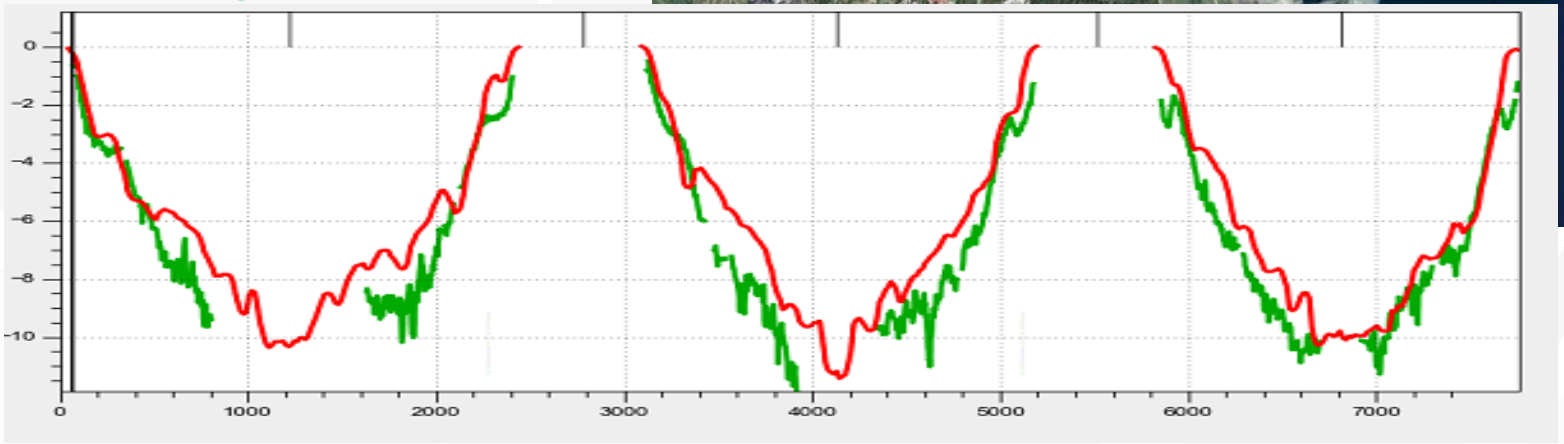
Base Platform

Balearics



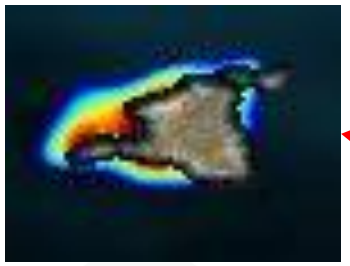
Satellite Derived Batyhmetry

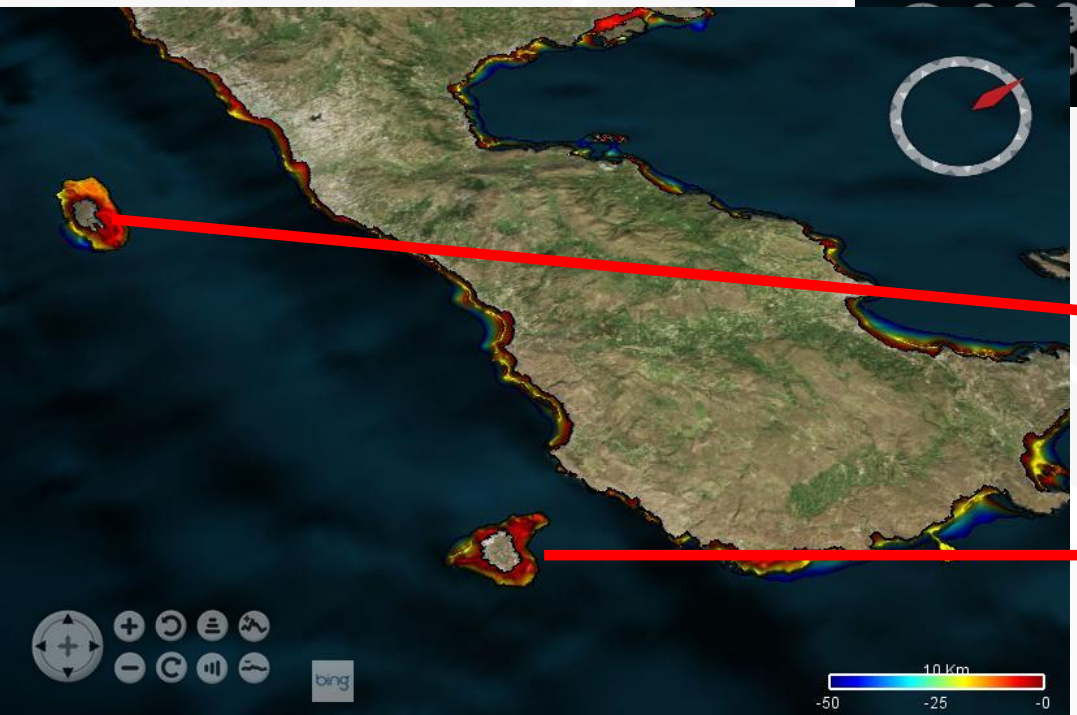
High res. MBES

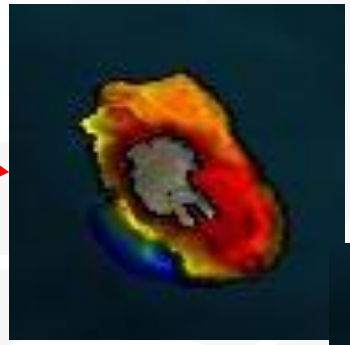


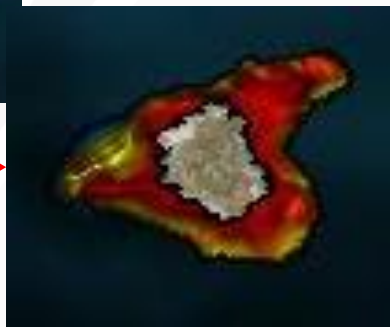
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 687323.

Med east









EMODnet
European Marine Observation and Data Network

Island of Crete

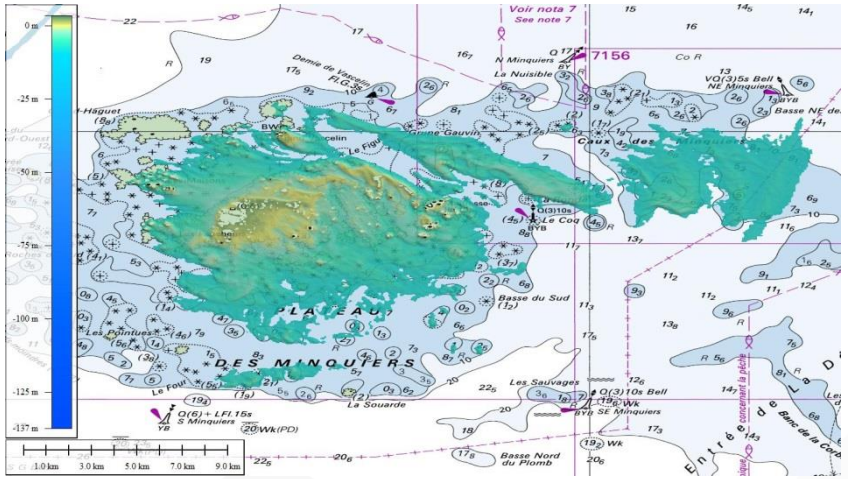
Satellite Derived Bathymetric Grid, Iraklion area, SDB (2018)

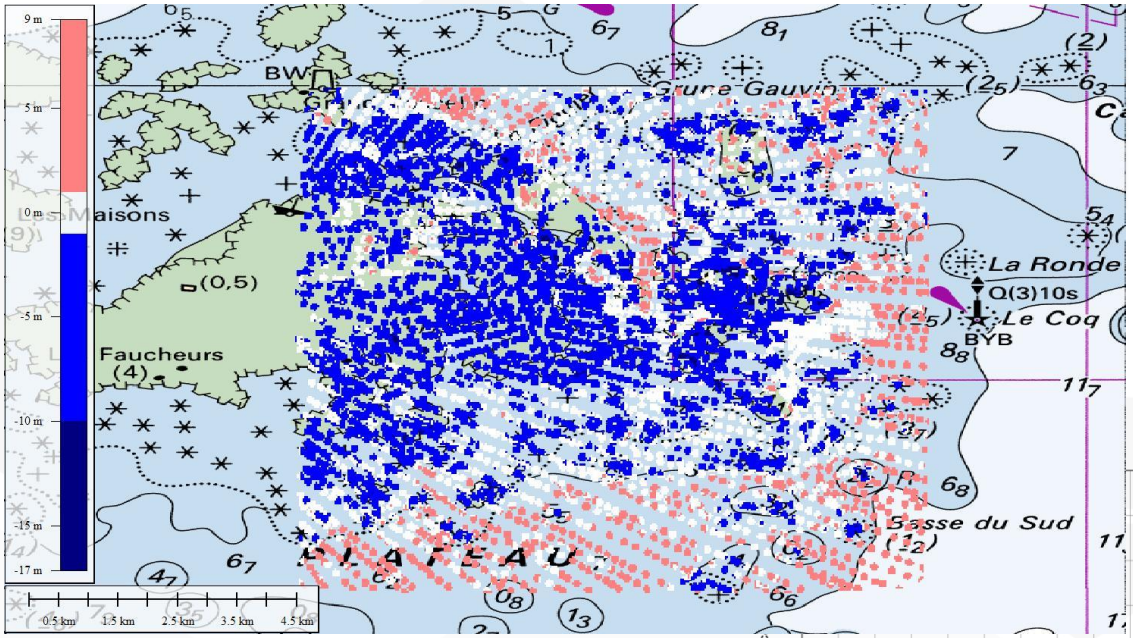
EMODnet 1/8 (2016)

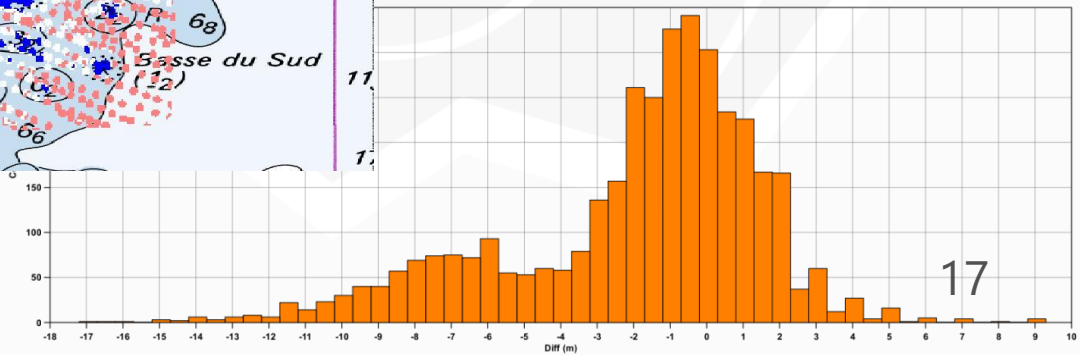
EMODnet
European Marine Observation and Data Network

Base Platform

Channel Islands

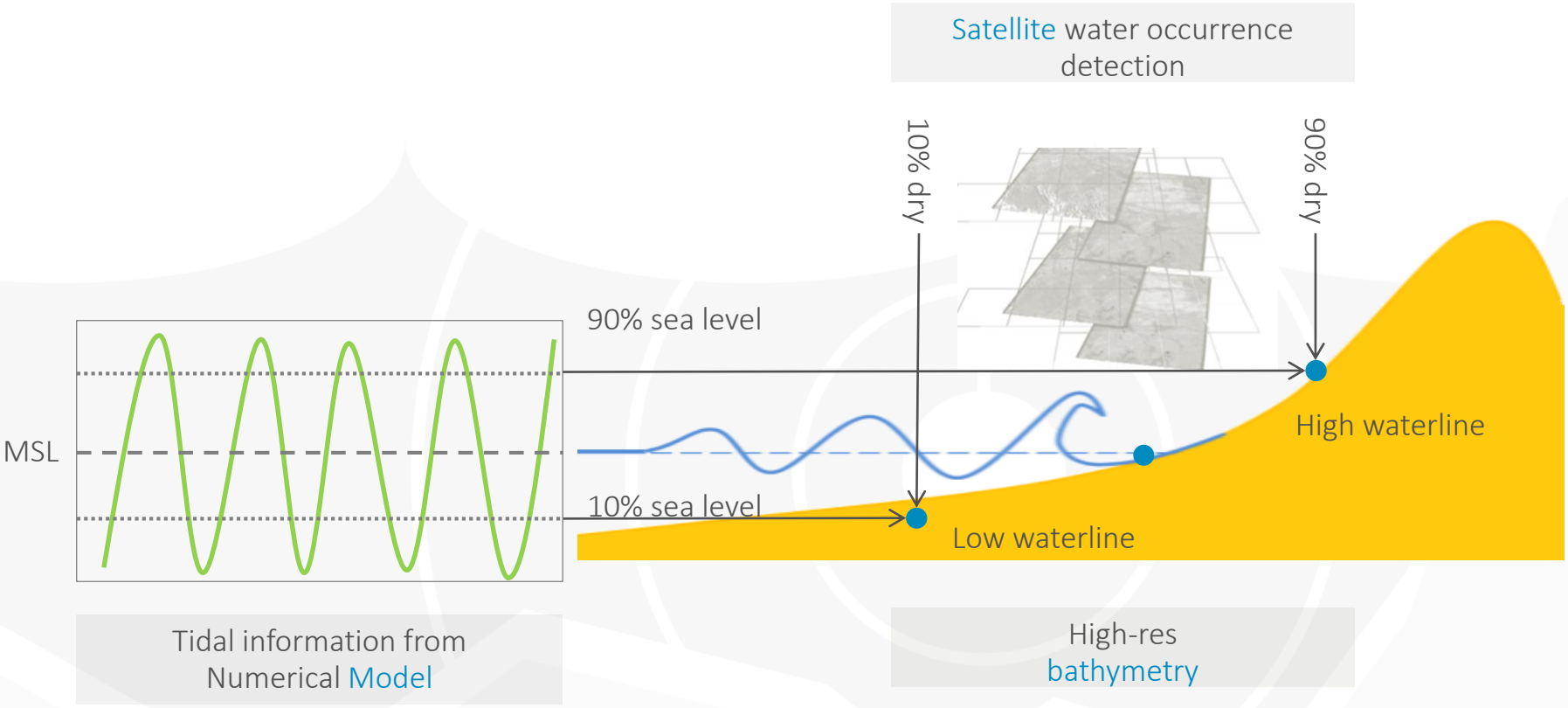






EMODnet
European Marine Observation and Data Network

Coastline estimation



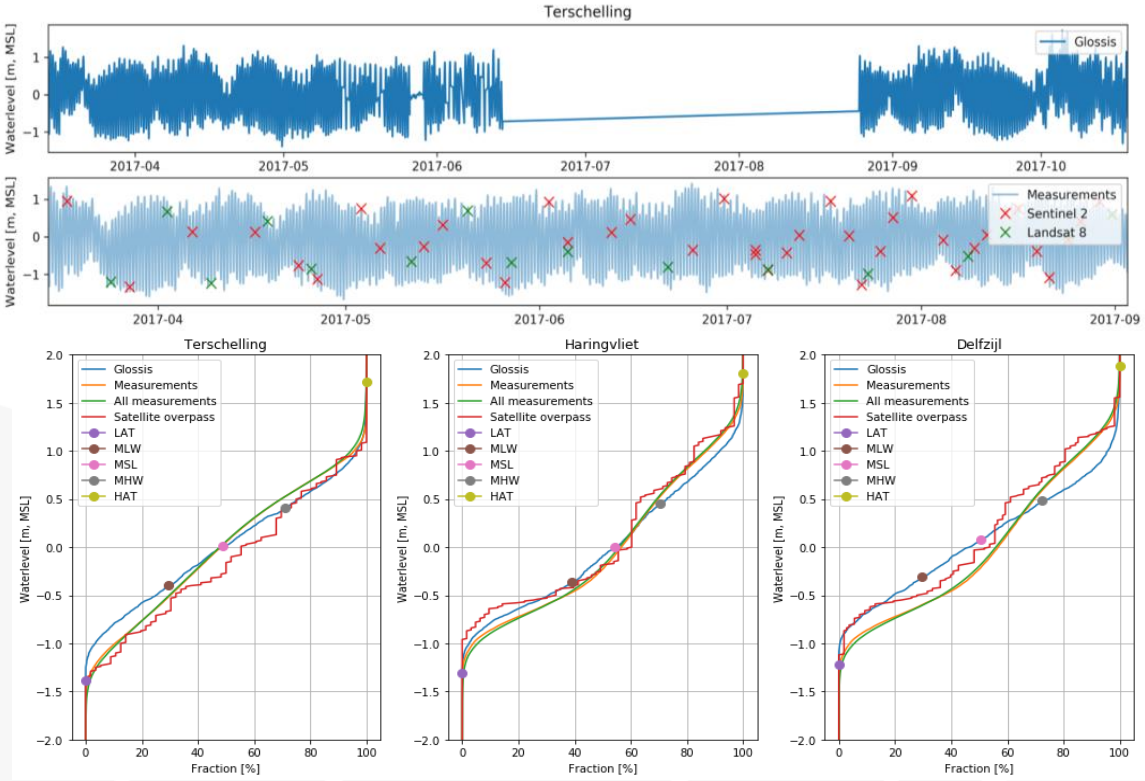
EMODnet
European Marine Observation and Data Network

1. Gather satellite data

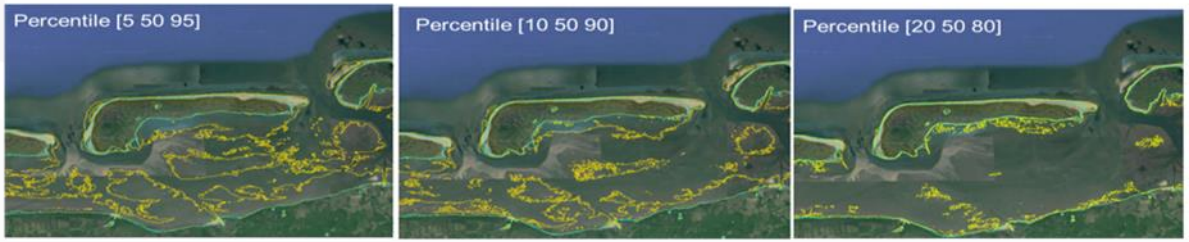
2. Detect Water bodies

$$NDWI = \frac{\rho_{green} - \rho_{nir}}{\rho_{green} + \rho_{nir}}$$

3. Relate satellite passage to water level

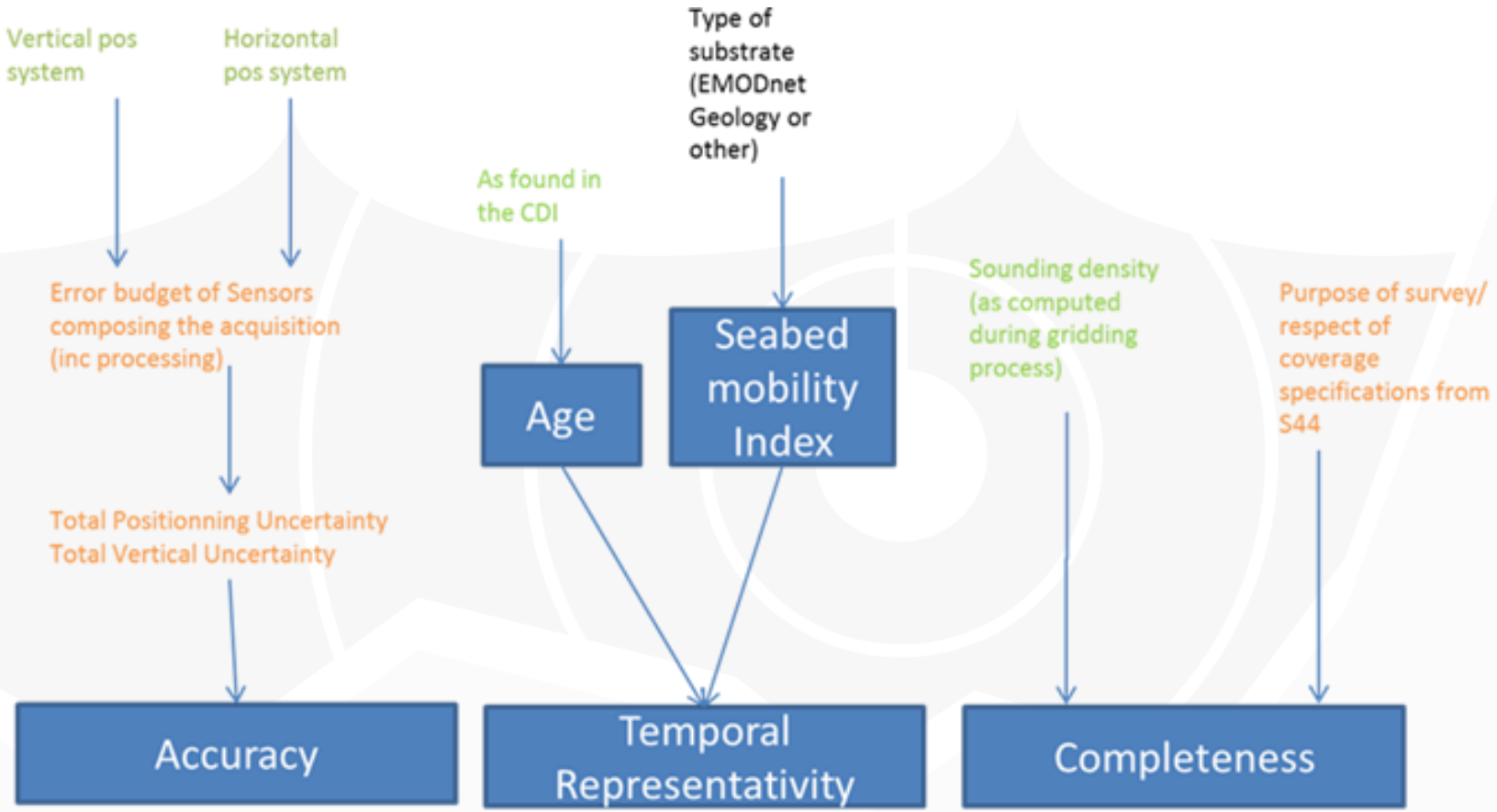


4. Extrapolate water bodies limits to defined tidal levels



EMODnet
European Marine Observation and Data Network

DTM confidence estimation



EMODnet
European Marine Observation and Data Network

QI_horizontal	QI_vertical	QI_age (provider expresses it through	Respect of a standard (abstract)
Unknown or > 500m (That is grossly equivalent to TACAN, OMEGA systems or similar)	0: Unknown, plummet, leadline	> 30 y	Purpose of the survey unknown (historical survey with no associated information).
between 500m and 50m (That is grossly equivalent to LORAN, DECCA systems or similar)	1: SBES Low Frequency, SDB (similar than 2+5%d)	10-30 y	Transit and/or opportunity
between 50m and 20m (That is grossly equivalent to natural GPS systems)	2: MBES low frequency (lower than 100kHz) (similar than 1+2%d)	5y -10 y	Bathymetric/morphologic survey
< 20m (GPS with correction) (That is grossly equivalent to aided GPS system DGPS, RTK …)	3: Lidar, SBES High Frequency	0y – 5y	Hydrographic survey or compatible with hydrographic standards
	4: MBES High frequency (higher that 100kHz) (1+0.5%d)		

EMODnet
European Marine Observation and Data Network

Visit us: www.emodnet-bathymetry.eu