Multi-scale and multi-disciplinary investigation of the southwest Portuguese Continental shelf, the MINEPLAT project

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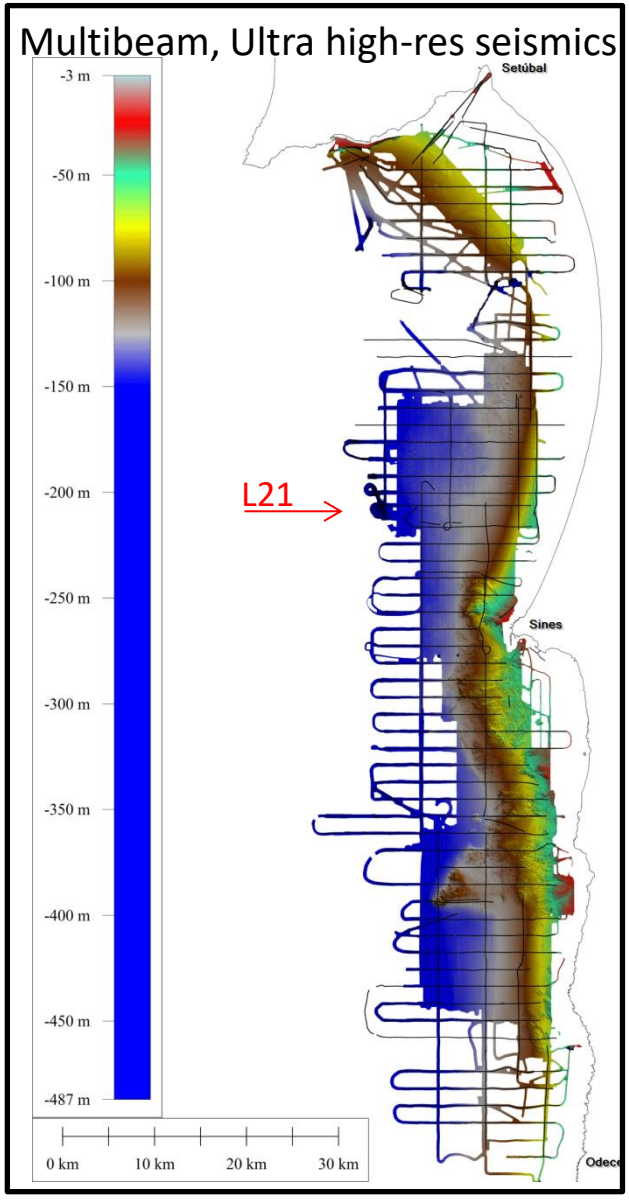
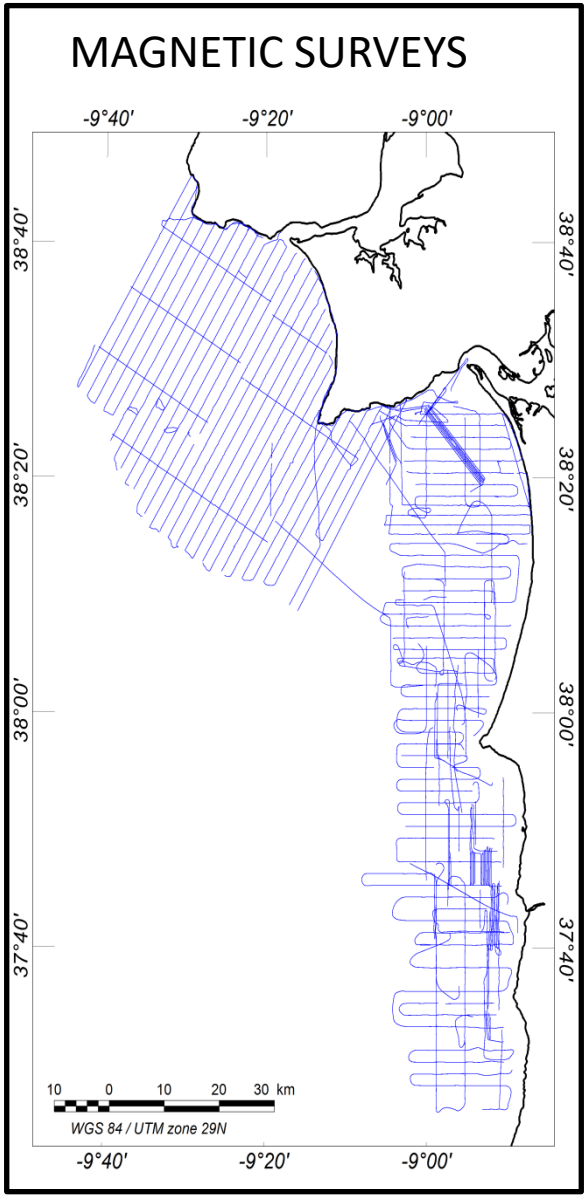
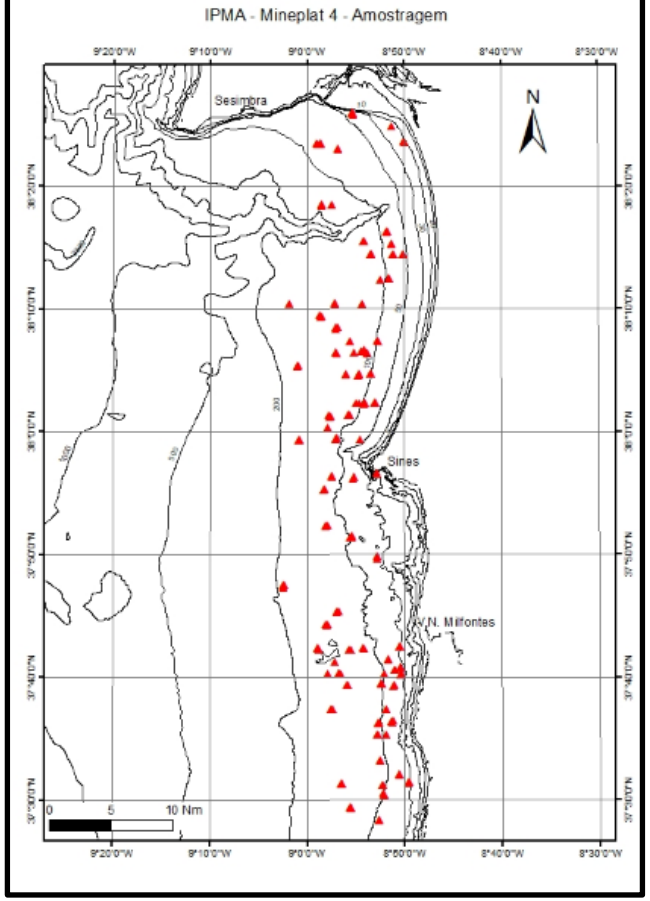
Figure 1- Maps of surveys carried out during MINEPLAT marine campaigns





- GRANULOMETRY
- X-ray diffraction
- ICP-MS- Bulk rock
- Mineral chemistry
- LA-ICP-MS in minerals



Understanding the distribution of mobile sediments on the shelf - 1

Fig. 2a. SW Portugal (bathymetry from www.emodnet-bathymetry.eu
Fig. 2b. Seabed substrate from www.emodnet-geology.eu
Fig. 3. Acoustic backscatter on top of multibeam bathymetry; note:

a) SORTED BEDFORMS: the wavy high and low backscatter (sand and fine grained sediments) perpendicular to SE directed dominant current;
b) low-stand river bed filled with fine sediments;
c) rocky outcrops (paleo-escarpments) with patchy sand cover and outlined by sand.

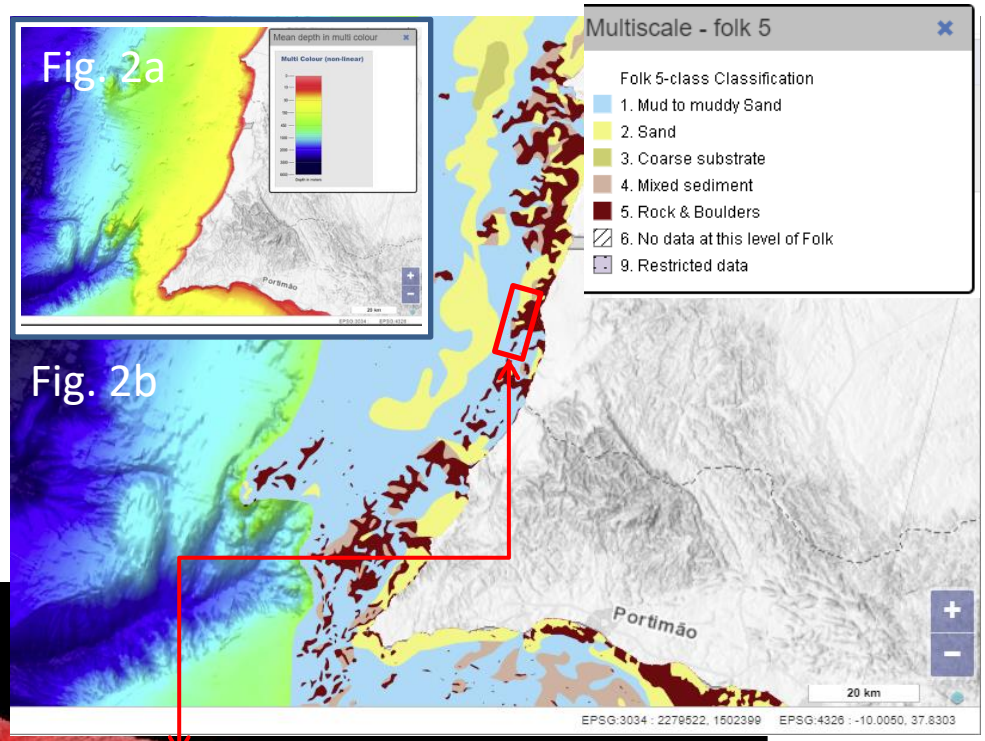
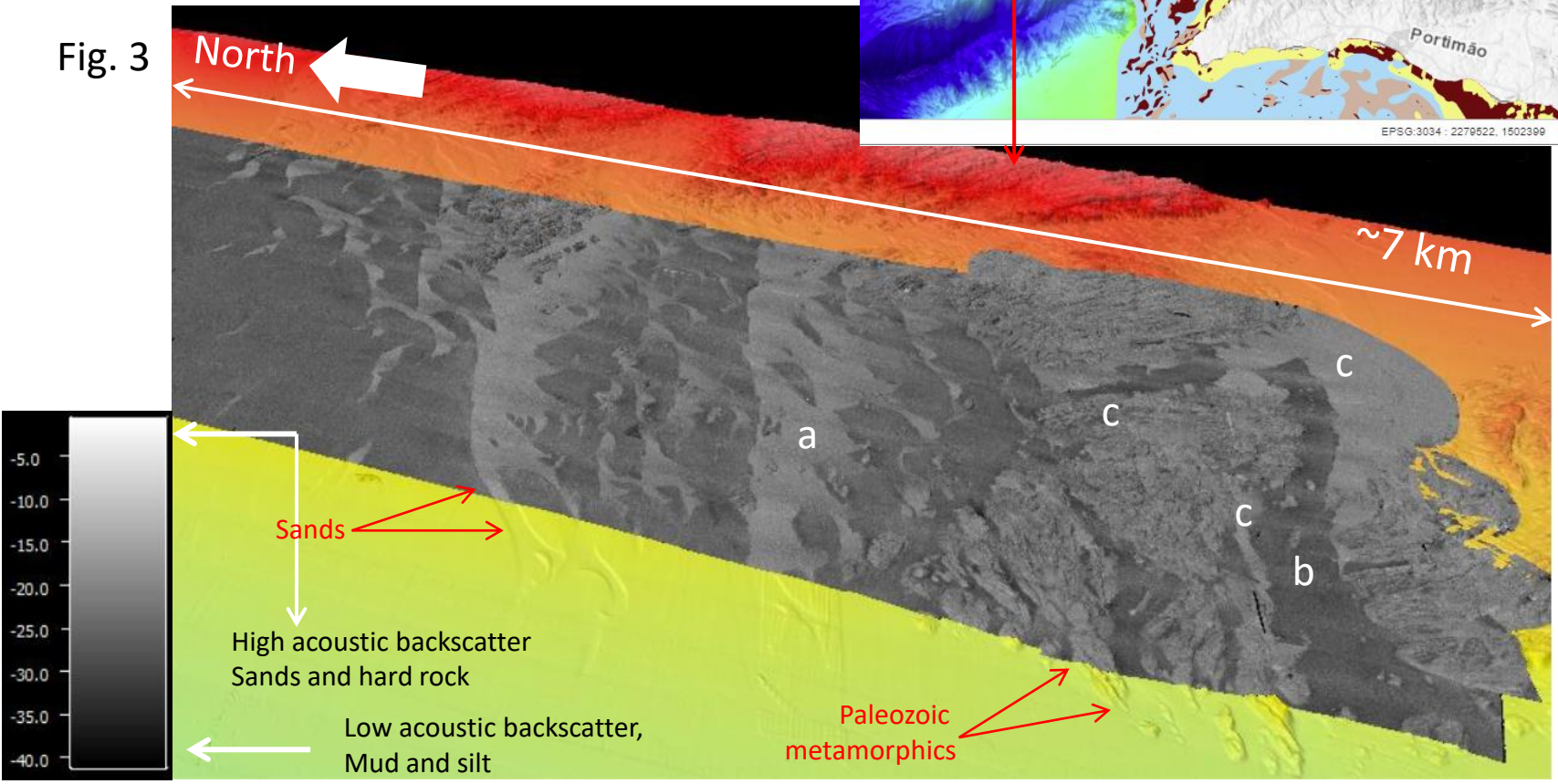


Fig. 3



Understanding the distribution of mobile sediments on the shelf - 2

- SORTED BEDFORMS: geometric parametrization and lithological description using multibeam bathymetry, acoustic backscatter and Ultra-high-resolution seismic reflection ; for line position (L21) see fig. 1.
- Types of sedimentary bodies strongly depends on water column depth
- Good quality sand can be found in sediment prisms nearshore

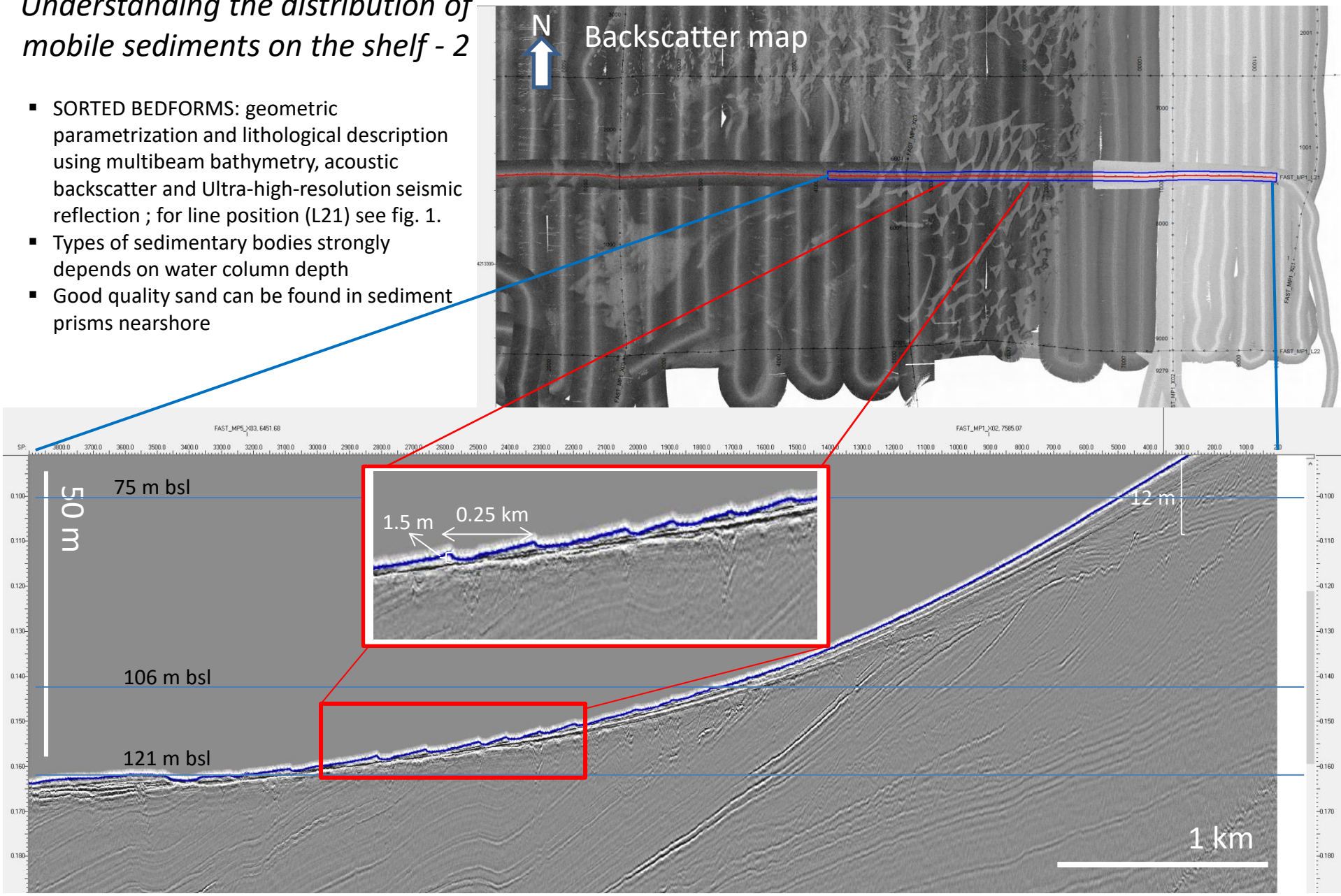


Figure 4- Backscatter map and ultra high resolution seismic profile of mobile sediments off Alentejo

- individual multibeam (**MB**), individual backscatter (**BS**) or backscatter on top of multibeam allow for enhancing different details of objects and processes, such as acoustic/sedimentary facies (**Fc**), remarkable shapes (**Sh**), boundaries (**Bd**) and dispersal (**Dp**).

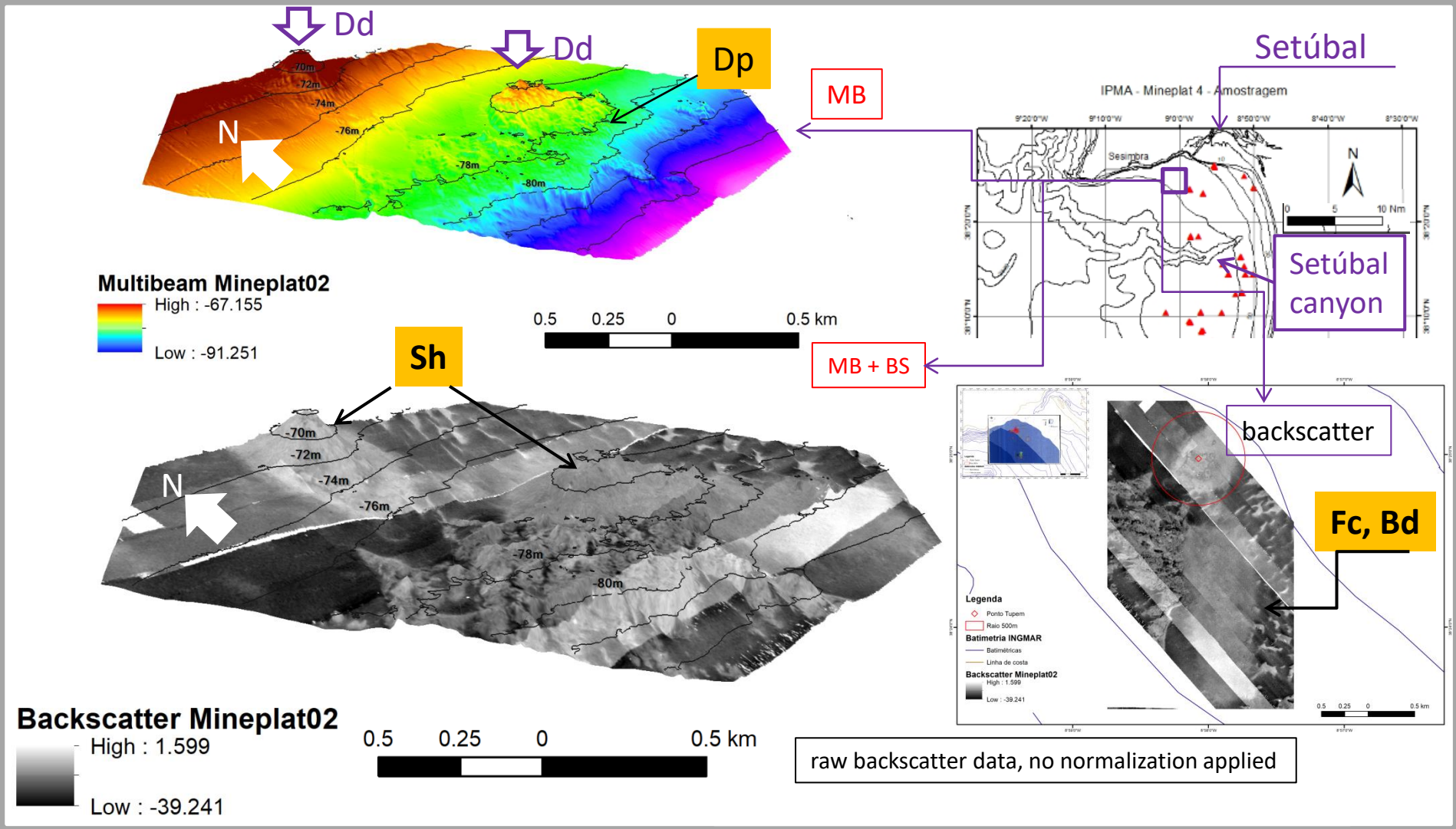
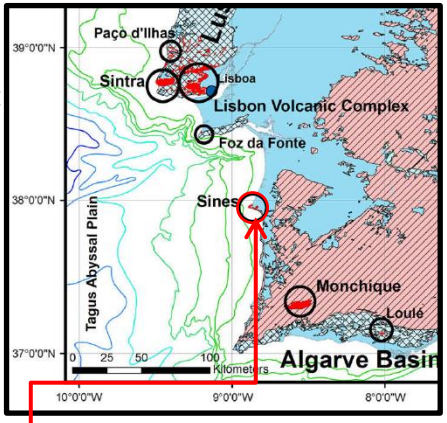


Figure 5- Preliminary reconnaissance of dredge disposals on the Alentejo continental shelf.

Redefinition of the Sines magnetic anomaly

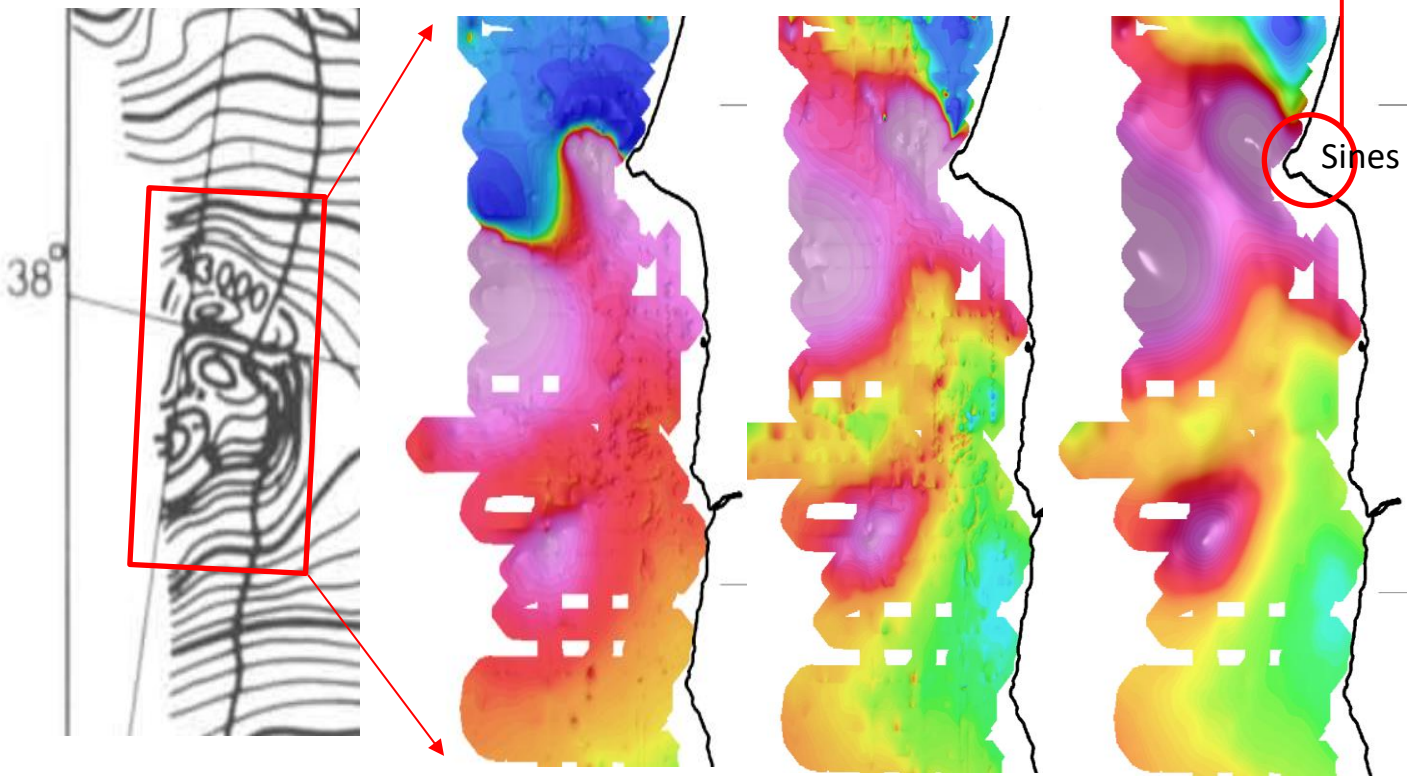
- The Sines magnetic anomaly is one of several that correspond to magmatic complexes of the West Iberia Alkaline Province.
- The Sines Complex is covered onshore by a Holocene dune field and industrial complex not allowing for magnetic survey.
- We use these data to constrain the Sines complex geometry offshore



(From Miranda et al 2007)

The Sines magnetic anomaly in the aeromagnetic survey of Portugal (Miranda et al 1989)

The Sines magnetic anomaly in the MINEPLAT marine magnetic survey



Total field anomaly

Reduced to the pole anomaly (rtp)

rtp, upward continued to 600 m height

Figure 6- Results from the magnetic survey

References

- Miranda, J.M. Galdeano, A. Rossignol, J.C., Victor, L.M. (1989). Aeromagnetic anomalies in mainland Portugal and their tectonic implications. Earth and Planetary science letters, 1989, 95. 1-2: 161-172.
- Miranda, R., Valadares, V., Terrinha, P., Mata, J., Azevedo, M.R., Gaspar, M., Kullberg, J.C., Ribeiro, C. Age constraints on the Late Cretaceous alkaline magmatism on the West Iberian Margin. Cretaceous Research 30 (2009) 575–586.