



A highly detailed multibeam bathymetry survey of Azores Triple Junction area

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The STRIPAREA cruise was sailed on board the N/O Suroit, as a result of a international collaboration involving CIMA (UALG), CGUL (ULIS) and the French Research lab: UMR6538/CNRS from Brest. This collaboration started also with the PMEL/NOAA lab, Newport, USA, in the early stages of the preparation of the SIRENA project, which comprised the installation on the north Atlantic of an autonomous hydrophone network. The presence of R/V Le Suroit in the Azorean waters, following the MARCHE 1 cruise last April, was a major opportunity that allowed to take advantage of the quality and reliability of its hull-mounted EM300 swath bathymetry system. Benefiting from the already long-lasting Franco-Portuguese collaboration, it was relatively straightforward to set up with IFREMER, the STRIPAREA cruise as a piggy-back operation to the MARCHE1 cruise. The main objectives of the STRIPAREA cruise dealt with the kinematics and tectonics of the Eurasia/Africa/North America triple junction (TJ). The Azores Archipelago is believed to be the location of the third arm of this RRR triple junction. It is also believed that this triple junction has progressively migrated to the north since its onset about 30 Ma ago and that this migration is related to the build-up of the Azores plateau. However, the current TJ location is still a matter of debate. It was therefore considered that a highly detailed multibeam bathymetry survey, together with along-track sea-level magnetic anomalies measurements would reveal the existence of structures related with the evolution of the TJ. The EM300 system performs optimally around 1500 m water depths, hence given the average range of water depths between 1000 and 2000m on the survey

area, we were able to produce a high resolution grid of 50 m x 50 m. This grid will enable the detailed morphological analysis of volcano-tectonic features in the ATJ area. Analysis of the data is ongoing but several preliminary observations can be outlined:

- 1) The Terceira axis does not intersect the MAR axis neither the North Azores Fracture Zone. It is disrupted by a series of NW-SE faults.
- 2) The faulting pattern is complex with fault families identifiable in three main directions: WSW-ENE, NW-SE, WNW-ESE disrupting nearly N-S MAR generated Abyssal hill fabric and controlling several basins.
- 3) The surveyed region is largely depleted from volcanic constructs. This is in clear contrast with the much higher magmatic budget observed in the adjoining MAR axis to the West and Faial Ridge to the East.