

Changes to the Captions

- **Figure 1: Bathymetric map with the location of the two survey areas (western corridor and eastern corridor).** Magnetic anomaly picks are from Sauter et al. (2008). The nature of the seafloor was deduced either from the side-scan images when available (Sauter et al., 2013) or from the multibeam bathymetric data (Cannat et al., 2006). The dredges numbers and the proportion of rocks by weight, shown as pie charts, are from Sauter et al. (2013). We have only shown the dredges for which we have measured the magnetic properties (see table 1 and Fig. 3 and 5). **The black lines in the two enlarged boxes are the TOBI tracks.**
- **Figure 2:** 2D magnetic profiles recorded within the two survey areas **along the profiles shown in Fig. 1.** Magnetic data (continuous red lines) have been upward continued to an altitude of 1200 m below the sea level. Broken lines correspond to the magnetic anomaly predicted by a 14 mm/a seafloor spreading model calibrated on the volcanic seafloor (profile 2-5) with a 500 m thick source layer and a 10 and 5 A/m magnetization for the axial and off axis blocks, respectively. Black solid lines correspond to a model based on a 2 km thick source layer for which a solely induced and uniform magnetization is applied (1.5 A/m). Interpretations from the side-scan images are shown below the bathymetric profiles (from Sauter et al., 2013). The vertical grey area indicates the location of the axial valley.
- **Figure 3:** Inverted magnetization for the western (a) and eastern survey area (b). Colored strips show the calculated magnetization values along the magnetic anomaly profiles (black lines). Shaded relief images are shown in background. Red circles are sized relatively to the NRM values of dredged basalts whereas green circles correspond to NRM values measured on dredged peridotites (see table 1). **The dredge number is shown in the white box near the circles.** The thin black lines indicate the magnetic anomaly. The red lines corresponding to the edges of the volcanic seafloor are from Sauter et al. (2013). Picking of magnetic anomalies is the same as Figure 1. As a comparison **in the Fig. 3b** a 14 mm/a reversal **pattern** is superimposed on the bathymetry.
- **Figure 4:** 3D bathymetric view of the two survey areas. The inverted magnetization (colored strips) and the edges (from Sauter et al., 2013) of both the corrugated surfaces (purple lines) and the volcanic seafloor (white lines) are draped on the multibeam **bathymetric** map. The black lines indicate the edges of the TOBI side-scan swath.
- **Figure 5:** (a) Natural remanent magnetization (NRM) ~~in samples~~ from dredged peridotites, basalts and gabbros as a function of the magnetic susceptibility (K). (b) Koenigsberger ratio (Q) for serpentinized peridotites (SP), basalts (B) and gabbros (G). Note that Q has a logarithmic scale.
- **Figure 6:** Comparison between the deep-tow **observed magnetic** ~~measured~~ field, **along the profiles 2-2 and 2-5**, and the **magnetic** computed field along the TOBI path for different depths of inferred magnetized dipoles from 0 to 2000 m below the seafloor. **Along the same profiles for different depth is also reported the magnetization solution.** The shallowest and deepest dipoles lead respectively to the appearance of high frequency oscillations in the computed field and loss of resolution in both the computed field and the magnetization solution. The best compromise is found for dipoles located around 500 m below the seafloor for the profile **2-5** acquired above the volcanic crust and 1000 m for the profile **2-2** collected above the exhumed mantle derived rocks. A significant loss in resolution is observed for dipoles located below 1000 m in the case of the volcanic crust whereas both the computed field and the magnetization solution are quite well preserved up to 2000 m for the case of exhumed mantle seafloor.