



Central Indian ridge versus Reunion hotspot : Past and present interactions

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Samples of the foreseen interaction area between the Reunion plume and the Central Indian Ridge (CIR) from former cruises have led to models of mixing between hotspot and ridge derived products (Murton et al. 2005, Nauret et al ; 2006). R/V Revelle cruise RR11Knox (2007) has completed the sampling of these studies and recently He data (Füri et al. 2010) supported either Murton et al.'s model of some Reunion like enriched material present under the northern tip of the CIR westernmost segment,) or the model of Nauret et al. of a flux of plume material toward the southern tip of the same segment. This flux of ^3He enriched material through the off axis Three Magi and Gasitao ridges flows eastward to the ridge and then southward along the segment. Radiogenic isotopes establish that this material derives from the Reunion plume and traveled from the present position of the plume to the spreading axis. Witnesses of this transfer are the off axis ridges produced by melting of the underlying mantle through tension cracks in the lithosphere and maybe also the island of Rodrigues.

Two sections across the CIR at the same latitude show periodic feeding with enriched material (cordier et al. 2010). Whereas Sr and Nd isotopes were not entirely conclusive on the origin of the enriched material, Pb and Hf reveal its origin. New data on Reunion plume from submarine rift zones of the eponym island also reveal that this plume is far from being as homogenous as thought (Smietana et al. 2010).