4.7 Rare Earth Element Studies in the Crozet Region

Main objectives of study

- To investigate the Rare Earth Element (REE) and Nd isotope signatures of water masses encountered along the Crozet plateau.
- To examine water mass paths and to investigate the extent of seawater – margin interactions.

This work is lead by Dr. Valerie Chavagnac at SOC in collaboration with Dr. Catherine Jeandel at LEGOS, Toulouse, France.

Water samples:

Seawater samples were collected during D285 and D286 for REE studies. The samples were collected from the TiCTD and from the Stainless CTD. For REE studies 1 litre of unfiltered seawater and 1 litre of filtered seawater (0.4 μm) were collected from the TiCTD casts at M5, M6, M9 and M10 (Table 4.7). For the Nd isotope studies 20L samples were taken directly from the Stainless steel CTD. These were drawn into 25 litre carbuoys. The samples were unfiltered and un-acidified; they were wrapped in black plastic bags to block out the light. Samples were collected at M5, M6 and M10.

Table 4.7 REE sampling during D286

Station number	Station Name	Depth of cast (m)	Sampling Depths (m) for REE	Sampling Depths (m) for Nd isotope
15552	M9	3200	25;200;500;1000;1500; 2000;2500;3000;3200	
15563	M10	2897	15;125;200;500;1000; 1500;2000;2500;2897	
15581	M5	4220	100;500;1000;1250;1750; 2500;4000;4220	
15564	M10	2908		500;1000;1500;2000;2500;2908
15582	M5	4226		500;1000;1250;1750;2500;4000

Sediment samples:

Due to the poor performance of the megacorer (see separate section) limited sediment samples were available for this study. Two cores were taken at M6 and stored cold. Transportation problems may lead to these cores being transported back frozen to SOC. Sub-cores were taken at M5 and frozen. No cores were obtained at M10.

All analysis for these studies will be undertaken by Dr. Valerie Chavagnac back at SOC.