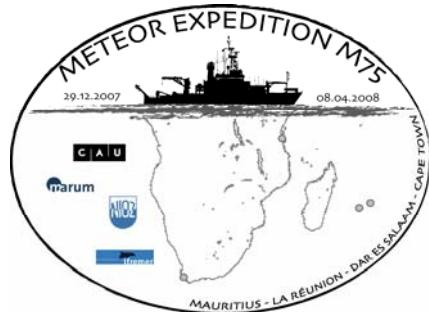


## Expedition Meteor M75/1 – ERODER 2

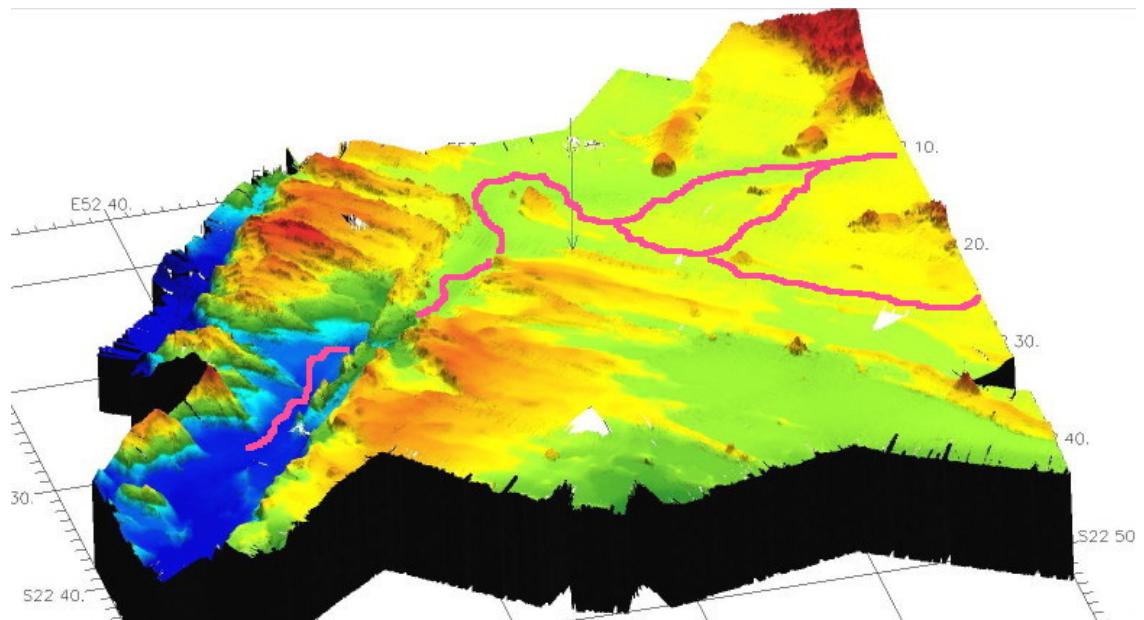


### 3. Wochenbericht: 7.01.2008 – 13.01.2008

The M75/1 is **also named** ERODER 2, as it is part of a more complete geological program named ERODER. The main goal of the ERODER 2 cruise is to collect more detailed bathymetric, backscatter, mud-penetrator data and cores on deep-sea fans and seamounts which were discovered in 2006 around La Réunion Island.

Last Sunday, we reported that the cruise had to deal with changing weather and sea conditions. We experimented the same conditions during the past week. We started with 4-5 Beaufort and swell between 2 and 3 meters. At that time, we were exploring the distal part of the Cilaos deep-sea fan between 4000 m and 4500 m water depth. The fan covers an area of more than 15000 km<sup>2</sup>, 6 times the island area (2500 km<sup>2</sup>) and 40 times its source area on island. Elongated volcanic ridges divide the turbidite system into three parts: western, axial and eastern. The lower western fan, our target, is confined between a volcanic ridge and a submarine volcano massif. It is characterized by one major straight channel branched out downstream. Data collected in 2006 indicated that the main channel was continuing its course beyond the surveyed area. Our goal was to track the path of the channel down to its end. This part of the survey was very exciting, as the course of the channel is largely controlled by pre-existing morphology, the channel changes several times its main course and because we were exploring a “blank area” (no data at all). We successfully tracked the channel to its distal end, which is located at more than 5000 m water-depth in a complex fracture zone linked to the history of the oceanic plate. Our channel hunt pushed us far southward the previous survey, delivering very interesting information on the oceanic structures in the area. Acoustic data suggest that the Cilaos turbidite system is quite sandy. This is confirmed by several cores collected and described on board last week.

Last thursday and friday, we left our main working area to go closer to the southern coast of La Réunion Island. A deep low pressure system, located westward the island, generated a tough north flux.



*3D view of part of the survey area, showing relief alignments related to the oceanic plate history and the complex interaction between the pre-existing morphology and the today present active Cilaos channel (in pink).*

The wind increased up to 8 Beaufort, before we left the area. Protected by the volcanic island, we found very good working conditions and used for the first time a circular dredge brought with us from France.

Two dredges were realized in the south-western flanks of La Réunion edifices on the co-called “Ride de l’Etang Saleé”. This submarine ridge, about 15 km long and a few kilometers wide has an elongated shape radial to the island and was previously interpreted as an ancient rift-zone of Piton des Neiges volcano. Samples of rocks were collected during both dredges. Three other dredges were operated on the Piton de la Fournaise rift-zones. Two dredges were realized on the southern ridge of the NE rift-zone (Ride des Anniversaires), one near the base (many good samples) and one near the top (successful but only two samples). The target of the third dredge was the northern part of the SE rift-zone. In spite of difficult conditions, two samples were collected. On Sunday 13 January, two other dredging operations were successfully conducted on huge seamounts located 170 km westward La Reunion, one seamount already dredged on January 3rd (henceforth called « Lasso ») and the “Moustik” seamount, which is 3200 m high !

It is our last sunday at sea on the R.V. Meteor and therefore the last sunday message of the M75/1a cruise.

