

Happy New Year from the Mediterranean! All the best in 2011 and for years ahead!

There are two grounds explaining the name of our cruise, which is “*Ristretto e Lungo*”. First of all, it is already a long established tradition of “coffee cruises” within MOCCHA project. Another motive is the working strategy - short but intensive sampling programs and long transits.

To begin with, it is hard to realise that our cruise is happening during the winter: calm sea, warm, blue sky and sun. So far we are very lucky with the weather, which for any scientific expedition is one of the important conditions determining the success of the sea-going research.

Our scientific team is quite young and international: Spain (Granada University – IACT (CSIC)), Italy (University of Milan-Bicocca and Università Politecnica delle Marche), Germany (Heidelberg University), Switzerland (Basel and Fribourg Universities), and the Netherlands (Utrecht University and Royal NIOZ). Most of our team members are students. For some of them *Ristretto e Lungo* is the first sea-going journey with a new exciting experience, hard work and a lot of learning.

The work was started in the evening of December 28th 2010, soon after the METEOR has left the port of Cadiz. The transit time to the first working area, northern West Alboran Basin, was only 10 hours and during this little time we had to unpack, install all our labs and be completely ready for “shooting the seafloor” with diverse sampling equipment, parasound and multibeam systems. We had only 50 hours in the area and our working program (as usual) was quite ambitious and massive.

Alboran Basin 28-30.12.2010

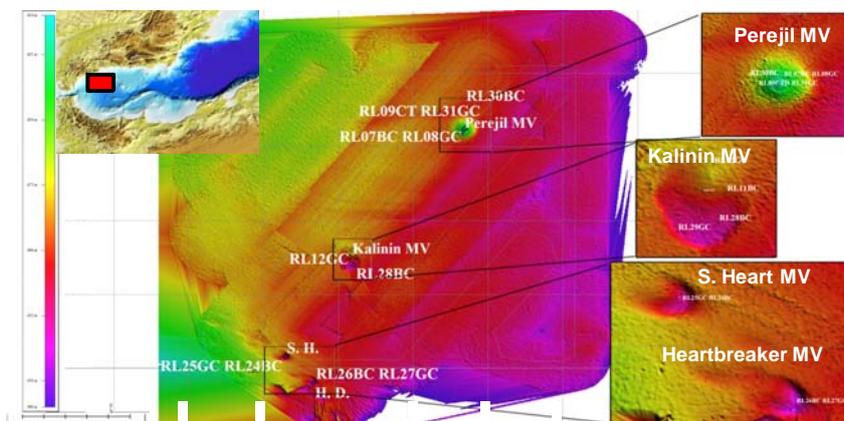


Figure 1. Multibeam profiles of the Northern sector of the WAB obtained during the Alboran part of M83/3 *Ristretto e Lungo* cruise.

Our first study area was located in the northern part of the West Alboran Basin (WAB). Previous surveys during “Training Through Research” (TTR) cruises in 1999, 2002 and 2007 demonstrated the occurrence of mud volcanoes in the Iberian and Moroccan margins behind the Gibraltar Arc. Our intention was to learn more about mud volcanoes and fluid venting in general in the WAB concentrating mainly on two contrasting mud volcanoes, Perejil and Kalinin. For the first

time, a multibeam survey with KONGSBERG EM 122 was performed in the northern Alboran mud volcano province where we discovered two new mud volcanoes with a heart shape (Figure 1). That’s why the first one was preliminary named “S. Heart” and the second one is “Heartbreaker Depression”. We also performed video surveys crossing summits of Perejil, Kalinin and one of the new mud volcanoes, which were followed by sampling with box- and gravity corers and a CTD station above the Perejil mud volcano. Sediments and water samples will be used for a wide-range of inorganic and organic geochemical studies. Hydrocarbon gas and pore water chemistry together with lipid biomarker studies will speak for the origin of migrated fluids and microbial processes in the close subsurface. On board labelling experiment with radio labelled substrates added to sediment samples will give us a perspective about current modes of anaerobic methane consumption in different mud volcanoes. For the first time we found some authigenic carbonates and sulphide-pyrite. Also for



Figure 2. Pyrite concretion and chemosynthetic shells found at the summit of Perejil mud volcano.

the first time alive chemosynthetic shells and methane-associated tube worms were sampled and described in the Perejil mud volcano (Figure 2).

Subsequently METEOR moved to the second working area near Mallorca for the recovering of two biological moorings and to do a CTD station.

New Year's Eve on METEOR

Something we will never forget! Indeed, it is very spectacular to make a step in the New Year being in the middle of the Mediterranean Sea! This was an excellent, amazing Eve with lots of fun. The party was not long though since the first CTD station was scheduled at 8:00 on the first morning of 2011.

Mallorca area 01-02.01.2011

The moorings East of Mallorca were efficiently recovered and we moved to the SE of Malta area.

SE of Malta 04.-08.01.2011



Figure 3. Coral fragments collected from the top of the discovered mound.

Here we did two multibeam profiles. These data revealed the presence of ca. 20 m high mound and a few reef-like structures at the water depths of 360 m. TV-controlled box-corer profiles accompanied with the sampling of the mound top had confirmed that the structure is a carbonate mound covered by hard carbonate pavements with debris of cold water corals most likely affiliated with *Madrepora oculata* specimens (Figure 3). Only a very occasional living fauna was found.

From our multibeam data we also selected potential sampling stations for the BIOFUN project and for paleoceanographic studies. The aim of BIOFUN is to sample pelagic sediments from 1200 m to 2800 m of water depth to screen biological diversity in the deep Mediterranean Basin. An almost 24-hour/day sampling program kept all of us awake during these days. Finally, everybody is happy and our biologist has enough samples to work with.

For BIOFUN at each of the chose biodiversity areas, three large box-corers (\varnothing 50 cm) had to be taken at the same site... At one site METEOR and its crew managed to take this very literally. The second box-corer with camera came to the seafloor EXACTELY (within 30 cm) to the same site as the previous, which is quite a challenge at a water depth of 1200 m, but under favourable weather conditions (Figure 4). Besides professionalism of METEOR's staff, the atmosphere on board is excellent!



Figure 4. Preceding box-corer sampling site.

Undoubtedly, it is great to be here!

Gert de Lange, Alina Stadnitskaia and the scientific party of *Ristretto e Lungo* M83/3 cruise