

METEOR Cruise 77/1

Talcahuano (Chile) – Callao (Peru)

Weekly Report No. 2: 27. 10. -02. 11. 08



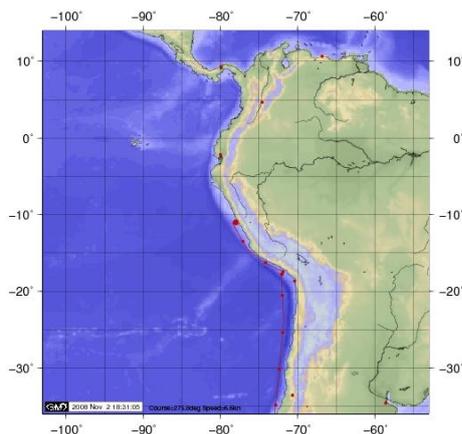
FS METEOR

Olaf Pfannkuche

We continued our passage to the first working area until Monday evening (27-10-08) when we reached our first station in 17°50'S/072°05'W at 21:30h in the Peruvian EEZ. We started station work with a CTD/RO cast by 2000m depth commencing from here an upslope transect with multi-beam EM120/EM710 and Parasound to about 130m depth. We performed CTD/RO casts on the transect line near the 1000m, 800m, 500m, 300m and 200m depth contour. After producing a bathymetric map based on the multi-beam survey and with a more detailed knowledge of the spatial extend of the OMZ (see below) we surveyed the 18°S-transect until Thursday (30-10-08). We took benthic samples with the TV multi-corer and gravity corer by 1000m, 800m, 500m, 300m, and 200m, depth, drove three OFOS transects on the upper slope, continued our CTD/RO survey and deployed the first BIGO-Lander. With the successful retrieval of the BIGO Lander we left the 18°S-transect in northern direction heading to 11°S. It was originally planned to investigate a transect in the vicinity of 12°S but since the course of a 5 miles coastal zone which limits our research area expands too far out, due to some islands, we could not investigate water depths beyond 150m. Therefore we shifted our area of investigation to 11°S where we could sample to a depth of 80m.

We shortly interrupted our approach to 11°S at 15°S where we took a series of samples by 500m depth with gravity corer, multi-corer and CTD/RO.

We reached our first station at 11°S on Saturday evening (01-11-08) at 21:00h and started station



work with a CTD/RO cast by 1000m depth followed by an upslope transect with multi-beam EM120/EM710 and Parasound to about 85m water depth on the shelf and with CTD/RO casts near the 700m, 800m, 500m, 300m, 200m, 150m and 80m depth contour. The transect extends across 40 nautical miles. The multi-beam/Parasound tracks were continued until Sunday afternoon to produce a bathymetric map of the area which will lay the foundation of our benthic work for the next week.

Fig. 1: Cruise track towards the 11°S-transect (last position afternoon, 02-11-08).

During the 1st week of M77-1 we completed a short survey using a CTD/Rosette water sampler (a device which measures temperature, salinity and pressure and especially for this cruise includes oxygen sensors and takes water samples) across the southern part of the Peruvian continental shelf at 18°S. We encountered the following spatial extend of the low oxygen zone (Fig. 2) in the water column across the shelf and into the open ocean. We found that dissolved oxygen was rapidly depleted from the surface waters so that by 80m depth there was less than 0.1% saturation (the percentage of the amount of oxygen that would be present if the water was at the surface and in equilibrium with the atmosphere). The OMZ continued to approximately 400 m depth after which oxygen increased again in the water due to supply via mixing with oxygen containing deep waters.

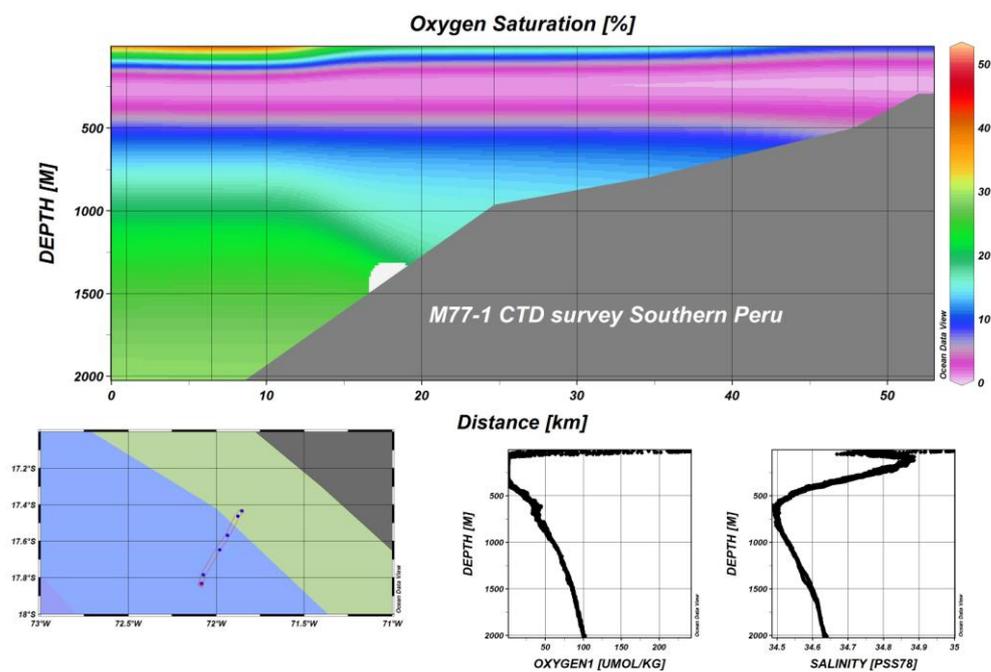


Fig. 2: The present structure of the OMZ at 18°S

On behalf of the science party and **Meteor** crew, our very best regards.

Olaf Pfannkuche