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Object: Short Term Scientific Mission report

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The Short Term Scientific Mission I just achieved in Turkey from October 27th to November 19th had many purposes:

- Joining the first Leg of the Marsitecruise mission in the Sea of Marmara on board of the N/O Pourquoi Pas ?. During this Leg, focused on the deployment of geodetic sonar beacons, we were planning on acquiring some new sub-bottom profiles to precise the coring targets for the 3rd Leg.
- Working at the Istanbul Technical University (ITU) with Mr. Sinan Ozeren on the calculation of the lithospheric elastic thickness in the Marmara area.
- Finally, to be fully involved in the 3rd Leg of the Marsitecruise mission for last-minute decision, core recoveries and sub-bottom profile processing on board.

Most of this objectives were fully completed and should lead to future work and publications.

During the first Leg, I was assigned with a shift at the numerical on board journal: eight hours a day, I was in charge of keeping it up-to-date. I made good use of this duty, using it as a way to enquire about the technical details of the various operations carried on: OBSs and bubble acoustic recorder (BOB) deployment, geodetic beacons deployment, configuration and testing and multibeam surveys. Unfortunately, the Leg schedule and itinerary did not allow us to include some sub-bottom surveys around the 3rd Leg initial coring targets. However, due to a problem with the ROV/VICTOR (the main cable was damaged), no dive was carried during the first Leg and, as a replacement, we headed to the Kumburgaz basin to retrieve two cores for seismoturbidite studies. After processing and analyzing a sub-bottom profile on the expected locations, we decided to move one of the targets to avoid layers possibly rich with gas. The other core was extract at the same location as the Marnaut-MNTKS21 core in order to perform some magnetic susceptibility anisotropy analysis on a fresh core. The ship crew was in charge of the coring but, with people from the Mineral Research & Exploration General Directorate in Ankara, Pierre and I took care of cleaning, indexing, cutting and storing the core sections.

As the ROV dives had been canceled during Leg 1, I managed to stay in the Pourquoi Pas ? for the first two days of the second Leg. I was included in one of the ROV shift and assisted H  l  ne Ondr  as

for image extractions and annotations during the coring of short sediment columns and the verification of the geodetic beacon correct states (straight positioning and not too much sunk in the sediment).

While the 2nd Leg was carried on, Pierre and I were working at the Istanbul Technical University. The first days were spent with Gulsen Ucarus, Namik Çağatay and Kadir Kürşad working on last details for the third Leg, more precisely on the exact location of the eastern cores. As planned, I started working with Sinan Ozeren on the elastic thickness on the Sea of Marmara. He provided me with a software by Jon Kirby and Chris Swain which computes the isotropic elastic thickness from gravity data using wavelet transforms. Unfortunately, the software was not so straight-forward to use and we had little time. We finally manage to run it but didn't had the time to study the first results. However, Sinan showed great interest in the project. I will continue to work on this from Marseille and we are planning on meeting again soon to carry the project all the way to a future publication.

During the 3rd Leg, I was a member of one of the "core team". From 8am to 12am and from 8pm to 12pm, if coring was carried on, we were retrieving the core after the coring by the ship crew and preparing the sections for storage. The cores were not opened on board. Moreover, I was responsible for the SIG database and was thus in charge of preparing exact coordinates for sub-bottom surveys, processing the sub-bottom surveys and indexing the trajectory in the SIG software, checking the core coordinates... Before each coring, we gathered with scientists from the ITU and from the Institute of Marine Sciences and Technology in Izmir to validate the final location in regard of the new sub-bottom profiles. The main difficulty we were confronted to was the bending of one core in the Imrali basin. In this area, which shows a beautiful scarp were we were hoping to reach some deep horizons, we probably reached only the first targeted reflector whose age is estimated to be around 105 ky. The rest of the plan went well. Seven cores are targeting horizons estimated to correspond to 100 000yr climatic cycles and we are hoping to have reach further than the first one. Two cores should contain a good recording of Holocene sedimentation and will be used for seismoturbidite studies.

During the Mission, Celâl Şengör from ITU wanted to test his idea that the Imrali canyon meanders were actually the result of small bending in that area accommodating a part of the displacement. Thus, we performed sub-bottom profiles parallel to the canyons, on both side, and I have been working with him on mapping small folds and faults that are indeed present all around the canyon. We will keep working on that subject that could lead to an article on how the canyon meanders are controlled by the folds and faults around.

All in all, this short term mission was for me a great success both humanly and scientifically. I hope my work with Sinan Ozeren and Celâl Şengör will lead to publications and I am looking forward to work with Gulsen Ucarus and Kadir Kürşad on the retrieved cores.

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