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Report for the ECOST-STSM-ES1301-030716-078141

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Dear Dr. Paola Vannucchi,

during the short term scientific mission (STSM) within the framework of FLOWS, I visited the Instituto Dom Luiz (IDL) in Lisbon (Portugal) from 03. July until 08. July 2016. The main goals of the STSM were:

- joint meeting of researchers from different disciplines (e.g. geology, geophysics) with a research focus on the Eurasian-African plate boundary in the Atlantic (Gloria fault)
- exchange of results from seismology, structural geology, analogue experiments, numerical models and active seismics in the vicinity of the Gloria fault
- discussion of the obtained results with the aim to understand the overall structure, as well as the role of fluid migration and interaction processes at the Gloria fault (major transform fault)
- identification of possible drilling locations along the fault and identification of research questions for an IODP proposal

All goals were achieved during the STSM and all participants agreed on the benefits of a multi-disciplinary look at the structures related to the Gloria fault and their implications for fluid migration and interaction in relation to this major oceanic transform fault.

I presented the results obtained with ocean bottom stations (OBS) North of the Gloria fault. The OBS were used for the localization of the local and regional seismicity. This gives insight into the fault activity within the Eurasian and African plate as well along the fault trace. The observations suggest an activation of parallel transform faults which

form the plate boundary and are observed in the sea-floor bathymetry. An active seismic experiment across the Gloria fault presented by Luis Batista showed evidence for a layer of serpentinized mantle.

This is in good agreement with my results of a receiver function study which give details for the crustal and mantle structures North of the Gloria fault. Both data sets show in combination a transition of the serpentinized mantle observed close to the fault towards the rather undisturbed mantle in the Eurasian plate. This indicates a high influence of fluid interaction in the vicinity of the fault.

In conclusion, the STSM gave me a good opportunity to learn more about the crustal and mantle structures which I am investigating and to relate my observations with the tectonic structures North of the Gloria fault. Furthermore, I received new evidence to link my observations of decreasing shear wave velocities towards the Gloria fault to the penetration of fluids along fractures in the oceanic mantle. I also used this STSM to get in touch with the researchers at IDL and Instituto Português do Mar e da Atmosfera (IPMA) and to identify common research interest.

Yours Sincerely,



Katrin Hannemann
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