



The MERAMEX amphibious project - overview and first results

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The Sunda island arc and the ongoing subduction process off Central Java is studied within the MERAMEX project (MERapi AMphibious EXperiments). In 2004, during RV Sonne cruise 179, a seismometer array on- and offshore was installed and active marine seismic experiments were carried out at 110° E. The data set comprises one seismic profile parallel to the trench and two dip lines crossing the trench. Air-gun shots were recorded also on land with a seismic array covering all Central Java around the Merapi volcano. In addition, bathymetric, magnetic and gravimetric data was acquired.

The poster focusses on discussing the tectonic regime off Central Java and on the forward modelling and tomographic inversion of both on- and offshore wide-angle-seismic data. Together with magnetic and gravimetric data a detailed geodynamic model of the subduction zone off Central Java could be established. The model could be extended from the marine area of the subducting oceanic plate into Central Java due to the additional recording of the airgun shots by the onshore temporal seismological network. The dip angle of the subduction zone off Central Java is about 10 degrees along both dip lines. The thickness of the oceanic plate decreases from 9 to 8 km from the eastern to the western dip line. The model of the trench parallel profile shows a flat layering and a decrease in layer thickness and seismic velocities from east to west.

The tomographic inversion of the wide-angle-data and the amphibious data are handled differently. Both methods and their first results will be presented. Future work shall yield in a composite model of the subduction zone and its linkage to the volcanic source of Merapi volcano.