



The Tomographic Results of the MERAMEX-Project and its Relation to the Java Earthquake in May 2006

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The MERapi AMphibiuos EXperiments aim at revealing the tectonic regime of Central Java and the correlations between subduction process and volcanic activity. A temporary seismological network consisting of 106 short period three-component seismometers and 14 Ocean Bottom Seismic stations were installed in 2004 for a period of five months. Supplementary, active seismic experiments were carried out offshore.

The amphibious data consists of 50060 first arrival picks of the airgun shots fired along three seismic profiles recorded onshore and 13800 P- and S-phases from local events. The data set enabled to perform 3D tomographic studies of only passive, only active and active & passive seismic data simultaneously. The most important feature is a low-velocity anomaly with maximum amplitudes of $> 30\%$ in P and S models located in the crust northwards of the volcanoes Sumbing, Merapi and Lawu. The main anomaly extends about 80 km in EW, 30 km in NS direction, and > 50 km in depth. It is inclined towards the slab, moves southwards and declines in amplitude with depth. The velocity perturbations and attenuation of P and S waves, the high Poisson's ratio of 0.3, its correlation to a gravity low and the location in the active Sunda arc lead to the following interpretation: The low-velocity anomaly is caused by multiple magma reservoirs and ascending feeder systems of the volcanic systems of Central Java.

We will present our tomographic studies and their interpretation. The hypocenter distribution of different earthquake catalogues will be correlated to the tomographic results. In addition, we will discuss the hypocenter location of the Java earthquake in May 2006 with regards to a detected low-velocity zone adjacent to the event.