



Upper crustal structure of the western Corinth Gulf, Greece, and re-location of the 2010 earthquake sequence

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The western part of the Corinth Gulf attracts attention due to its high seismic activity. A moderate size Mw5.3 earthquake occurred close to the town of Efpalio on January 18, 2010, followed by a sequence of smaller earthquakes. We used a part of the Efpalio earthquake sequence to derive a local model of the upper crustal structure to a depth of 10 km. In particular, we used arrival times from 51 well-documented events recorded on January 19 and 20 by at least 5 stations at epicentral distances less than about 25 km, including temporary stations. Due to a limited data amount and deployment of seismic stations, we restricted ourselves to a 1-D velocity model, composed of homogeneous layers with constant ratio of the P- and S-wave velocities in all layers. This v_p/v_s ratio was sought by the Wadati method and its average value of 1.83 was obtained.

The arrival time residua were minimized by simultaneous variations of the structural and hypocentral parameters. A variant of the method of conjugate gradients was used for this purpose. In comparison with several previous models, the new structural model is characterized by higher velocities. The hypocentres of the selected earthquakes lay at depths between about 5 and 9 km.

Using the new structural model, the other earthquakes of the 2010 Efpalio sequence will be located, and the results will be compared with previous interpretations.