Geophysical Research Abstracts, Vol. 8, 07200, 2006
SRef-ID: 1607-7962/gra/EGU06-A-07200

Aftershocks of the M_w 7. 4, 1999 Izmit earthquake: hypocentre determination and local magnitude calibration

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This work presents the results about the determination of both the hypocentres and the local magnitudes of the aftershocks following the M_w 7. 4, Izmit 1999 earthquake. 2901 earthquakes occurred from August 22 till October 15 have been located using a standard single earthquake location procedure (Klein, 2002). The arrival times at 39 stations belonging to both the permanent Sapanca-Bolu network and the temporary German Task Force network (Baumbach et al., 2003) have been considered for the location procedure. Moreover, the stability of the results with respect to the starting location has been checked and the possible effect of the considered velocity model outlined. The local magnitude scale has been calibrated by merging a set of selected velocimetric recordings with data recorded at stations of the permanent and temporary accelerometric network operated by the Kandilli Observatory and Earthquake Research Institute (KOERI). In all, 4059 recordings relevant to 529 earthquakes occurred from August 22 till December 30, 1999 have been exploited to calibrate the magnitude scale. We selected data from 31 seismometers and 22 accelerometers, and the considered paths cover the distance range from 10 to 190 km. The computed magnitudes range from 0.61 to 5.96, and the standard deviation of most of the earthquakes having at least five recordings is less than 0.1.