Geophysical Research Abstracts, Vol. 9, 02972, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-02972

Real-time magnitude estimation from first P-arrivals using an aftershock dataset

M. Hildyard (1) and A. Rietbrock(1)

(1) Department of Earth and Ocean Sciences, University of Liverpool (mark.hildyard@liv.ac.uk; a.rietbrock@liv.ac.uk)

We use data from over 1800 events from an aftershock dataset in Chile, and apply the approach of Lockman and Allen (2005, BSSA, vol. 95, no. 6, pp 2029-2039) for calculating early estimates of earthquake magnitudes. The method involves estimating the predominant period from the first few seconds of the P-wave. The full dataset consists of 32 stations with magnitudes ranging from 0.7 to 5.8, and the estimated predominant period is shown to have a clear increasing trend with magnitude for most stations. Nevertheless, results based on the full dataset show considerable scatter. With a view to making the approach more robust, aspects of the dominant period calculation are examined in more detail, such as its dependence on the choice of filtering, and an attempt is made to optimise the filter to give meaningful results over the broadest possible magnitude range. The overall accuracy of the algorithm for estimating magnitudes in real-time is evaluated. The work forms part of efforts to develop magnitude inversion algorithms for use on real-time data from the European seismic network, and forms part of the NERIES project.