# Foreshocks and earthquake prediction: recent results from Greece experience

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Foreshock activity has been proposed since 60's as one of the most potential tools for the short-term prediction of the mainshock. However, the usually low earthquake detectability of the seismic monitoring systems makes it difficult to identify significant foreshock seismicity patterns in near real-time conditions. The gradual improvement of the monitoring systems in the last years makes it possible to detect more reliably the precursory nature of the foreshock activity. This is exactly the case of Greece which is characterized by the highest seismicity in the western Eurasia. We use data from the routine Greek seismicity catalogue of the time interval 1985-2008 and identify a posteriori foreshock activity occurring before strong earthquakes of $Ms \geq 5.5$. The criteria to identify significant foreshock activity includes the next: time window up to 1 year before the strong earthquake, space window no more that 50 km from the epicenter of the strong earthquake, increase of the seismicity rate in the particular space-time window at a significance level of at least 95% with respect to the background seismicity rate in the same area. The results indicate that at least of about 50% of the strong earthquakes were preceded by significant foreshock activity. However, further examination of the records in particular seismograph stations of the national Greek seismograph system showed that foreshock activity is not always evident in the routine seismicity catalogue because of reasons related to the detection capabilities of the system. We propose the systematic, automatic monitoring of the daily seismicity with the purpose to identify in near real-time foreshock activity. We demonstrate the algorithm FORMA which is designed to perform such an automatic detection.