ON THE DIURNAL PERIODICITY OF GREECE REPRESENTATIVE EARTHQUAKES: DATA COMPARISON OF DIFFERENT OBSERVATION SYSTEMS

A.V. Desherevskii, A.Ya. Sidorin

Schmidt Institute of Physics of the Earth, Russian Academy of Sciences, Moscow, Russia

Abstract. The Hellenic Unified Seismic Network (HUSN) started monitoring of the Greece seismicity in the end of 2007. As a result, seismicity observation quality was considerably improved by 2011. In particular, the earthquake detection-location capability was improved, the magnitude of completeness clearly decreased, and the number of annually recorded events increased. The new observation system extended possibilities for studies in seismicity regularities. That is why the authors revisited their studies in the diurnal periodicity of the Greece representative earthquakes revealed a few years ago using the data before 2011. We formed 18 samples from the earthquakes of different magnitudes using the catalog data for 2011 – June of 2016 and calculated the diurnal course of earthquake flow for each of them. We compared the data of two regions for increasing reliability of the results. It has been proved with a high degree of statistical significance that the diurnal periodicity of the strongly representative earthquakes ($M > Mc$ for all the sample events) is absent. This conclusion contradicts with the statistically reliable estimations obtained at the same area for the observation epochs of 1995–2004 and 2005–2010. The new results obtained are in agreement with the hypothesis of noise discrimination (observation selection) explaining the cause of the diurnal earthquake periodicity by the diurnal changes in seismic network sensitivity.

Keywords: earthquake, diurnal periodicity, magnitude of completeness, representative earthquake, Greece.