

Correlation Between Seismicity and Barometric Tidal Exalting

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The tidal changes of the barometric pressure in the area of Thessaloniki North Greece were studied by analysing a sample of 31 years of hourly measurements. The results of this analysis are expressed in terms of amplitude and phase difference of the tidal waves. In an earlier investigation a detectable correlation between the exalting of the amplitude parameters of the tidal waves with the strong seismic events was revealed. A problem of this work was that we had compared the tidal parameters resulting from the analysis of data covering the period of one year with instantaneous seismic events, although the earthquake is the final result of a tectonic process of the upper lithosphere. Consequently, in order to increase the resolution of our method we had analysed our data in groups of 3-months extend and the resulted amplitudes were compared with seismicity index for corresponding time periods. A stronger correlation was found in the last case. However the estimation of tidal parameters in this case was restricted to short period constituents. For these reasons a new analysis was performed, retaining the one-year length of each data block but shifting the one year window by steps of three months from the beginning to the end of the 31 years period. In this way we are able to estimate again tidal parameters ranging from periods of one year (S_a) down to eight hours (M₃). The resulting correlation between these tidal parameters with the seismicity index for corresponding time periods was remarkably increased.