The 20th April 2005 Koryakia earthquake (Russia): a case of study for its aftershock seismic sequence

Caccamo, D. ; **Barbieri, L. M.** ; **Lagana, C.** ; **Francesco, P.** ; **D'Amico, S.**

Even if the Koryakia earthquake (April 20, 2005 at 23:25:02-UTC) occurred in sparsely populated northeastern Russia about 40 people were injured and the several villages were destroyed. Some buildings and water supply systems were badly damaged as well. The Koryakia earthquake occurred in north-northeast of the Kamchatka Peninsula. The earthquake was in a complicated geological setting where the configuration and interaction of the tectonic plates between northeastern Asia and northwestern North America are still poorly understood. The aim of this paper is to study the Koryakia seismic sequence trough the application of the Delta/Sigma method (PEPI - Caccamo et al. 2005) and using data coming from the USGS data-bank. Using this method is possible to observe statistically significant anomalies in the temporal decay of seismic sequence before the occurrence of a large aftershock. The Delta/Sigma analysis show some anomalies in the temporal decay a few days before the occurrence of large aftershock. They possibly are not random fluctuations but probably could be considered as precursors. Fractal geometry is sometimes important to better explain the mechanisms of seismicity and so it could be useful to analyze the behavior of aftershocks occurrence. In this paper a fractal analysis od the seismic sequence was performed investigating the box-counting dimension (D0) and the correlation dimension (D2).

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