



The slow deformation waves as a possible precursor of seismic hazard

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Abstract

The article presents the results of three years of instrumental monitoring of deformation of rocks in South Baikal Geodynamic test site. It is shown that the time-series data represent the integral result consisting of two groups of deformation components. These components are of different nature, but they both have wave properties. The first group of components is relevant to external factors. Only lunar and solar tides, and atmospheric pressure variations are considered in this article as the parts of first group. It is shown that these components do not have a significant impact on the deformation process under single action. The second components group has internal tectonic nature. Aperiodic, random, periodic, and constant components are inside them. Non-periodic components appear as single pulses of strain with different intensity and form. It associated with slow offsets on large active faults outside monitoring territory, or (alternatively) with fast offsets on block interfaces within that. The nature of constant periodic components is associated with the India-Eurasian collision. This component is represented by slow strain waves. The direction and speed of spatial migration of deformation waves are changed in time. Typical trends of wave parameters variations are possibly associated with the preparation of strong earthquakes within the South Baikal geodynamic test site.

Keywords

instrumental monitoring, strain, deformation waves, faults,
slow slip, earthquakes, precursors, seismic hazard

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