The Precursory Evidence and Forecast Significance of Sand Bed Strain Based on Granule Medium for Wenchuan Ms8.0 Earthquake

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The sand bed strain records are new-style observation data, whose measure principle is based on granule medium theory[1~2], and have essential differ from the other strain records. The sand bed strain with uniqueness can synthetically describe stress-strain characteristic of granule medium in lithosphere, and have gained primary application and its results in short-term earthquake prediction:

1) Generally, by the study of sand bed strain records, it is shown that the records with high frequency and big magnitude can give seismic precursor characteristic before some middle-strong earthquakes in China Mainland: for the near-field earthquakes, the abnormal records include mainly high frequency signals, fast unload stage and accident variety; for the far-field earthquakes, the abnormal records contain slow change of smooth trend and large-scale unload stage, which can be filtered by granule medium in propagation path and at station, and can only obtained seismogenic process with low-frequency and slow change.

2) Expressly, the sand bed strain gauges nicely recorded the dynamic evolvement processes of Wenchuan Ms8.0 earthquake, but only Changping station recorded the obvious and unique variety processes. Through studying the variety characteristic of the above records, it is found that the pattern of seismogenic process for Wenchuan earthquake is similar to the other huge earthquakes in history by means of the comparison of change processes, which can be thought to describe the precursory evolutive process of Wenchuan earthquake. because of the repeatability of seismogenic process for some huge earthquakes, it is not difficult to understand that the seismogenic process of huge earthquakes can be have its intrinsic evolutive law and unique physics model for seismogenic process. Based on the above reason, the destructive earthquakes are hopeful to be effectively predicted partially in the future sooner.

Keywords: Sand bed strain; granule medium; earthquake premonitory; physical model for seismogenic process; Wenchuan Ms8.0 earthquake

References

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