



## **Detecting Precursory Earthquake Migration Patterns Using the Pattern Informatics Method**

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We analyze the evolution of seismic activity using a dynamic modification of the pattern informatics (PI) method. This method identifies locations that have systematic fluctuations in seismicity on PI maps. By investigating the evolution of hotspot configurations on the PI map and calculating the distance between hotspots and the epicenter of the impending large earthquake, a migrating pattern of (increasing or decreasing) precursory change in seismicity is revealed. We find that hotspots on the PI map appear increasingly closer to the epicenter as the time of the forthcoming earthquake is approached, implying the existence of an earthquake preparation process. The migration pattern and associated decreasing distance is confirmed by a stochastic test, and therefore we conclude that a preparation process prior to large earthquakes can be detected.