



Systematic Analysis of Historic Seismicity and Interferometric Measurements

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Large, extended fault systems such as those in California are known to demonstrate complex space-time seismicity patterns, which include, but are not limited to, repetitive events, precursory activity and quiescence, and aftershock sequences. Here a pattern informatics analysis technique, formulated based on the physical and theoretical understanding of complex, non-linear fault systems, is employed to isolate emergent regions of coherent, correlated seismicity prior to their occurrence. This pattern informatics (PI) methodology is employed to identify systematic space-time variations in the seismicity of the California fault system. Interferometric Synthetic Aperture Radar (InSAR) technique is used to measure surface deformations at regions picked by PI method prior to occurrence of events. Analysis of interferometric data confirms the appearance of regions of conspicuous deformation corresponding to the source regions associated with the potential occurrence of future earthquakes.