

## **EVENT THREAD ANALYSIS FOR SEISMIC RISK ASSESSMENT**

C.Suteanu

Romanian Academy, Institute of Geodynamics, 19-21 Calderon Str., 70201  
Bucharest, Romania

suteanu@geodin.ro / Fax: +40 1 210 06 04

Event thread (ET) analysis is proposed as a new tool for an effective evaluation of the seismic activity of a region. The method proves capable to characterize the dynamic fingerprint of a region, on one hand, and to follow its evolution in time, on the other hand. It leads to the detection of specific dynamic regimes that are correlable with approaching strong seismic events, which turns it into a useful monitoring instrument concerning seismic risk. The proposed method relies on the evaluation of time-space scaling of seismic events. Contrary to methods that approach time and space aspects separately, ET analysis treats several relevant parameters together (the succession of events in time, their position in space, their magnitude). According to this method, a sequence of seismic events is seen as a series of vectors in N-dimensional space (N equal to the number of considered parameters), each vector having the origin in a point given by the co-ordinates of the preceding event and the end in the point corresponding to the current event. The series of vectors thus defined leads to a complex trajectory in N-dimensional space. The fractal analysis of such an "event thread" reveals a scaling pattern, characterized by a number of scaling exponents that give a fingerprint of the area and are followed in time. Examples from seismogenic regions show the value of the method for seismic risk assessment.