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Geosystemics View of Earthquakes

Gianfranco Cianchini and the SAFE Team

A full list of authors appears at the end of the abstract

Earthquakes, the most energetic phenomena in the lithosphere, often cause danger and casualties: thus, their study and comprehension are greatly worth doing because of the obvious importance for society. Geosystemics intends to offer a way to study the Earth system by viewing it as a whole, looking at the possible couplings among the different geo-layers, i.e., from the earth's interior up to the ionosphere through the atmosphere. It uses specific universal tools to integrate different methods that can be applied to multi-parameter data, often taken on different platforms (e.g., ground, marine or satellite observations). Its main aim is to understand the particular phenomenon of interest from a holistic point of view. Central is the use of entropy, together with other physical quantities that are introduced case by case. In this paper, we will deal with earthquakes, as final part of a long-term chain of processes involving, not only the interaction between different components of the Earth's interior but also the coupling of the solid earth with the above neutral or ionized atmosphere, and finally culminating with the main rupture along the fault of concern. Particular emphasis will be given to some Italian seismic sequences.

SAFE Team: INGV: Angelo De Santis angelo.desantis@ingv.it Gianfranco Cianchini gianfranco.cianchini@ingv.it Rita Di Giovambattista rita.digiovambattista@ingv.it Loredana Perrone loredana.perrone@ingv.it Claudio Cesaroni claudio.cesaroni@ingv.it Luca Spogli luca.spogli@ingv.it Alessandro Piscini alessandro.piscini@ingv.it Dedalo Marchetti (*) dedalo.marchetti@ingv.it (*Now at NUIST, Nanjing, China) Alessandro Ippolito (**) alessandro.ippolito@est.asi.it (**Now at ASI, Rome Italy) Saioa Arquero Campuzano saioa.arqueroampuzano@ingv.it Dario Sabbagh dario.sabbagh@ingv.it Francisco Javier Pavón-Carrasco (***) fjpavon@ucm.es (***)Now at UCM, Spain) Giorgiana De Franceschi giorgiana.defranceschi@ingv.it Maurizio Soldani maurizio.soldani@ingv.it Lucilla Alfonsi lucilla.alfonsi@ingv.it Anna De Santis anna.desantis@ingv.it Planetek: Cristoforo Abbattista abbattista@planetek.it Leonardo Amoroso amoroso@planetek.it Marianna Carbone carbone@planetek.it Francesca Santoro santoro@planetek.it ESA: Roger Haagmans Roger.Haagmans@esa.int