



## **Seismic and geodetic constraints on recent activity in southeastern Sicily (Italy): new evidences and tectonic implications**

Carla Musumeci, Luciano Scarfi, Mimmo Palano, and Domenico Patanè  
Istituto Nazionale di Geofisica e Vulcanologia, Italy (luciano.scarfi@ct.ingv.it)

We performed an in-depth analysis of the ongoing tectonics of a large sector of southern Sicily, including the Hyblean Foreland and the front of the Maghrebian Chain, as well as the Ionian Sea offshore, through the integration of seismic and GPS observations collected in the nearly two decades. In particular, a dataset consisting of more than 1100 small-to moderate-magnitude earthquakes ( $1.0 \leq ML \leq 4.6$ ) has been used for local earthquake tomography in order to trace the characteristics of the faulting systems, and for focal mechanisms computation to resolve the current local stress field and to characterize the faulting regime of the investigated area. In addition, GPS measurements, carried out on both episodic and continuous stations, allowed us to infer the main features of the current crustal deformation pattern. Main results evidence that the Hyblean Plateau is subject to a general strike-slip faulting regime, with a maximum horizontal stress axis aligned to the NNW-SSE orientation, in agreement with the Nubia-Eurasia direction of convergence. The Plateau is separated into two different tectonic crustal block by the left-lateral strike-slip Scicli-Ragusa Fault System. The western block moves in agreement with central Sicily while the eastern one accommodates part of the contraction arising from the main Europe-Nubia convergence. Furthermore, the Hyblean-Maltese Escarpment Fault System represents the active boundary between the eastern block of the Plateau and the Ionian basin and is characterized by a right-lateral strike-slip behaviour