

Analyzing of focal mechanisms and GPS data : Case study of the Western Africa-Eurasia plate boundary

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Abstract

The analysis of kinematic indicators from different data sources allow us to investigate consistencies and discrepancies among them, strengthening their interpretation. Serpelloni et al., (2007) combined the seismic data and geodetic data to study the present-day kinematics and tectonics of the Africa-Eurasia plate boundary in the Western Mediterranean.

The GPS technique represents a fundamental tool for studying the kinematics of continental deformation at diffuse plate boundaries, allowing us to derive interseismic velocities and velocity gradients. Recently improved catalogues of focal mechanisms allow us to better investigate the pattern of coseismic deformation in terms of active tectonic regimes occurring along the plate boundary zone. For regional tectonic analysis, it is often desirable to present information about available earthquake focal mechanisms. Frohlich (2001) proposed quantitative methods for evaluating the distribution of focal mechanism orientations of groups of earthquakes, and shows how to display this distribution on a triangle diagram. Triangle diagrams are one of graphical methods for displaying groups of focal mechanisms, where the three vertices correspond to 'pure' strike-slip, normal, and thrust mechanisms. It also provides a means for displaying the frequency distribution, indicating the relative frequencies of mechanisms within various portions of the diagram.

References

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