



## **Study of the Initial Peak Displacement Evolution of Ibero-Maghrebian Earthquakes: Application for Earthquake Early Warning**

Marta Carranza (1), Elisa Buforn (1,2), Simona Colombelli (3), and Aldo Zollo (3)

(1) Complutense University of Madrid, Geophysics, Spain, (2) IGEO, CSIC, Madrid, Spain, (3) Dept. Fisica Università Federico II, Naples (Italy)

We have studied the shape of the initial peak displacement ( $P_d$ ) evolution using the first seconds of P-wave in order to know rapidly the size of the earthquake. We have checked the hypothesis proposed by some authors that the initial evolution of  $P_d$  (P-wave amplitude on displacement) versus time may be used to distinguish between large/small earthquakes. This information could be of a great importance for early warning and seismic risk mitigation procedures. In order to check their model, we have studied earthquakes occurred at the Ibero-Maghrebian region in the period 2002-2014 with magnitudes ranging from 3.8 to 6.8 recorded at broad band velocity stations and distance up to 700 km. We enlarged the time window from 0 to 20 seconds to measure  $P_d$ , avoiding the inclusion of S-wave. At the same time, to complete the study, we have also analyzed the evolution of the initial peak velocity ( $P_v$ ) with the enlarged time windows. We found out that some earthquakes from this region show a more complex behavior. We propose that these differences may be explained due to the rupture complexity and to the arrival of a stronger secondary P-phase.