



## **Did You Feel It? The Ms 7.9 1969 San Vicente Earthquake, 50 Years Later**

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Fifty years ago, on 28 February 1969, at 3:41 local time, an earthquake located offshore SW Iberia strongly shook all the south of Portugal. Maximum intensities of VIII were recorded in the SW tip of Portugal, with intensities VII widespread in the south of Portugal and north of Lisbon. The earthquake was felt up to 1300 km from the epicenter, particularly in Bordeaux, France, and in the Canaries, north Atlantic. With an estimated magnitude of Ms 7.9, this event is currently the highest magnitude felt earthquake in the European historical catalog. One WWSSN seismic station operated in Portugal at the time, in Oporto, while another two seismic observatories (Lisbon and Coimbra) also recorded the earthquake. One strong-motion accelerometer located in the 25th of April bridge, which links Lisbon to the southern margin of the Tagus river, provided the closest non-clipped record of the earthquake.

The earthquake occurred at a time when Plate Tectonics was just developing. According to studies carried out in the 70s and 80s, the earthquake, with epicenter in the middle of the Horseshoe Abyssal Plain, had a depth of 22-33 km, Ms 7.9, and the focal mechanism indicates reverse faulting, on a fault striking NE-SW (40 to 70 degrees), a dip of ~50 deg, with a small component of left-lateral faulting. Current microseismic studies indicate that earthquakes in this region frequently occur at depths of ~40 km, indicating brittle failure in the lithospheric mantle, which has classically been attributed to the old and cold nature of the lithosphere in the region. The relationship between instrumental seismicity, historical earthquakes, geologically mapped faults, Earth structure and rheology in this region, which acts as a diffuse plate boundary between the EU and AF plates, and which may have also unleashed the great 1755 Lisbon earthquake, remains enigmatic until today.

Taking advantage of the 50th anniversary of this earthquake, of the fact that many citizens still remember well this impressive earthquake, and of currently available technology, a collaborative enterprise between seismologists and engineers, from academic institutions and from the Portuguese seismic network, is launching a Did You Feel It (DYFI) questionnaire for citizens to report back on felt and observed effects of this landmark earthquake that occurred 50 years ago. The resulting macroseismic information will be analyzed with a particular focus on regional attenuation, site effects, and social response of the population. In this presentation, we will review main aspects of this earthquake and report on the first results of the DYFI questionnaire.

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