The May 7 - 11, 2016 Earthquake Sequence at Rivera Fault Zone

Francisco J Nunez-Cornu¹, Diego Cordoba², William L Bandy³, Juan José Dañobeitia⁴, Carlos Mortera-Gutierrez², Edgar Alarcon¹, Diana Nuñez¹, Claudia B Quinteros-Cartaya¹, and Carlos Suarez-Plascencia¹

¹Universidad de Guadalajara, Centro de Sismologia y Volcanologia de Occidente, Puerto Vallarta, Mexico
²Fac. Cs. Físicas, Universidad Complutense de Madrid (Spain).
³Instituto de Geofísica, Universidad Nacional Autónoma de México
⁴Unidad de Tecnología Marina - Consejo Superior de Investigaciones Científicas (Spain).

The geodynamic complexity in the interaction between Rivera, Cocos and NOAM plates is mainly reflected in the high and not well located seismicity of the region. In the framework of TsuJal Project, a study of the passive seismic activity was carried out. A temporal seismic network with 25 Obsidian stations with sensor Le-3D MkIII were deploying from the northern part of Nayarit state to the south of Colima state, including the Marias Islands, in addition to the Jalisco telemetric Seismic Network, being a total of 50 seismic stations on land. Offshore, ten Ocean Bottom Seismographs type LCHEAPO 2000 with 4 channels (3 seismic short period and 1 pressure sensors) were deployed and recover by the BO El Puma from UNAM in an array from the Marias Islands to off coast of the border of Colima and Michoacan state, in the period from 19th April to 7th November 2016.

A seismic sequence started on May 7, 2016 with an earthquake Mw = 5.6 reported by CMT-Harvard, USGS and SSN at the area north of Paleo Rivera Transform fault and west of the Middle America Trench, an area with a very complex tectonics due to the interaction of Rivera, Cocos and NOAM plates.

An analysis of this earthquake sequence from May 7 to May 11 using data from OBS and adequate P-Wave velocity model for Rivera plate is presented, 87 earthquakes were located. Data from onland stations were integrated after a travel-time residual analysis.

We observed that the new location is about 50 km southwest direction, from previous one, between the Paleo Rivera Transform fault and the northern tip of the East Pacific Rise – Pacific Cocos Segment. This area has a different tectonic stress regime.