Stratigraphic control on fault segmentation and interaction. New constrains based on a 3D P-Cable survey offshore California

(Title max 300 characters)

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Abstract (2000 characters, excluding spaces but including punctuation)

Often fault segmentation and characterization of their kinematics and evolution in time is based on superficial geology and 2D seismic data. Despite many advances, 3D seismic data is required to understand how faults interact in space and time. To this objective, a high-resolution 3D Parallel Cable (P-Cable) seismic dataset was acquired along the Newport-Inglewood Rose Canyon (NIRC) fault system on the scope of the Sothern California Regional Mapping project. The NIRC is a complex right lateral strike-slip fault system that stretches on the offshore for 120 km. The fault slip-rate ranges from 1.5-2.0 mm/yr to 0.5-1.0 mm/yr, from south to north, according to onshore paleoseismological studies. The acquired offshore dataset images part of the continental shelf and the slope in front of the San Onofre Nuclear Generating Station. The preliminary analysis of this high-resolution seismic volume has allowed mapping several faults that are offsetting different seismostratigraphic units. In addition, it reveals that the faults consist in a number of segments that join in depth, but also laterally. The seismostratigraphic units show changes of thickness across the different faults. Comparing the different depocenters related to the faults will allow characterizing in time the evolution of the fault system and the growth of the different fault segments. We expect to obtain a 3D geometry of the fault system and the seismostratigraphic units highlighting the interaction through time between sedimentation and fault activity.