



## **New elevation data and ages from late-Neogene coastal terrace sequence in Mejillones Peninsula Northern Chile: reconstructing the morphotectonic evolution along a segment of the Nazca subduction zone.**

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Mejillones Peninsula of northern Chile is located over the active Nazca subduction zone along the Pacific coast of South America. Its morphology exhibits a remarkably well preserved sequence of coastal terraces, a valuable source of information about the tectonic and climatic evolution in this segment of the Andes.

Detailed mapping and measuring of shoreline angle's elevation has allowed identifying 12 well defined different levels. The youngest terrace has been measured at ~20 m. a.s.l., the following levels are located at approximately 50, 100, 130, 150, 180, 200, 250, 280, 420, 460 and around 500 m. a. s. l. A preliminary ESR dating performed on articulated mollusk shells collected from the sixth level (~180 m. a.s.l), that could be assigned to IS 9, is congruent with previous studies that indicate a relatively high uplift rate with a first rough estimate of 0.6 mm/yr. Numerous samples of articulated shells from almost every level have been collected. More ESR and U-Th are being performed to reconstruct an age model for the entire sequence with a minimum interpolation.

The east boundary of the northern tip, presents a sequence with narrow and discontinuous terraces. Perturbations in their natural morphology, related to the activity in branches of Mejillones fault, can be seen in the older levels as well in the younger ones. Morphological and structural evidence of normal displacement along one of its branches has been recognized affecting terraces of different ages. The history of the

activity is being reconstructed using the terraces as a horizontal datum. A contrasting situation occurs in the western boundary, where the terraces are wider, continuous, and there is no sign of recent deformation in the sequence. Longer term uplift, not related to the movement of the faults will be estimated using this part of the sequence.