



## **Provenance of Conglomerates within a Late Cretaceous Turbidite Channel System on the North American Margin: the Rosario Formation, Baja California, Mexico**

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The Rosario Formation forms part of the Peninsular Ranges forearc basin complex, which crops out discontinuously along the Pacific coast of the Baja California Peninsula, Mexico. This study concerns the upper, deep marine part of the Rosario Formation, which includes several slope channel systems, one of these, the San Fernando channel systems consists of five channel complex sets (CCS1 to CCS5), each characterized by three filling stages. Stage I consists of predominantly clast and matrix-supported conglomerates, with subordinate medium to coarse grained sandstones. Stage II consists of units of clast-supported conglomerates with subordinate medium to coarse-grained sandstones, separated by mainly thinly-bedded turbidites (intercalation of thin beds of fine-grained sandstones and mudstones). Stage III consists mainly of hemipelagic mudstones. The main objective of this research is to determine source area and to compare the coarse fraction and finer fraction (fragments <2 cm) from conglomerates of each channel set, combining provenance methodology such as heavy minerals, clast counting, geochemistry, bulk petrography and U/Pb in detrital zircons by LA-ICPMS and SHRIMP. The heavy minerals assembly identified were Ca amphibole, epidote, clinozoisite, titanite, garnet, tourmaline, apatite, rutile and zircon, among them amphiboles are by far the most abundant detrital mineral. Clast counting and petrographic characterization showed that the pebble fraction of the conglomerates is constituted at least 18 different, and the majority being composed by pyroclastic, porphyritic volcanic and sandstone rocks. Bulk quantification indicates that the main provenance tectonic mode of the fine fraction of the conglomerates can be interpreted as dissected magmatic arc, with subordinate uplifted basement and recycled orogenic contributions. The preliminary conclusion is that the sedimentary supply to the Rosario Formation was mostly derived from volcanic and plutonic rocks of the Upper Peninsular Ranges Arc complex known as the Alisitos Arc, which follows the western margin of the Peninsular Ranges batholith, as well as from older magmatic arc, and from recycling of sedimentary/metasedimentary terrains.