

## **Understanding the Provenance of the Turbidites from the Rosario Formation, Baja California, Mexico: Utilizing Heavy Minerals and Bulk Quantification**

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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. The study is being performed in the San Fernando Canyon, between El Rosario and Punta San Carlos towns. In this area, the Rosario Formation comprises a lower, shallow marine member, overlain by an upper, deep marine member, including several slope channel systems. Based on previous research, the San Fernando channel systems consist of five channel complex sets (CCS1 to CCS5), each one characterized by three filling stages. Stage one consists of predominantly clast- and matrix-supported conglomerates, with subordinate medium to coarse grained sandstones. Stage two consists of units of clast-supported conglomerates with subordinate medium to coarse-grained sandstones, separated mainly by thinly-bedded turbidites (intercalation of thin beds of fine-grained sandstones and mudstones). Stage three corresponds mainly of hemipelagic mudstones. The main objective of this research is to determine source area and to compare the finer fraction of the conglomerate from each channel set, combining provenance methodology heavy minerals and bulk petrography.

Bulk quantification indicates that the main provenance tectonic model of the finer fraction of the conglomerates can be interpreted as dissected magmatic arc, with subordinate uplifted basement and recycled orogenic contributions. The heavy minerals assembly identified were amphibole, epidote, clinozoisite, titanite, garnet, tourmaline, apatite, rutile and zircon, among them amphiboles are by far the most abundant detrital mineral. 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.