

**PALEOTOPOGRAPHIC CONTROLS ON FACIES DISTRIBUTION IN A MIOCENE CARBONATE PLATFORM: LA
RELLANA PLATFORM, SOUTHEASTERN SPAIN**

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Field investigation of the Rellana platform area in the Cabo de Gata region of southeastern Spain evaluated paleotopographic controls on stratigraphy and facies. The location is a previously unstudied area, but is known to serve as an excellent analog for subsurface Miocene systems of SE Asia. The platform is characterized by a 2.5 km exposure, which displays Miocene to Pliocene strata with relatively undisturbed paleotopography. Deposits range from mono- and polymictic volcanic conglomerates to carbonate deposits featuring heterozoan sands, as well as photozoan coralgall reef assemblages, oolite, and microbialite.

Field work resulted in 11 stratigraphic sections, with approximately 600 meters of stratigraphic section described. Stratigraphic sections were combined with photomosaics of the exposure to clarify the stratigraphic relationships observable in the platform. Additionally, over 400 samples were taken to produce a comprehensive facies analysis of the area, as well as bolster stratigraphic interpretations.

Carbonate deposits associated with the platform area extend from present-day sea level to high elevation (up to 250 m), and are deposited on a northward sloping surface. There is a subtle drainage divide to the south, where the surface slope orientation tends to dip toward the south. The stratigraphy shows a record of climate and sea-level changes. It transitions from a heterozoan ramp to photozoan-dominated reef, oolite and microbialite. At least five sequence boundaries define major changes. Sea level's interaction with the paleotopography resulted in overlapping, aggradational, progradational, and draping geometries. This study facilitates more complete understanding of heterogeneities in shallow water and deep water carbonate reservoirs.