

EVOLUTION OF THE PLIO-PLEISTOCENE REPETTO AND PICO FORMATIONS, VENTURA BASIN, SOUTHERN CALIFORNIA

Jonathan R. Rotzien and Donald R. Lowe

Department of Geological and Environmental Sciences, Stanford University, Stanford, CA 94305-2115, USA, email:
jrotzien@stanford.edu

An outcrop analog and thorough depositional model describing an ancient deepwater braided channel system are conspicuously absent from existing literature. We use over 30 m of outcrop and 100 m of detailed core stratigraphy of the Plio-Pleistocene Repetto and Pico Formations, Ventura basin, California for two objectives: 1) to determine the depositional evolution of these formations and 2) to produce a predictive model for coarse-grained, braided channel turbidite deposition. The prevalent and repetitive stacking pattern of coarse-grained traction to normal graded deposits with basal scour observed in these formations mimic in several ways typical fluvial stratigraphy produced by modern and ancient terrigenous braided systems. In addition, the deposits can be described using classic turbidite divisions ranging from Lowe R and S to Bouma Tabcde divisions. We differentiate channel axis, off-axis channel, margin and overbank environments that crudely resemble the evolution of a multistory braided channel system. Proper documentation of the formations' stratigraphy and a quantitative depositional model will serve as predictive tools for analogous systems with limited available data. Further work includes measuring more outcrop and core stratigraphy and modeling that may corroborate our nascent stage conclusion that the Repetto and Pico showcase deposition within a rapidly changing environment that we interpret as a good candidate for a deepwater braided channel system.