

On the Source-to-Sink Relationships of the Capistrano Formation, Onshore and Offshore Orange County, California

Daniel Schwartz

Daniel E Schwartz, LLC

9.29.2020 - 10.1.2020 - AAPG Annual Convention and Exhibition 2020, Online/Virtual

Abstract

Previous studies of the source-to-sink system of the Mio-Pliocene Capistrano Formation (Schwartz, 2018) focused on the provenance of clasts and sedimentology within the San Juan Creek catchment area, analysis of clasts and sedimentary fill sequences in the catchment and in outcrops at Dana Point Harbor, and log interpretations from onshore wells. Recent analysis of 1960's and 1980 - 2006 vintage 2D reflection seismic from offshore Dana Point, San Clemente and Oceanside supports a connection between the San Juan Creek catchment (source), the feeder sediments of the Capistrano Formation at Dana Point Harbor; and seismically and well-log-data constrained submarine fan lobe (sink) deposits in the Capistrano Embayment of the Southern California Borderlands. The Dana Point Harbor section of the Capistrano is a channelized gorge-fill deposit fed by traction and debris flows sourced from the 456 square kilometer proto-San Juan Creek catchment. These deposits feed a channelized submarine fan which ranges in size from 216 sq. km. to in excess of 948 sq. km. A bathymetrically confined extent for the fan is 367 sq. km. The late Miocene to early Pliocene fan exceeds 750m in thickness, pinches out northward, pro-graded westward across the San Mateo-Carlsbad fault to the Oceanside fault zone, and extends southward toward La Jolla, abutting the Newport-Inglewood Fault on the east. The Capistrano source-to-sink system fits the global source to sink relationships of Somme et al., (2009), and Nyberg et al., (2018), but varies from the Romans and Graham, (2013) source-to-sink model as there is no evidence for deltaic sedimentation in the catchment, the Mio-

Pliocene shelf is fault bounded and quite narrow, the slope is steep, and the feeder canyon is fault bounded.

AAPG Datapages/Search and Discovery Article # 91200 © 2020 AAPG Annual Convention & Exhibition Online, Sept. 29- Oct. 1.