

Evidence for an Asteroid-Impact Origin for the Ventura Basin

Jacque Senteur de Boue
Cressy and Associates, Bakersfield, CA
mudsmeller@aol.com

An asteroid impact origin for the Ventura basin is indicated by an east-west orientation of the basin axis and clinoforms that dip away from the basin center. Most major structural elements in California have north-south trends that parallel the San Andreas Fault, the healed suture of an ancient subduction zone. By contrast, the Ventura basin trends eastwest. Speculative models, based on poorly constrained paleomagnetic data, interpret this anomalous trend to have originated from clockwise rotation of the basin axis by 90°. A more believable explanation is that the basin formed when a giant meteor hit the Piru area and gouged a linear east-west trough (the Santa Clara Valley) as the meteor slid westward into the sea. Frictional heating associated with meteoric impact reset paleomagnetic orientations in adjacent rocks to give anomalous values that most researchers have misinterpreted to evidence tectonic rotation.

Giant clinoforms with amplitudes >100 m characterize exposures of the Middle Eocene (Narizian) Cozy Dell Formation that crop out in the Topatopa Mountains on the uplifted northeastern margin of the Ventura basin. Previous studies interpret these structures as river-dominated deltas. However, the clinoforms do not dip south, toward the basin depocenter, as would be expected if they formed during delta progradation. Instead, depositional dip is to the northwest, away from the probable point of asteroid impact. Most likely, these clinoforms resulted from sediments scrambling pell-mell over one another in an attempt to get the hell out of the way of the shock wave generated by the meteor collision.