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SEDIMENTOLOGY OF COARSE-GRAINED, THICK-BEDDED TURBIDITES, TALARA BASIN, PERU

Seacliff exposures in the Paleogene Talara forearc Basin, NW Peru, provide nearly continuous outcrops of a 150m-thick succession of amalgamated, thick-bedded, coarse-grained turbidites characterized by pervasive traction structures. Sedimentation units, having been supplied with large volumes of coarse-grained sediment, are composed largely of pebble-sized conglomerate to coarse-grained sandstone, range up to 4 m thick, and are highly lenticular, disappearing laterally largely through erosion by overlying beds. Unlike most thick-bedded turbidites, these units widely include both thick normally graded, massive to water-escape-structured S_3 divisions and current-structured divisions (T_t) dominated by large-scale, commonly climbing, coarse-grained cross-stratification. Overall the succession fines upward, and it is interpreted to represent the fill of a submarine channel at least three km wide. The thick S_3 divisions show that flows were beginning to deposit their high-density suspended loads at this location, but the abundance of traction structures, the relatively coarse grain-sizes, and scoured bases indicate that the flows were erosive to quasi-steady for long intervals of time during which large amounts of sediment bypassed through the channel to more basal sites of deposition. Although these turbidites could not have been deposited by sustained hyperpycnal flows, highly energetic flows were maintained for long intervals as the flows passed. These deposits probably represent slope channels that funneled coarse sediment from a narrow shelf offshore to more basinal forearc sites of deposition.