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### **Estuaries and Incised Valleys on the Southeast Coast of Australia**

The southeast coast of Australia extends 1500 km from Victoria to the Great Barrier Reef and contains hundreds of incised valleys now occupied by estuaries. These systems fit into a classification of barrier estuaries, incised bedrock estuaries and lagoons. However, a significant variant (the shoreline divergent estuary) occurs on the southern Queensland coast where the shoreline orientation swings westward, but the barrier coastline continues northward, forming a series of large embayments with extensive tidal mouth shoals and seaward barriers up to 125 km long, along which coastal sediments are bypassed to deep water.

The coastal valleys typically incised 10-50 km landward from a highstand shoreline, but did not erode a significant valley further seaward on the exposed continental shelf, or establish a lowstand delta. It is difficult to identify clear upstream estuarine to fluvial transitions in the subsurface, as this transition often corresponds to a bedrock constriction. This feature and the overall geometry of the valleys is frequently structurally controlled. The valley fill conforms to a general tripartite wave dominated estuary model of bay head delta, muddy central basin and sandy barrier with tidal deltas. However, the valley fill is often exceedingly complex as the valleys have been cut and filled over numerous sea level cycles leaving a fragmented record up to 90 m thick.