

DYNAMICS PROCESSES OF BIO-BIO CANYON, CHILE

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The Bio-Bio submarine canyon is situated north of the Arauco Bay ($36^{\circ}49'$ S). Its head is located at 300 m from the coast, near the mouth of the Bio-Bio river and at 15-20 m depth. The canyon ends at the trench at a depth of 4,570 m. The length of the channel is 134 km. The sedimentological analysis revealed the presence of turbidites generated by high-density turbidity currents in the canyon, which were generated by slumping, debris flow, and by fluidized sediment flow at the head of the canyon. These processes are induced by the bedload of the Bio-Bio river. The mineral composition of the sand and mud of the canyon talweg, indicates that the sediment transported by the Bio-Bio river, are originated by the weathering of igneous (principally volcanic) and metamorphic continental rocks. The presence of turbidites indicates that the canyon is eroding, thus migrating its head towards the continent, altering the sedimentation-erosion equilibrium of the playa Escuadron, located just south of the Bio-Bio mouth. This beach also feeds from the sand-transported southwards by longshore drift. While the head of the canyon moves closer to the continent, the river discharges directly to the canyon and the sedimentary contribution to the Escuadron beach decreases. This process contributes to a retreat of the coast line.