

Quaternary Tectonic Evolution of the Doce River Middle Valley, SE Brazil

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The Doce river middle valley is a depressed area originated by a Tertiary transtensional event. This area presents geomorphic features that have supported discussions concerning to paleoclimatic and neotectonic controls during the Quaternary. The most impressive feature corresponds to a barred lake system related to the damming of tributary valleys by an intense sedimentation. Paleochannel traces developed over large infilled paleovalleys represent another important feature. Stratigraphic, structural and geomorphologic analyses support interpretations about the neotectonic controls. It were recognized two Quaternary tectonic events for the area. An early Holocene E-W dextral tectonic stage strongly affected Pleistocene deposits and also affected a paleosoil dated on 10.000 y. B.P. This tectonic stage produced NW-SE to E-W topographic highs resulting on intense sedimentation by alluvial fans and low sinuosity rivers that filled up the valleys with a relatively thick Holocene alluvial sequence. As a consequence of this tectonic and sedimentary evolution, a first lacustrine submersion occurred. Soon after, a tectonic stage related to a NW-SE extension affected the previous Holocene alluvial sequence and controlled abrupt migrations of the Doce river and main tributaries. This phase produced infilled valleys preserving paleochannel traces and disconnected the lakes from the fluvial system. Seismic surveys at the mouth of the Dom Helvécio Lake show a NE-SW normal fault that documents the influence of the Holocene NW-SE extension on the lake evolution.