

GEOMETRY, ARCHITECTURE AND HETEROGENEITY OF THE PASSO DAS TROPAS AQUIFER: 3D RECONSTRUCTION FROM OUTCROP AND SHALLOW SUBSURFACE DATA.

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The Passo das Tropas Member, a Middle Triassic fluvial facies association of the Paraná Basin, is the main porous aquifer of the central region of the Rio Grande do Sul State (Southern Brazil). Detailed description of four representative exposures, including data related to facies, paleocurrent and gamma ray signature, sampling and petrographic studies, has allowed the characterization of the architecture, geometry and heterogeneity of the main components of the fluvial facies association. The surface information was compared to sub-surface data such as GPR profiles and lithological data from artesian wells. The fluvial system comprises amalgamated, very coarse- to fine-grained sandstone bodies interlayered with minor lenses (frontal view) and blankets (lateral view) of mudstone. The fluvial facies association represents a bed-load to mixed-load fluvial system with frontal accretion on sand bars suggesting low to moderate sinuosity sandy channels and associated flood plains. Sand/mud ratio spans from 90 to 70% within the aquifer, according to the dominance of channel or extra-channel facies. This facies distribution defines both mega- (between amalgamated sand bodies) and macro- (within each amalgamated sand body) scale heterogeneity of the Passo das Tropas Aquifer.