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Integrated Analysis of the Southern-Altiplano-Basin, Southern Bolivia

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The present study of the Southern-Altiplano-Basin (SAB) is based on sedimentological and structural (field work), geochronology, seismic lines and well-data analyses.

During the Eocene, the Southern-Altiplano-Basin formed a complex basin between two uplifted areas: the Eastern Cordillera and the Chilean Precordillera. In the east, the SAB formed a foreland basin relative to the Eastern Cordillera while in the west the SAB occupied a backarc position to the Precordillera before ~38 Ma, when the basin was inverted. In the entire SAB the Potoco Fm. was deposited concordantly over older sediments showing in the west and the east a succession from a playa, fluvial and alluvial-fan environment, in the center only a playa-environment occur.

Subsequently, ~30 Ma, tectonism and magmatism started in the SAB. Intense volcanic activity began which is strongly reflected in the composition of the sediments (San Vicente Fm.). The San Vicente Fm. consists of 5 facies associations: alluvial-fan, playa-, aeolian-, fluvial- and lacustrine-association. For the Early-Oligocene/Miocene we interpret two different tectonic positions of the SAB, (i) a foreland position in the western and eastern margin and (ii) an intra-arc position in the central SAB. The intra-arc structures are characterized by normal faulting prior to 30 Ma, thickness variations and a Miocene inversion (~17 Ma).

In Paleocene-Miocene time, up to 7 km of clastic and volcanoclastic sediments were accumulated in the SAB; at this time, the uplifted areas boardering and within the SAB and consisting of Precambrian metamorphic and Paleozoic rocks were eroded.