



Initial Report on MexiDrill: The Basin of Mexico Drilling Program

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The Basin of Mexico (19°30'N, 99°W, 9600 km², 2240 m asl) is a hydrologically-closed basin in the Trans-Mexican Volcanic Belt. The emergence of the Chichinautzin volcanic field after ~780 ka is linked to basin closure and initiation of the development of a lake system within the basin. Continued subsidence accommodated accumulation of a long lacustrine sediment sequence. Radiocarbon chronologies indicate sedimentation rates of ~40 cm/kyr since ~40ka; application of this rate to the entire lacustrine sequence suggests a basal age of ~800 ka, consistent with the Chichinautzin volcanic age.

To investigate the environmental history contained in Basin of Mexico sediments, the MexiDrill Program recovered a long lacustrine sedimentary sequence contained in the Lake Chalco basin on the southern outskirts of Mexico City. These sediments have the potential to provide a >500,000 year record of North American climate. Chalco is well suited for reconstruction and investigation of interannual through orbital-scale variations in the North American Monsoon and hydrologic variations of the neotropics. Ongoing work suggests that the system records environmental responses to both Milankovitch- and millennial-scale climate forcing.