



Tropical environment in the last 2.5 million years: the Colônia deep-drilling project

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Although lowland Tropics are the richest in hydrological and biodiversity resources, the effects of tropical climate variability on these resources are still too poorly documented to predict the future of densely populated regions. The Colônia structure is located in southern Brazil, close to the city of São Paulo (23°52'S 46°42'20"W). It contains a bog deposited in a hilly circular structure of 3.6 km diameter with an outer rim elevated by up to 125 m. The structure is formed in Proterozoic crystalline rocks and 230 m of organic-rich, fine-grained sediments fill the Colônia basin. Drilling the Colônia sediments will provide a unique archive on Southern Hemisphere climate development as well as improve our knowledge about tropical rainforest evolution. Indeed, as it is located within the Atlantic rainforest domain, this site has become a reference site for tropical paleoecological research because the upper 8 m of sediments record 130 ka of paleoenvironmental history. Thus, assuming a continuous and relatively uniform sedimentation rate, the sediment fill could account for up to 2.5 Ma of sedimentation history. A second goal for the proposed drilling of the Colônia basin is to establish the process that led to its formation. Drilling into the basement of the Colônia structure could provide the necessary information to unravel its origin, complementing the main goal of the project regarding climate change and, thus, adding a valuable scientific bonus. Other similar possible impact structures recognized in Brazil entirely dried up and did not preserve any sediment infill, thus making the Colônia site unique.