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View Abstract Details

Title: *A New Microscopic Charcoal Record from the Valle de las Morrenas, Costa Rica*

Keywords: Microscopic, Charcoal, Biogeography, Global Change

Type: Interactive Short Paper

Abstract: The Valle de las Morrenas is located in the Cordillera de Talamanca, the highest mountain range in the isthmian portion of Central America, and faces north from the Cerro Chirripó, the highest peak in Costa Rica. The valley is a well-developed alpine glacial trough with a cirque headwall, tarns, rock thresholds, and the moraines that give it its name. A chain of five substantial lakes (Lakes 0-4; 0.6–5.6 ha) and a number of smaller lakes occupy an area of irregular topography and drainage in the upper valley, within the bamboo-dominated páramo that occurs above treeline in the Cordillera de Talamanca. Horn recovered two long sediment cores from Lake 1, the largest and deepest lake in the valley, in 1989 to determine deglaciation timing and to study pollen and microscopic charcoal evidence of vegetation and fire history; subsequent studies analyzed macroscopic charcoal, diatoms, and stable carbon isotopes. In 1998, we cored Lake 4, the lowest upper-valley lake, for comparative material. Basal dates are similar but sedimentation here was slower than at Lake 1, with only 1.7 m of organic mud overlying glacial flour, as compared to 5.3 m of organic sediment atop glacial flour in Lake 1. Microscopic charcoal concentrations, quantified by point counting, show a pattern similar to that found for microscopic and macroscopic charcoal at Lake 1, with highest charcoal concentrations in the late Holocene, driven by regionally drier climate and perhaps increased ignitions from human activity in the Talamancan foothills.

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