

LAKE MASCARDI, ARGENTINA: A CONTINUOUS RECORD OF HOLOCENE GLACIER VARIATIONS AT 41° S

ARIZTEGUI, Daniel¹, ANDERSON, William T.¹ and BIANCHI, Maria Martha ²
Geologisches Institut - ETH Zentrum - 8092 Zürich, Switzerland, ² PROGEBA, Apt. 47, 8400
S. C. de Bariloche, Río Negro, Argentina

Glaciers are particularly sensitive to variability in the global climate system. Until recently, the reconstruction of Holocene glacier variations has been based largely on moraine stratigraphy. Yet, there is a very limited and fragmented data coverage of neoglaciations in the Southern Hemisphere. A sedimentary sequence from distal proglacial Lake Mascardi (41°10'S, 71°53'W) provides a continuous record of Holocene glacier variations. Lake Mascardi is fed from meltwater originating from the Tronador ice-cap in Argentina near the Chilean border. A multi-disciplinary analysis of the Holocene sedimentary record (10 ka. to present) indicate that the visible lithostratigraphic units vary in phase with magnetic susceptibility, grain-size, organic matter content and pollen percentages. These data combined with a robust accelerator mass spectrometer radiocarbon (AMS) chronology are used as indicators of glacial activity in the lake catchment. In addition, the Holocene sedimentary sequence from Lake Mascardi provides a uniquely well-preserved record of subaquatic mosses (*Rhynchostegium*) from which α -cellulose was isolated and analyzed for stable isotopes. The oxygen isotopic composition of cellulose from these subaquatic mosses is in turn used to calculate the lake's isotopic composition and its relationship with the reconstructed changes in the Tronador ice cap during the Holocene. The timing and extent of these glacier fluctuations is compared with existing data bases, especially oceanic and ice core data. The integration of these results will aid in establishing more refined models of climate forcing mechanisms in this region of the Southern Hemisphere.