

AMAZON RIVER DISCHARGE SINCE THE LAST GLACIAL PERIOD: A COMBINED LAKE AND MARINE PALEOCLIMATE STUDY

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A crucial question in paleoclimates is whether the Amazon Basin contained very dry savannah or rain forest during the last glacial period. To investigate this question we have reconstructed: 1) the Amazon River out-flow using marine sediments and 2) precipitation in Peru using sediments from Lake Junin.

Ocean Drilling Project Leg 155 Site 942 was drilled to the west of the Amazon Fan to monitor the Amazon River freshwater discharge. Site 942 age model was provided by 12 AMS radiocarbon dates. Site 942 planktonic foraminifera *N.dutertrei* stable isotope record reflects global ice volume, temperature and the mixing ratio of isotopically depleted river water with isotopically enriched seawater. Hence the magnitude of Amazon River discharge can be reconstructed. This reconstructed Amazon outflow history bears a striking resemblance to the Peruvian Lake Junin oxygen isotopic record, another measure of effective moisture in equatorial South America. Both records indicate a dry glacial and Younger Dryas, with the Amazon outflow being only 40% of its current strength. There is then a sudden shift to wetter conditions at the Younger Dryas/Holocene transition and steadily increasing effective moisture levels through the Holocene. We suggest that this is a response to increasing summer insolation in the southern hemisphere which resulted in an intensified convection and easterly flow of moist air across the Amazon Basin and thus increased average rainfall over the entire Amazon Basin.