



ENSO-triggered floods in South America

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ENSO-triggered floods altered completely the annual discharge of most watersheds of South America. Anomalous years as 1941, 1982-83 and 1997-98 signified enormous discharges of rivers draining toward the Pacific but also to the Atlantic Ocean. These floods affected large cities as Porto Alegre, Blumenau, Curitiba, Asunción, Santa Fe and Buenos Aires. Maximum discharge months are particular and easily distinguished at those watersheds located at the South American Arid Diagonal. At watersheds conditioned by precipitations delivered from the Atlantic or Pacific anticyclonic centers the ENSO-triggered floods are difficult to discern. The floods of 1941 affected 70,000 inhabitants in Porto Alegre. In 1983, Blumenau city was flooded during several days; and the Paraná River multiplied 15 times the width of its middle floodplain. The Colorado River in Northern Patagonia connected for the last time to the Desaguadero-Chadileuvú-Curacó system and therefore received saline water. ENSO years modify also the water balance of certain piedmont lakes of Southern Patagonia: the increases in snow accumulations cause high water levels with a lag of 13 months. The correlation between the maximum monthly discharges of 1982-83 and 1997-98 at different regions and watersheds indicates they can be forecasted for future floods triggered by same phenomena. South American rivers can be classified therefore into ENSO-affected, and ENSO-dominated, for those within the Arid Diagonal that are exclusively subject to high discharges during these years.