Extreme discharge events in the Paraná River and their climate forcing.

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Abstract

The largest discharge anomalies of the Paraná River were examined focusing on the contribution from the sub-basins and on the climate forcing of these events. Major discharge anomalies at Corrientes originated in the central and southern Upper Paraná basin with relatively small contributions from the Paraguay River and the northern Upper Paraná basin.

About two thirds of the major discharge anomalies in Corrientes occurred during El Niño events while none was registered during La Niña events. Major discharge anomalies related to El Niño occurred either in the spring of the year of El Niño onset or in autumn of the following year (autumn (+)) accompanying the precipitation signal of El Niño in eastern subtropical South America. The signal during autumn (+) is the most relevant as five out the six top discharges of the Paraná River at Corrientes occurred in this season. The remaining third of the major discharges not related to El Niño took place during the austral spring or austral summer of neutral periods. In each of these seasons, they share a common sea surface temperature anomaly pattern in the proximity of the South American coasts.