



## **TRMM and the global interannual variability of rain over the past five decades**

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Until 1979, the evidence linking El Niño with changes in rainfall around the world came from rain gauges measuring precipitation over land and a handful of islands. Before the launch of the Tropical Rainfall Measuring Mission (TRMM) in November 1997, the remote sensing evidence gathered since 1979 was confined to ocean rainfall because of the very poor sensitivity of the instruments over land. In this paper we analyze the first five years of the first global land and ocean remote-sensing record of rainfall. We distill the information into a few objective indices, the first principal components of the rain anomaly, and extend them back in time to show how the global remote-sensing record implies that El Niño is indeed the major driver of the global interannual variability of rainfall.

Also note, that the contrast between the coefficients over the Eastern and Western Indian Ocean appears to highlight the recently identified Indian Ocean Dipole oscillation, a phenomenon that has not been directly tied to ENSO. Unfortunately, the fact that the TRMM record is quite short makes it very difficult to extract much quantitative information about the correlation between the rain anomaly principal components and SST anomalies in the Indian Ocean. Nevertheless, the clear contrast between East and West begs further investigation.

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