

# **Severe rainfall over northeastern Brazil**

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During the whole month of January 2004, usually one of the driest months of the year in Northeastern Brazil (NEB), an upper troposphere cyclonic vortex (VCAN) produced high rainfall totals over the region. In the State of Alagoas, the month rainfall totals were, in general, above 300 mm, 5 to 12 times the local means, and an estimated material loss and damages of about US\$10 million. The month synoptic analysis was performed aiming at characterizing the large-scale circulation patterns related to the severe weather event and radar data analyzed to learn about the structure of the thunderstorms cells. It was observed that VCANs occurred mainly during La Niña events or years when the equatorial Pacific sea surface temperatures were near normal. Considering that the frequency of La Niña events increased during the cold phase of the Pacific Decadal Oscillation (PDO), it was hypothesized that the frequency of VCAN will increase in the next 20 to 25 years, once the PDO apparently is entering in its cold phase again.

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