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## SYNOPTIC ANALYSIS OF HEAVY RAINFALL EVENTS IN THE PARAÍBA DO SUL RIVER BASIN

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### RESUMO

Heavy Rainfall Events (HREs) are usually associated with significant social and environmental disruptions. Landslides and floods causing injuries, deaths, and material losses might happen during these HREs. HRE usually are influenced by large scale systems with mesoscale precipitation systems embedded. In this study we analyze 10 HREs occurred in the Paraíba do Sul River Basin (PSRB), between 2000 and 2012. The events are selected based on daily precipitation observed in 9 meteorological stations from the National Institute of Meteorology (INMET), located in the PSRB. All the events reach the 99th percentile for, at least, two stations. During these events serious damages were caused to the local population. The analysis is carried out by Satellite Images, Pluviometric data from 34 stations in the PSRB region, Pluviometric Data from Merge Database (Rozante et al., 2010) and Reanalysis data from CFSR (NCEP). The synoptic Analysis shows that most of the events occur during South America Convergence Zone (SACZ) events (8 of 10 events). Cyclonic Vortices embedded in the SACZ have been present in 6 cases (one VCAN Pálmen type). The other 2 cases are due to instability areas. The seasonal distribution shows that 7 cases occur during the summer, 2 in the spring and only one in the autumn. The Conclusion is that the SACZ is the main agent from heavy precipitation during the summer, in concordance with several authors (Carvalho et al., 2002; Dreczynski et al., 2009; Seluchi and Chou, 2009). The complex topography of the Basin Region is also determinant for the elevated totals of rain. Subsequently, the events here studied are related to low previsibility systems occurring locally in an accentuated topography region, being very hard to predict.