

An Investigation on Rainfall Patterns and the General Circulation in the Southwest Pacific Region

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An analysis of ten-year mean precipitation data from 1990 – 1999 is presented, that examines precipitation trends for the western Pacific region, bounded by 155°E – 135°W, 15°N – 30°S. Wind fields derived from the NCEP/NCAR reanalysis data are presented for the same period of study to examine the nature of the airflow for study region. To investigate the possible impacts of convergence and divergence on precipitation distribution, surface and 200 hPa divergence fields are derived using the wind fields and correlated with the precipitation data. Correlation between mean monthly Southern Oscillation Index (SOI) and precipitation is also carried out.

The precipitation patterns reveal several features that are prominent during the monthly and seasonal time scales. There is a rise in precipitation during highly negative surface divergences and a fall during positive surface divergences on the spatial map. It has been shown that summer shows the highest negative correlation between precipitation and surface divergence while autumn shows the least at the 5% level of significance. Correlation between SOI and precipitation indicates that highly positive correlation between the two variables exists along the zone of the South Pacific Convergence Zone (SPCZ).

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