



The relationship between the Madden-Julian Oscillation and the land surface soil moisture

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The impact of the Madden-Julian oscillation (MJO) on the global land surface soil moisture was explored in the study. The MJO index was calculated from long term 1997-2013 GPCP precipitation and ERA-Interim 850-hPa and 250-hPa zonal winds. The composites of soil moisture anomalies over eight MJO phases were mapped and analyzed. The soil moisture was found to show variations within the eight MJO phases across many areas, e.g. over India and Australia. The relation between the soil moisture and precipitation anomalies during MJO event days was also investigated spatially and temporally. The results show that the variation of soil moisture over MJO phases is related to its connection to precipitation. In addition, large similarities were found between GPCP-derived MJO index and corresponding ESA CCI soil moisture composites, and ERA-Interim-derived MJO index and corresponding ERA-Interim soil moisture composites. Owing to the different resolutions of the CCI and ERA-Interim soil moisture, CCI is more appropriate for regional and ERA-Interim dataset for large-scale MJO related analysis.