



Satellite-observed soil and vegetation moisture content (1978-2006) show strong inter-annual ENSO signal across Australia

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Estimates of near surface soil moisture and vegetation moisture content (i.e. optical depth) were derived from passive microwave observations by four satellite sensors (SSMR, SSM/I, TRMM and AMSR-E) going back to 1978 using the VUA algorithm. Differences in measurement specifications mean that the data cannot be directly merged. A continuous product was developed for Australia by scaling percentiles of the temporal moisture distribution within each cell of a grid to those of a baseline sensor (AMSR-E). The scaling parameters provided information on data quality for the different sensors. As much as possible, it was analysed to what extent the procedure followed may have removed any long-term trends in the merged time series. Using the resulting product, the main drivers of land surface hydrology were assessed across the continent using statistical spatiotemporal analysis techniques to compare moisture patterns with different modes of oceanic circulation. A similar comparison with an interpolated rainfall product for the same period suggested - within the limitations of passive microwave technology - good quality and consistency in the soil and vegetation moisture product. The analysis confirmed the strong ENSO signal in surface hydrology across Australia and revealed a secondary influence of Indian ocean circulation.