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Evaluation of TRMM rainfall for soil moisture prediction in a sub tropical climate

The Tropical Rainfall Measuring Mission (TRMM) is a joint space mission between NASA and the Japan Aerospace Exploration Agency (JAXA) designed to monitor and study tropical rainfall. In this study, the daily rainfall from TRMM has been utilized to simulate the soil moisture content in a vertical soil profile of 30 cm at an interval depth of 15 cm by using the numerical model, HYDRUS-1D. The simulated soil moisture content and ground based measurements indicate an agreeable goodness of fit between the both. For the soil depths 0-15 cm and 15-30 cm, the comparison of observed and simulated soil moisture content is based on the Nash Sutcliffe efficiency, being 0.70 and 0.63 respectively and the relative root mean square error, being 0.106 and 0.138 respectively. The analysis reveals that TRMM rainfall is a promising for soil moisture prediction, in absence of ground based measurements of rainfall.