

Inter-comparison of GNSS and radiometer-derived water vapour during rainfall events

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Water vapour is considered to be the main greenhouse gas. Therefore, knowing of how water vapour is distributed in the troposphere is an important part of the climate research that helps us understand how the climate is changing. The common way to determine the amount of water vapour is to use water vapour radiometers. However, those devices could be unreliable at certain conditions, like precipitation periods. In this paper, the accuracy and reliability of water vapour measurements derived from radiometers during rainfalls was studied. Data derived by the radiometers was compared to water vapour estimates obtained from GNSS measurements. The GNSS data was processed with G-Nut/Tefnut software using Precise Point Positioning technique. Tested time series covered several periods with precipitation and severe weather conditions. The results show that water vapour radiometers should be complemented by GNSS receivers, and that applies in particular to rainfall periods.