



Diurnal differences in ERS scatterometer backscatter for West Africa

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Soil moisture estimates from the ERS-1, -2, and MetOp scatterometer instruments are available as a long time series since 1991. Especially in semi arid regions, such as West Africa, the soil moisture estimates provided by the TU Vienna show good soil moisture signals. To better understand the satellite backscatter data and the corresponding soil moisture estimates, differences between different overpass times were analyzed.

An analysis of more than 15 years of ERS scatterometer data shows distinct patterns in backscatter between different overpass times for West Africa. Differences between backscatter data from descending (10.30 am) and ascending (10.30 pm) tracks show systematic spatial and temporal patterns that do not correspond with the moisture distribution in West Africa.

This study investigates the distribution of the diurnal backscatter differences over space and time. The fact that most regions show spatially persistent patterns that have clearly defined annual cycles suggests that systematic processes are the cause. Next to the regional mapping of the detected diurnal patterns, several possible causes are postulated and discussed. First results suggest that diurnal differences in vegetation water are among the most probable explanations for the detected anomaly.