



Improving spatial crop simulation using the ASCAT Soil Moisture Product.

G. Kubu (1), S. Thaler (1), J. Eitzinger (1,2)

(1) Institute of Meteorology, BOKU-Met, Vienna, Austria (josef.eitzinger@boku.ac.at), (2) CzechGlobe - Center for Global Climate Change Impacts Studies, Brno, Czech Republic

Limitations of spatial crop model applications are often related to availability and quality of spatial model input data. One of the most promising methods to improve spatial applications of ecosystem models is the use of remote sensing data. Especially precipitation and soil input data and related soil water content variations need to be considered critically, because of its importance for soil water storage and water availability for crops. Since most models integrate at daily time steps, daily weather input data are needed including maximum and minimum temperature, solar radiation as well as precipitation. Soil water content at different soil layers is a common daily model output as it is a main growth limiting factor. Similarly the spatial-temporal surface water contents are critical for high resolution crop modelling. In the frame of the Global Monitoring of Soil Moisture for Water Hazards Assessment (GMSM) Project procedures for better spatial-temporal crop model initialisation and calibration are investigated. For this purpose the dynamic crop growth and yield model DSSAT was applied in the case study region of "Seewinkel", which is one of the driest and warmest regions in Austria. First results show good agreement of the course of daily measured and simulated soil moisture with the ASCAT 25 km products. The results point directly to one of the most significant advantages of ASCAT soil moisture data which should be used for improving spatial crop yield modelling: The use of information on spatial-temporal variability of top soil moisture could improve the spatial crop yield simulations as compared to the use of the point information of single weather stations.