



Eddy Covariance-Measurements of carbon dioxide and water vapour fluxes of a sugar beet canopy for the validation of the DANUBIA crop growth model

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Within the GLOWA-Danube project (www.glowa-danube.de), the object-oriented, distributed and multi-disciplinary decision support system DANUBIA is developed. DANUBIA aims at assessing climate change impacts upon future water availability on the regional scale. DANUBIA couples natural science and socio-economic processes. Eddy Covariance Measurements provided by a Campbell/Licor system were used to measure the fluxes of carbon dioxide, water vapour and sensible heat over a sugar beet canopy. These measurements are used to validate the newly developed crop growth model of DANUBIA. Measurements were taken during the growing period of 2006.

The paper will present and discuss the system setup and data processing methods used to calculate the respective fluxes. The measured raw fluxes require a well-chosen set of corrections and quality controls, depending on the location and the measurement system. The response of each applied correction to our data set was studied and will be discussed. All fluxes were quality checked and flagged as high, moderate and low quality data.

The performance of the quality test labelled nearly 60 % of the data as good quality data. Examples for typical day- and night time fluxes will be discussed as well as the calculated net ecosystem exchange of carbon and water. The measurements will be utilized to validate the modelled carbon and water vapour fluxes of the DANUBIA crop growth model for sugar beets. First comparisons between this data and the modelled fluxes of the DANUBIA crop growth model show a good agreement.