**Fakultät Umweltwissenschaften, Fachrichtung Forstwissenschaften**

Institut für Bodenkunde und Standortslehre, Professur für Waldstandorte und Wasserhaushalt

Technische Universität Dresden, 01069 Dresden

## B.Sc./M.Sc. Thesis topic

### Diurnal dynamics of leaf water isotopes in two crop species and their environmental drivers

Leaf water isotopes provide key insights into transpiration patterns and interactions with the atmosphere. The isotopic composition of leaf water can vary significantly over the course of a day due to changes in environmental conditions such as relative humidity and temperature. This project aims to investigate the diurnal variability of water isotopes in winter wheat and maize leaves and identify the environmental factors driving these changes. Meteorological, soil and plant physiological data is available for this thesis  This study forms part of a larger research unit the “Land-Atmosphere-Feedback Initiative” (LAFI; https://lafi-dfg.de/) dedicated to improving the understanding and quantification of land–atmosphere feedbacks (e.g. evapotranspiration fluxes) through unique synergistic observations and model simulations. You will:

- Learn how water stable isotopes ($^{2}H$, $^{18}O$) can help to trace plants’ water cycle
- Learn how to extract plant water for stable isotope analysis
- Interpret diurnal patterns of leaf water isotopes in relation to environmental drivers

### Requirements

- Interest in plant–atmosphere–water interactions and environmental processes
- Motivation to learn and apply new analytical tools and methods
- Willingness to participate in lab work
- Interest in statistics, data analysis (with R) and interpretation

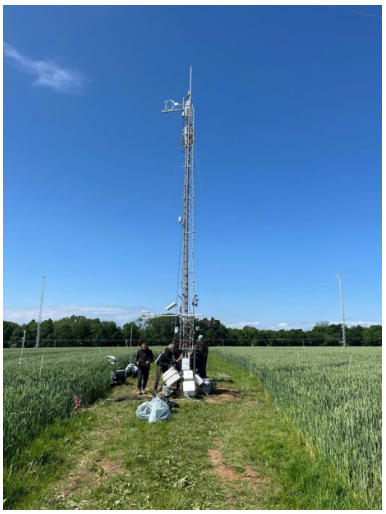

**Fig. 1:** Photo from the field site (“Heidfeldhof”, Uni Hohenheim, Stuttgart)

### Supervision

- Prof. Dr. Natalie Orlowski
- Dr. Claudia Voigt

### Contact

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### Literature

Cernusak, L. A., Barbour, M. M., Arndt, S. K., Cheesman, A. W., English, N. B., Feild, T. S., ... & Farquhar, G. D. (2016). Stable isotopes in leaf water of terrestrial plants. *Plant, Cell & Environment*, *39*(5), 1087-1102.