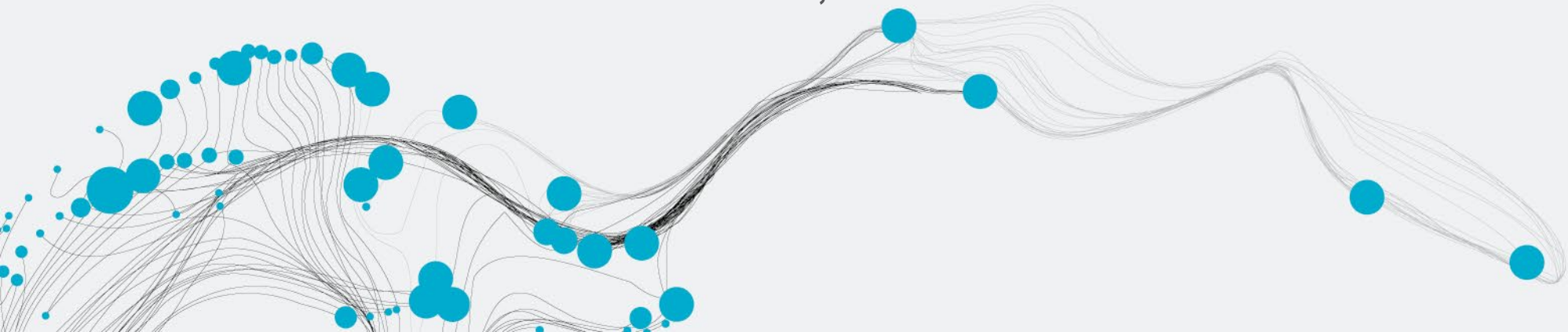
Faculty of Geo-Information Science and Earth Observation, ITC

This HE Teaching Material was supported by the EGU Higher Education Teaching Material Grant 2023

CROP WATER PRODUCTIVITY

AN ONLINE SHORT COURSE BY DR. EGOR PRIKAZIUK WITH SUPPORT OF THE EUROPEAN GEOSCIENCE UNION, EGU



YOU WILL LEARN TO

1. **Explain** the link between **crop yield** and **crop water demand** (reading, lecture)

2. **Link** the **components** of crop water productivity (CWP), plant productivity, evapotranspiration, with the respective **Earth Observation (EO) based modelling techniques** (reading, lecture)

3. **Calculate crop yield** from EO-based **gross primary productivity** (GPP) estimates (exercise, Excel)

4. Identify **phenological metrics** (start, end of the growing season) from EO data (exercise, Excel)

5. Produce **meaningful**, growing season-related **estimates** of CWP (exercise, WaPOR)

6. Conclude on the **efficiency of the water management scheme** in the study area (case study)

Earth Observation data used by WaPOR to compute CWP components

$$gross\ WP = \frac{\sum_{SOS}^{EOS} GPP}{\sum_{SOS}^{EOS} ET}$$

Photosynthesis (GPP)	Evapotranspiration (ET)
Weather data	
air temperature air humidity	
photosynthetically active radiation	wind speed, shortwave radiation, longwave radiation
Vegetation data	
NDVI -> fAPAR	NDVI -> fractional cover leaf area index (LAI)
	albedo (reflectivity and emissivity)

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