Title MSc project: Assessment of water footprint of irrigated crops in the European Union under future climate change scenarios	
Assignment number: 30.17	**Internal/external project** Internal
Head graduation committee Prof.dr.ir. Arjen Y. Hoekstra	**Daily supervision** Dr.ir. Alejandro Galindo
Required courses:	
Involved organisations	**Start of the project** Flexible

Short project description

Agriculture is the largest freshwater user, accounting for 92% of the global consumptive water footprint (Hoekstra and Mekonnen, 2012). Consumptive water use (from both precipitation and irrigation) for producing food and fodder crops is expected to increase at 0.7% per year from its estimated level of 6400 billion m^3 per year in 2000 to 9060 billion m^3 per year in order to adequately feed the global population of 9.2 billion by 2050 (Rosegrant et al., 2009). Raising water productivity in agriculture ("more crop per drop") can contribute to reducing the pressure on the global freshwater resources (Passioura, 2006). The water footprint offers a quantifiable indicator to measure the volume of water consumption per unit of crop (Hoekstra et al., 2011).

Research objective

The aim of this study is to analyze how climate change could affect the green and blue water footprint of growing major crops, in the European Union area, through using a systematic model-based assessment, considering different irrigation strategies and techniques.

Approach

The work will consist of the following steps:

- This study will analyze the effect of field management practices on green and blue ET, crop yield (Y) and green and blue water footprint (WF) under current climate and a variety of irrigation practices, using the AquaCrop-OS model (Foster et al., 2017). This will then lead to an assessment of options to reduce the water footprint and lower the impact on water resources.
- Next, using the same model, ET, *Y* and green and blue WF will be estimated for three different future periods: short term (2030), mid term (2050), and long term (2070), using the new generation of emission scenarios (IPCC, 2014).

References

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