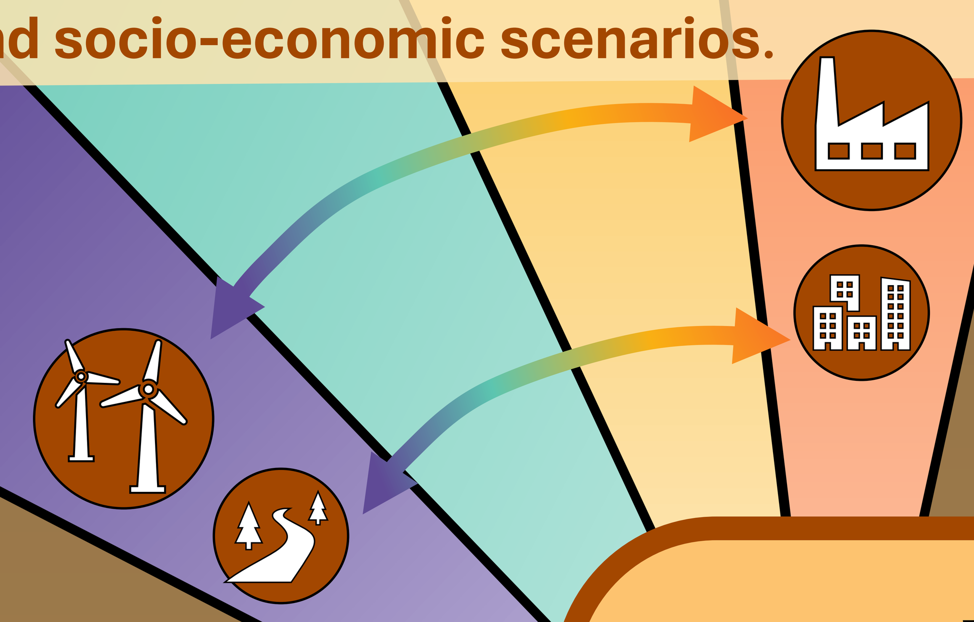
What Lies Ahead: Exploring Droughts in a Changing Climate

1 Many Uncertainties, Different Potential Futures

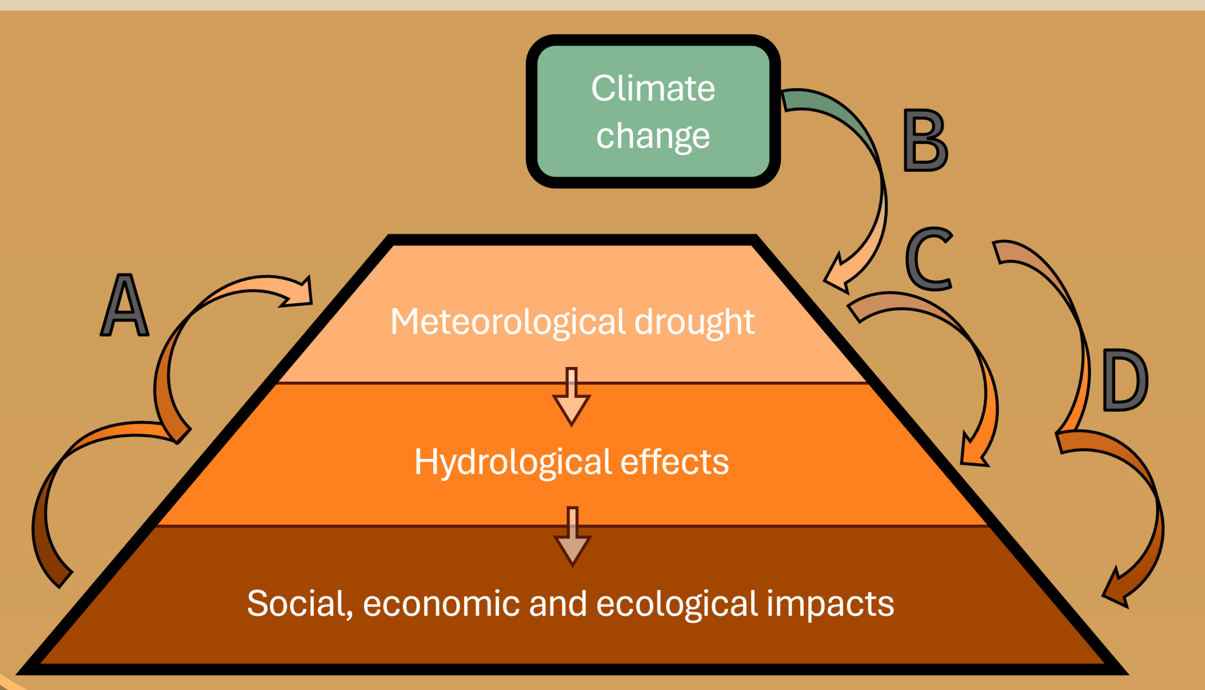
- Droughts impact agriculture, nature and drinking water supply.
- The frequency and severity of droughts is expected to increase in the future.
- However, numerous **uncertainties** exist, regarding future emissions, the response of the climate system to these emissions, and socio-economic developments.
- It is therefore important to study potential future droughts under **various climate and socio-economic scenarios.**



2 Research Outline

2024-2028

This PhD project aims to understand the impact of **climate change** on **meteorological droughts** in the Dutch-German border region, and to assess the **hydrological effects** and **social, economic and ecological impacts** of these droughts in past and future conditions.



A. Determine relevant meteorological indicators based on historic impacts

B. Determine impacts of climate change on meteorological drought

C. Assess hydrological effects of droughts under historic conditions

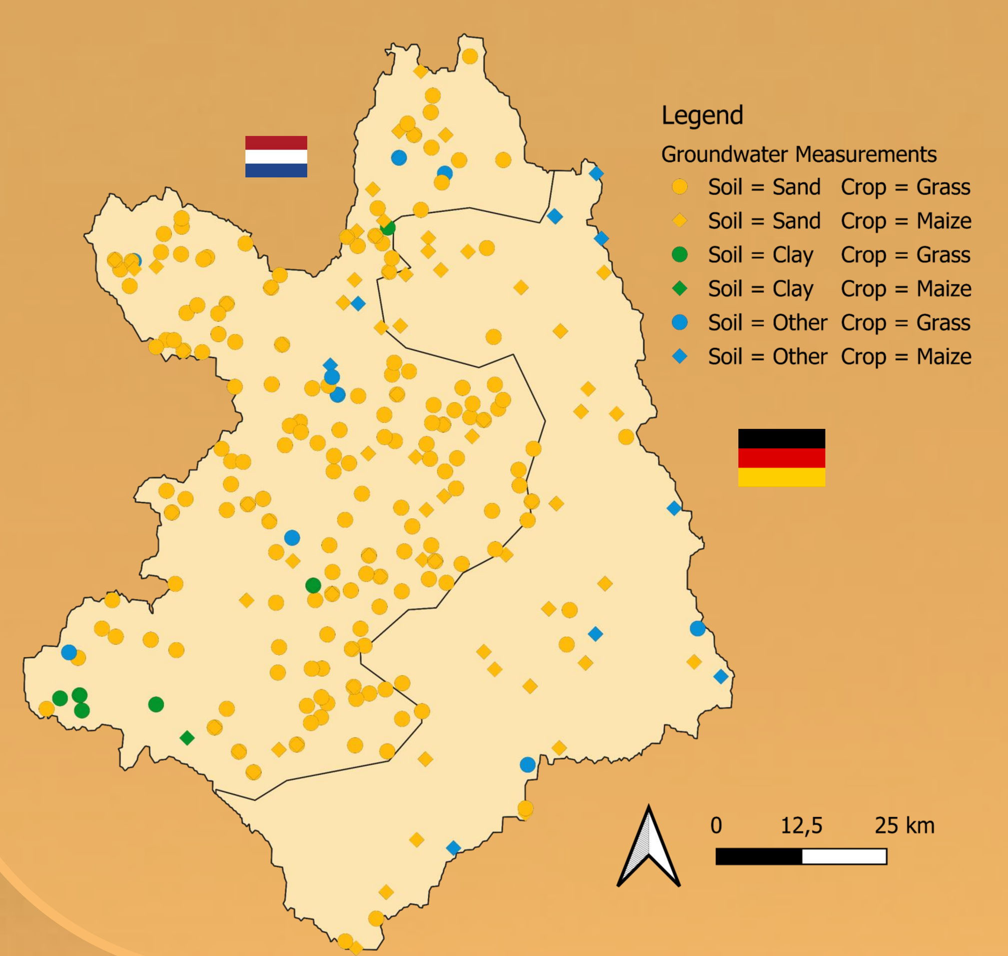
D. Assess impacts of droughts under future scenarios

3 Hydrological indicator for assessing drought impacts to agriculture

Methodology:

- 'Waterwijzer Landbouw' tool was used to compute the yield loss due to drought for 2293 fictional years based on observed groundwater levels
- Correlation between this yield loss and average groundwater depth over different aggregation scales was taken
- Aggregation scale with the maximum correlation is the most relevant timescale

Selected Stations

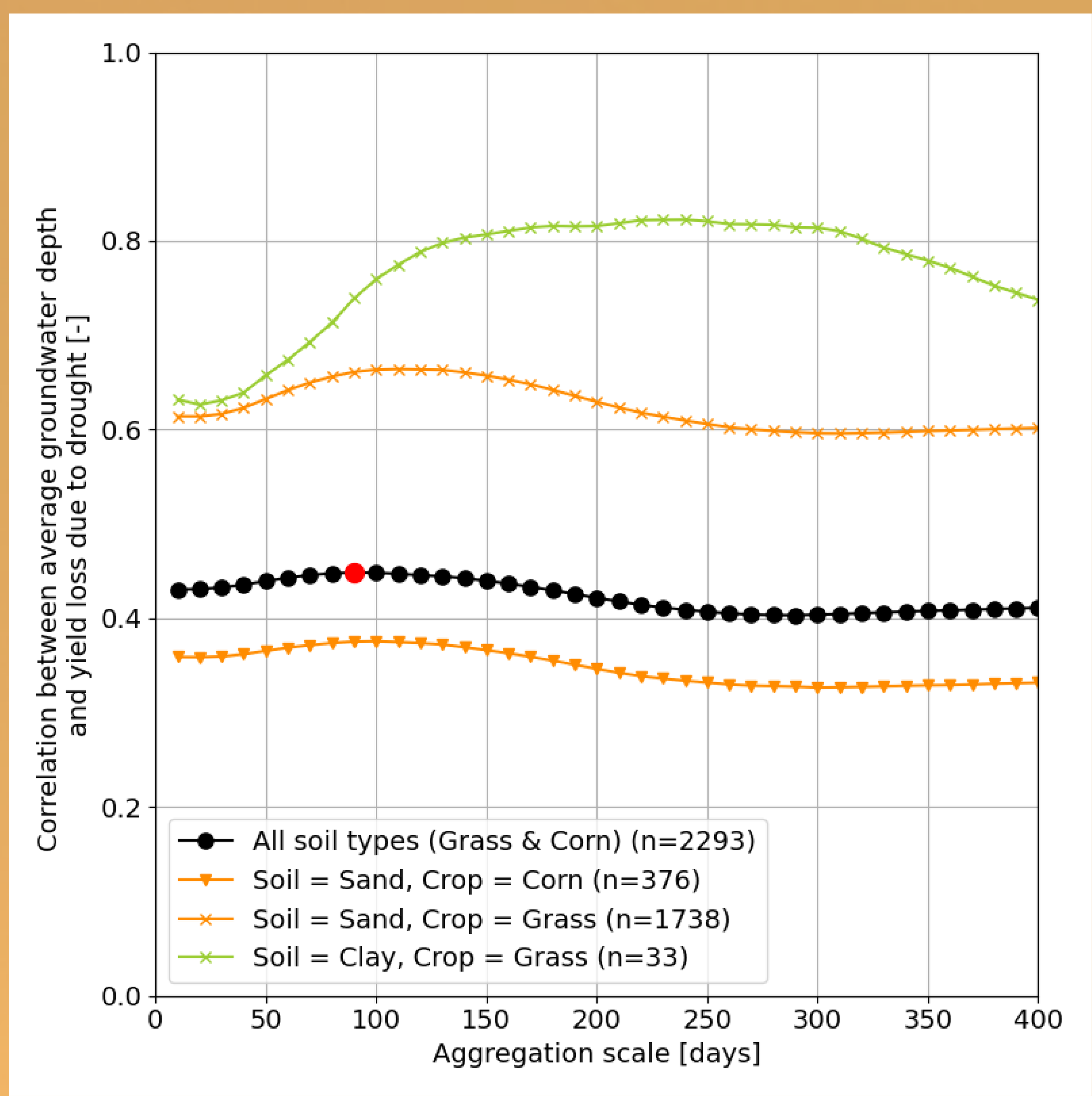


Next Steps:

1. Similar analysis for drought impacts to nature and drinking water supply
2. Determine relevant timescale for meteorological indicators

Preliminary Results

Correlation yield loss and groundwater depth



Interreg Deutschland – Nederland

Drought Strategies in Water Management (DIWA)

UNIVERSITY OF TWENTE.

This PhD research is part of and funded by the Interreg Deutschland-Nederland DIWA project, which aims to develop transboundary approaches to tackle drought and its impacts.

Background Picture: Atienzar, M. (2009). The early bird catches the worm [Photograph]. Flickr.

Questions or Suggestions?

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