



# MODELLING THE IMPACTS OF EXTREME WEATHER EVENTS ON CROP YIELDS USING WATER BALANCE AND SATELLITE SENSOR DATA

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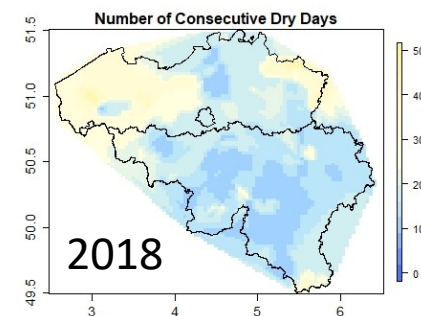
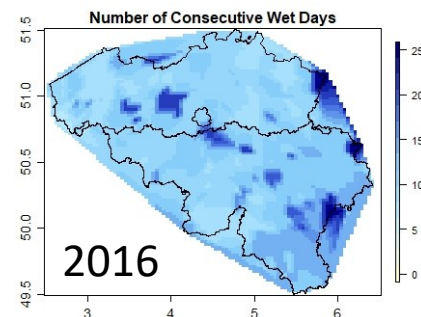
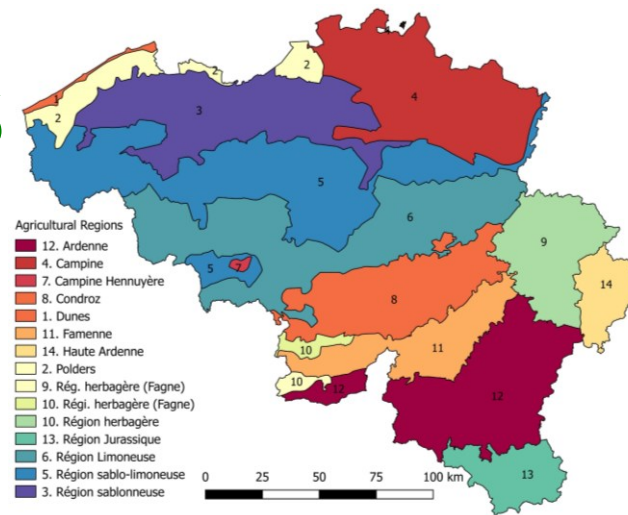
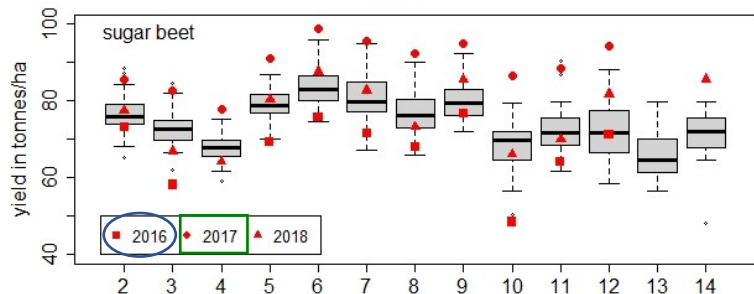
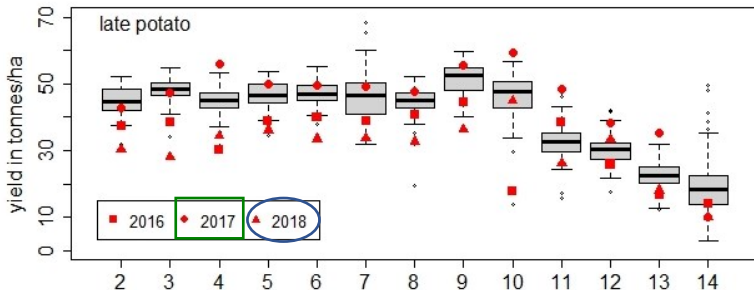
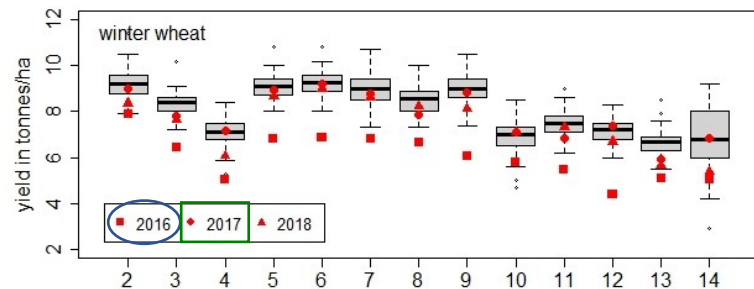
# Climate change est...

THE FUTURE IS NOW



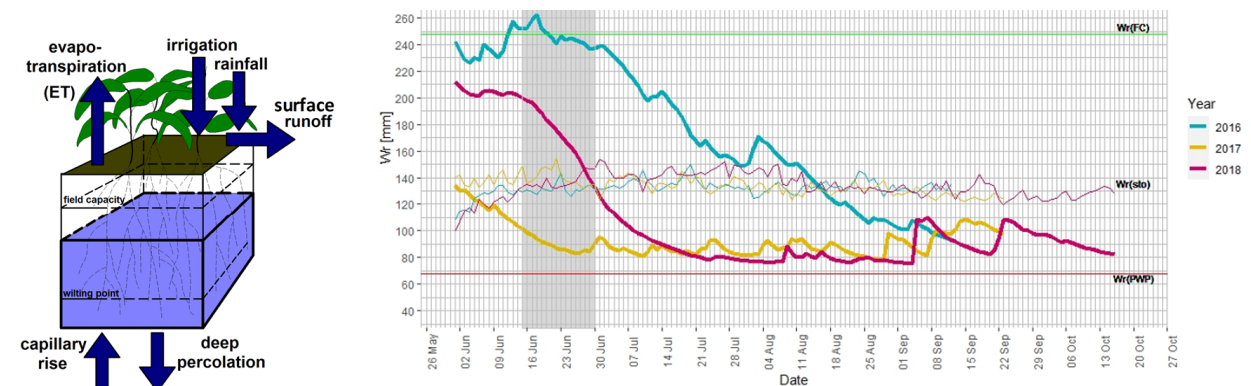
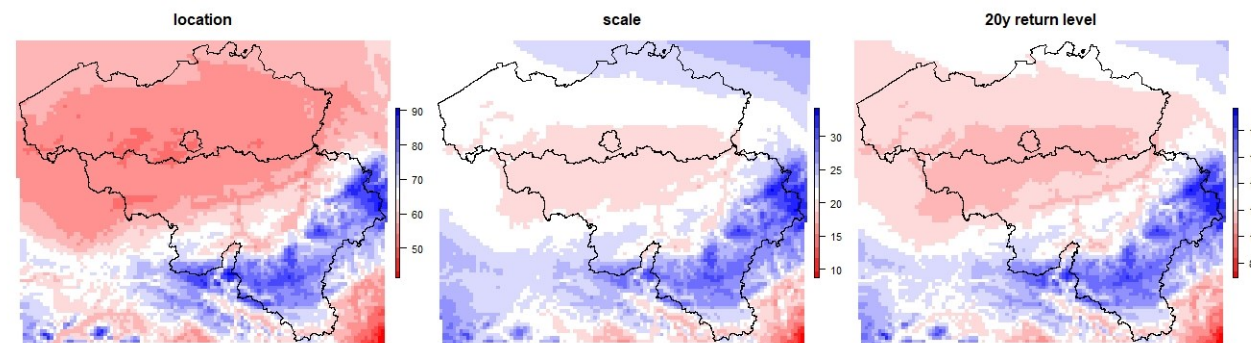
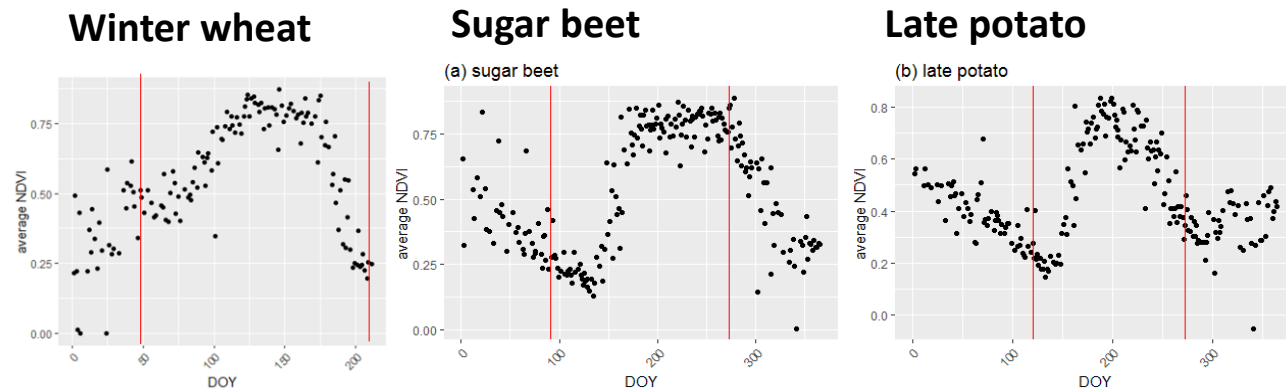
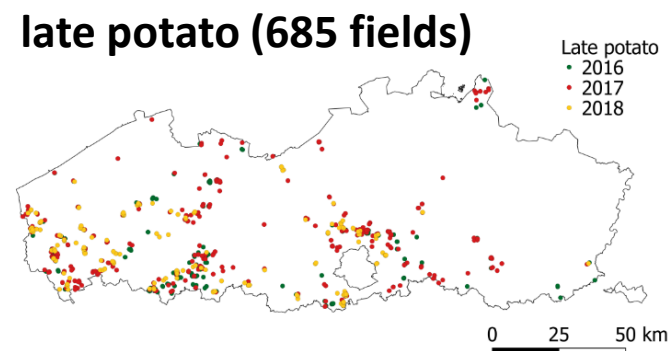
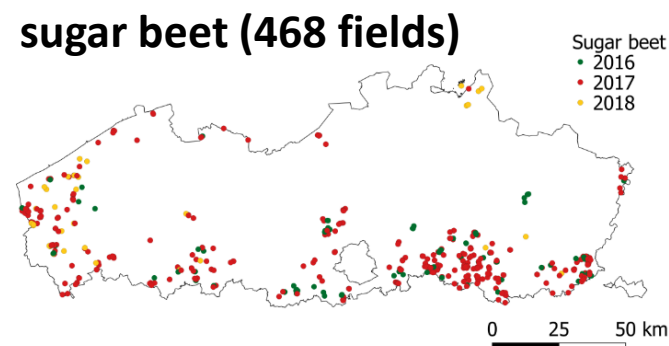
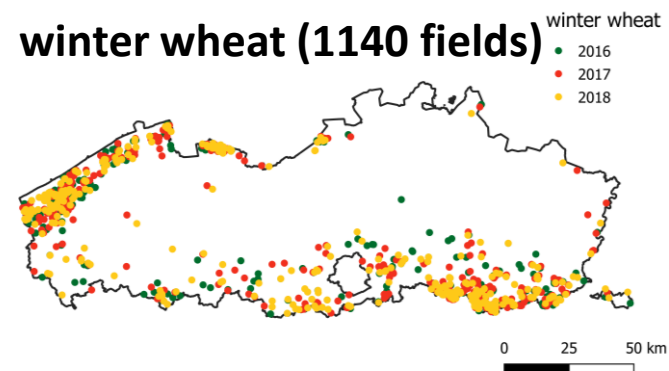


# Arable crop yields





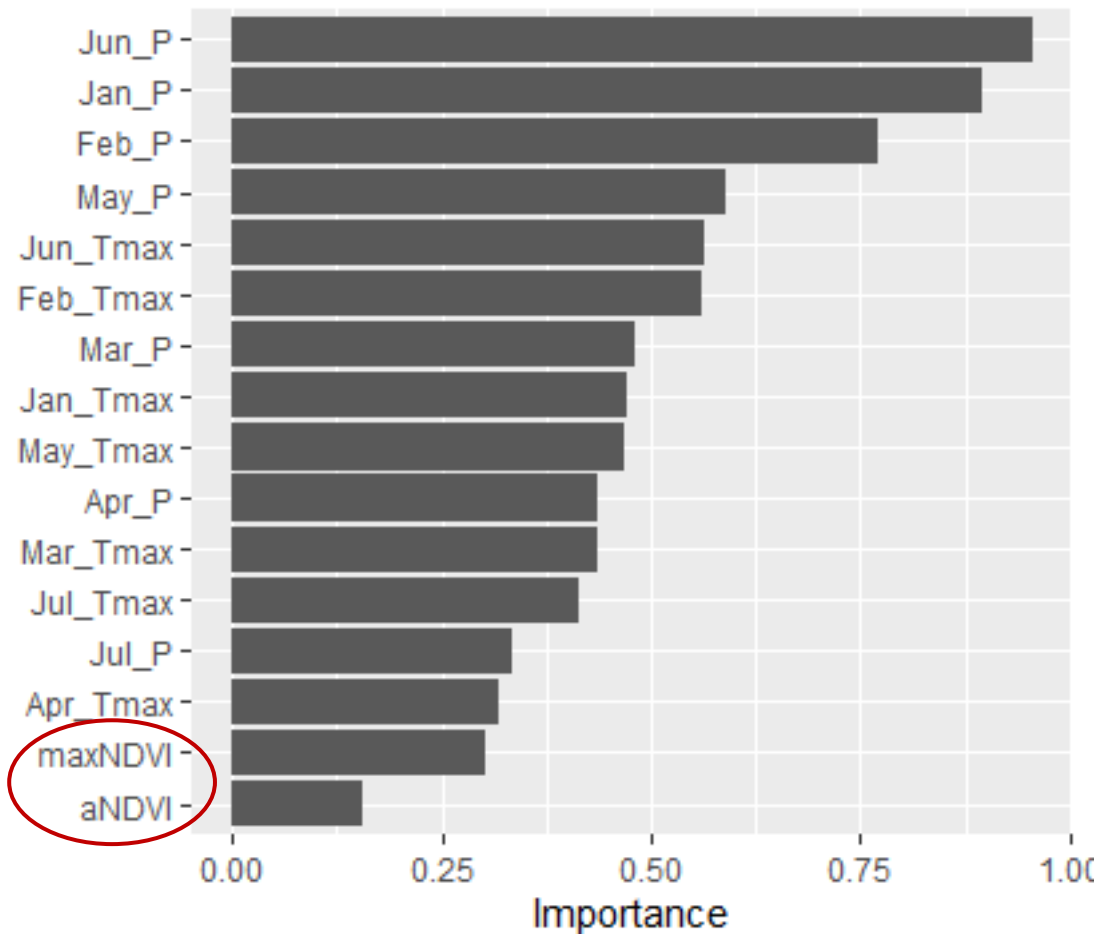
# Data sources



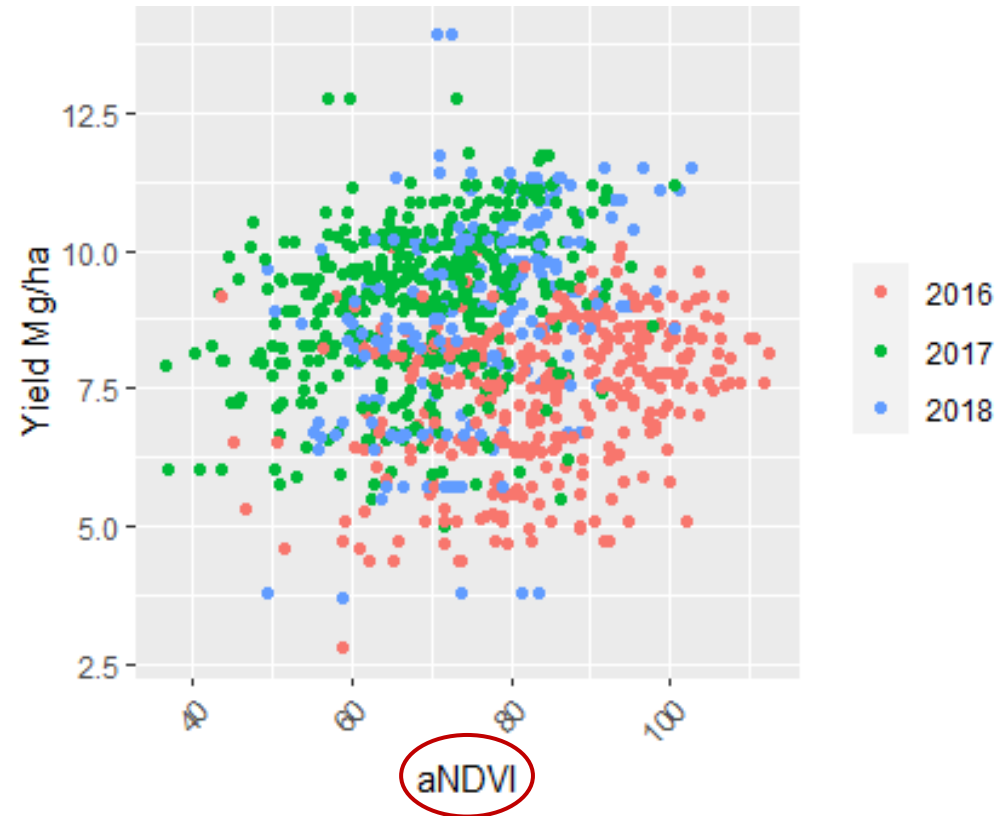


# Model results: winter wheat

Variable importance



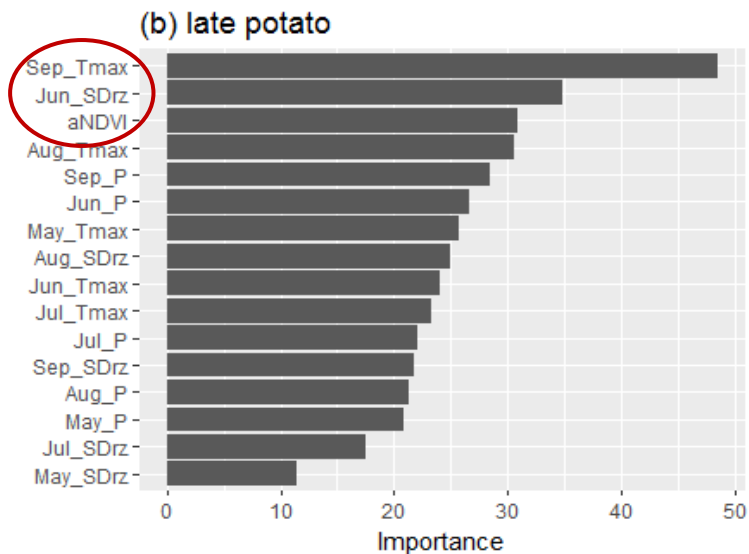
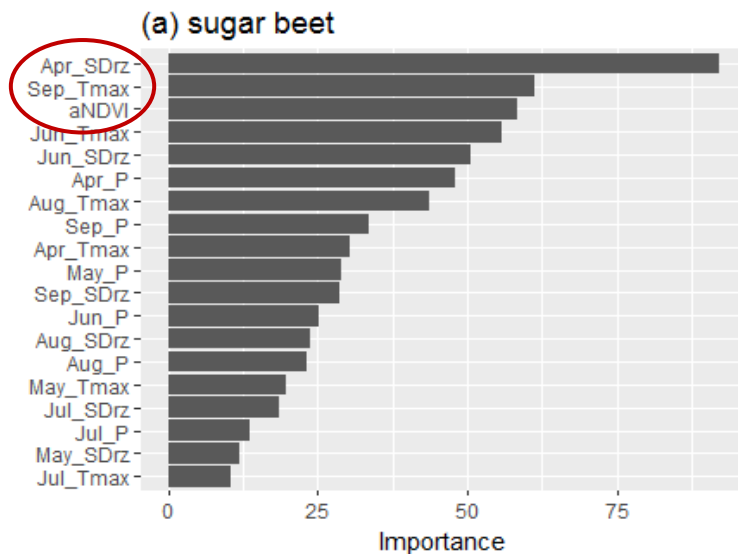
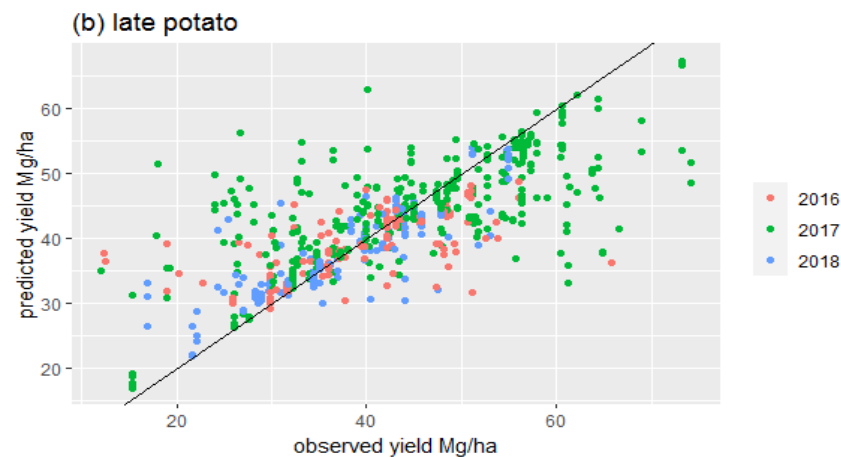
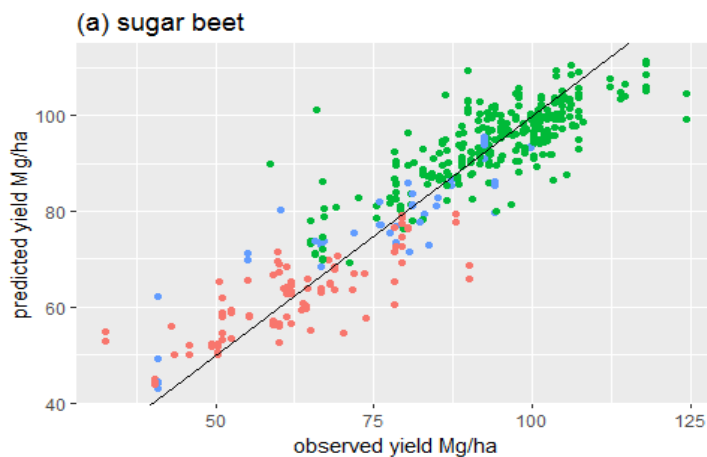
NDVI is not a good predictor for wheat yield in BE



*NDVI needs to be sensitive to yield  
affecting environmental variables for  
effective use in data driven crop models*



# Model results: sugar beet and late potato





# Conclusions



- **Weather** information explained a large part of yield variability
- Modelled **soil water depletion** explained part of sugar beet and late potato variability
- **NDVI time series** explained yield variability when able to capture environmental effects
- **Transferability** of data-driven yield models:
  - Data from multiple years needed to capture year-to-year variability
  - Wide range of environmental conditions should be included in data-driven models

Gobin, A., 2012. *Impact of heat and drought stress on arable crop production in Belgium*. *Natural Hazards and Earth System Sciences* 12: 1911–1922. <https://doi.org/10.5194/nhess-12-1911-2012>

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