Mapping of winter crops across Europe from MODIS time series

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Outline

- Objective

- Data

- Method

- Results

- Conclusions and way forward

Objective

Crop Yield Forecasting System accuracy 🔗 Crops location
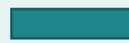
CYFS in the EU ▬ Arable land ➡

- Fix in time
- All crop types

Crop distribution changes ■

Time series length ■

Ground data ■ ■

Small agricultural scale ■ ■

MODIS time series for yearly winter crop mapping in Europe

Data

| MODIS NDVI time series	 BOKU	• NDVI • 250m • 2002 – 2020 • 10 days composite • Smoothed
Arable land map		• Corine land cover
Daily temperature		• 25km grid
Validation		• EU 2018 crop map (10m) • Regional statistics

NDVI

1 Jan   Date of 1800°C   31/08   Time

Method

- NDVI maximum (between 01/01 and 31/08)
- Normalisation to the min of the time series
- Senesce
- 0.75*(Max NDVI value norm)
- Thermal time < 1800°C
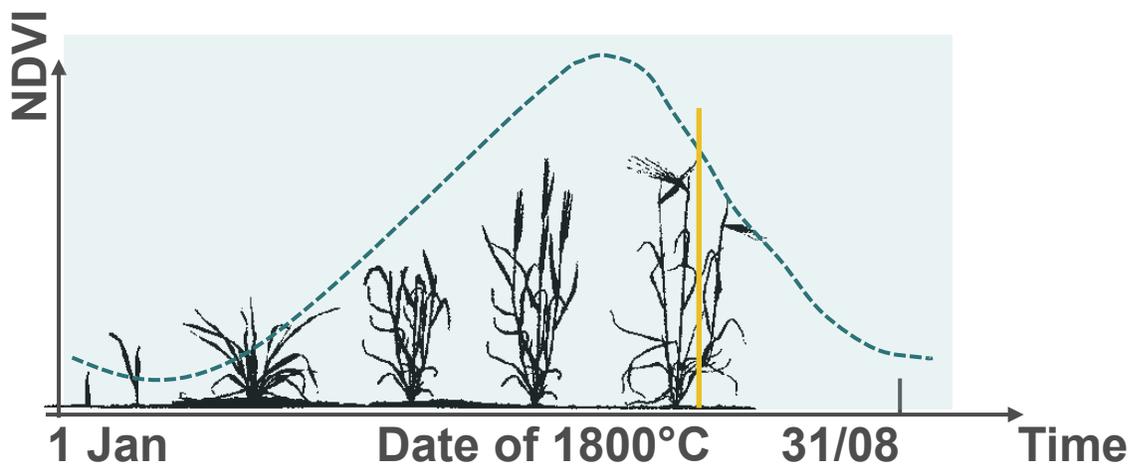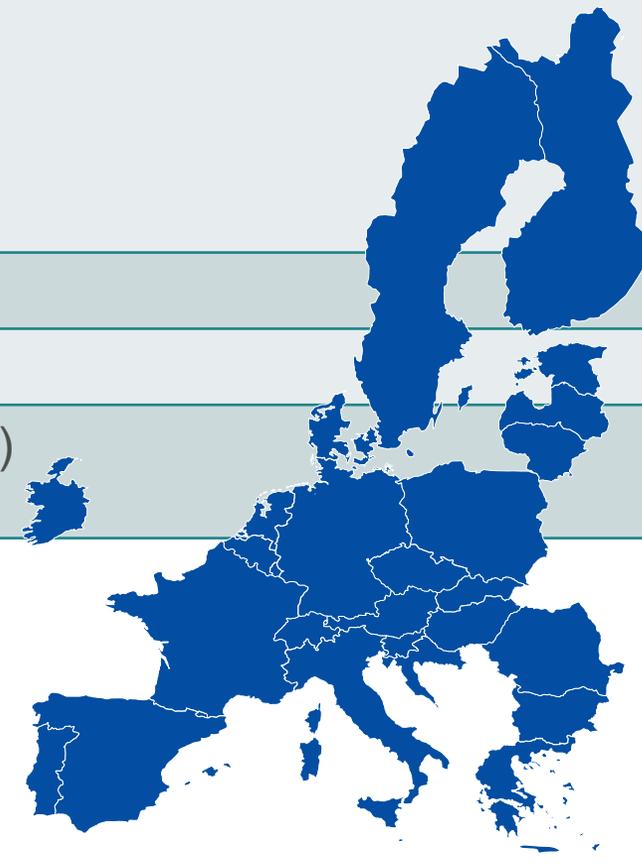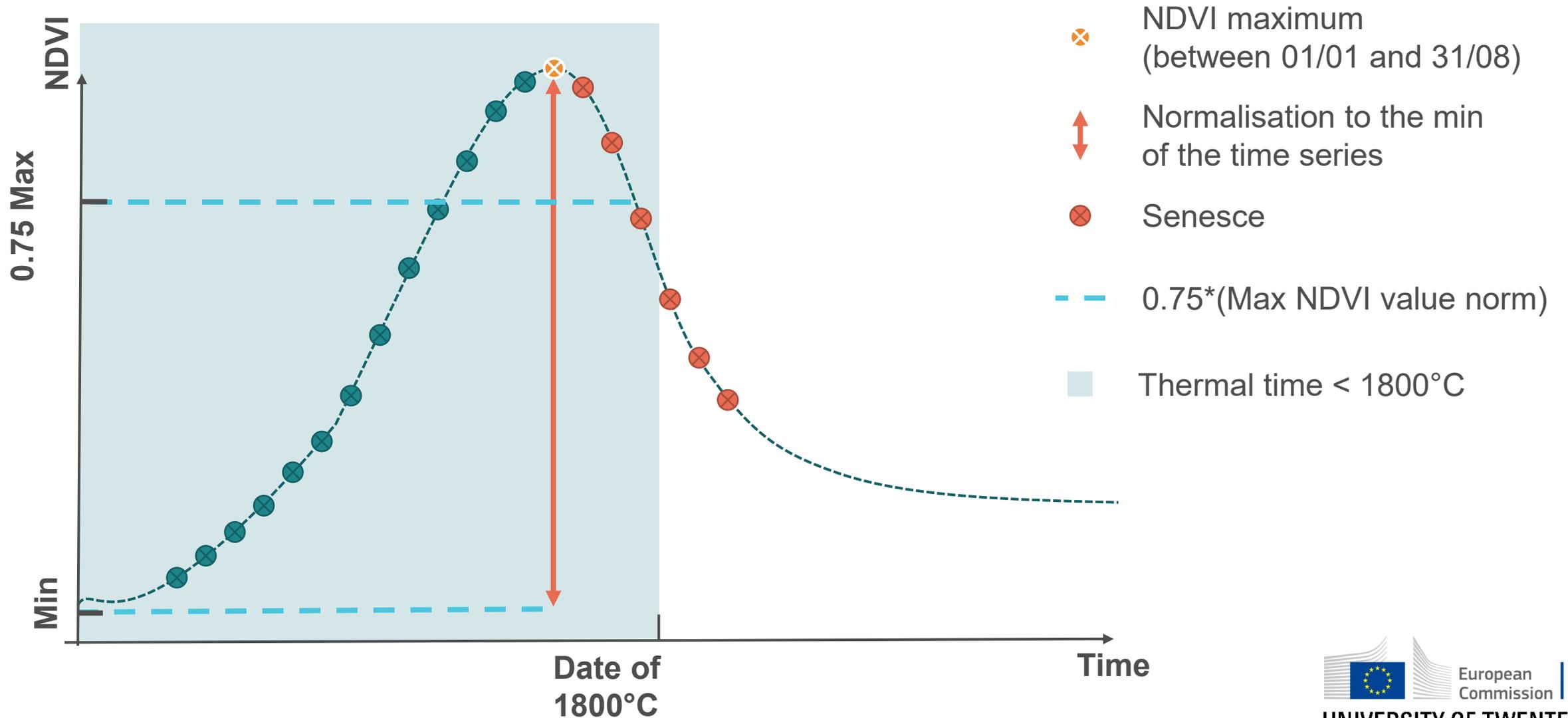
Method
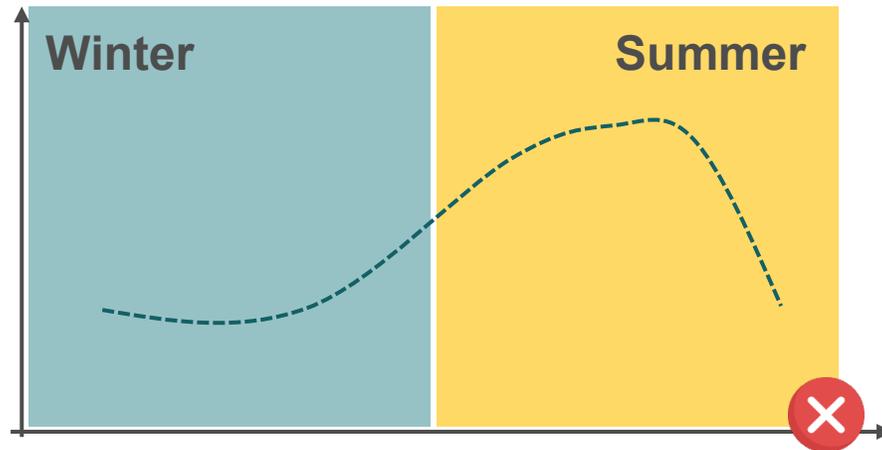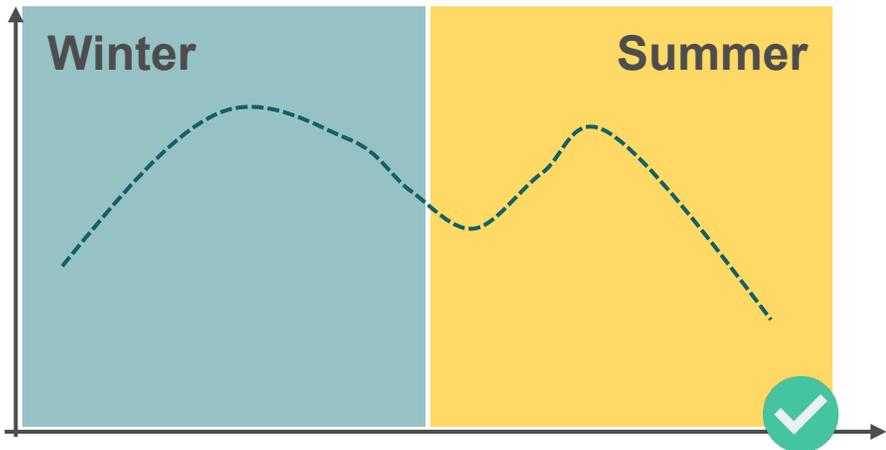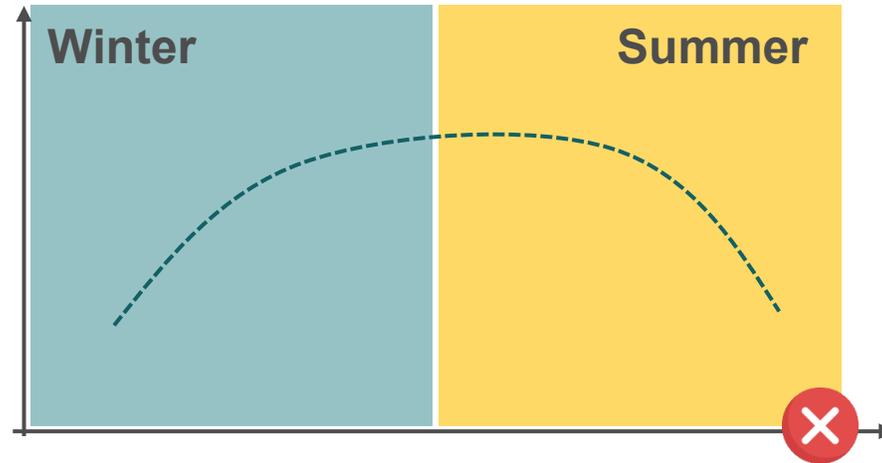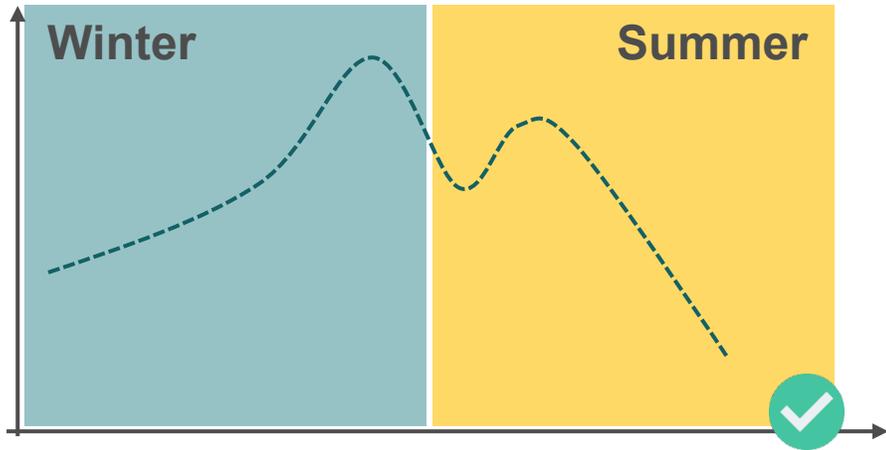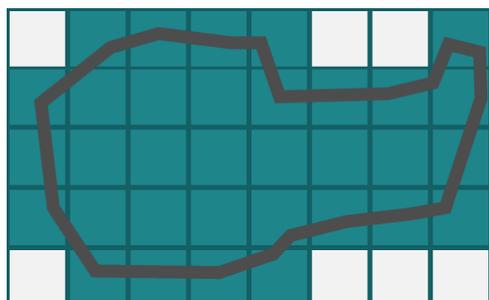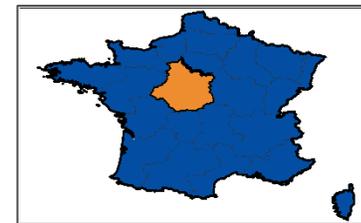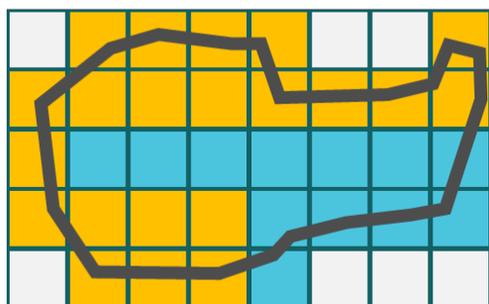
Results

Arable

Winter
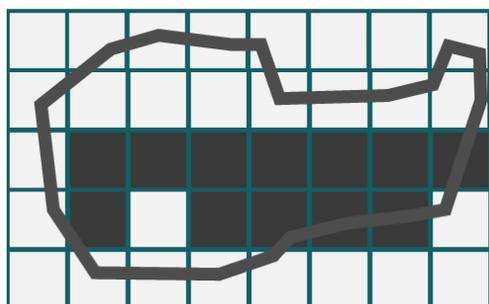
Not Winter

EU2018

FR – Centre – 1st EU winter crops
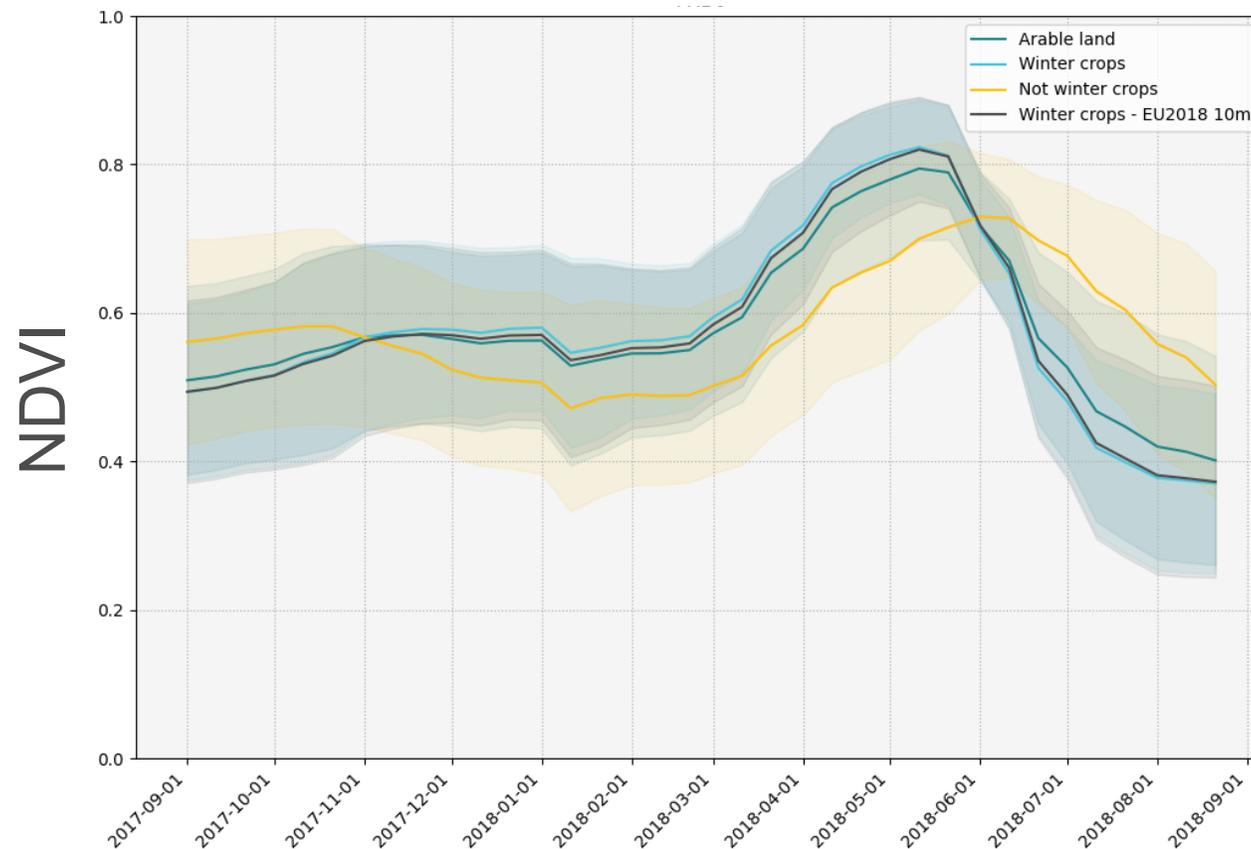
2018
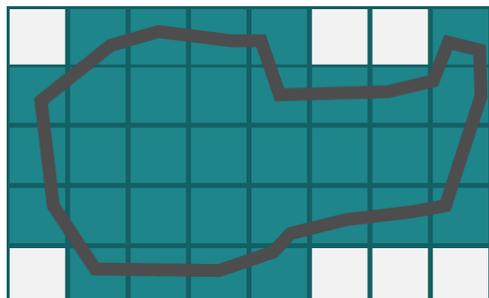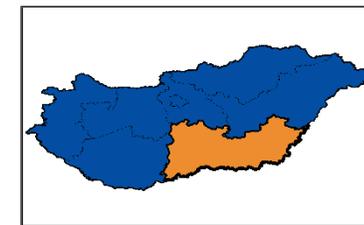
Results

Arable ⟶

Winter ⟶
Not Winter ⟶

EU2018 ⟶

HU – Dél-Alföld – Mix

NDVI

Legend:
- Arable land
- Winter crops
- Not winter crops
- Winter crops - EU2018 10m
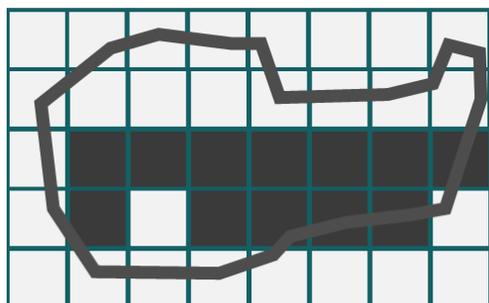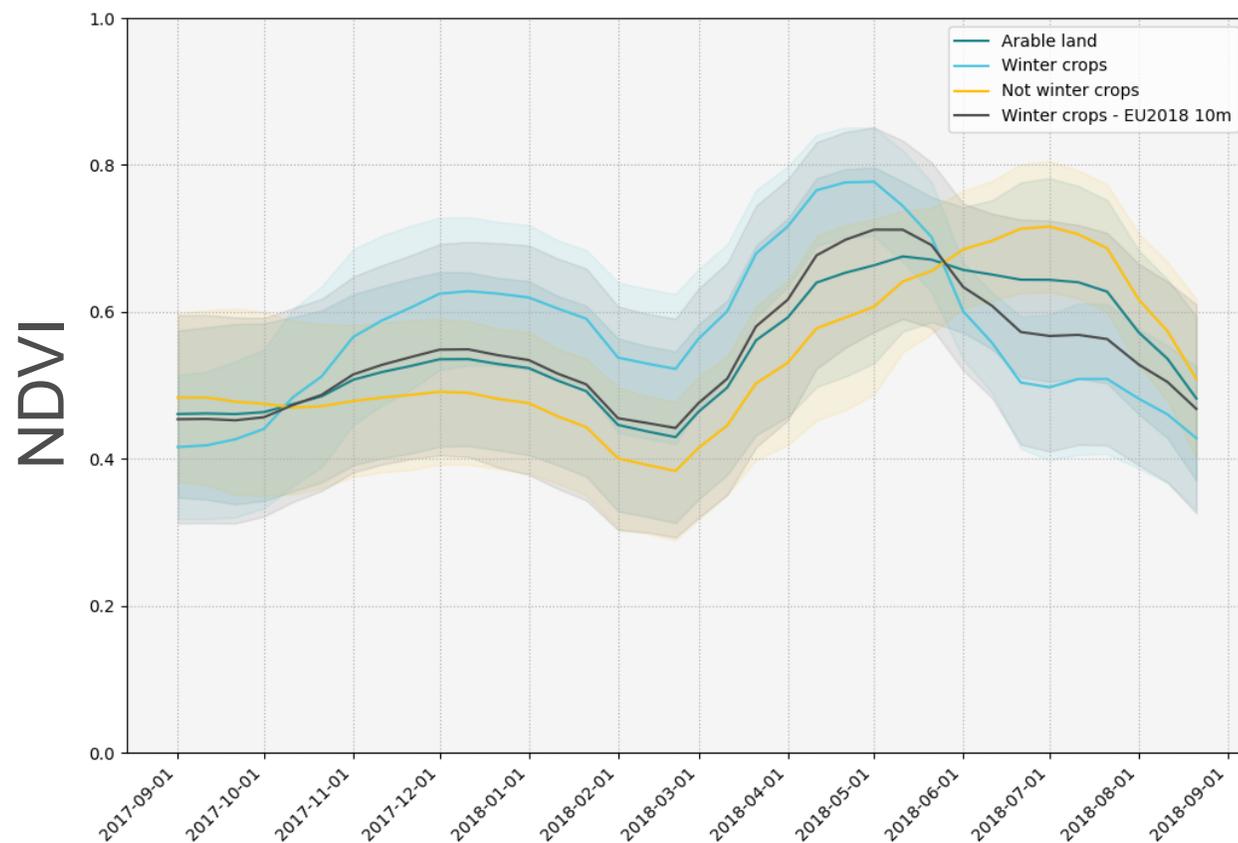
2018

Results

FR – Centre

HU – Dél-Alföld

2018
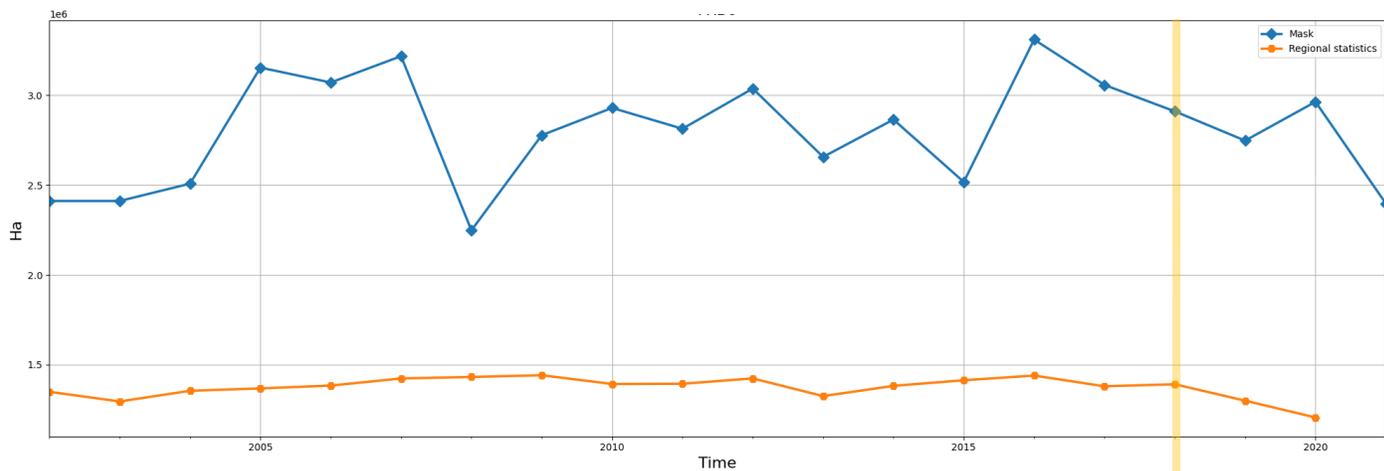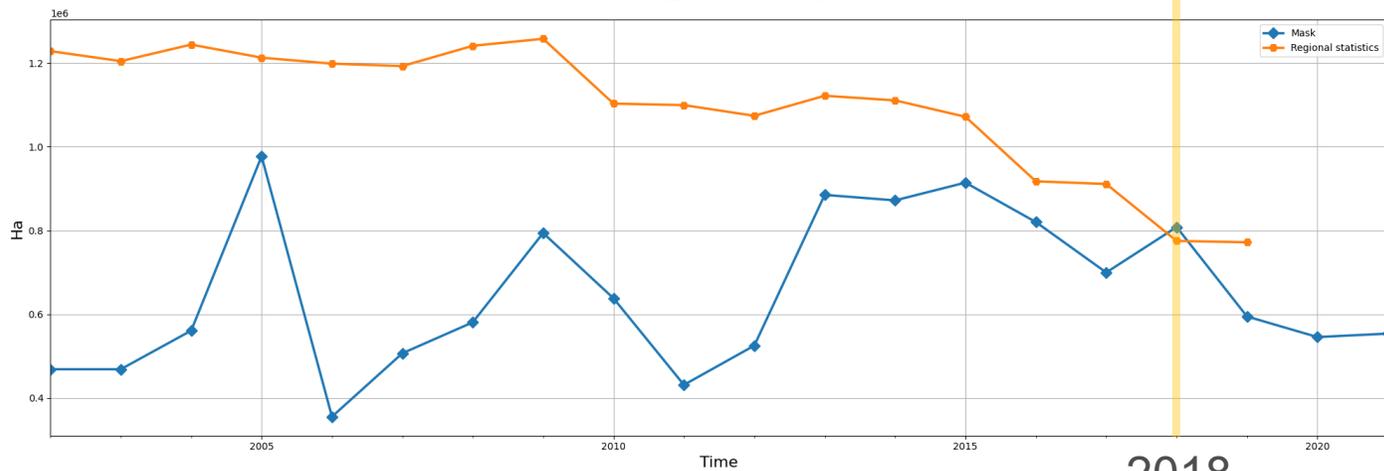
Coefficient of variation
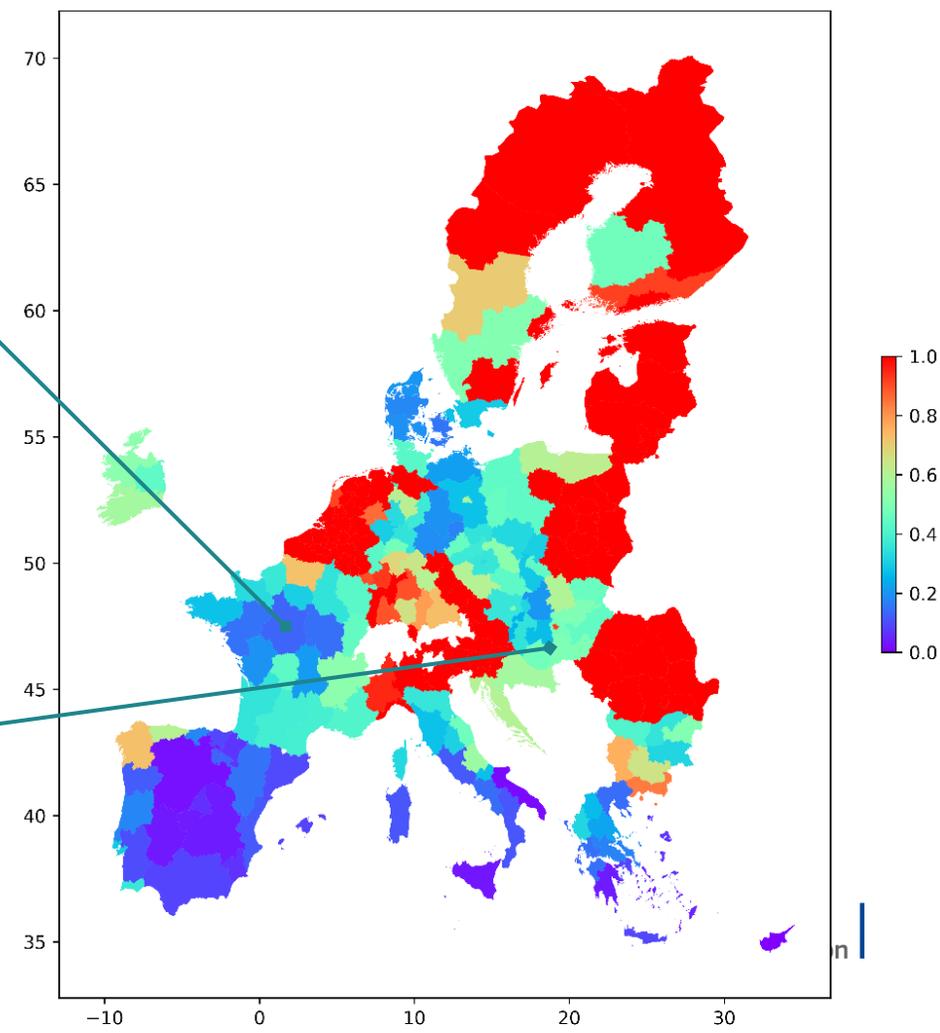
Conclusions and way forward

MODIS time series for yearly winter crop mapping in Europe

- Parametric approach NDVI + T Sum:
  - catches winter crops phenology
  - offers spatial coherence
  - is not consistent in time

- Different parameters values
- Stable pixels (5-years?)
- Consider the green up
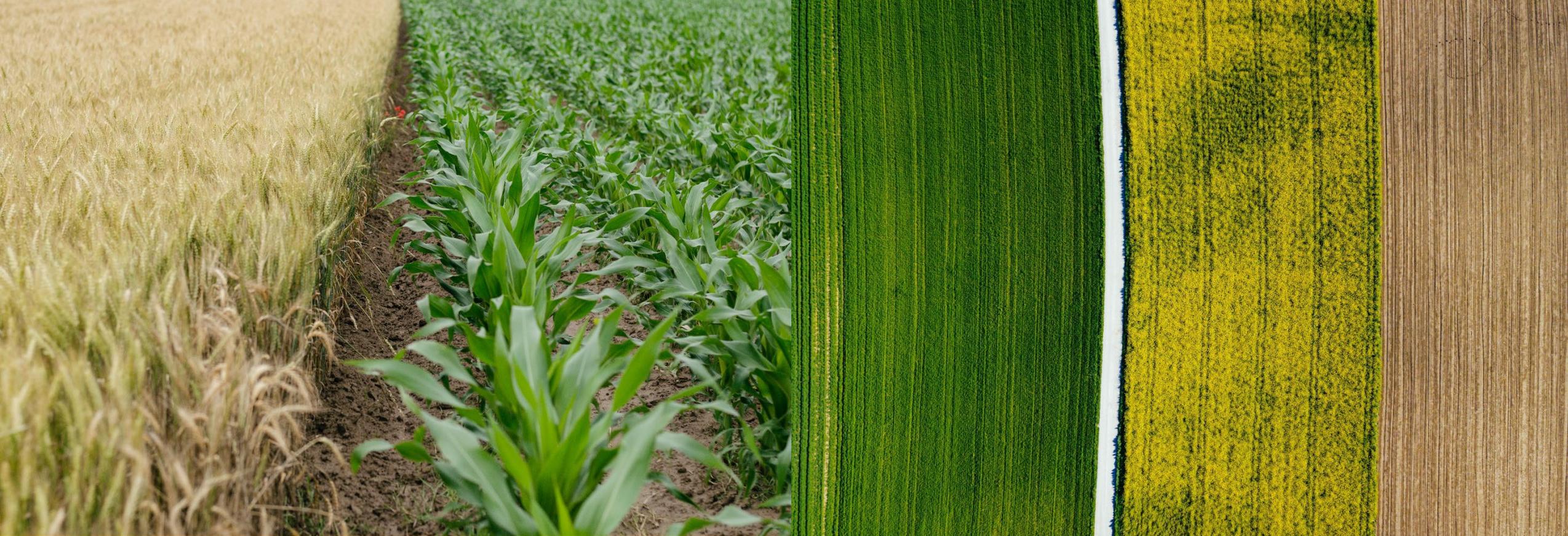
Thank you

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European Commission

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