



Landbrugskortlægning og satellitdata

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Landbrugskortlægning



Agenda

- Afgrøde areal
- Vegetationsstress
- Afgrøde type
- Efterafgrøder
- Græsslåning/høst
- Vandstress/fugt
- Udbytte

Afgrødebestemmelse - Areal



SATLAS

SATELLITE ATLAS OF DENMARK

Explore Data from

24 Jun '18	27 Jun '18	29 Jun '18
02 Jul '18	04 Jul '18	07 Jul '18
09 Jul '18	12 Jul '18	14 Jul '18
17 Jul '18	19 Jul '18	22 Jul '18
24 Jul '18	27 Jul '18	29 Jul '18

Monthly average

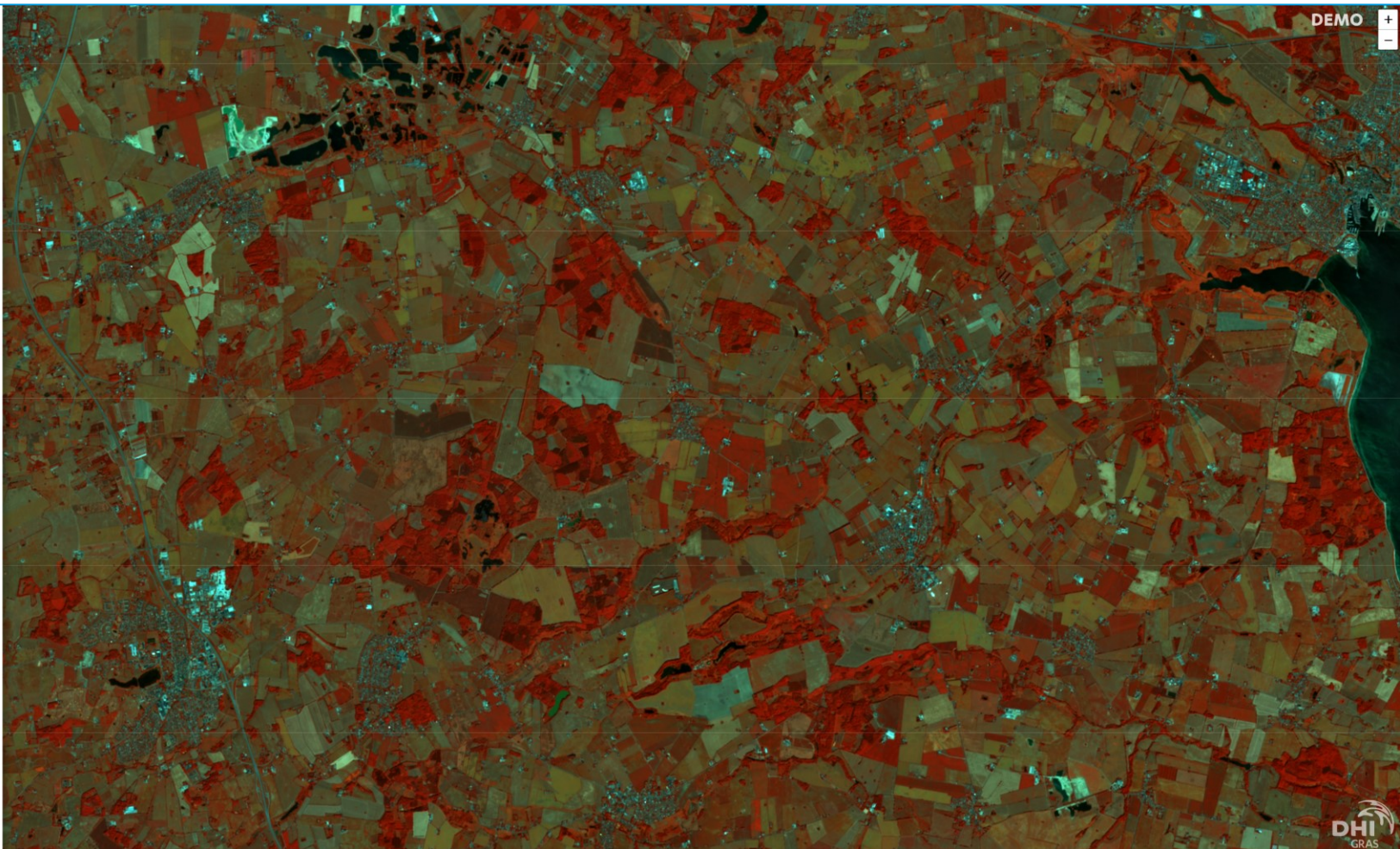
Daily optical

Daily infrared

Individual Sentinel 2 observations rendered in false colors. This combination of spectral bands includes near-infrared (NIR), and helps to differentiate various land cover types such as vegetation, water, and land.

Daily vegetation index

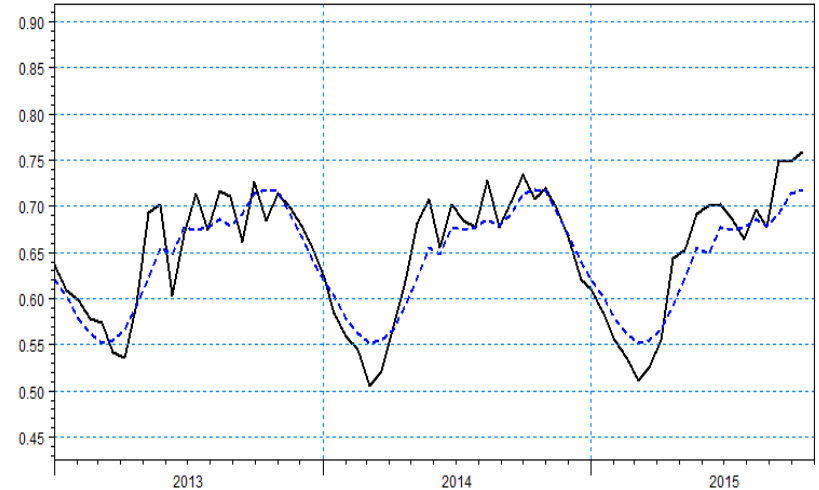
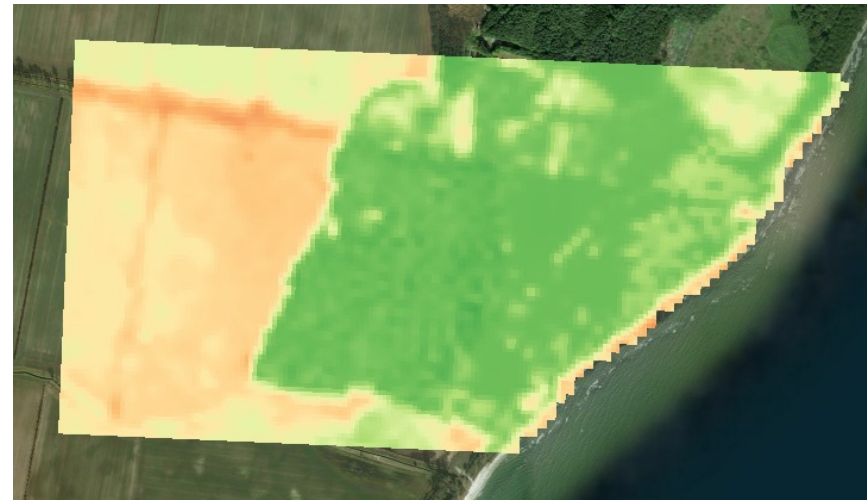
Daily radar



Vegetationsstress og klima

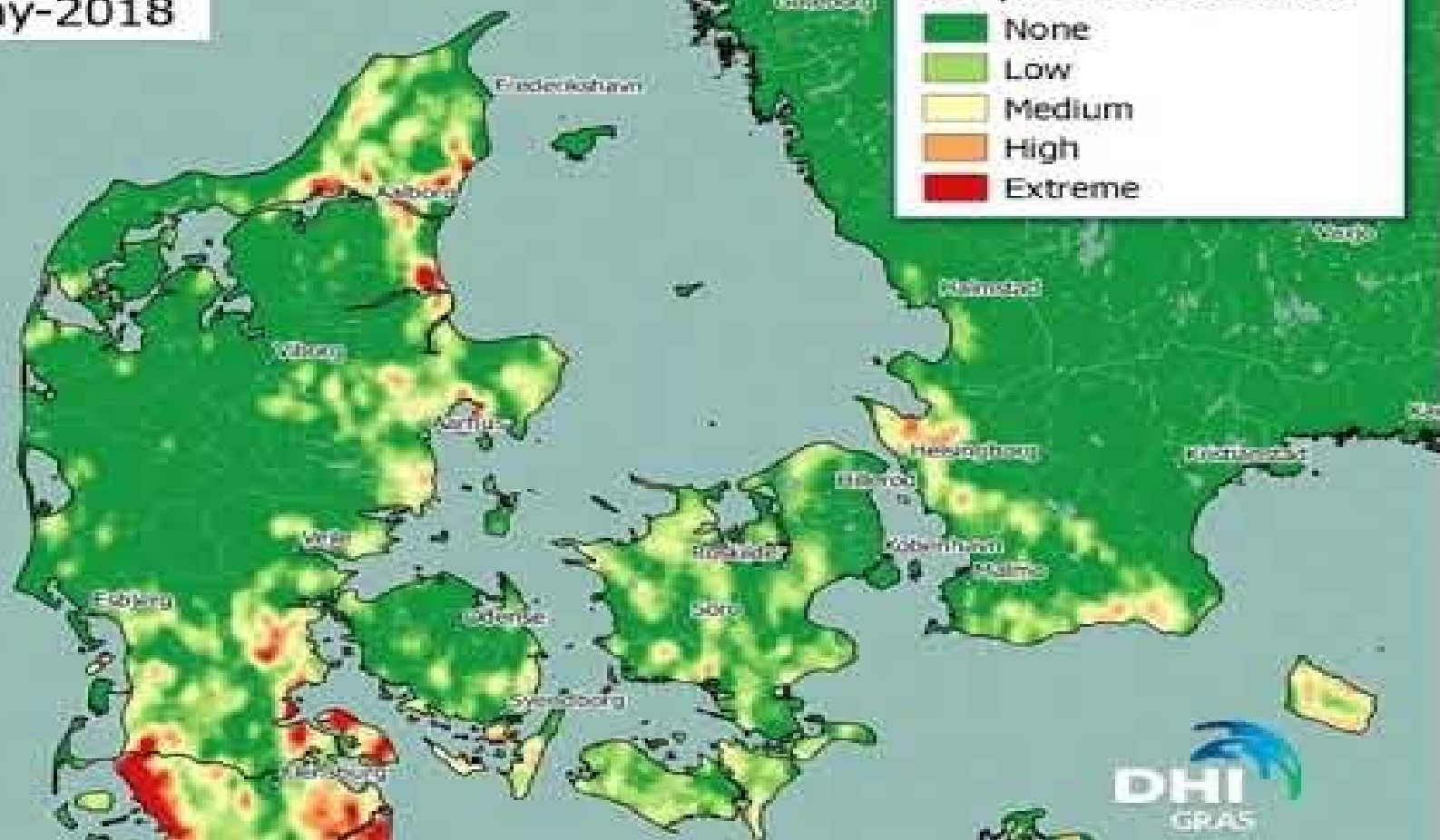
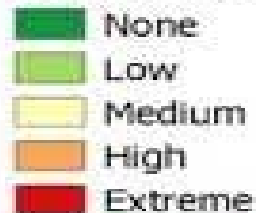
Vegetationstress

- Vegetationsstress
- LAI stress



May-2018

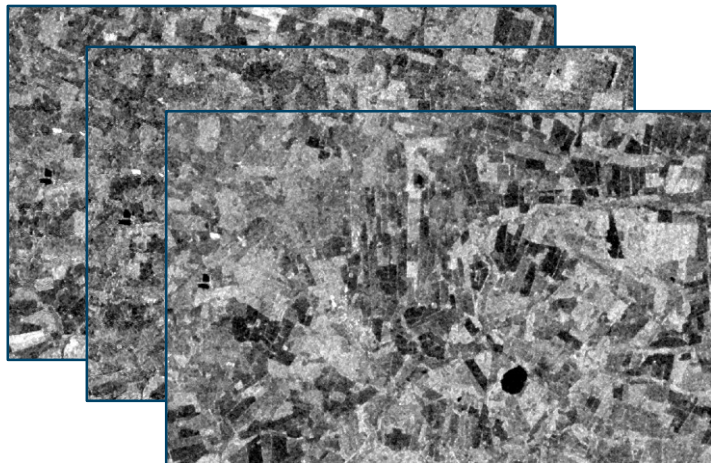
Vegetation stress; 2018 compared to 2000-2017



Afgrødebestemmelse - Type



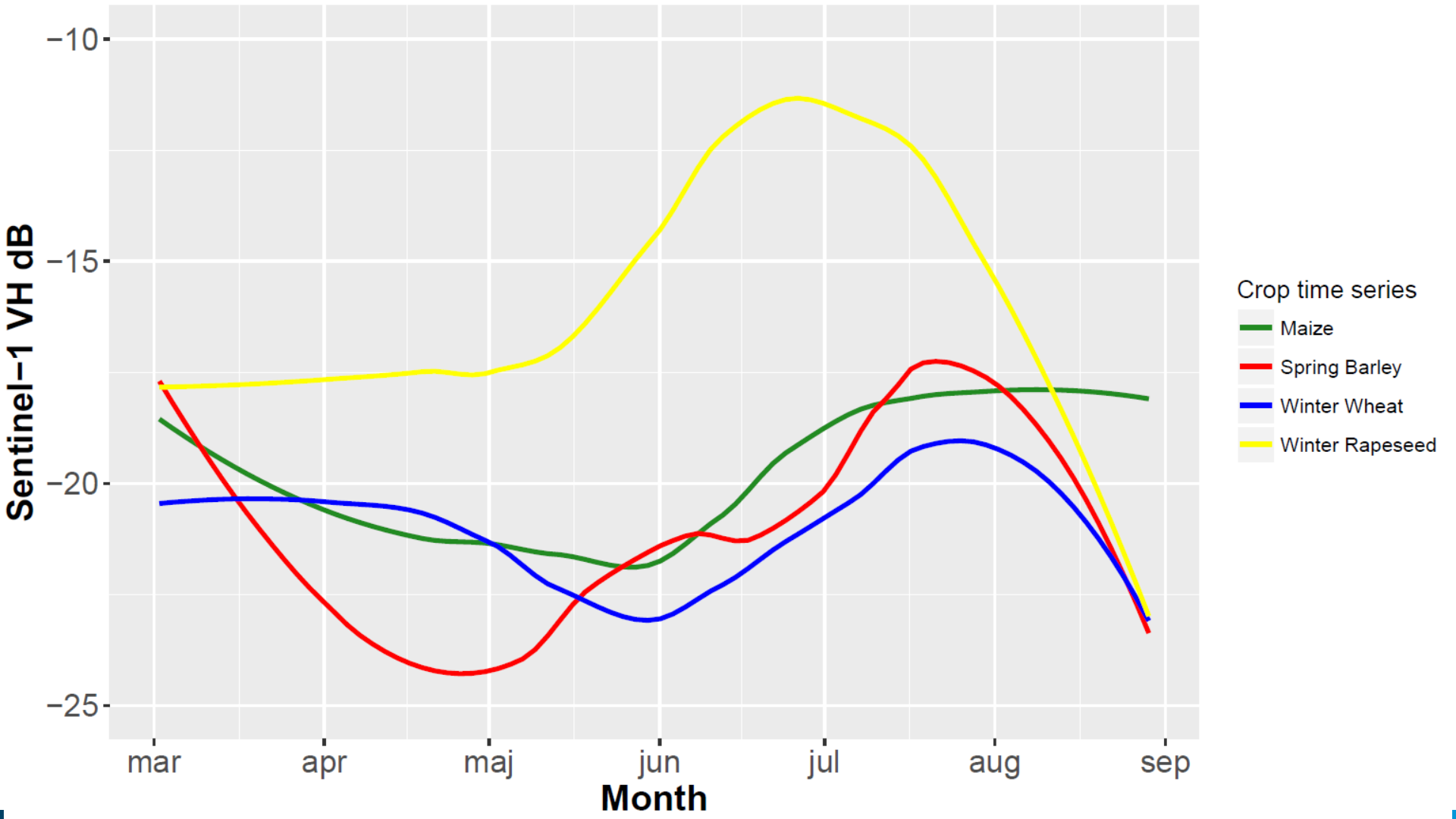
Sentinel 1 tidsserier



Sentinel 2 tidsserier



Afgrøder





Crop classification

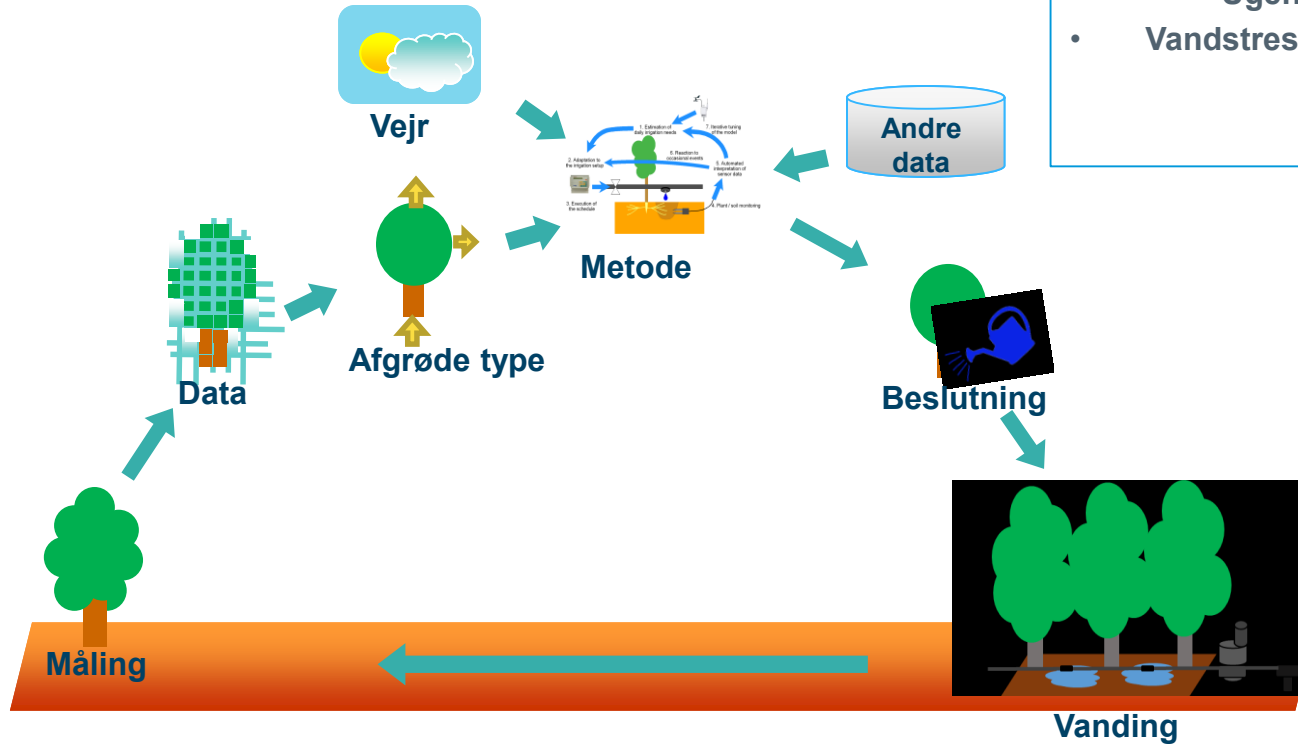
- winter barley
- winter wheat
- winter rape seed
- winter rye
- winter triticale
- mixed spring crops
- spring barley
- spring oats
- spring wheat
- spring rye
- grass
- pea
- maize
- potatoes
- other crops

Vandstress og vandressource tildeling





Vandstress

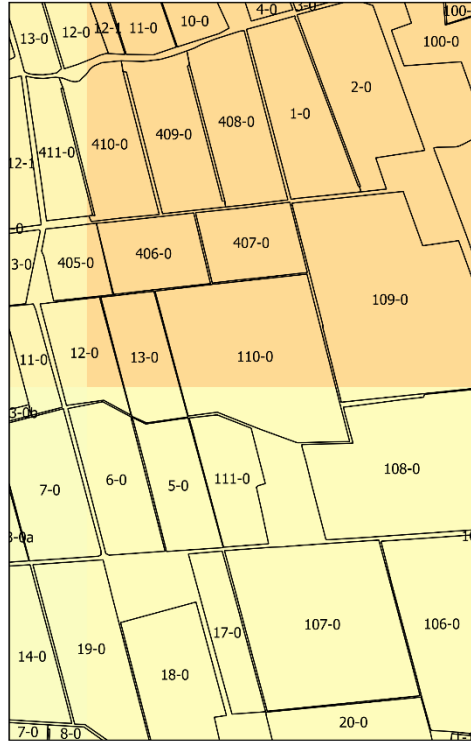


- **Aktuel evapotranspiration**
 - 20 m grids
 - Ugentlig kortlægning
- **Vandstress**

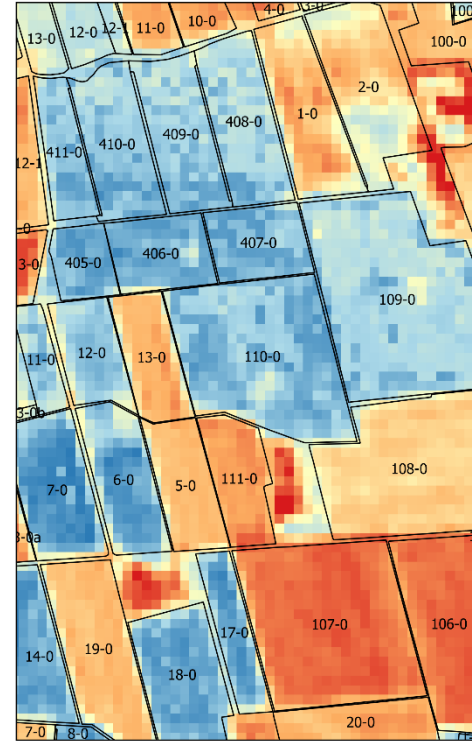
Sentinel-2
True Colour Composite



Sentinel-3
Evapotranspiration



Sentinel-2 and Sentinel-3
Evapotranspiration



Instantaneous ET (W/m²)

- 250
- 325
- 400
- 475
- 550

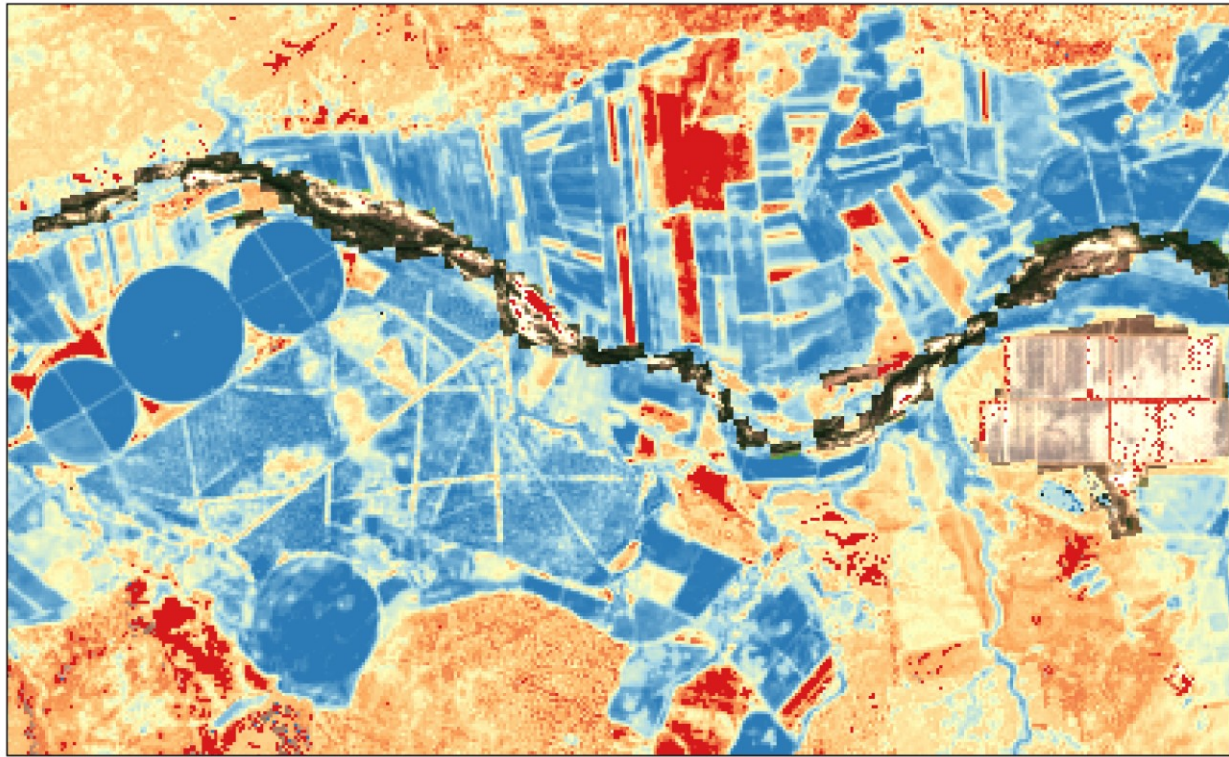
0 100 200 300 m



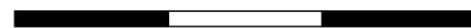


0 1000 2000 3000 m





0 1000 2000 3000 m

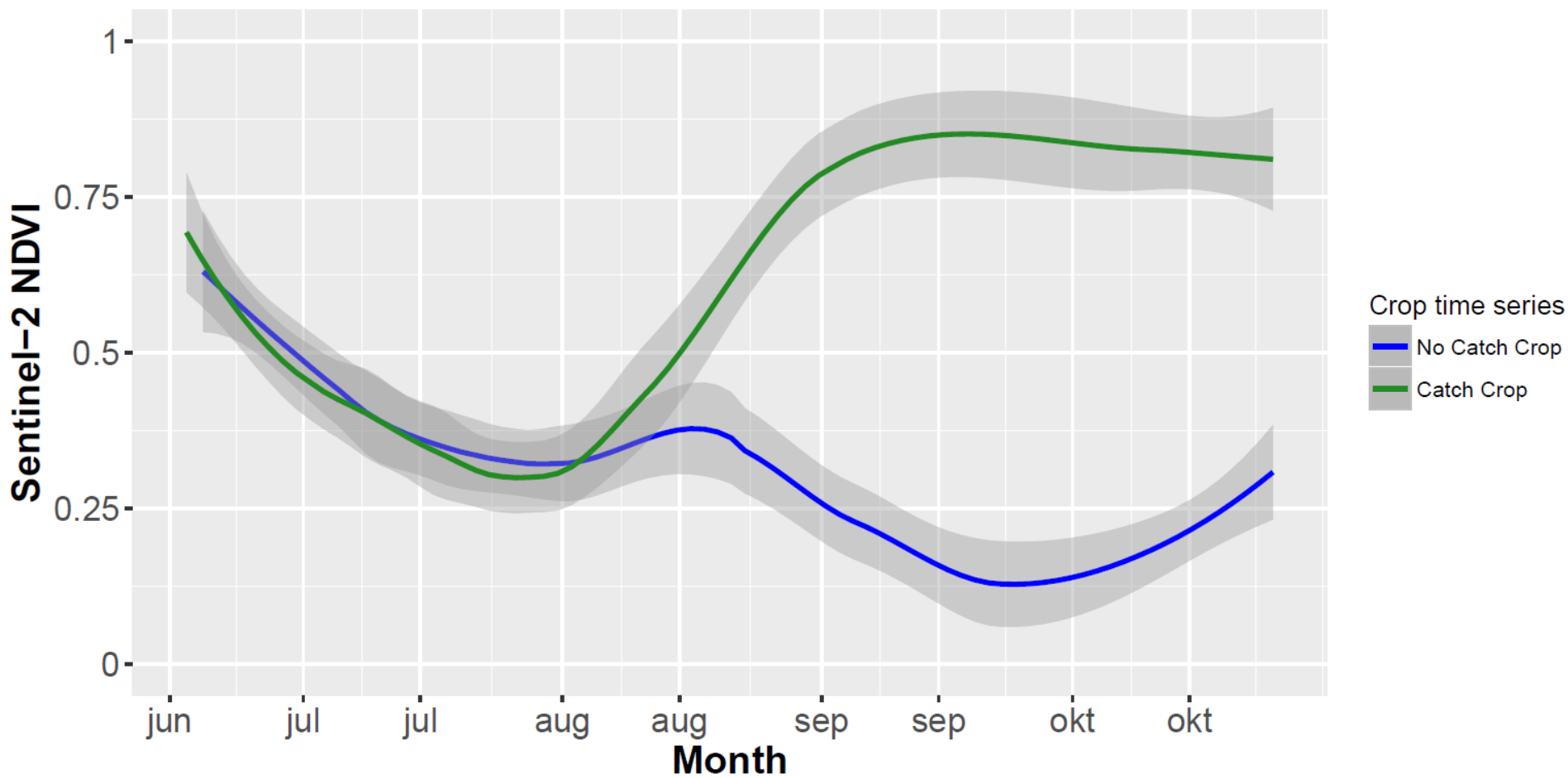


Efterafgrøder



Mapping Catch-crops with Sentinel-2

NDVI Time Series Signal

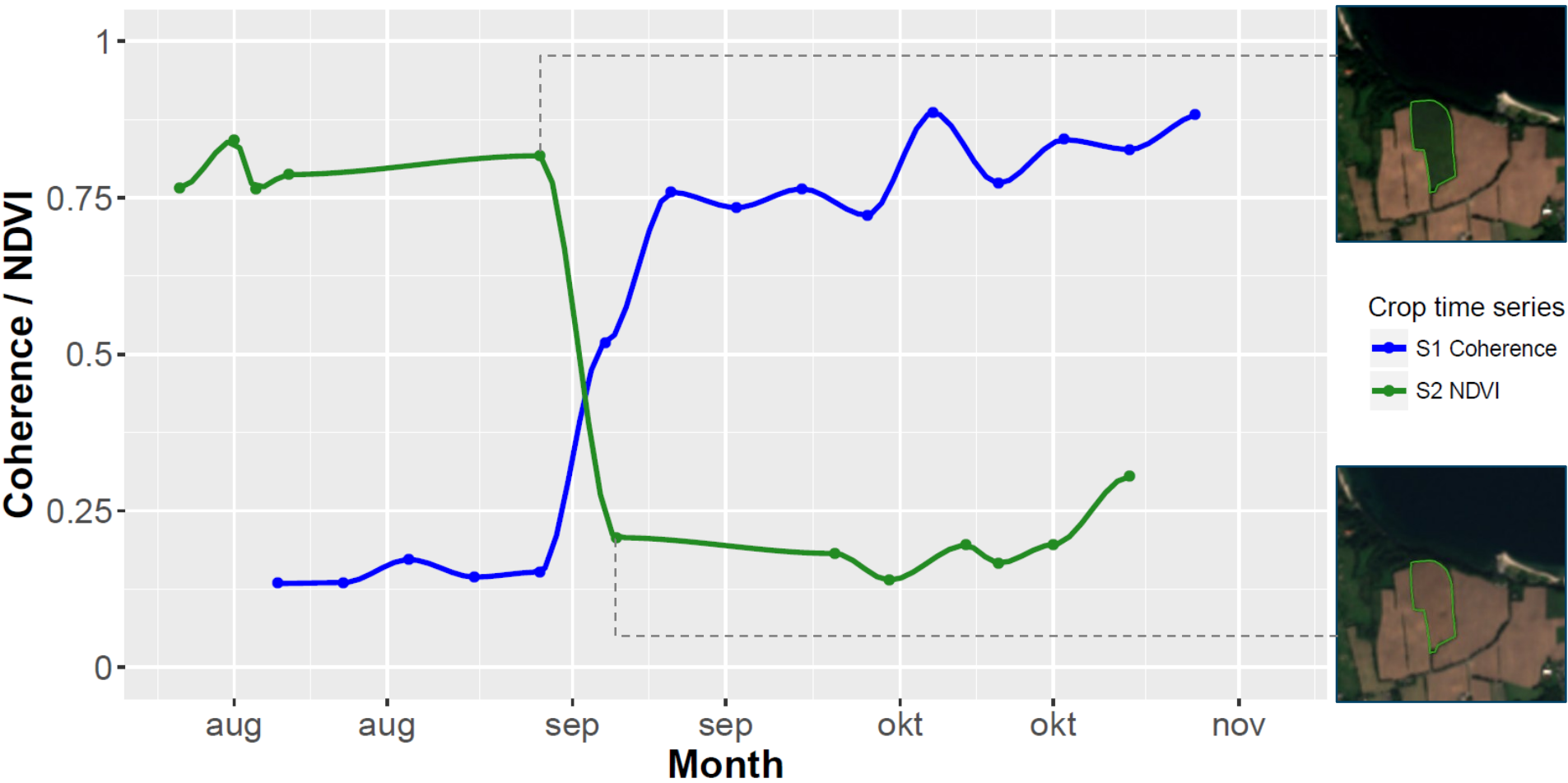


Græsslåning/Majs høst



Detecting Maize Harvest Using Sentinel-1 and Sentinel-2

NDVI & InSAR Coherence Time Series Signal

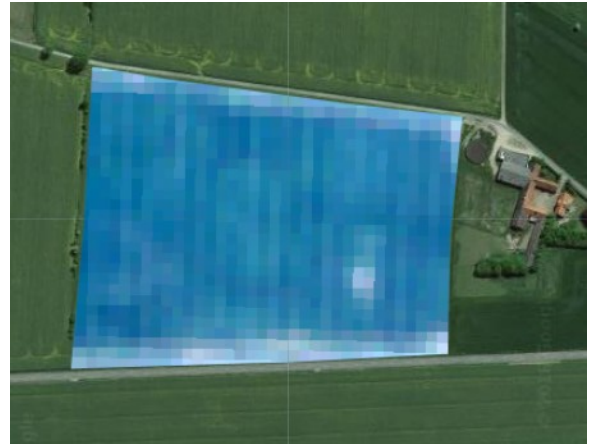
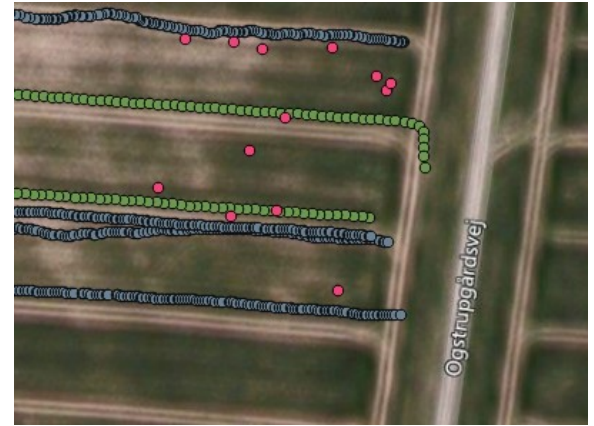


Udbytte

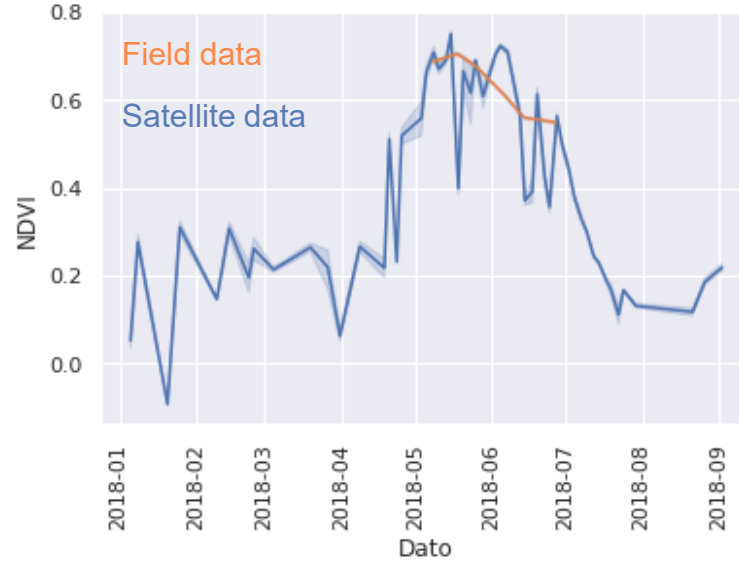
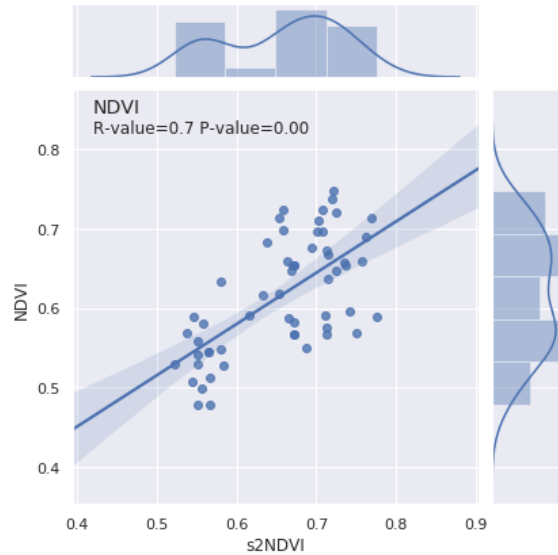


Data

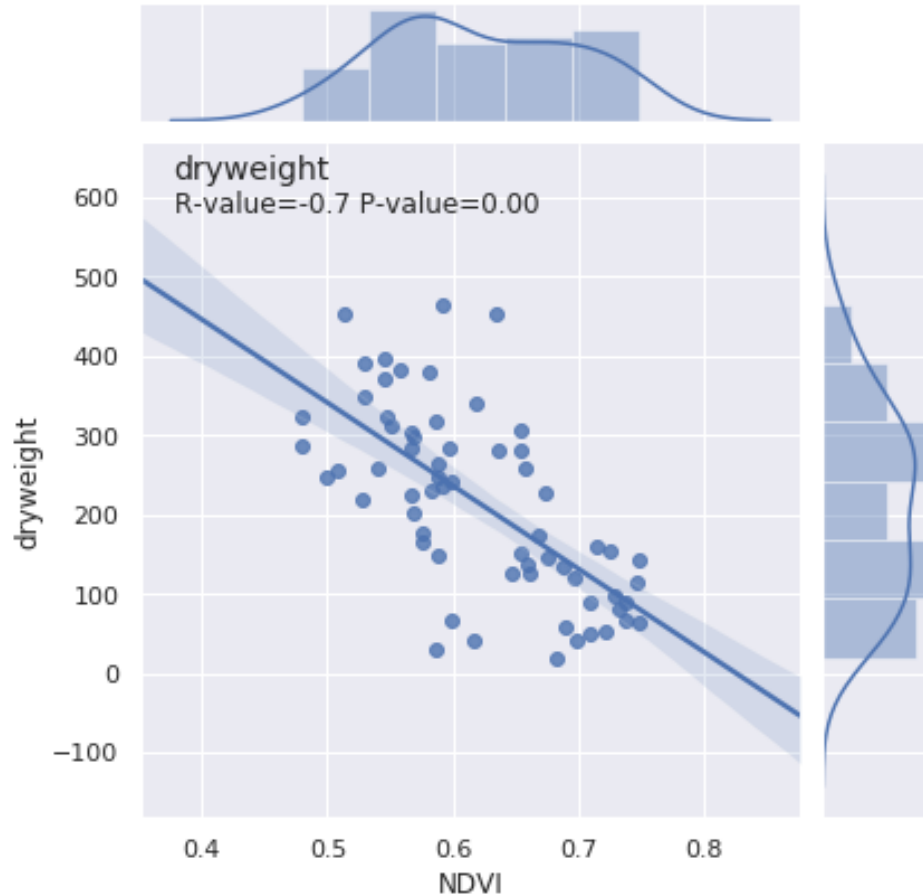
- Hvede nord for Århus
 - GPS NDVI fra Maj-Juni 2018 (blå)
 - 70 biomasse Maj-Juni 2018 (rød)
 - GPS udbytte data fra Juli (grøn)
 - Sentinel-2 NDVI of 2018



In situ vs satellitdata



Resultater



Udfordringer



Udfordringer

- Skyer
- Atmosfære
- Databehandling
- Tid/systemer/hardware
- Udbytte

Tak!

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Business developer



Mapping of agricultural events, Denmark

- Using time series to identify timing of harvesting and ploughing
- Monitoring compliance with deadlines for grass tilling, ploughing and harvesting?

