→ 9th ADVANCED TRAINING COURSE ON LAND REMOTE SENSING: AGRICULTURE

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Université catholique de Louvain | Belgium

Quality control of optical time series and temporal features computation

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Hosted by UCLouvain

Making good use of large time series

- At least one image every 5 days

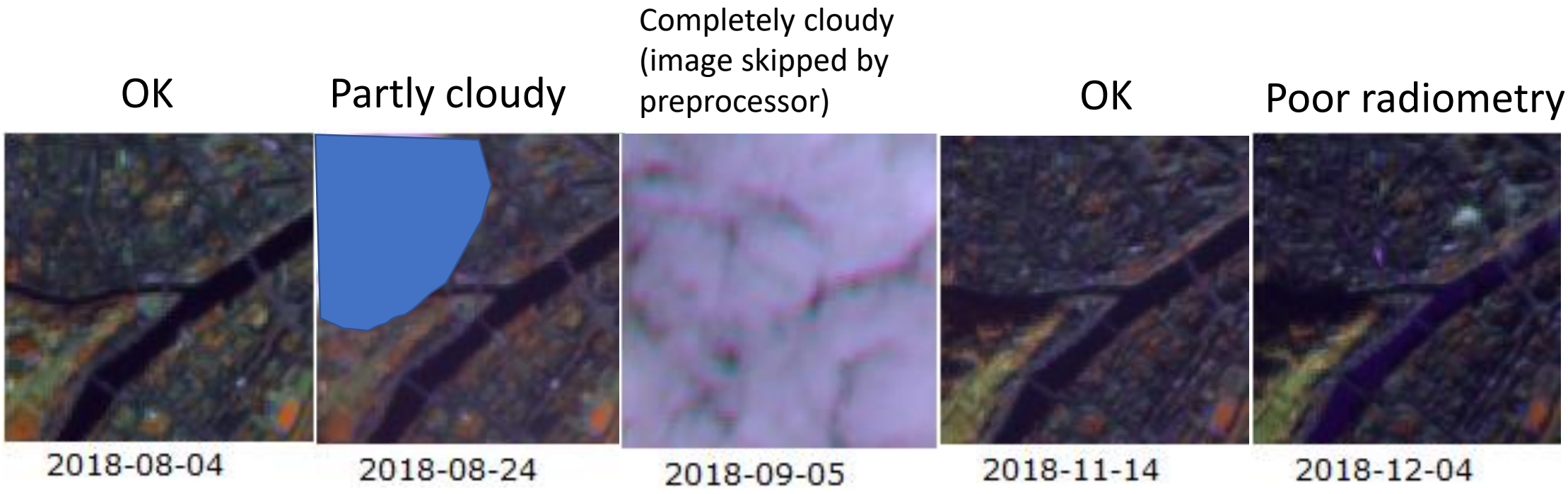
➔ more than 70 images per year

- Consistency of the optical signal is a key

➔ We will focus on three questions

  - Are images usable or not ?
    - Fully cloudy images are discarded by preprocessing
  - How to check the quality of the time series ?
    - Cloud/cloud shadow flag
    - Atmospheric corrections
  - How to extract meaningfull information ?
    - Phenology metrics

Visual check is useful, but strenuous



Automated quality check of reflectance

- Use of pseudo-invariant targets
- Examples:
  - Desert
  - Water
  - Impervious surfaces
  - Salt flats
  - Evergreen forests
  - …
- Make sure that they are really invariance in YOUR area

Temporal metrics to capture the time series info

Example of specific set of metrics (features) designed for crop monitoring

1 **Maximum Red** (average of 3 max.)

Bare soil at sowing preparation

2 **Max. positive slope**

Fastest growth of vegetation

3 **Maximum NDVI** (average of 3 max.)

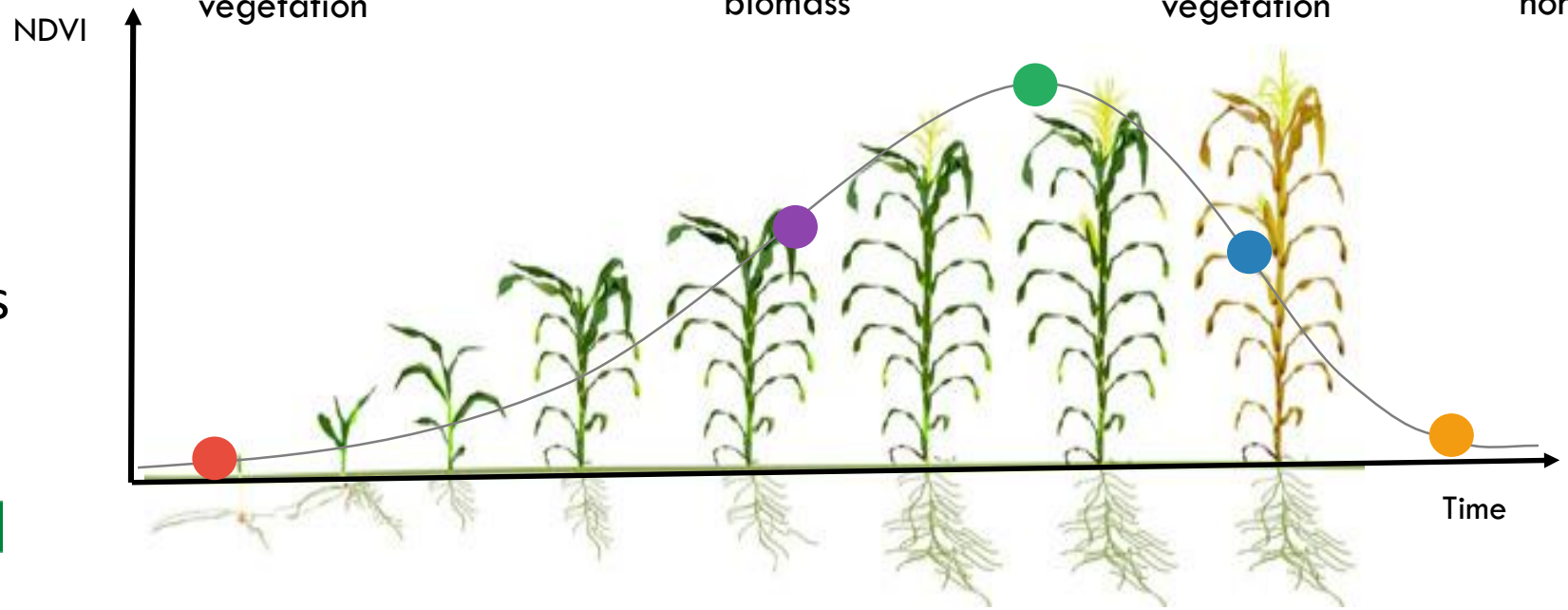
Maximum green biomass

4 **Max. negative slope**

Fast reduction of vegetation

5 **Minimum NDVI** (average of 3 max.)

Harvested crop or non green residues



First by pixels

Then by parcels

sentinel-2 → AGRICULTURE

(Matton et al., 2015, Waldner et al., 2016, Lambert et al., 2016)

Open your Jupyter notebook

- You have a paper copy of the exercise
- Interactive exercise is written in a Jupyter notebook
- Double click on jupyter shortcut on your desktop
- Load the notebook located in

/mnt/upload2/trainme/DATA/sessions/2_temporal_features/jupyter_notebook/TrainingESA_TimeSeries_v2.ipynb