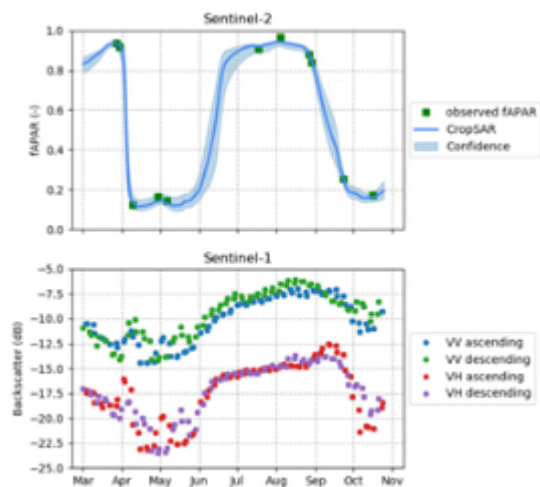


# Gap Filled Time Series of High-Resolution Biophysical Parameters

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Description (Source: CropSAR VITO)

## Category

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## PRODUCT DESCRIPTION

Optical sensors of high-resolution imagery such as Sentinel-2 are unable to look through clouds, resulting in cloud-induced gaps in observations, and hence making it impossible to retrieve the complete time series of a vegetation index. Typically gap-filling (e.g. linear interpolation) and/or smoothing procedures are used to reconstruct continuous growing curves on the available EO data. While this method provides reasonable results for dense time series such as provided by low resolution imagery, much less reliability is observed on the irregular observations from high resolution optical data (from e.g. Sentinel-2). Recent technologies such as CropSAR\*, overcome this problem by taking advantage of the combined strength of optical Sentinel-2 data and the cloud-penetrating capacities of radar Sentinel-1 data.

\* <https://blog.vito.be/remotesensing/cropsar2019>

## PRODUCT SPECIFICATIONS

### Main processing steps

Both datasets are fused in a deep learning framework resulting in Sentinel-2 like time series of vegetation parameters which are free of clouds, using the original Sentinel-2 and Sentinel-1 data.

### Input data sources

Optical: Sentinel-2  
Radar: Sentinel-1  
Supporting data: Parcel boundaries

### Spatial resolution and coverage

Spatial resolution: Field level  
Coverage: Global  
Availability: globally available

### Accuracy / constraints

Thematic accuracy: Most mature over European cropland  
Spatial accuracy: one pixel

**Limitations**

Performance is crop type and crop stage dependent

**Frequency / timeliness**

Frequency: 3 days

Timeliness: near real-time

**Delivery / output format**

Data type: 1-D time series of FAPAR & associated uncertainties

File format: array or CSV

**Accessibility**

Commercially available on demand from EO service providers.

**CHALLENGES ADDRESSED - USE CASE(S)**

Consistent data to address challenges in all business processes