Land Monitoring

From PROBA-V to Sentinel-3

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on behalf the CGLOPS-1 consortium

Global Land Operations

VEGETATION

- Leaf Area Index (LAI)
- Fraction of Absorbed Photosynthetically Active Radiation (FAPAR)
- Fraction of vegetation cover (FCOVER)
- Normalized Difference Vegetation Index (NDVI)
- Dry Matter Productivity
- Burnt Area
- Moderate Yearly Land Cover
- Surface Soil Moisture
- Soil Water Index
- Vegetation Condition Index
- Vegetation Productivity Index

ENERGY

- Land Surface Temperature
- Top-of-Canopy reflectance
- Surface Albedo

Free and Open Access

WATER

- Lake and river water level
- Lake Water Quality
- Lake surface water temperature
- Water Bodies

CRYOSPHERE

- Snow water equivalent
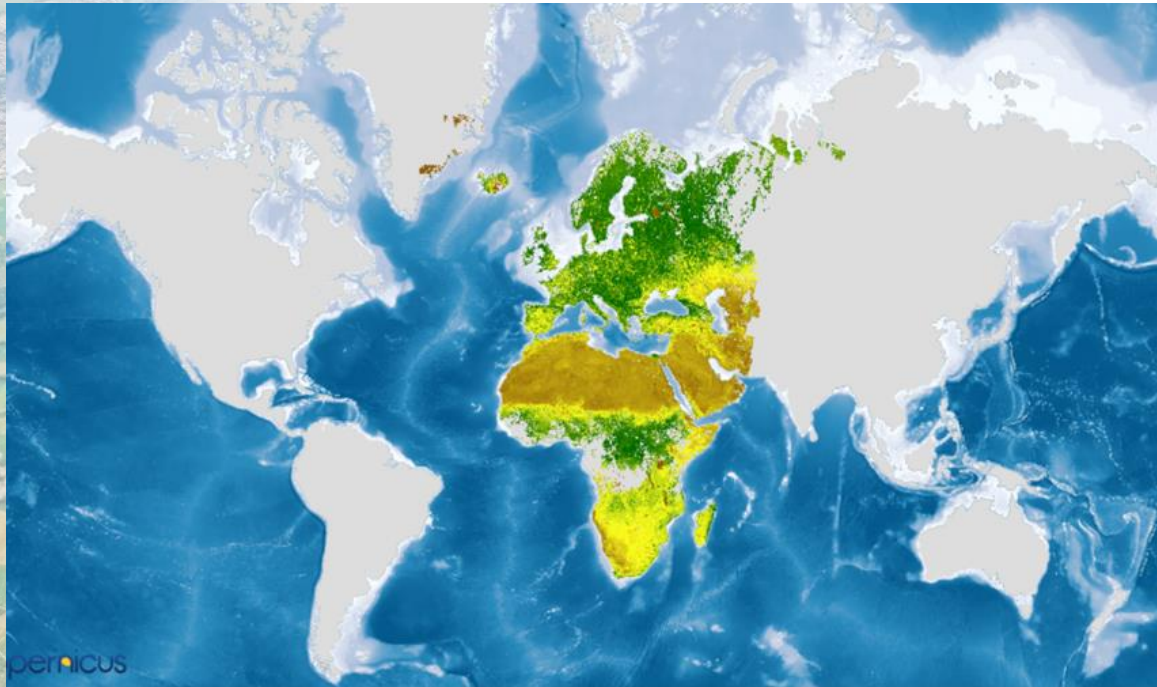- Snow cover extent
- Lake Ice Extent

PROBA-V products till 30th June 2020

Variable	Temporal coverage	Temporal resolution	Spatial coverage	Spatial resolution	Sensor	Timeliness
LAI - FAPAR - FCOVER	1999 - 2020 2014 - 2020	10 days	Global	1 km 300 m	SPOT/VGT PROBA-V	3 days
NDVI – VCI	1999 - 2020 2014 - 2020	10 days	Global	1 km 300 m	SPOT/VGT PROBA-V	3 days
Dry Matter Productivity	1999 - 2020 2014 - 2020	10 days	Global	1 km 300 m	SPOT/VGT PROBA-V	3 days
Burnt Areas	2014 - 2020	1 day	Global	300 m	PROBA-V	3 days
Dynamic land cover	2015, 2016, 2017, 2018	1 year	Global	100m	PROBA-V	offline
Surface Albedo	1999 - 2020 2014 - 2020	10 days	Global	1 km	SPOT/VGT PROBA-V	3 days
Water Bodies	1999 - 2020 2014 - 2020	10 days	Global	1 km 300 m	SPOT/VGT PROBA-V	3 days

Continuation of NRT PROBA-V production as gap filling with the Sentinel-3 NRT operations: Europe and Africa coverage only.

Global Land Operations

300m
- S1 TOA reflectance
  - LAI/FAPAR/FCOVER V1
  - DMP V1
- S1 TOC reflectance
  - Burnt Areas V1
- S10 TOC reflectance
  - NDVI V1

NDVI, 11th August 2020

-0.08   0.2   0.92

sea
no_data

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- No incidents with the PROBA-V data

- One issue with the data dissemination early September

  – No more delivery through the ftp site

  – Solved within a couple of days

- Impact:

  – Daily intermediate products needed to be started manually as soon as the data became available

  – No impact on 10-days products.

- Mitigation measure:

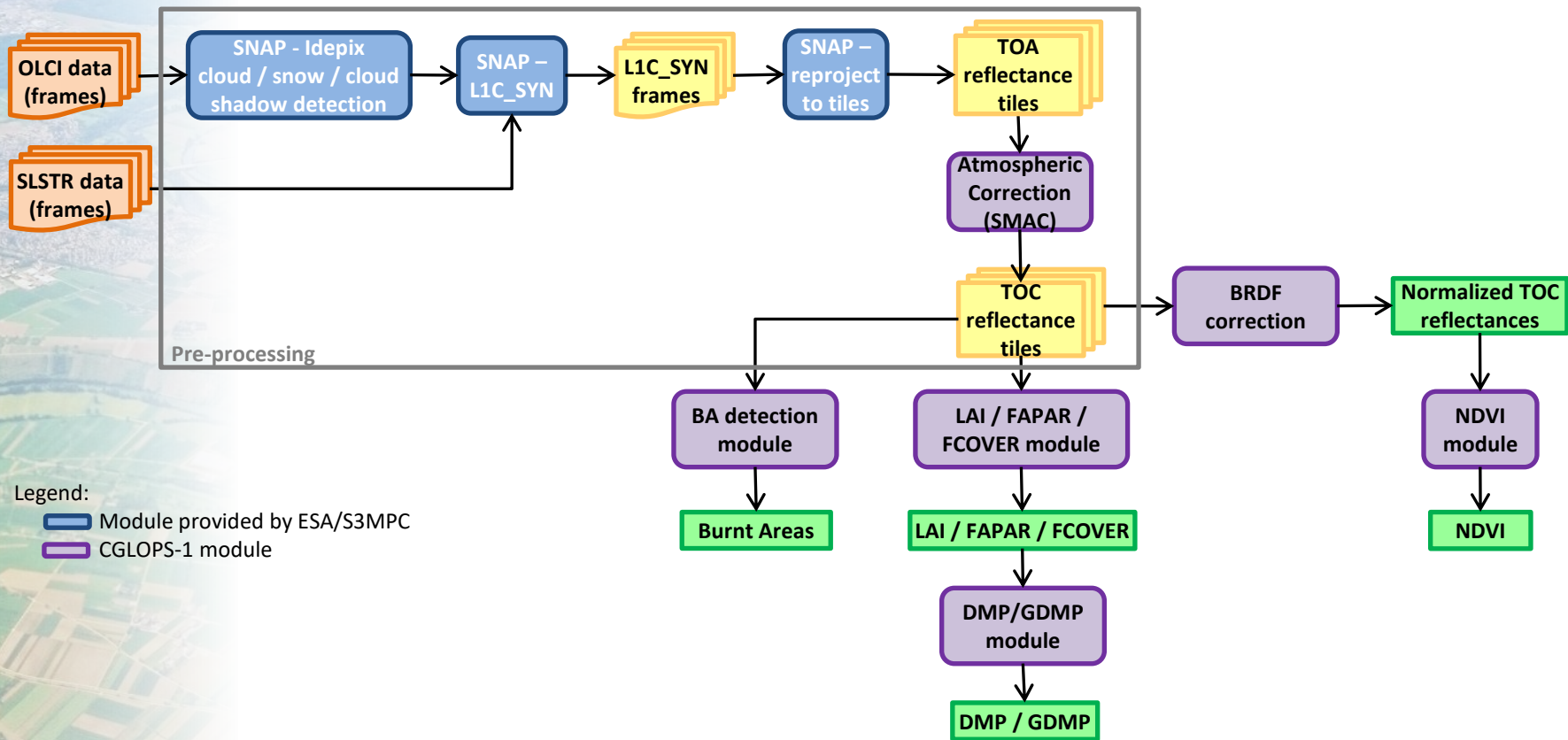 – Extension from 3 to 4 days of the processing window (i.e. the number of days prior the current day we check the unprocessed data)

From 1ˢᵗ July 2020 onwards: continuity with Sentinel-3 - Strategy

- Focus on Collection 300m products: NRT production based upon Sentinel-3 data (OLCI and SLSTR)

- No longer NRT production of Collection 1km time series:
  - Collection 1km time series continue by downscaling Sentinel-3 300m products (NDVI, LAI/FAPAR/FCOVER, DMP/GDMP)
    - Downscaling tools developed by JRC (https://github.com/cgls)
    - No assessment of full 1km time series consistency yet available.
    - In addition, tool with a default re-sampling method available on the CGLS website
  - Albedo Collection 1km: continuation in C3S
  - Water Bodies:
    - Continuation till September 2020 from PROBA-V
    - From October 2020 onwards (delivery in November), monthly products from Sentinel-2 (60m)

From 1st July 2020 onwards: continuity with Sentinel-3 - Workflow

From 1ˢᵗ July 2020 onwards: continuity with Sentinel-3 - Portfolio

Variable	Temporal coverage	Temporal resolution	Spatial coverage	Spatial resolution	Sensor
LAI - FAPAR - FCOVER	July 2020 - present	10 days	Global	300 m	S3/OLCI
NDVI	July 2020 - present	10 days	Global	300 m	S3/OLCI
Dry Matter Productivity	July 2020 - present	10 days	Global	300 m	S3/OLCI
Burnt Areas V1	July 2020 - present	1 day	Global	300 m	S3/OLCI & SLSTR
Burnt Areas V3 *(offline)*	July 2020 - present	1 day	Global	300 m	S3/SLSTR

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- LAI/FAPAR/FCOVER and DMP now available (from July 2020 to the present)
- NDVI, BA V1 & V3 expected in November 2020
- Remove PROBA-V gap-filler products when Sentinel-3 products are released

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- Ongoing dissemination of first Sentinel-3 CGLOPS biophysical products
  - Limited commitment on quality

- In parallel, exhaustive Quality Assessment of S3 biophysical products

- Consolidation of S3 biophysical algorithms
  - Remove or decrease limitations identified in QA
  - Update QA to check/quantify if/how limitations are removed/decreased
  - Update processing chains

- Disseminate consolidated S3 biophysical products.

- Later on, align PROBA-V 300m products on S3 biophysical products
  - Using PROBA-V Collection 2 reprocessed data

- PROBA-V data were reliable for NRT operations during the whole operational mission life

- The large delays encountered during the development of the Sentinel-3 processing chains have some impacts:
  - Delay in S3 NRT operations: gap-filling (4 months) with degraded PROBA-V products (Europe + Africa only)
  - Limited commitment on the quality of the first S3 products

- Early access to PROBA-V C2 for alignment with S3 biophysical products would be appreciated.

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