*Global Monitoring for Environment and Security (GMES) and Africa*

# eStation 3.0

## Product Report

## Version 1.2.0

***October 2023***

**Date**: 12/10/2023
**Ref**: GMES/DOC/eStation3.0/EN/ProductReport

| Abstract / Résumé |
| --- |
| This document lists all the products available on Climate Station (or C-Station) |


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| | Details | Date |
| --- | --- | --- |
| Version history | | |
| Version 1.1.0 | Initial Release | April 2022 |
| Version 1.1.1 | Update for version 1.1.1 | July 2022 |
| Version 1.1.2 | Update for version 1.1.2 | February 2023 |
| Version 1.2.0 | Update for version 1.2.0 | October 2023 |

## Contents

## List of Figures and Tables

**ACRONYMS and DEFINITIONS**

| | |
|---|---|
| ACMAD | African Centre of Meteorological Applications for Development |
| AGRHYMET | Centre Régional de Formation et d'Application en Agro météorologie et Hydrologie Opérationnelle |
| AU | African Union |
| CAPC-CA | Central Africa Regional Climate Centre |
| CIMH | Caribbean Institute of Meteorology and Hydrology |
| EO | Earth Observation |
| EUMETSAT | European Organisation for the Exploitation of Meteorological Satellites |
| EUMETCast | EUMETSAT's primary dissemination mechanism for the near real-time delivery of satellite data and products |
| FTP | File Transfer Protocol |
| GIS | Geographical Information System |
| IOC | Indian Ocean Commission |
| JRC | Joint Research Centre of the European Commission |
| MOI | Mauritius Oceanography Institute |
| REC | Regional Economic Communities |
| RCC | Regional Climate Centre |
| SADC-CSC | SADC Climate Services Centre |
| SPREP | Secretariat of Pacific Regional Environment Programme |
| TA | Technical Assistance |
| TAT | Technical Assistance Team |
| ACP | Africa Pacific Caribbean |
| ECCC | Environment and Climate Change Canada |
| NCEP | National Centers for Environmental Prediction |
| MF | Meteo France |
| UKMO | UK Met Office |
| JMA | Japan Meteorological Agency |
| ECMWF | European Centre for Medium-Range Weather Forecasts |

# 1. INTRODUCTION

## 1.1 APPLICABLE AND REFERENCE DOCUMENTS

| Id | Title | Date | Reference |
|---|---|---|---|
| AD-1 | | | |
| AD-2 | | | |
| AD-3 | | | |
| AD-4 | | | |

**Table 1: Applicable documents**

| Id | Title | Date | Reference |
|---|---|---|---|
| RD-1 | | | |
| RD-2 | | | |
| RD-3 | | | |

**Table 2: Reference documents**

## 1.2 SCOPE OF THE DOCUMENT

This document describes all EO products processed and visualized on the Station, release 1.2.0. It is meant mainly for the thematic expert making use of the system.

## 2. DATASETS DISTRIBUTED ON THE STATION

The following tables contain the products treated on the Station: firstly, the input products are listed, followed by the derived products computed by each processing chain. The reference period for the computation of LTA (Long Term Anomalies) is also indicated: normally, it corresponds to the whole datasets length, and is therefore longer then the temporal extension of time series locally available on the stations.

### 2.1 VEGETATION PRODUCT

The products indicated in grey correspond to previous versions, which are still available on the Station but not automatically activated.

#### 2.1.1 Input products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period[1] | Ref |
|---|---|---|---|---|---|---|
| vgt-ndvi | vgt-pv-olci[2] | ndvi | NDVI from CGLS (1km) | Africa | 1999- current | link |
| | olci-v2.0 | ndv | NDVI from CGLS (300m) | Africa, Carribean | 2020-current | link |
| modis-ndvi[3] | 1.0 | ndvi, zndvi, ndvid | NDVI from BOKU university (1km) | Africa | 2001-current | link |
| modis-fapar[4] | 1.0 | fapar, 10dzscore | FAPAR products from DRO (0.01 degree) | Africa | 2001-2022 | link |
| wsi-hp | V1.0 | pasture, crop | Water Satisfaction Index from JRC/MARS (1km) | Africa | 2003-current | link |
| vgt-dmp | olci-v1.0 | dmp | DMP from CGLS (300m) | Africa, Carribean | 2021-current | link |
| vgt-fapar | olci-v1.0 | fapar | FAPAR from CGLS (300m) | Africa, Carribean | 2021-current | link |
| vgt-fcover | olci-v1.0 | fcover | FCOVER from CGLS (300m) | Africa, Carribean | 2021-current | link |
| vgt-lai | olci-v1.0 | lai | LAI from CGLS (300m) | Africa, Carribean | 2021-current | link |
| gdo-rdri | V2.3.2 | rdri | Risk of Drought Impacts for Agriculture (1deg) | Global | 2010-current | link |

[1] Available period are the one from the station reference server.

[2] Since July 2020, the PROBAV platform ended its operations and was replaced by Sentinel-3 products in Copernicus Global Land Service (CGLS). The NDVI vgt-pv-olci version is the temporal composition of VEGETATION, PROBAV and S3-OLCI (see olci-v2.0 below) products into a single timeseries, in order to allow LT anomaly detection.

[3] These products are available only for visualization on eStation online version http://estation.jrc.ec.europa.eu/eStation2/

[4] The product is discontinued from version 1.1.2

## 2.2 INLAND WATER PRODUCTS

The following table describes the 'Inland water' products that are retrieved and ingested in the Station. The reference period for the computation of LTA (Long Term Anomalies) is also indicated: normally, it corresponds to the whole datasets length, and is therefore longer then the temporal extension of timeseries locally available on the stations.

### 2.2.1 Input products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| wd-gee | V1.0 | occurr | Inland water surface from Landsat – monthly occurrences (30m) | Africa[5] | 2019-current | link |
| | | avg | Long Term average occurrences (30m) | Africa | 1985-2015(LTA) | |
| theia-wl[6] | 1.0 | n.a. | Water level over lakes and rivers (CSV Point data) | | | link |

[5] The product is calculated on a global scale, but distributed only on Africa, divided by region.

[6] This product serves only for data download over the lakes and rivers selected in data source description

## 2.3 RAINFALL PRODUCTS

The following table describes the 'rainfall' monitoring products that are retrieved and ingested in the Station. The reference period for the computation of LTA (Long Term Anomalies) is also indicated: normally, it corresponds to the whole datasets length, and is therefore longer then the temporal extension of timeseries locally available on the stations.

### 2.3.1 Input Products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| fewsnet-rfe | 2.0 | 10d | Precipitation estimates over 10 days (8km) | Africa | 2001-current | link |
| tamsat-rfe | 3.0 | 10d | Precipitation estimates over 10 days (4km) | Africa | 1983-current | link |
| | 3.1 | 10d | Precipitation estimates over 10 days (4km) | Africa | 1983-current | link |
| | | 1d | Precipitation estimates over 1 day (4km) | Africa | 2000-current | link |
| chirps-dekad | 2.0 | 10d | Precipitation estimates over 10 days (0.05deg) | Global | 1981-current | link |
| arc2-rain | 2.0 | 1d | Precipitation estimates from NASA-CPC(1983-Present) (0.1deg) | Africa | 1983-current | link |
| rain-spi | V1.0 | spi-1mon | Standard Precipitation Index over 1month from JRC-MARS (0.05deg) | Global | 1989-current | link |
| | | spi-3mon | Standard Precipitation Index over 3months from JRC-MARS (0.05deg) | Global | 1989-current | link |
| era-hourly-tp | 1.0 | tp | CDS ERA5 Total Precipitation rate hourly (25km) | ACP | Refer CDS | link |
| cdas-monthly-prcp | 1.0 | prcp | CDAS Monthly Precipitation (2.5 Degree) | ACP | 2019-current | link |
| gpcc-gpac | V.2022 | fg-monthly | GPCC rainfall first guess monthly(1 degree) | Global | 2013-current | link |

## 2.4 RAINFALL FORECAST PRODUCTS

The following table describes the 'rainfall' forecast products that are retrieved and ingested in the Station.

### 2.4.1 Input products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| eccc3-monthly-tp | 1.0 | tp | Seasonal forecast - Environment and Climate Change Canada system 3 monthly mean of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |
| ukmo601-monthly-tp | 1.0 | tp | Seasonal forecast - UK met office system 601 monthly mean of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |
| mf8-monthly-tp | 1.0 | tp | Seasonal forecast - Meteo France system 8 monthly mean of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |
| s51-monthly-tp[7] | 1.0 | tp | Seasonal forecast - ECMWF system 51 monthly mean of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |
| | | tp-anom | Seasonal forecast - ECMWF system 51 monthly anomaly of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |
| jma3-monthly-tp | 1.0 | tp | Seasonal forecast - JMA system 3 monthly mean of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |
| ncep2-monthly-tp | 1.0 | tp | Seasonal forecast - NCEP system 2 monthly mean of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |
| efi-spi | 1.0 | 1month | Wet and Dry Spells 1month forecast (1 degree) | ACP | 2023-current | link |
| | | 3month | Wet and Dry Spells 3 months forecast (1 degree) | ACP | 2023-current | link |
| | | 6month | Wet and Dry Spells 6 months forecast (1 degree) | ACP | 2023-current | link |
| s51-subdaily-tp | 1.0 | tp | Seasonal forecast - ECMWF system 51 subdaily 4 weeks forecast of Total Precipitation rate (1 degree) | ACP | Refer CDS | link |

[7] The ECMWF system 5 version was replaced by S51 at the end of 2022. This apply to all S5 products.

## 2.5 FIRE PRODUCTS

The following table describes the 'Fire' products that are retrieved and ingested in the Station. The reference period for the computation of LTA (Long Term Anomalies) is also indicated: normally, it corresponds to the whole datasets length, and is therefore longer then the temporal extension of timeseries locally available on the stations.

### 2.5.1 Input Products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| modis-firms | V6.1 | 1day | Daily Active Fires at 1 km resolution | Africa | 2021-current | link |

## 2.6 MISCELLANEOUS (MONITORING & FORECAST) PRODUCTS

The following table describes the 'Miscellaneous' monitoring and forecast products that are retrieved and ingested in the Station. The reference period for the computation of LTA (Long Term Anomalies) is also indicated: normally, it corresponds to the whole datasets length, and is therefore longer then the temporal extension of time series locally available on the stations.

### 2.6.1 Input Products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| ascat-swi | V3.1 | swi | Soil Water Index- Every day product (0.1 degree) | Global | 2019-current | link |
| cpc-sm | 1.0 | sm | Soil Moisture – Monthly product (0.5 degree) | Global | 2012-current | link |
| lsasaf-et | Undefined | et | Evapotranspiration 30mins product (1km) | MSG-disk | NA | link |
| lsasaf-lst | Undefined | lst | Land Surface temperature 15mins product (1km) | MSG-disk | NA | link |
| era-hourly-ssrd | 1.0 | ssrd | ERA5 hourly Surface solar radiation downwards (25km) | ACP | Refer CDS | link |
| era-hourly-10uwind | 1.0 | 10uwind | ERA5 hourly 10m u component of wind (25km) | ACP | Refer CDS | link |
| era-hourly-10vwind | 1.0 | 10vwind | ERA5 hourly 10m v component of wind (25km) | ACP | Refer CDS | link |
| s51-monthly-10mws | 1.0 | 10mws | Seasonal forecast - ECMWF system 51 - monthly mean of 10m Wind Speed (1 degree) | ACP | Refer CDS | link |
| s51-monthly-mslp | 1.0 | mslp | Seasonal forecast - ECMWF system 51 - monthly mean of Mean sea level pressure (1 degree) | ACP | Refer CDS | link |
| s51-monthly-ssrd | 1.0 | ssrd | Seasonal forecast - ECMWF system 51 - monthly mean of Surface solar radiation downwards (1 degree) | ACP | Refer CDS | link |
| s2-l1c[8] | V1.0 | N/A | Sentinel 2 L1C products from SentinelSat API | NA | NA | link |
| gdo-tws | V1.1.0 | twsan | GRACE Total Water Storage Anomaly (1deg) | Global | 2002-current | link |
| gdo-sma | V3.0.1 | sma | Ensemble Soil Moisture Anomaly (0.1 degree) | Global | 2023-current | link |

[8] This product is introduced for Sentinel 1 & 2 data acquisition SentinelSat API. The detailed description how to use the acquisition for other Sentinel 2 sensors (L2A) in mentioned in Appendix. Also this product should be activated manually from Product Administrator and not available from Portfolio

## 2.7 MARINE PRODUCTS

The following table describes the 'Marine' monitoring and forecast products that are retrieved and ingested in the Station. The reference period for the computation of LTA (Long Term Anomalies) is also indicated: normally, it corresponds to the whole datasets length, and is therefore longer then the temporal extension of time series locally available on the stations.

### 2.7.1 Input Products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| modis-sst | v2019.0 | sst-day | Ingested daily Sea Surface temperature SST (4km) | Global | 2003-current | link |
| modis-chla | v2022.0 | chl-day | Ingested daily Chlorophyll a (4km) | Global | 2003-current | link |
| modis-par | v2022.0 | par-day | Ingested daily Photosynthetically Available Radiation - PAR (4km) | Global | 2003-current | link |
| modis-kd490 | v2022.0 | kd490-day | Ingested daily Diffuse attenuation coefficient for downwelling irradiance at 490 nm - KD490 (4km) | Global | 2003-current | link |
| pml-modis-chla | 3.0 | chl-3day | Ingested CHL (1km) | Region | 2015-2023 | link |
| pml-modis-sst | 3.0 | sst-3day | Ingested SST (1km) | Region | 2015-2023 | link |
| olci-wrr | V02.0 | chl-oc4me | Chlorophyl-a computed with oc4me algo (1km) | Africa | NA | link |
| olci-wrr | V02.0 | tsm-nn | Total Suspended Matter computed with nn algo (1km) | Africa | NA | link |
| slstr-sst | 1.0 | wst | Sea Surface Temperature (1km) | Africa | NA | link |
| era-hourly-sst | 1.0 | sst | ERA5 Sea Surface Temperature hourly (25km) | ACP | Refer CDS | link |
| era-monthly-sst | 1.0 | sst | ERA5 Sea Surface Temperature Monthly (25km) | ACP | Refer CDS | link |
| s51-monthly-sst | 1.0 | sst | Seasonal forecast 51 ensemble monthly mean of Sea Surface temperature (1 degree) | ACP | Refer CDS | link |
| | | sst-anom | Seasonal forecast 51 monthly anomaly of Sea Surface temperature (1 degree) | ACP | Refer CDS | link |

## 2.8 TEMPERATURE MONITORING PRODUCTS

The following table describes the 'Temperature' monitoring products that are retrieved and ingested in the Station.

### 2.8.1 Input Products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| era-hourly-2mt | 1.0 | 2mt | ERA5 2 meter temperature hourly (25km) | ACP | Refer CDS | link |
| | | 2mtmax | ERA5 Hourly maximum 2m temperature since previous post processing (25km) | ACP | Refer CDS | link |
| | | 2mtmin | ERA5 Hourly minimum 2m temperature since previous post processing (25km) | ACP | Refer CDS | link |
| era-monthly-2mt | 1.0 | 2mt | ERA5 2 meter temperature monthly (25km) | ACP | Refer CDS | link |
| era-hourly-2mdw | 1.0 | 2mdw | ERA5 2 meter dew point temperature hourly (25km) | ACP | Refer CDS | link |
| cdas-daily-temperature | 1.0 | tmax | Gridded daily temperature max (0.5 degree) | ACP | 2020-current | link |
| | | tmin | Gridded daily temperature min (0.5 degree) | ACP | 2020-current | link |

## 2.9 TEMPERATURE FORECAST PRODUCTS

The following table describes the 'Temperature' forecast products that are retrieved and ingested in the Station.

### 2.9.1 Input products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| s51-monthly-2mt | 1.0 | 2mt | Seasonal forecast - ECMWF system 51 - monthly mean of 2 meter temperature (1 degree) | ACP | Refer CDS | link |
| | | 2mtmax | Seasonal forecast - ECMWF system 51 - monthly mean of 2 meter temperature maximum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| | | 2mtmin | Seasonal forecast - ECMWF system 51 - monthly mean of 2 meter temperature minimum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| | | 2mt-anom | Seasonal forecast - ECMWF system 51 - monthly anomaly of 2 meter temperature (1 degree) | ACP | Refer CDS | link |
| eccc3-monthly-2mt | 1.0 | 2mt | Seasonal forecast - Environment and Climate Change Canada(ECCC) system 3 - monthly mean of 2 meter temperature (1 degree) | ACP | Refer CDS | link |
| | | 2mtmax | Seasonal forecast - ECCC system 3 - monthly mean of 2 meter temperature maximum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| | | 2mtmin | Seasonal forecast - ECCC system 3 - monthly mean of 2 meter temperature minimum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| mf8-monthly-2mt | 1.0 | 2mt | Seasonal forecast – Meteo France (MF) system 8 - monthly mean of 2 meter temperature (1 degree) | ACP | Refer CDS | link |
| | | 2mtmax | Seasonal forecast – Meteo France (MF) system 8 - monthly mean of 2 meter temperature maximum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| | | 2mtmin | Seasonal forecast – Meteo France (MF) system 8 - monthly mean of 2 meter temperature minimum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| ukmo601-monthly-2mt | 1.0 | 2mt | Seasonal forecast – UK Met Office (UKMO) system 601 - monthly mean of 2 meter temperature (1 degree) | ACP | Refer CDS | link |
| | | 2mtmax | Seasonal forecast – UK Met Office (UKMO) system 601 - monthly mean of 2 meter temperature maximum in the last 24 hours (1 degree) | ACP | Refer CDS | link |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 2mtmin | Seasonal forecast – UK Met Office (UKMO) system 601 - monthly mean of 2 meter temperature minimum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| s51-monthly-2mdw | 1.0 | 2mdw | Seasonal forecast ECMWF system 51 - monthly mean of 2 meter dew point temperature (1 degree) | ACP | Refer CDS | link |
| s51-subdaily-2mdw | 1.0 | 2mdw | Seasonal forecast ECMWF system 51 - subdaily 4 weeks forecast of 2m dew point temperature (1 degree) | ACP | Refer CDS | link |
| s51-subdaily-2mt | 1.0 | 2mt | Seasonal forecast ECMWF system 51 - subdaily 4 weeks forecast of 2m temperature (1 degree) | ACP | Refer CDS | link |
| | | 2mtmax | Seasonal forecast ECMWF system 51 - subdaily 4 weeks forecast of 2m temperature maximum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| | | 2mtmin | Seasonal forecast ECMWF system 51 - subdaily 4 weeks forecast of 2m temperature minimum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| ncep2-monthly-2mt | 1.0 | 2mt | Seasonal forecast – NCEP system 2 - monthly mean of 2 meter temperature (1 degree) | ACP | Refer CDS | link |
| | | 2mtmax | Seasonal forecast – NCEP system 2 - monthly mean of 2 meter temperature maximum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| | | 2mtmin | Seasonal forecast – NCEP system 2 - monthly mean of 2 meter temperature minimum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| jma3-monthly-2mt | 1.0 | 2mt | Seasonal forecast – JMA system 3 - monthly mean of 2 meter temperature (1 degree) | ACP | Refer CDS | link |
| | | 2mtmax | Seasonal forecast – JMA system 3 - monthly mean of 2 meter temperature maximum in the last 24 hours (1 degree) | ACP | Refer CDS | link |
| | | 2mtmin | Seasonal forecast – JMA system 3 - monthly mean of 2 meter temperature minimum in the last 24 hours (1 degree) | ACP | Refer CDS | link |

## 2.10 ATMOSPHERE PRODUCTS

The following table describes the 'Atmosphere' observation and forecast products that are retrieved and ingested in the Station.

### 2.10.1 Input products

| Product code | Version | Ingested sub-product | Description | Coverage | Available Period | Ref |
|---|---|---|---|---|---|---|
| cams-bcaod550 | 1.0 | subdaily | CAMS subdaily forecast of Black Carbon Aerosol Optical Depth at 550nm | ACP | Refer ADS | link |
| | | daily[9] | CAMS daily observation of Black Carbon Aerosol Optical Depth at 550nm | ACP | Refer ADS | link |
| | | monthly[9] | CAMS monthly Black Carbon Aerosol Optical Depth at 550nm | ACP | Refer ADS | link |
| cams-duaod550 | 1.0 | subdaily | CAMS subdaily forecast of Dust aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| | | daily[9] | CAMS daily observation of Dust aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| | | monthly[9] | CAMS monthly Dust aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| cams-omaod550 | 1.0 | subdaily | CAMS subdaily forecast of Organic matter aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| | | daily[9] | CAMS daily observation of Organic matter aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| | | monthly[9] | CAMS monthly Organic matter aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| cams-pm10 | 1.0 | subdaily | CAMS subdaily forecast of Particulate Matter 10um | ACP | Refer ADS | link |
| | | daily[9] | CAMS daily observation of Particulate Matter 10um | ACP | Refer ADS | link |
| | | monthly[9] | CAMS monthly Particulate Matter 10um | ACP | Refer ADS | link |
| cams-pm2p5 | 1.0 | subdaily | CAMS subdaily forecast of Particulate Matter 2.5um | ACP | Refer ADS | link |
| | | daily[9] | CAMS daily observation of Particulate Matter 2.5um | ACP | Refer ADS | link |
| | | monthly[9] | CAMS monthly Particulate Matter 2.5um | ACP | Refer ADS | link |
| cams-aod550 | 1.0 | subdaily | CAMS subdaily forecast of Total aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| | | daily[9] | CAMS daily observation of Total aerosol optical depth at 550 nm | ACP | Refer ADS | link |
| | | monthly[9] | CAMS monthly Total aerosol optical depth at 550 nm | ACP | Refer ADS | link |

[9] These products are updated twice a year with 4-6month delay.

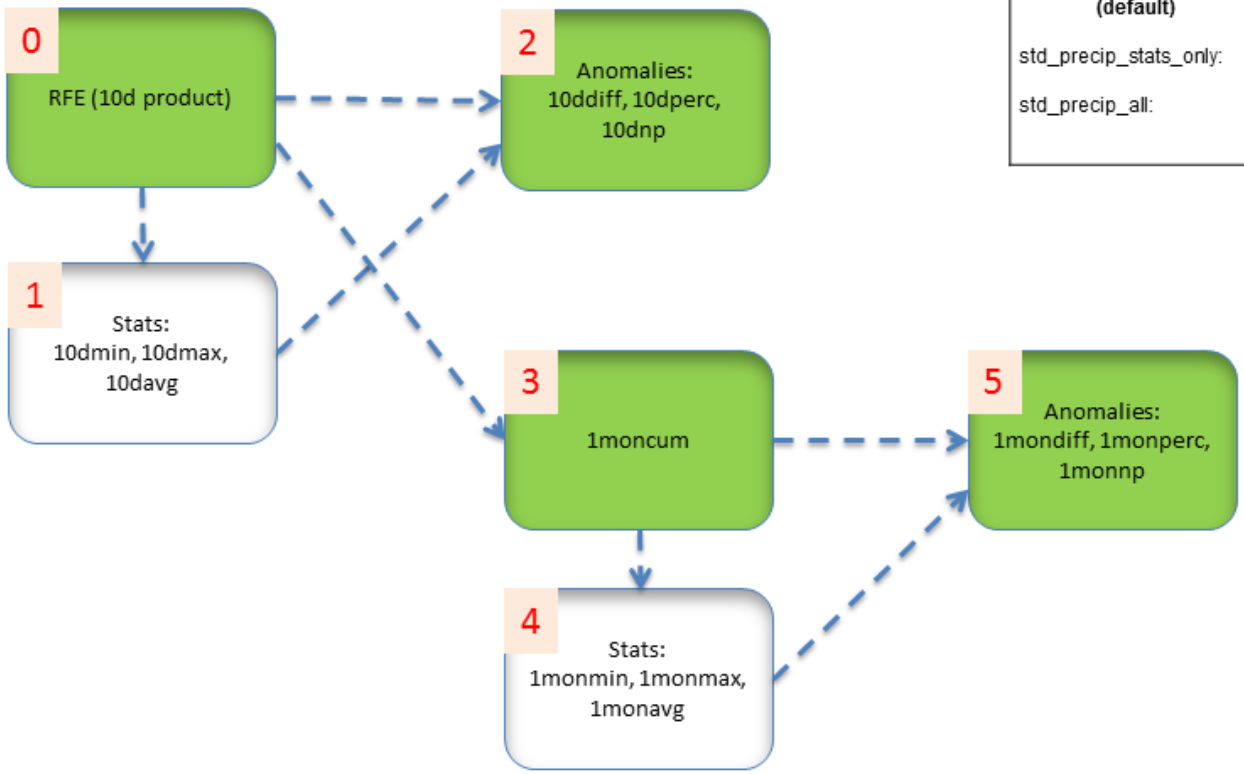
## 3. DESCRIPTION OF THE 'STANDARD' PROCESSING CHAINS

The current paragraph presents in a graphic manner how the 'derived' products are computed in the 'standard' processing chains, available , according to the following conventions:

- The 'entry' point of the processing chain is displayed at the top-left corner, and indicated with the number 0. It is normally an ingested product.
- Every group of derived products is indicated with an increasing number, according to the order of the computation.
- Some processing chains can be called with an option, which activates/deactivates some steps. When he steps are de-activated, the corresponding outputs are not updated (e.g. long-term statistics).
- The options are indicated in a table, together with the products the chain is applied to (non-exhaustive list). The default option is also indicated, for which the active computational steps are indicated in green in the diagram.

## Processing chain: **std_precip**

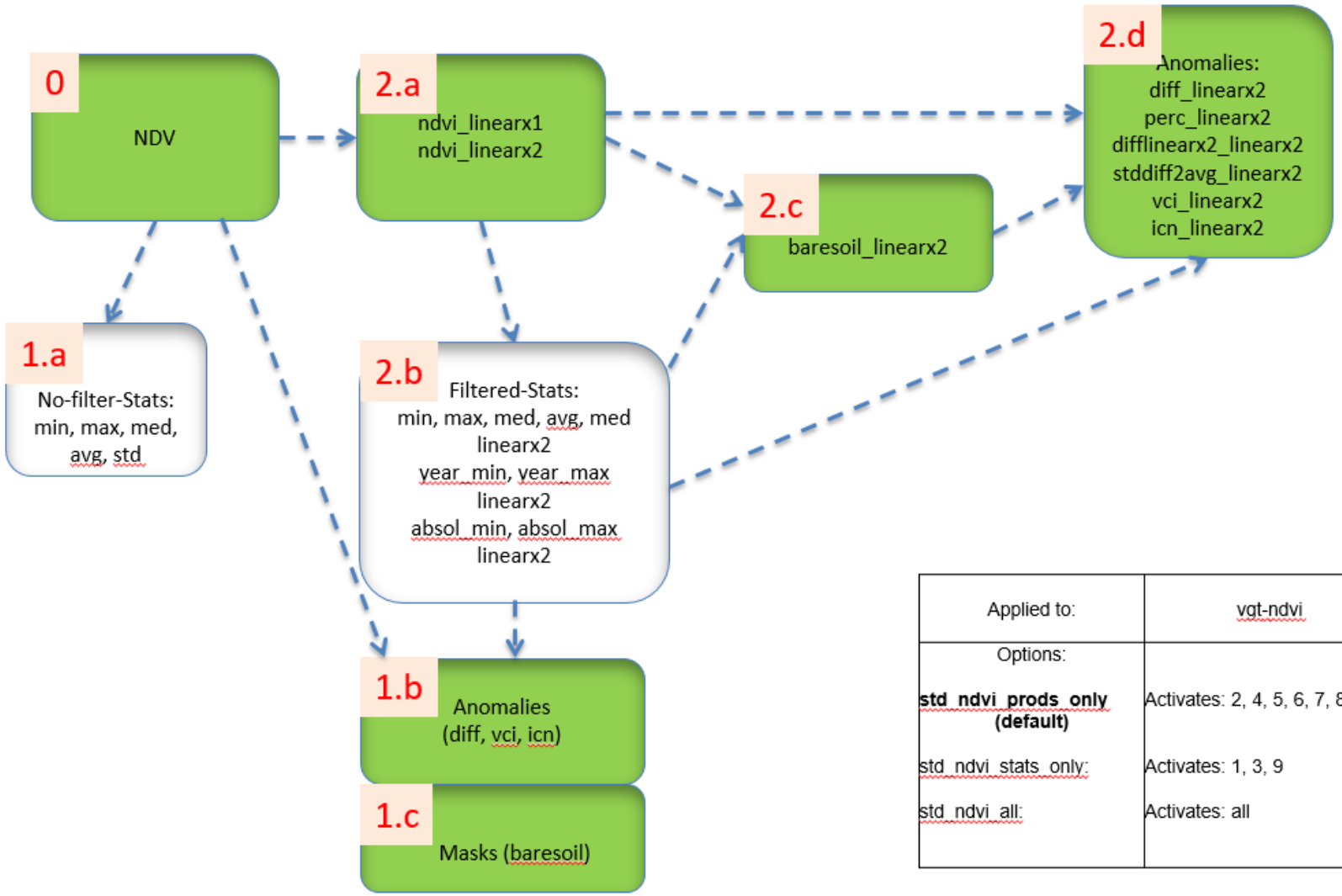
| Applied to: | FEWSNET<br>TAMSAT<br>CHIRPS |
|---|---|
| Options: | |
| **std_precip_prods_only (default)** | **Activates: 2, 3 and 5** |
| std_precip_stats_only: | Activates: 1 and 4 |
| std_precip_all: | Activates: all |



Processing chain: Standard Precipitation processing chain (**std_precip**)
Applied to: fewsnet-rfe, tamsat-rfe, chirps-dekad

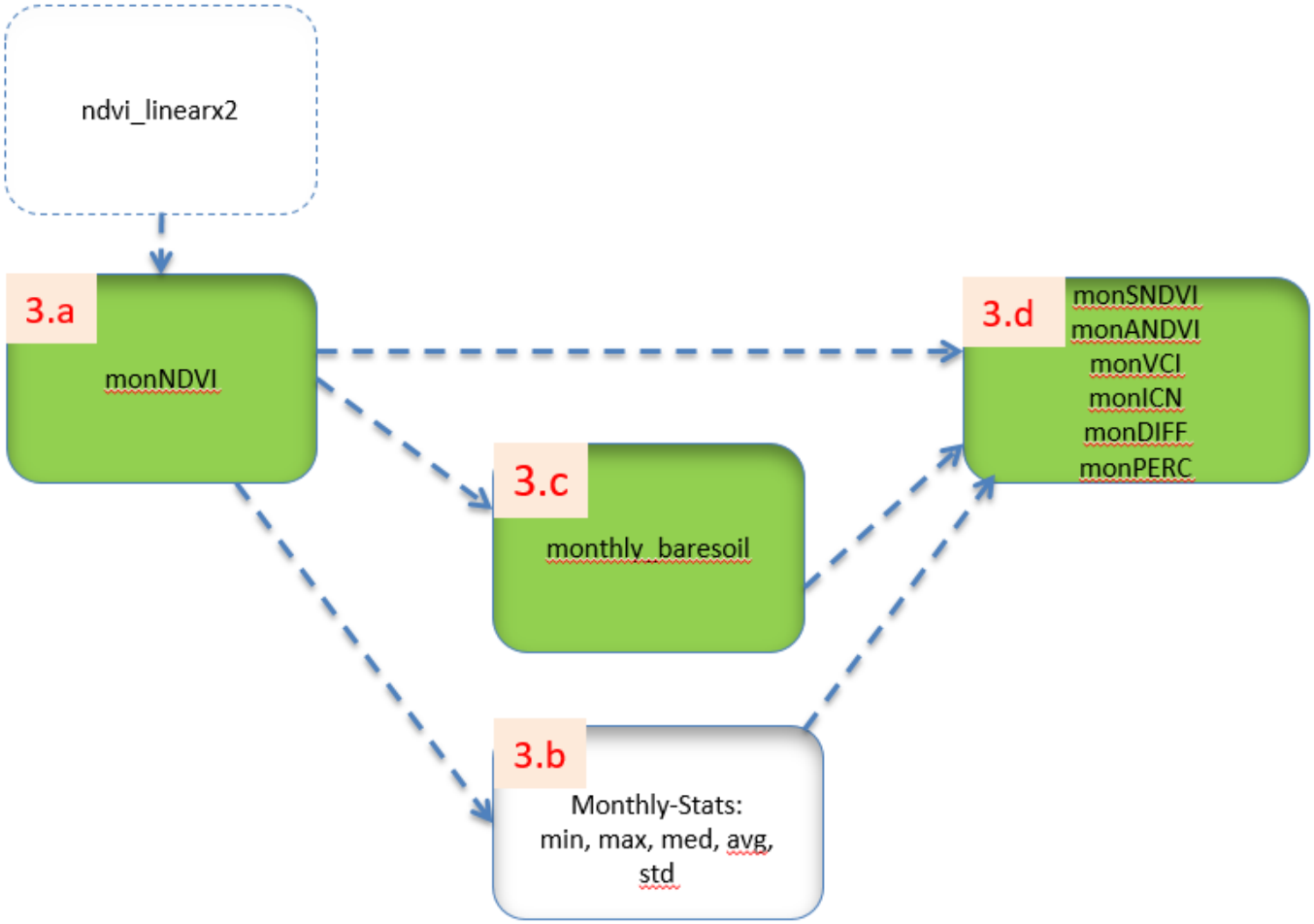
| | |
|---|---|
| 10davg | Statistic: multi-years average for each dekad |
| 10dmin | Statistic: multi-years minimum for each dekad |
| 10dmax | Statistic: multi-years maximum for each dekad |
| 10ddiff | Anomaly: ABSOLUTE DIFFERENCE (10d – 10davg) |
| 10dperc | Anomaly: RELATIVE DIFFERENCE % ((10d – 10davg)/10davg) (Computed only when LTA > 7mm) |
| 10dnp | Anomaly: Normalized Precipitation (10d- 10dmin)/(10dmax-10dmin) (Computed only when LTA > 7mm) |
| 10dratio | Anomaly: Precipitation Ratio 100*(10d/10davg) |
| 1moncum | Cumulated 10day RFE over each month |
| 1monavg | Statistic: multi-years average for each month |
| 1monmin | Statistic: multi-years minimum for each month |
| 1monmax | Statistic: multi-years maximum for each month |
| 1mondif | Anomaly: ABSOLUTE DIFFERENCE (1moncum-1monavg) |
| 1monperc | Anomaly: RELATIVE DIFFERENCE (1moncum-1monavg)/1monavg (Computed only when LTA > 20mm) |
| 1monnp | Anomaly: Normalized Precipitation (1moncum- 1monmin)/(1monmax-1monmin) (Computed only when LTA > 20mm) |

## Processing chain: **std_ndvi**




| Applied to: | vgt-ndvi |
|---|---|
| Options: | |
| **std_ndvi_prods_only (default)** | Activates: 2, 4, 5, 6, 7, 8, 10 |
| std_ndvi_stats_only: | Activates: 1, 3, 9 |
| std_ndvi_all: | Activates: all |

## Processing chain: **std_ndvi** (continued)



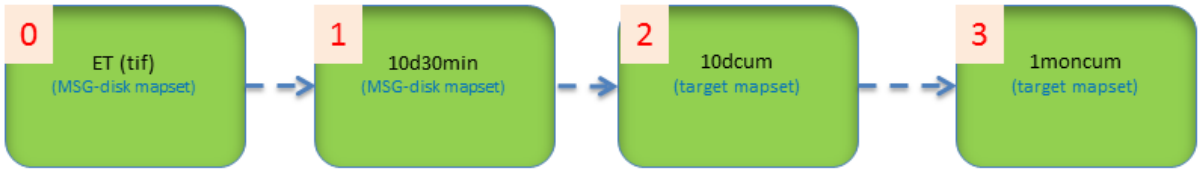
Derived products

Processing chain: Standard Precipitation processing chain for VGT NDVI (**std_vgt_ndvi**)

Applied to: vgt-ndvi

| | |
|---|---|
| ndvi-linearx2 | Filtered NDVI (linear filtering applied twice) |
| 10davg-linearx2 | Statistic: AVG of ndvi-linearx2 |
| 10dmin-linearx2 | Statistic: MIN of ndvi-linearx2 |
| 10dmax-linearx2 | Statistic: MAX of ndvi-linearx2 |
| 10dmed-linearx2 | Statistic: MED of ndvi-linearx2 |
| 10dstd-linearx2 | Statistic: STD of ndvi-linearx2 |
| 10ddiff-linearx2 | Anomaly: DIF of ndvi-linearx2 |
| 10dsndvi-linearx2 | Anomaly: SNDVI of ndvi-linearx2 (aka z-score) |
| 10dperc-linearx2 | Anomaly: PERC difference of ndvi-linearx2 (100*(curr-LTA)/LTA) |
| linearx2diff-linearx2 | Anomaly: Absolute Difference (ndvi-linearx2 -10davg-linearx2) |
| vci-linearx2 | Anomaly: VCI (linearx2 vs. linearx2 statistics) |
| icn-linearx2 | Anomaly: ICN (linearx2 vs. linearx2 statistics) |
| ratio-linearx2 | Anomaly: Ratio (100 * ndvi-linearx2/10davg-linearx2) |
| monndvi | Indicator: monthly NDVI (from ndvi-linearx2) |
| 1monavg | Statistic: monthly multi-year average NDVI |
| 1monmin | Statistic: monthly multi-year min NDVI |
| 1monmax | Statistic: monthly multi-year max NDVI |
| 1monicn | Statistic: monthly ICN NDVI |
| 1monvci | Statistic: monthly VCI NDVI |
| 1monstd | Statistic: monthly std NDVI |
| 1mondiff | Anomaly: monthly diff NDVI |
| 1monperc | Anomaly: monthly perc NDVI |
| 1monsndvi | Anomaly: monthly SNDVI (aka z-score) |
| monthly-ratio | Anomaly: monthly ratio |

Processing chain: **std_lsasaf_et**



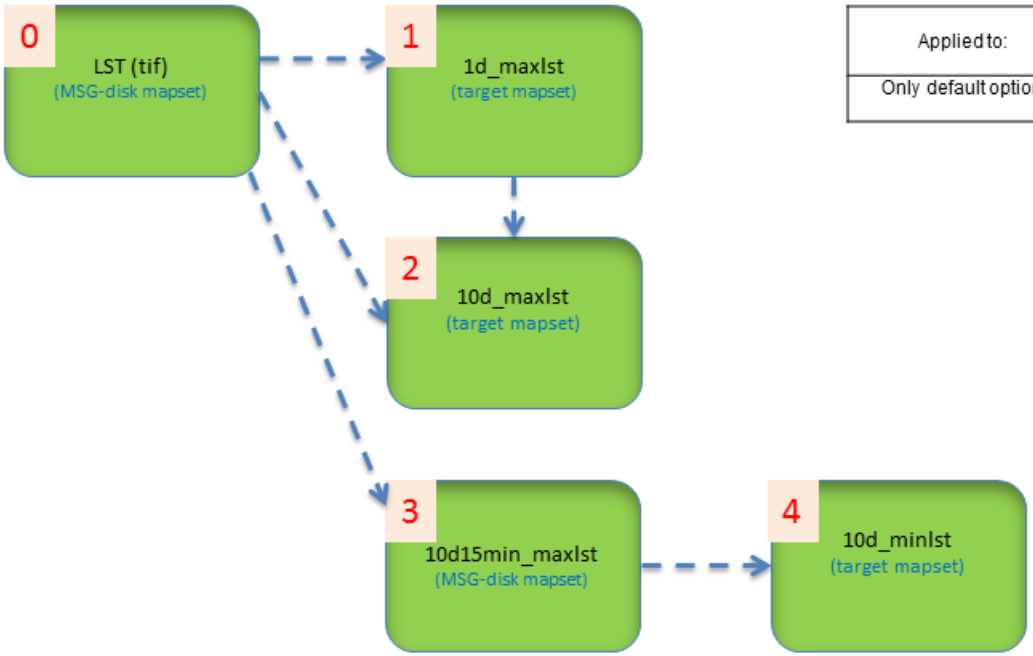

| Applied to: | lsasaf-et |
|---|---|
| Only default option | |
| Notes: | 10d and 1mon stats and anomalies to be added |

Processing chain: Standard Processing chain for LSASAF ET related products (**std_lsasaf_et**)

Applied to: lsasaf-et

| | | |
|---|---|---|
| 10d30min[2] | Statistics (30min average over 10 days) | MSG-disk |
| 10dcum | Indicator: ET cumulated over 10 days | Africa |
| 1moncum | Indicator: ET cumulated over 1 month | Africa |

Processing chain: **std_lsasaf_lst**

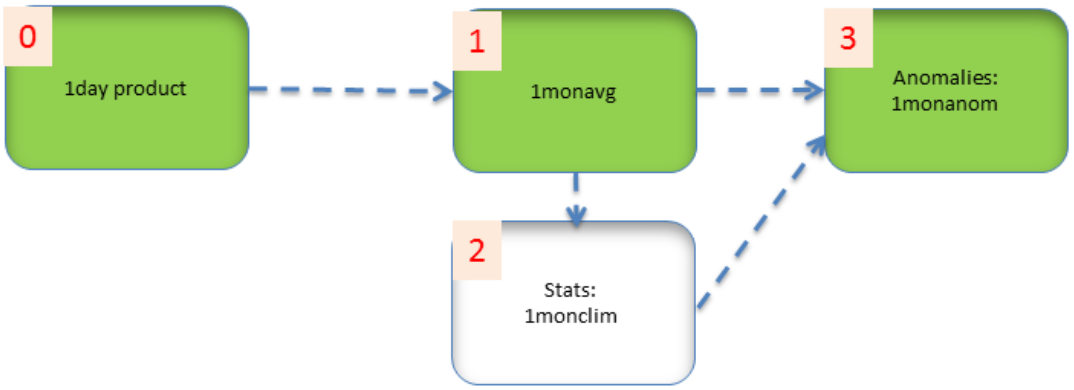



| Applied to: | lsasaf-lst |
|---|---|
| Only default option | |

Processing chain: Standard Processing chain for LSASAF LST related products (std_lsasaf_lst)

Applied to: lsasaf-lst

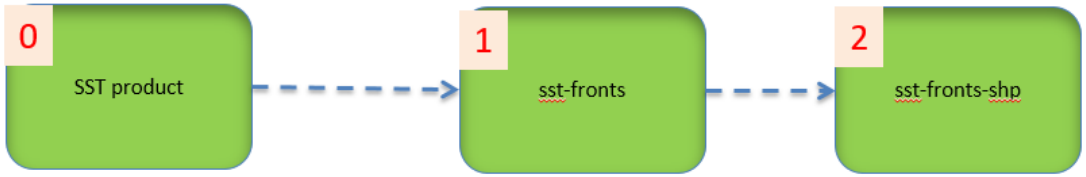
| | | |
|---|---|---|
| 10d15min[2] | Statistics (15min max over 10 days) | MSG-disk |
| 1dmax | Indicator: LST maximum over 1 day | Africa |
| 10dmax | Indicator: LST maximum over 10 days | Africa |
| 10dmin | Indicator: LST minimum over 10 days | Africa |




| | |
|---|---|
| Applied to: | modis-chla<br>modis-sst<br>modis-kd490<br>modis-par |
| Only default option | |
| Notes: | The computation of 1monclim is done once for all (no updated) |

Processing chain: Standard Processing chain for MODIS monthly average computation (**std_modis_derived**)
Applied to: modis-chla, modis-sst, modis-par, modis-kd490

| | |
|---|---|
| 8daysavg | 8 days Average |
| monavg | Monthly average |
| monclim | Monthly Climatology |
| monanom | Monthly Anomaly (monthly - climatology) |



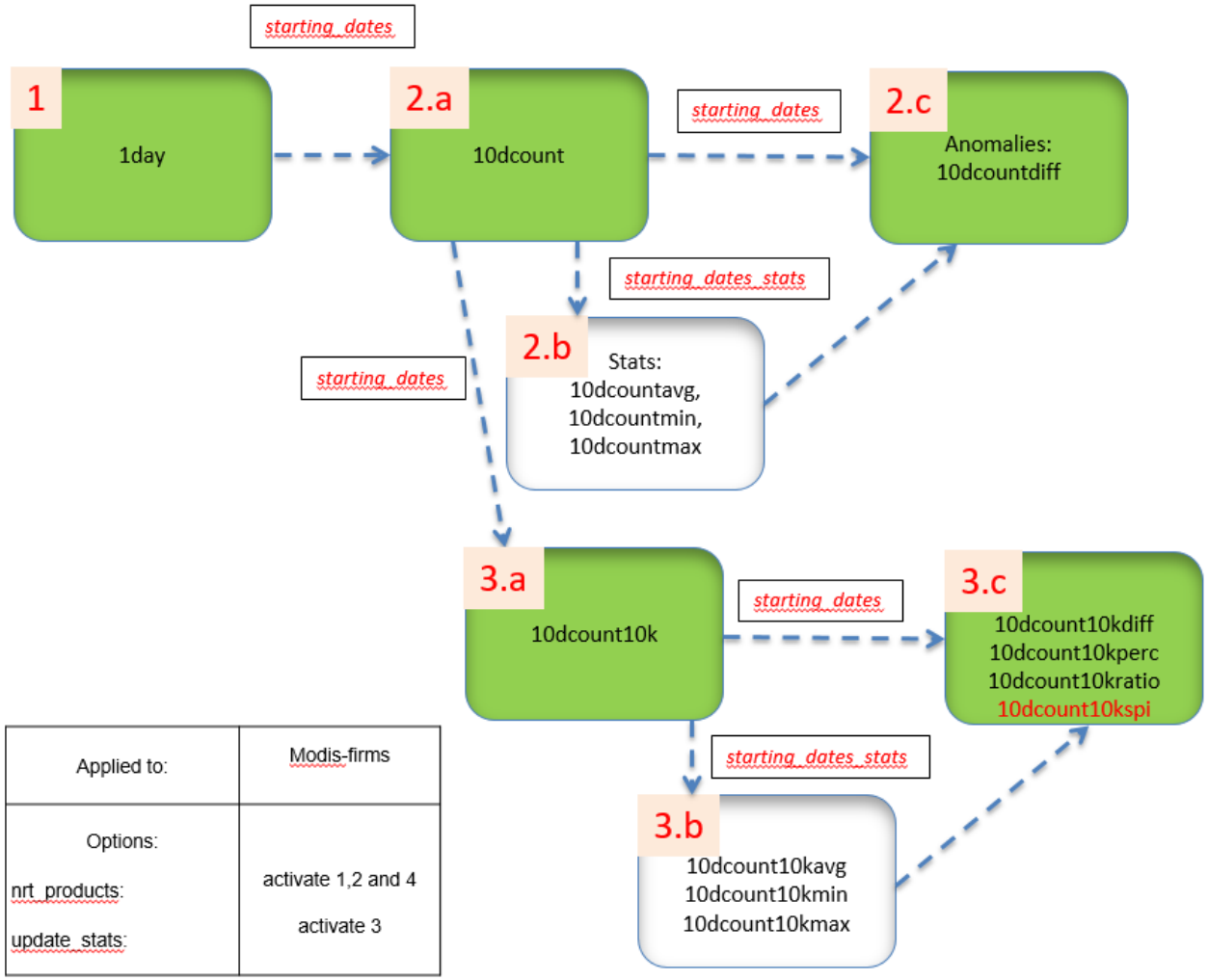

| | |
|---|---|
| Applied to: | modis-sst<br>pml-modis-sst<br>slstr-sst |
| Only default option | |

Processing chain: Proc library based processing chain for front's computation (**proc_fronts**)
Applied to: pml-modis-sst, slstr-sst

| | |
|---|---|
| sst-fronts | Fronts of Sea Surface Temperature |
| sst-fronts-shp[10] | Fronts of SST in shapefile format |

[10] On top of the GeoTiff file (sst-fronts) this product is created for usage in QGIS or other applications (it is not visualized by Climate Station viewer).

## Processing chain: std_modis_firms

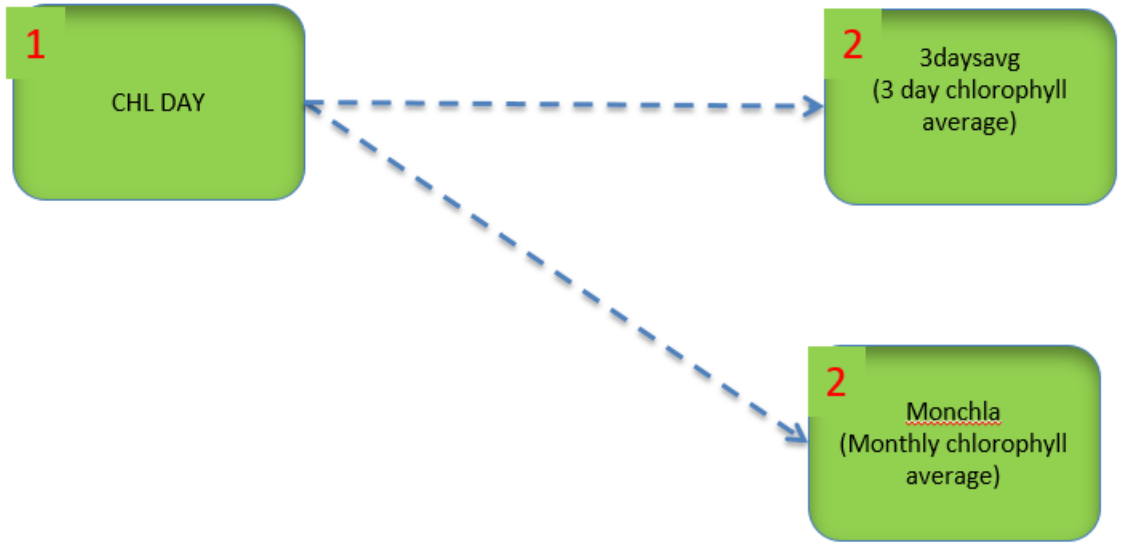



| Applied to: | Modis-firms |
|---|---|
| Options:<br>nrt_products:<br>update_stats: | <br>activate 1,2 and 4<br>activate 3 |

Processing chain: Processing chain of standard MODIS FIRMS products (**std_modis_firms**)
Applied to: modis-firms

| | |
|---|---|
| 10dcount | Number of fires over 10 day period |
| 10dcountavg | Multi-years average number of 10dcount |
| 10dcountmin | Multi-years minimum number of 10dcount |
| 10dcountmax | Multi-years maximum number of 10dcount |
| 10dcountdiff | Difference between 10dcount and 10dcountavg |
| 10dcount10K | Number of fires over 10 day period over 10 Km grids |
| 10dcount10Kavg | Multi-years average number of 10dcount over 10 Km grids |
| 10dcount10Kmin | Multi-years minimum number of 10dcount over 10 Km grids |
| 10dcount10Kmax | Multi-years maximum number of 10dcount over 10 Km grids |
| 10dcount10Kdiff | Difference between 10dcount and 10dcountavg over 10 Km grids |
| 10dcount10Kratio | Ratio between 10dcount and 10dcountavg over 10 Km grids |

Processing chain: std_olci_wrr




Processing chain: Standard Processing chain for 3day average, monthly average products computation (**std_olci_wrr**)
Applied to: slstr-sst, olci-wrr

| | |
|---|---|
| 3daysavg | 3day average Product |
| monavg | Monthly average product |

## Processing chain: std_gradient


## Processing chain: std_monavg


## Processing chain: std_3dayavg

Processing chain: Proc library based Processing chain for gradient computation (**proc_gradient**)
Applied to: modis-chla, slstr-sst, olci-wrr

| | |
|---|---|
| gradient | Horizontal Gradient for chlorophyll and sea surface temperature. |

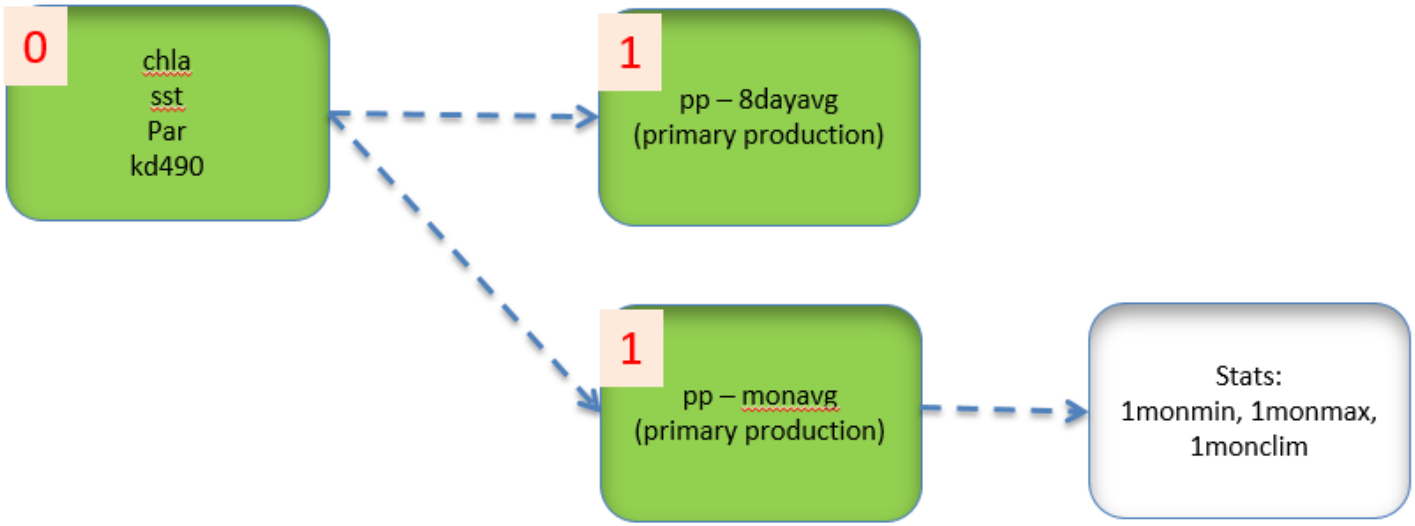
Processing chain: Standard Processing chain for monthly average computation from daily products (**std_monavg**)
Applied to: slstr-sst, olci-wrr

| | |
|---|---|
| monavg | Monthly averaged for sst or chla |

Processing chain: Standard Processing chain for monthly average computation from daily products (**std_3dayavg**)
Applied to: slstr-sst

| | |
|---|---|
| 3dayavg | Three day averaged for sst or chla |

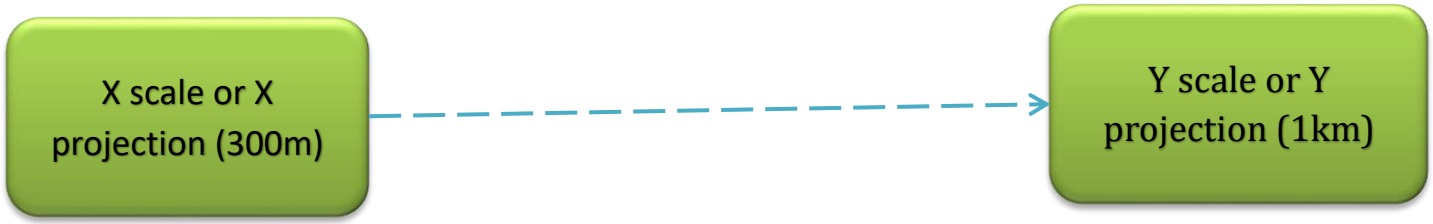
Processing chain: **modis_pp**




Processing chain: Non Standard Processing chain for Primary production computation (**modis_pp**)
Applied to: modis-chla, modis-sst, modis-par, modis-kd490 are the 4 inputs for computing PP

| | |
|---|---|
| 8daysavg | Average Primary production over 8 days |
| monavg | Monthly average primary production |

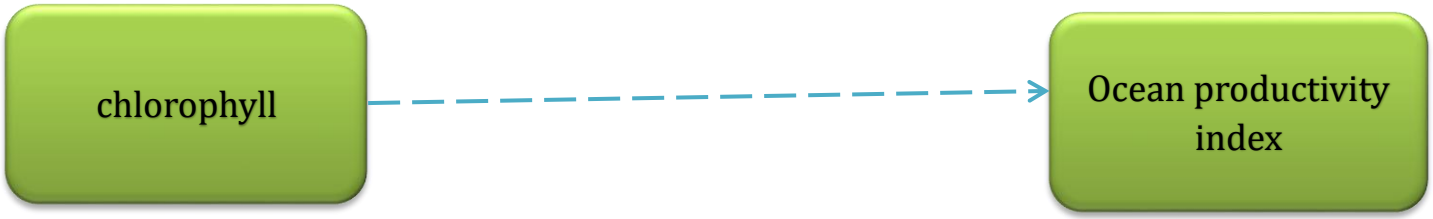
## Processing chain: std_reproject




Processing chain: Standard Processing chain to convert to one resolution, one projection from existing resolution and projection (**std_reproject**)
Applied to: vgt-ndvi

| | |
|---|---|
| ndvi | Reprojected data from 300m to 1km |

# Processing chain: std_opfish




Processing chain: Standard Processing chain to generate Ocean productivity index from chorophyll (**std_opfish**)
Applied to: modis-chla

| | |
|---|---|
| opfish | Ocean productivity index from Modis chlorophyll data |