



ESTHUB USAGE EXAMPLES

Thomas Storm, Brockmann Consult GmbH

TOPICS

Data access with catalogue (DHuS)

- Search by type, region, time period
- Download of Sentinel data products

Processing with processing system (Calvalus)

- Submission of parameterised processing requests
- Download of result data product sets
- Different processing workflows

ESTHUB

ESTHub is ...

- Mirror of regional (Estonian) Sentinel data
- Processing facility with data processors

Data access with catalogue (DHuS)

- Search by type, region, time period
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Processing with processing system (Calvalus)

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- Different processing workflows

CATALOGUE DATA ACCESS

- Dedicated installation of open source DHuS software
- Software used for ESA SciHub, tailored for EstHUB
- Web portal to search, display and download Sentinel data over Estonia
- Access via the Maa-amet EstHUB webpage:

The screenshot displays the Maa-amet EstHUB web portal. The top navigation bar includes links for Geoportaal, MAA-AMET, KAARDIRAKENDUSED, RUUMIANDMED (highlighted), TEENUSED, and INSPIRE. The main content area is titled 'ESTHub satelliidiandmed'. It features a sidebar on the left with a list of data categories under 'RUUMIANDMED', such as Maakatastri andmed, Eesti topograafia andmekogu, Kitsenduste andmed, Ortofotod, Geo3D, Kaldaerofotod, Kõrgusandmed, ESTHub satelliidiandmed (highlighted), Aadressiandmed, Haldus- ja asustusjaotus, Kohanimed, Mullastiku kaart, Geoloogilised andmed, Geodeetilised andmed, Topokaardid ja aluskaardid, Kaardilehte süsteemid, Planeeringute andmed, and Kinnisvara tehingute andmebaas. The main text describes ESTHub as a central point for accessing satellite data, mentioning the Copernicus programme and Open Access Hub-st. It also provides information on data availability for Sentinel 1, 2, and Landsat 8. Two maps are shown: 'Joonis 1. Sentinel 1, 2 ja Landsat 8 andmete ulatus' and 'Joonis 2. Sentinel 3 andmete ulatus'. On the right, there are video thumbnails and a section titled 'Juurdenpääs teenustele' (Access to services) with a red circle highlighting the 'Satiladu' (Satellite data) link, along with 'ESTHub-i andmeportaal' and 'ESTHub-i töötuskeskkond'.

CATALOGUE DATA ACCESS

ESTHub satellite data portal

Insert search criteria...

Display 1 to 25 of 11311 products. 0 products selected

Order By: Sensing Date ↓

Request Done: ((platformname:Sentinel-3 AND producttype:OL_2_LFR...))

S3B OLCI S3B_OL_2_LFR____20210321T102733_20210321T103033_20210322T170041_0180_050_222_1800_L...
Download URL: [https://ehdatahub.maaamet.ee/dhus/odata/v1/Products\('17eb06a4-2a58-4804-b925-b0e0855dca](https://ehdatahub.maaamet.ee/dhus/odata/v1/Products('17eb06a4-2a58-4804-b925-b0e0855dca)
Mission: Sentinel-3 Instrument: OLCI Sensing Date: 2021-03-21T10:27:32.782087Z Size: 69.93 MB

S3A OLCI S3A_OL_2_LFR____20210321T092858_20210321T093158_20210322T154855_0180_069_364_1980_L...
Download URL: [https://ehdatahub.maaamet.ee/dhus/odata/v1/Products\('3736cc5a-f48e-43cf-ac51-896bbb64d03f](https://ehdatahub.maaamet.ee/dhus/odata/v1/Products('3736cc5a-f48e-43cf-ac51-896bbb64d03f)
Mission: Sentinel-3 Instrument: OLCI Sensing Date: 2021-03-21T09:28:57.569684Z Size: 106.75 MB

S3A OLCI S3A_OL_2_LFR____20210321T092558_20210321T092858_20210322T154844_0179_069_364_1800_L...
Download URL: [https://ehdatahub.maaamet.ee/dhus/odata/v1/Products\('0c2a3608-a059-4a52-b394-f504b2f0cdb](https://ehdatahub.maaamet.ee/dhus/odata/v1/Products('0c2a3608-a059-4a52-b394-f504b2f0cdb)
Mission: Sentinel-3 Instrument: OLCI Sensing Date: 2021-03-21T09:25:57.569684Z Size: 97.38 MB

S3B OLCI S3B_OL_2_LFR____20210321T084934_20210321T085234_20210322T145650_0179_050_221_1980_L...
Download URL: [https://ehdatahub.maaamet.ee/dhus/odata/v1/Products\('5c0022f6-d04c-4cc4-82e3-5b5f0d4502fa](https://ehdatahub.maaamet.ee/dhus/odata/v1/Products('5c0022f6-d04c-4cc4-82e3-5b5f0d4502fa)
Mission: Sentinel-3 Instrument: OLCI Sensing Date: 2021-03-21T08:49:33.599074Z Size: 101.65 MB

S3B OLCI S3B_OL_2_LFR____20210321T084634_20210321T084934_20210322T145639_0180_050_221_1800_L...
Download URL: [https://ehdatahub.maaamet.ee/dhus/odata/v1/Products\('b924ece1-6020-42bc-b765-4081410ac1f](https://ehdatahub.maaamet.ee/dhus/odata/v1/Products('b924ece1-6020-42bc-b765-4081410ac1f)
Mission: Sentinel-3 Instrument: OLCI Sensing Date: 2021-03-21T08:46:33.599074Z Size: 91.75 MB

S3A OLCI S3A_OL_2_LFR____20210321T075058_20210321T075358_20210322T132914_0180_069_363_2160_L...
Download URL: [https://ehdatahub.maaamet.ee/dhus/odata/v1/Products\('cd70af9c-0fa3-4765-a08f-87b77a5bbdef](https://ehdatahub.maaamet.ee/dhus/odata/v1/Products('cd70af9c-0fa3-4765-a08f-87b77a5bbdef)
Mission: Sentinel-3 Instrument: OLCI Sensing Date: 2021-03-21T07:50:58.350948Z Size: 103.62 MB

S3A OLCI S3A_OL_2_LFR____20210321T074758_20210321T075058_20210322T132901_0179_069_363_1980_L...
Download URL: [https://ehdatahub.maaamet.ee/dhus/odata/v1/Products\('cd70af9c-0fa3-4765-a08f-87b77a5bbdef](https://ehdatahub.maaamet.ee/dhus/odata/v1/Products('cd70af9c-0fa3-4765-a08f-87b77a5bbdef)
Mission: Sentinel-3 Instrument: OLCI Sensing Date: 2021-03-21T07:47:58.350948Z Size: 103.62 MB

Products per page: 25 << < page: 1 of 453 > >>

DD Graticule

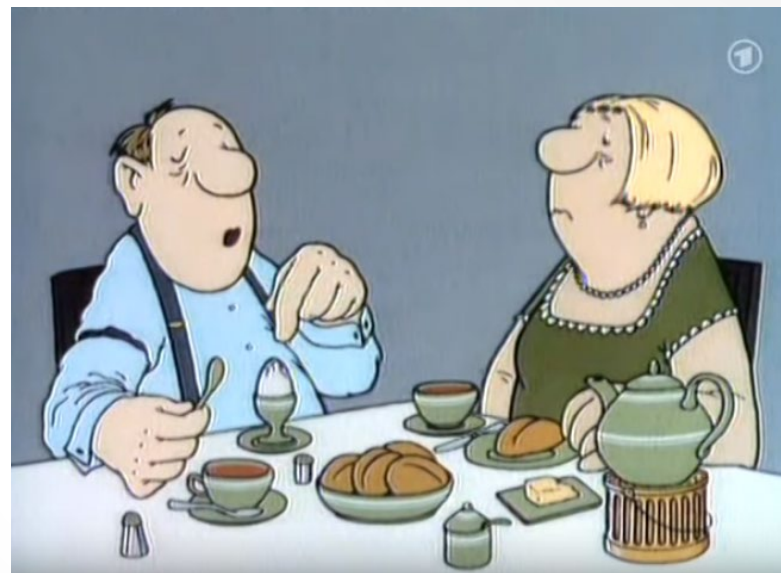
Map showing satellite coverage over Europe and surrounding regions, including labels for countries like Norway, Finland, Sweden, Denmark, Germany, Poland, Czech Republic, Slovakia, Austria, Hungary, Romania, Bulgaria, Greece, Turkey, Georgia, Armenia, Azerbaijan, Kazakhstan, Uzbekistan, Turkmenistan, Afghanistan, Pakistan, India, China, Mongolia, and others. The map also shows the location of the satellite ground stations (Kalaallit Nunaat) and the satellite's orbit path.

PROCESSING SERVICE

- 1 egg takes 4.5 minutes
- 160 eggs take ...

Options with a cluster:

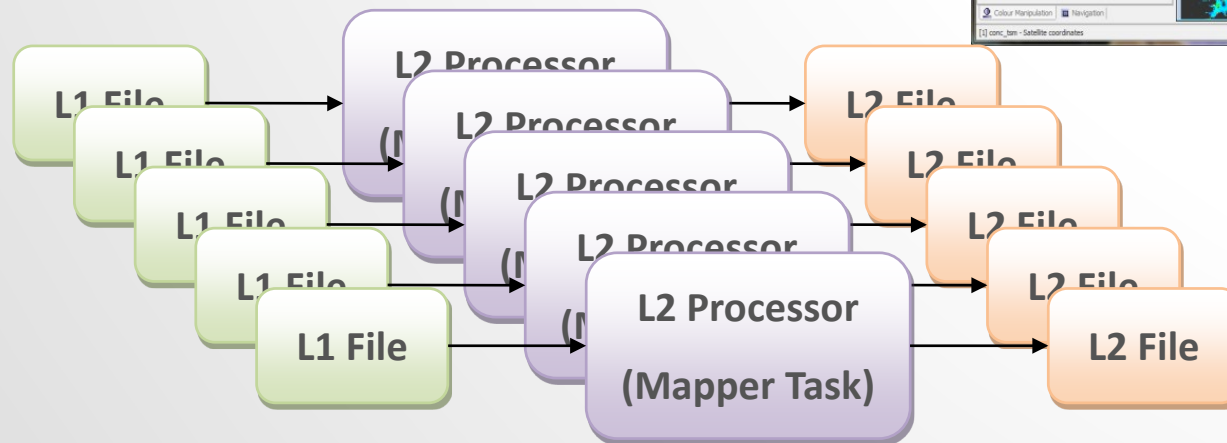
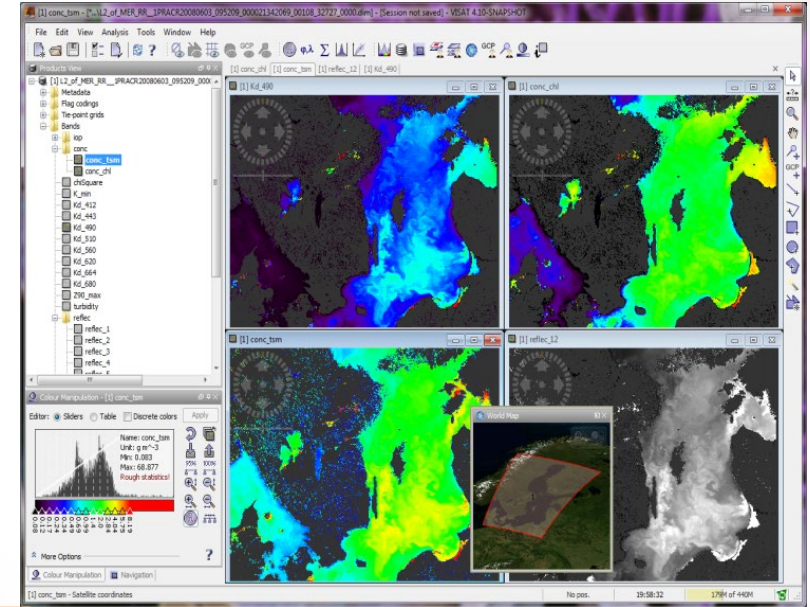
- Process a time series within the same time as a single product
- Process a larger coverage within the same time as a single product



(source: German TV show 'Loriot')

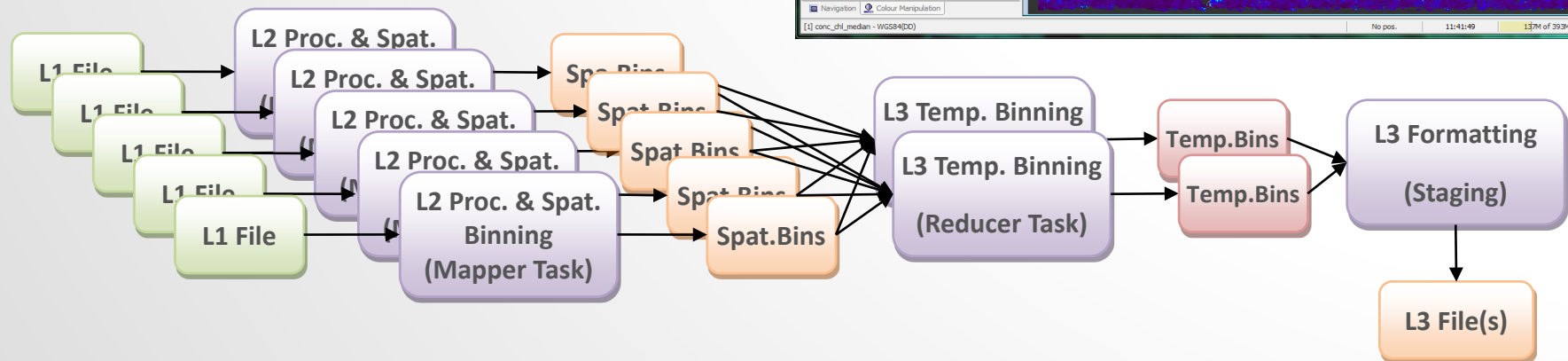
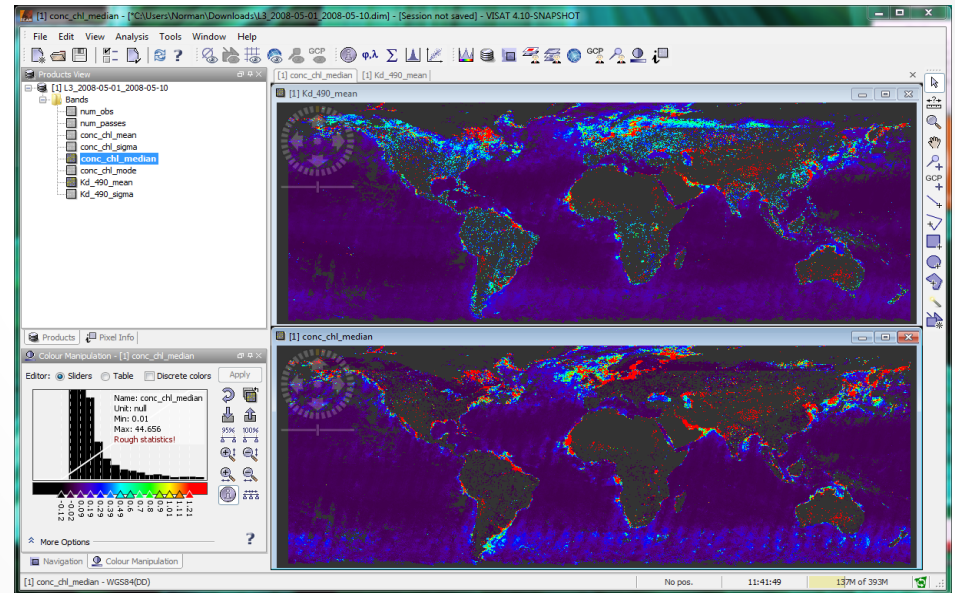
PROCESSING WORKFLOWS - L2 CONCURRENT PROCESSING

- MERIS RR L1, Baltic Sea, 3 days
- CoastColour NN L2 processor
- **6 minutes** (20 nodes)
- **output: L2 files**



PROCESSING WORKFLOWS – SPATIO-TEMPORAL AGGREGATION

- MERIS RR L1, global, 10-day
- CoastColour C2W processor
- **1.5 hours** (20 nodes)
- **1 L3 product**



ESTHUB SYSTEM

- 20 (physical) nodes
 - Purpose: data storage and data-local processing
- Set of dedicated virtual machines, most important:
 - ehmaster:
 - controls processing tasks
 - controls data storage
 - ehproduction01 + 02:
 - control regular processing jobs
 - user-defined or system-wide (like geo-index)
 - ehportal:
 - runs the processing service GUI
 - ehdatahub
 - Runs the DHuS catalogue

PROCESSING SERVICE

Geoportaal



MAA-AMET

KAARDIRAKENDUSED [RUUMIANDMED](#) TEENUSED INSPIRE

✓ est eng

RUUMIANDMED

- Maakatastri andmed +
- Eesti topograafia andmekogu +
- Kitsenduste andmed +
- Ortofotod +
- Geo3D +
- Kaldaerofotod
- Kõrgusandmed +
- [ESTHub satelliidiandmed](#)
- Aadressiandmed +
- Haldus- ja asustusjaotus +
- Kohanimed +
- Mullastiku kaart +
- Geoloogilised andmed +
- Geodeetilised andmed +
- Topokaardid ja aluskaardid +
- Kaardilehtede süsteemid +
- Planeeringute andmed +
- Kinnisvara tehingute andmebaas +

[Ruumiandmed](#) > [ESTHub satelliidiandmed](#)

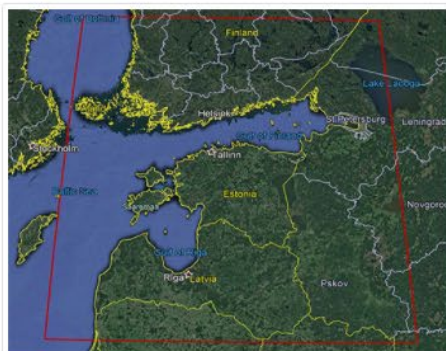
ESTHub satelliidiandmed

ESTHub on **riiklik satelliidiandmete keskus**, mille kaudu on kasutajatel võimalik otsida ja alla laadida [Copernicus programmi](#) andmeid. Samuti pakub ESTHub riigiasutustele võimalust **andmeid töödelda**.

ESTHub kogub Eesti huviala kohta [Sentinel](#) ja [Landsat 8](#) andmeid ning pakub nende andmete kiiret alla laadimist.

Andmete allalaadimiseks on kasutusel peamiselt riikidele mõeldud andmete alla laadimise portaal ([ColHub](#)). Sellele on meil ligipääs tänu [lepingule Euroopa Kosmoseagentuuriga](#), mille sõlmis EAS 2016. aastal. Kui tavaliselt on kasutajad harjunud [Open Access Hub-st](#) andmeid alla laadima, siis ESTHub pakub märgatavalt kiiremat andmete kätte saamise võimalust.

Sentinel 1, 2 ja Landsat 8 kohta laetakse alla ja arhiveeritakse ESTHub-s andmeid ca 200 km ulatus riigipiirist (vt joonis 1) ning Sentinel 3 andmed katavad kogu Läänemere ja selle lähiümbruse (vt joonis 2).



Joonis 1. Sentinel 1, 2 ja Landsat 8 andmete ulatus



Joonis 2. Sentinel 3 andmete ulatus

Tutvustavad videod



Juurdepääs teenustele

Satiladu

ESTHub-i andmeportaal


ESTHub-i töötluskeskkond

PROCESSING SERVICE

- Access via esthub.maaamet.ee
- Authentication with user name and password
- Web interface for
 - processing request composition
 - request submission and monitoring
 - result data access

PROCESSING SERVICE

ehcalvalus.maaamet.ee/calest/calvalus.jsp



REPUBLIC OF ESTONIA
LAND BOARD

ESTHub Processing Platform


Portal for Earth observation data processing

Username:

Password:

Calvalus version 2.15 (built 07-12-2018), © 2017 Brockmann Consult GmbH - [Imprint](#)

ehcalvalus.maaamet.ee/calest/calvalus.jsp



REPUBLIC OF ESTONIA
LAND BOARD

Processing Service

martin [HELP](#) [LOG OUT](#)

L2 Processing

Match-up Analysis

Regional Statistics

L3 Processing

Trend Analysis

Management

Regions

Requests

Productions

Input File Set

☒ Show predefined file sets
☐ Show my outputs and of other users

Sentinel-2 MSI L1C
Landsat 8 OLI and TIRS L1
Sentinel-1 SLC
Sentinel-1 GRD
Sentinel-1 OCN
Sentinel 3 OLCI EFR Level 1
Sentinel 3 OLCI LFR
Sentinel 3 OLCI WFR

Name: Sentinel-2 MSI L1C
Type: S2_MSI_L1C
Start Date: 2015-07-01
End Date: 2019-12-31
Region name: Estonia
Geo Inventory: Yes

Show Help

Temporal Filter

☐ No filter
☐ By date range

Spatial Filter

☐ No filter (global) ☒ By region


☐ EstHUB

Man


Satellite

5.7

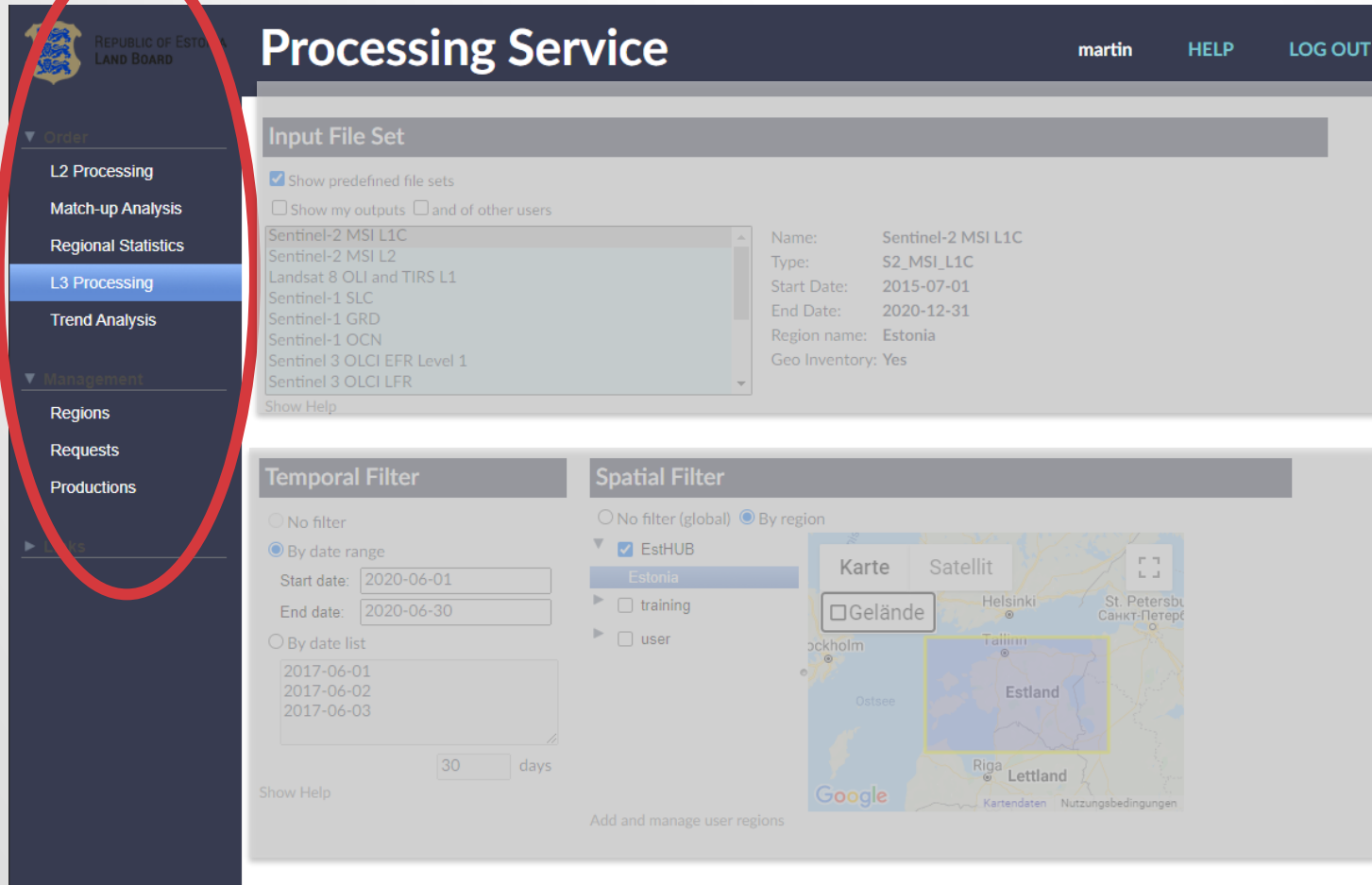
Calvalus version 2.15 (built 07-12-2018)
Copyright © 2018 ESTHub [Legal Notice](#) [Privacy Statement](#) [About](#) [Help](#)

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CONSULT

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 REPUBLIC OF ESTONIA
LAND BOARD

WEB INTERFACE – INPUT SELECTION



REPUBLIC OF ESTONIA
LAND BOARD

Processing Service

martin HELP LOG OUT

Input File Set

☒ Show predefined file sets
☐ Show my outputs ☐ and of other users

Sentinel-2 MSI L1C
Sentinel-2 MSI L2
Landsat 8 OLI and TIRS L1
Sentinel-1 SLC
Sentinel-1 GRD
Sentinel-1 OCN
Sentinel 3 OLCI EFR Level 1
Sentinel 3 OLCI LFR

Name: Sentinel-2 MSI L1C
Type: S2_MSI_L1C
Start Date: 2015-07-01
End Date: 2020-12-31
Region name: Estonia
Geo Inventory: Yes

Show Help

Temporal Filter

☐ No filter
☒ By date range
Start date: 2020-06-01
End date: 2020-06-30
☐ By date list
2017-06-01
2017-06-02
2017-06-03
30 days

Show Help

Spatial Filter

☐ No filter (global) ☒ By region
EstHUB
Estonia
☐ training
☐ user

Karte Satellit
Gelände
Helsinki
Tallinn
Riga
Lettland
Estland
St. Petersburg
Санкт-Петербург
Ostsee
Google
Kartendaten Nutzungsbedingungen

Add and manage user regions

Input selection by

- dataset
- time period
- region

WEB INTERFACE – PROCESSOR SELECTION

- Processor selection from**
- system-provided processors
 - user-provided processors

The screenshot displays the 'Processing Service' web interface. The header includes the Republic of Estonia Land Board logo, the service name, and user controls for 'martin', 'HELP', and 'LOG OUT'. A left sidebar contains navigation links for 'Order' (L2 Processing, Match-up Analysis, Regional Statistics, L3 Processing, Trend Analysis) and 'Management' (Regions, Requests, Productions), along with a 'Links' section. The main content area is titled 'Add and manage user regions' and features a 'Level-2 Processor' selection panel. This panel includes checkboxes for 'My processors', 'System processors', 'Processors of other users', 'Highest version', and 'Matching input type'. A list of processors is shown, with 'SNAP generic BandMaths v1.1' selected. Below the list, input details are provided: 'Input Types: *', 'Bundle: snap-buildin v6.0', and 'Owner: System'. To the right, the 'Level-2 Parameters' section displays an XML configuration for NDVI calculation. At the bottom, there are buttons for 'Datei auswählen' (None selected), 'Edit Parameters', and a link to the 'Processor description'.

REPUBLIC OF ESTONIA
LAND BOARD

Processing Service

martin HELP LOG OUT

Show Help Add and manage user regions

▼ Order

- L2 Processing
- Match-up Analysis
- Regional Statistics
- L3 Processing**
- Trend Analysis

▼ Management

- Regions
- Requests
- Productions

► Links

Level-2 Processor

☒ My processors ☐ Processors of other users ☒ Highest version
☒ System processors ☒ Matching input type

<none>
Atmospheric correction with Sen2Cor for S2 v2.5.5
Biophysical Processor for LAI from S2 v6.0.10
Case 2R/CoastColour Processor for S2 MSI v1.5
Case 2R/CoastColour Processor for S2 MSI with Idepix v1.5
Cloud screening with Fmask for L8 and S2 v0.4.5
Cloud screening with SNAP Idepix for S2 v7.0.0
Polymer L2 MSI v4.12.forscientificuse
Rayleigh correction for S2 v7.0.0
SNAP generic BandMaths v1.1
SNAP generic Subset v1.2

Input Types: *
Bundle: snap-buildin v6.0
Owner: System

► [Processor description:](#)


Show Help

Level-2 Parameters

```
<parameters>  
  <targetBands>  
    <targetBand>  
      <name>NDVI</name>  
      <type>float32</type>  
      <expression>(B8-B4) / (B8+B4)</expression>  
    </targetBand>  
  </targetBands>  
</parameters>
```

Datei auswählen Keine ausgewählt Edit Parameters

WEB INTERFACE – PARAMETERISATION

 REPUBLIC OF ESTONIA
LAND BOARD

Processing Service

martin [HELP](#) [LOG OUT](#)

▼ Order

L2 Processing

Match-up Analysis

Regional Statistics

L3 Processing

Trend Analysis

▼ Management

Regions

Requests

Productions

► Links

[Processor description](#)

Show Help

Level-3 Parameters

Variable Name		Expression
NDVI_agg	=	NDVI

Please define either variables by a band arithmetic expression or declare band names that already exist in the product. These variables can be used in the aggregate definitions below.

AddRemove

Aggregator

Parameters

AVG

Edit

varName=NDVI_agg

AddRemove

Good-pixel expression: true

Stepping period: 30 days

Compositing: BINNING

Compositing period: 30 days

Spatial resolution: 0.5 km/pixel

Number of periods: 1

Supersampling: 1 pixels

Target width: 1,551 pixels

Target height: 506 pixels

Show Help

 REPUBLIC OF ESTONIA
LAND BOARD

PROCESSING SERVICE – REQUEST SUBMISSION

Output Parameters

Production name:

Provide a name for the production to identify it later on. If left empty, a name will be generated from the

☐ Process to Cluster-Internal-Format

☒ User product

Product file format:

Note that the available product file formats may depend on the selected processor.

☒ Perform staging step after successful production

Percentage of allowed failing products:

Request queue:

If you are entitled for several queues select the queue for the project you are processing for.

[Show Help](#)

Request submission

- selection of output format
- selection of queue
- ordering production

Check Request

Save Request

Order Production

PROCESSING SERVICE – PROCESSING STATUS + RESULTS

▼ Order

L2 Processing

Match-up Analysis

Regional Statistics

L3 Processing

Trend Analysis

▼ Management

Regions

Requests

Productions

☐

▼ Production

User

Processing Status

Processing Time

Staging Status

Result

☐

20210322215223_L3_3dc07981f0d7e7
S2 NDVI Estonia

martin

RUNNING
(0.0%)

UNKNOWN

Cancel

☐

20201112132838_RA_15c2cf2391634e
Thomas Test Regional Stats

martin

COMPLETED

0:24:54

COMPLETED

Edit

Auto-staging

Download

☐

20201112130622_L3_15c2cf2391633d
NDVI L3 Test Thomas

martin

COMPLETED

0:17:22

COMPLETED

Edit

Auto-staging

Download

☐

20201112122612_MA_15c2cf23916325
Matchup Analysis Test Thomas

martin

COMPLETED

0:14:29

COMPLETED

Edit

Auto-staging

Download

☐

20201112102258_L2Plus_15c2cf23916313
NDVI Thomas test

martin

COMPLETED

0:03:59

COMPLETED

Edit

Auto-staging

Download

☐

20201112084207_L2Plus_15c2cf239162e5
Level_2_subset Test Thomas

martin

COMPLETED

0:19:15

COMPLETED

Edit

Auto-staging

Download

☐

2020111170956_RA_135b0599e8d516
Region analysis BandMaths 2020-05-01 to 2020-06-30 (Globe)

martin

COMPLETED

0:15:39

COMPLETED

Edit

Auto-staging

Download

☐

2020111165409_L3_135b0599e8d515

Auto-


☐

Show productions of all users

Active and completed productions

- Status and progress
- Edit and re-submit

WEB INTERFACE OF THE PROCESSING SERVICE

 REPUBLIC OF ESTONIA LAND BOARD Processing Service - staging area		
Staging area 20210322215223_L3_3dc07981f0d7e7		
Filename	Size	Last Modified
L3_2020-06-01_2020-06-30.nc	3295.6 kb	Mon, 22 Mar 2021 22:09:42 GMT
S2_NDVI_Estonia.zip	3204.4 kb	Mon, 22 Mar 2021 22:09:42 GMT
Copyright © 2018 ESTHub Legal Notice Privacy Statement		

Access to results

- Use on the platform for further processing
- Download

INSPECT RESULTS IN SNAP

