

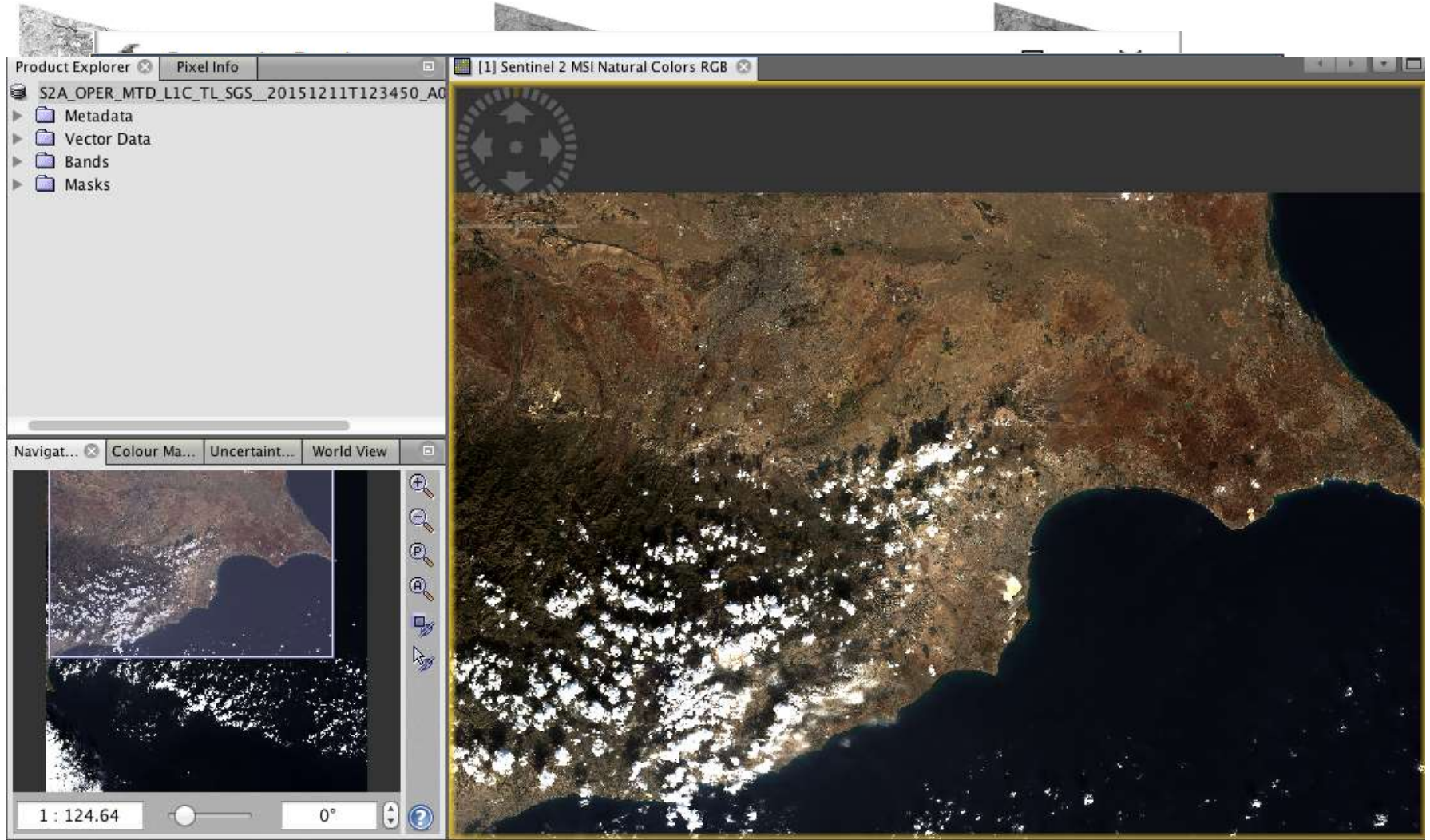
Sentinel Hub

Sentinel-2 satellite imagery distribution service

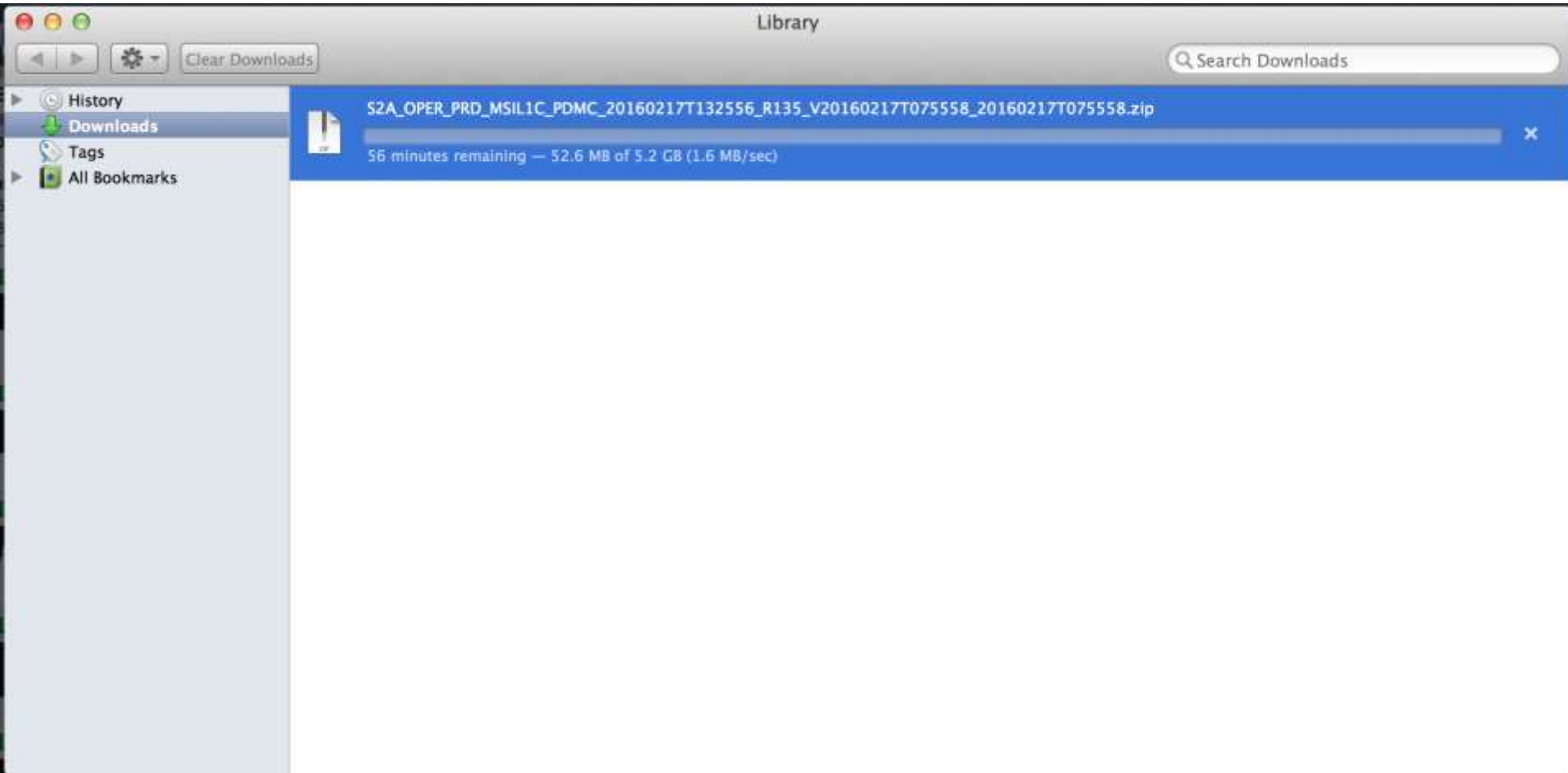
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grega.milcinski@sinergise.com



Traditional ways of working with EO data



Traditional ways of working with EO data



With Sentinel Hub

ArcGIS - My Map

www.arcgis.com/home/webmap/viewer.html

Search

24 SMS Int VS SGWIKI GA G CFO CA AI ct ci HD M FB CFO - Account Info

ArcGIS - My Map

New Map Grega

Details Add Basemap Save Share Print Measure Bookmarks Istanbul, Istanbul, Turkey

Contents

- Sinergise WMS service for Sentinel imagery
 - Tile ID texts
 - Tile date texts
 - Tile fills
 - Tile outlines
 - NDVI
 - True color
- Topographic

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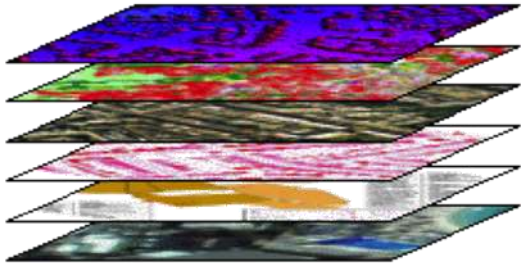
Geopedia

Terra Mapping the Globe Ltd, Esri, HERE, DeLorme, INCREMENT P, USGS, METI/NASA

esri

Earth observation platform

Open EO data - Sentinel-1, Sentinel-2, Landsat, etc.



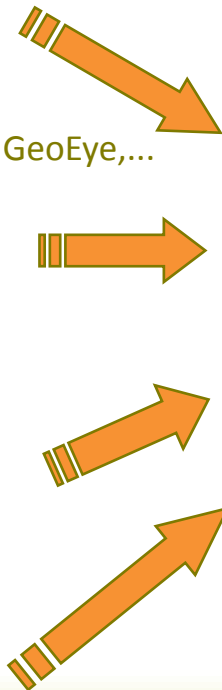
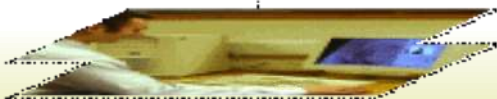
Commercial EO data – WorldWind, GeoEye,...



Aerial imagery (drone, plane)



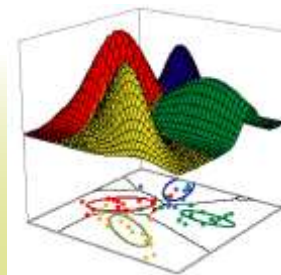
Other raster data



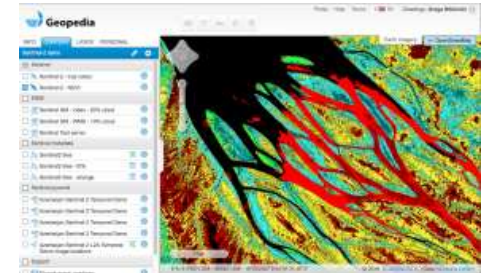
WMTS

WMS

API



Machine learning



Cloud GIS



Web applications



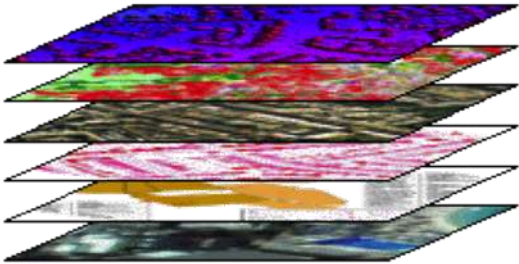
Open source GIS
(QGIS, OpenJump,..)



Commercial GIS
applications

Earth observation platform

Open EO data - Sentinel-1, Sentinel-2, Landsat



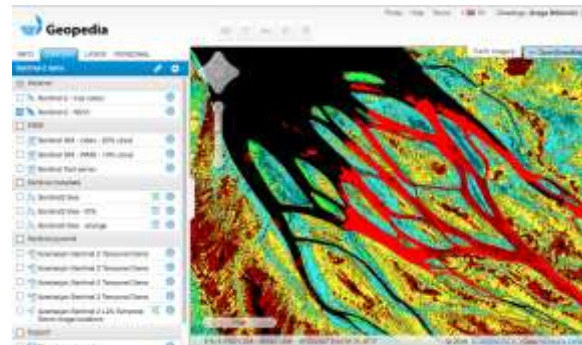
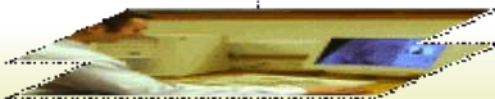
Commercial EO data – WorldWind, GeoEye,...



Aerial imagery (drone, plane)



Other raster data



Cadastre

Disaster response

Agriculture

Defence

Insurance

Land Change

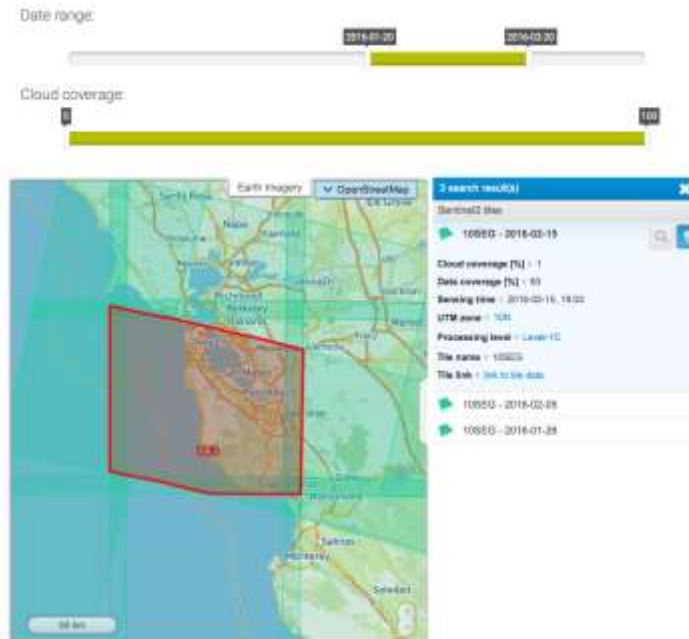
Drought monitoring

...

Sentinel-2 on AWS

Sentinel-2 data is available for anyone to use via Amazon S3.

- `s3://sentinel-pds`
- `http://sentinel-s2-l1c.s3-website.eu-central-1.amazonaws.com/`



Sentinel public image browser

[sentinel-s2-l1c](#) > [tiles](#) > [10](#) > [0](#) > [EG](#) > [2016](#) > [2](#) > [28](#) > [0](#)

↑ (folder up)

- [auxiliary](#)
- [qi](#)
- [S01.jp2](#)
- [S02.jp2](#)
- [S03.jp2](#)
- [S04.jp2](#)
- [S05.jp2](#)
- [S06.jp2](#)
- [S07.jp2](#)
- [S08.jp2](#)
- [S09.jp2](#)
- [S10.jp2](#)
- [S11.jp2](#)
- [S12.jp2](#)
- [S8A.jp2](#)
- [metadata.xml](#)
- [preview.jp2](#)
- [productInfo.json](#)
- [tileInfo.json](#)

Real-time processing of S-2 data

- Area of interest is processed in 2-4 seconds after request comes
 - download necessary data, decompress, mosaic, composite, rendering, compression
 - exposed via OGC standard services (WMS, WCS, WMTS, etc.)
- No need for additional storage for processed data
- Flexible, easy to add new features
- Process only what is needed

EO data within WebGIS

The screenshot displays a web browser window with the following elements:

- Browser Tabs:** ArcGIS - My Map, Sentinel hub | WMS config., Geopedia - Sentinel data.
- Address Bar:** www.geopedia.world/#T106_L1065_x1477986.378922168_y6399308.008034953_s5_b17
- Geopedia Logo:** Located at the top left of the page.
- Navigation Menu:** INFO, CONTENT (selected), LAYER, PERSONAL.
- Left Panel (Layers):**
 - Sentinel data (active)
 - Additional layers
 - Slovenia - land use
 - Sentinel
 - Sentinel WMS - True Color
 - Sentinel WMS - Color IR
 - Sentinel WMS - NDVI
- Main Map Area:** A 3D terrain visualization showing a mountainous region with green vegetation and grey terrain. The map includes navigation controls (compass, zoom) and a scale bar.
- Map Coordinates:** E N: 1549430 5840366, Eye height: 3.94 km, 46°22'23.71" N 13°55'7.57" E
- Footer:** © 2016 Sinergise d.o.o.

Added value services – EO products

The screenshot displays the Geopedia web interface. On the left, a sidebar lists various Sentinel-2 products under the 'CONTENT' tab, including EVI2, CRI 1, CRI 2, PSRI, PSRI-NIR, ARI 1, ARI 2, SAVI (Soil Adj), LAI_SAVI, and MSAVI2. Below this is a 'Supportive' section with 'Slovenia, GURS orthophot' and 'Slovenia Topo 2014'. The main area shows a map with a 'Set raster transform' dialog box open. The dialog has a title bar with a close button, a 'Save' button, and a 'Cancel' button. It contains the following content:

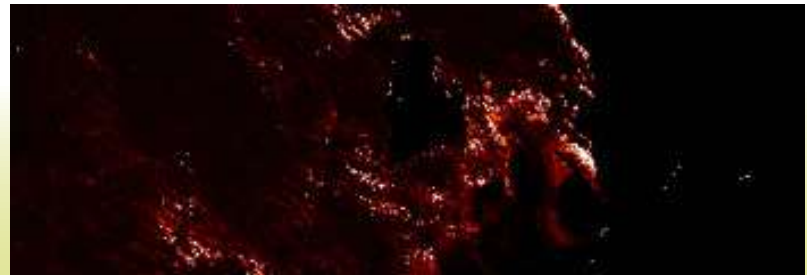
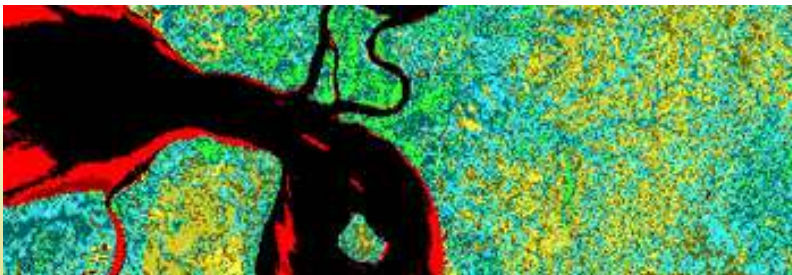
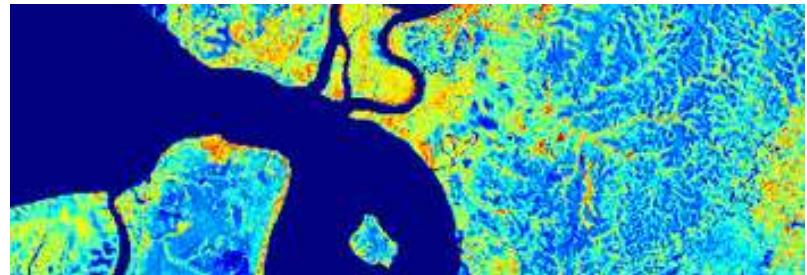
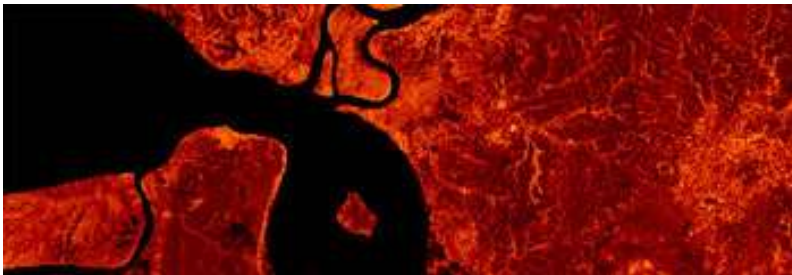
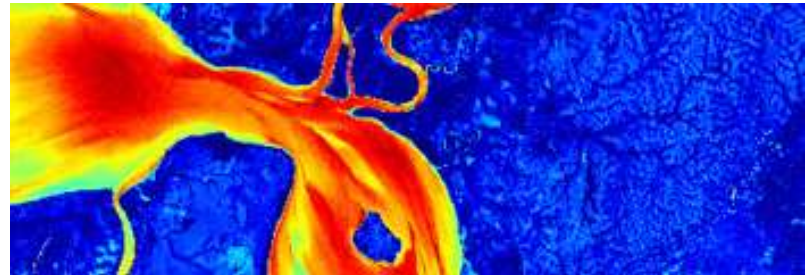
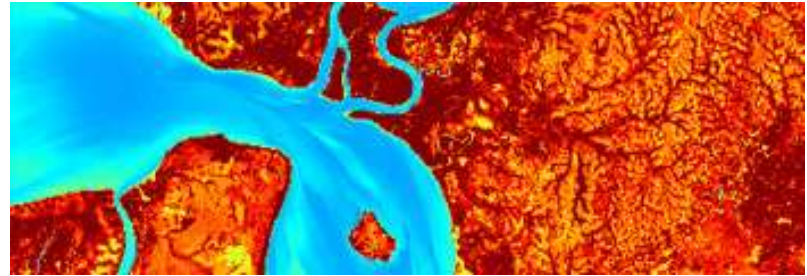
Transform enabled

Validate

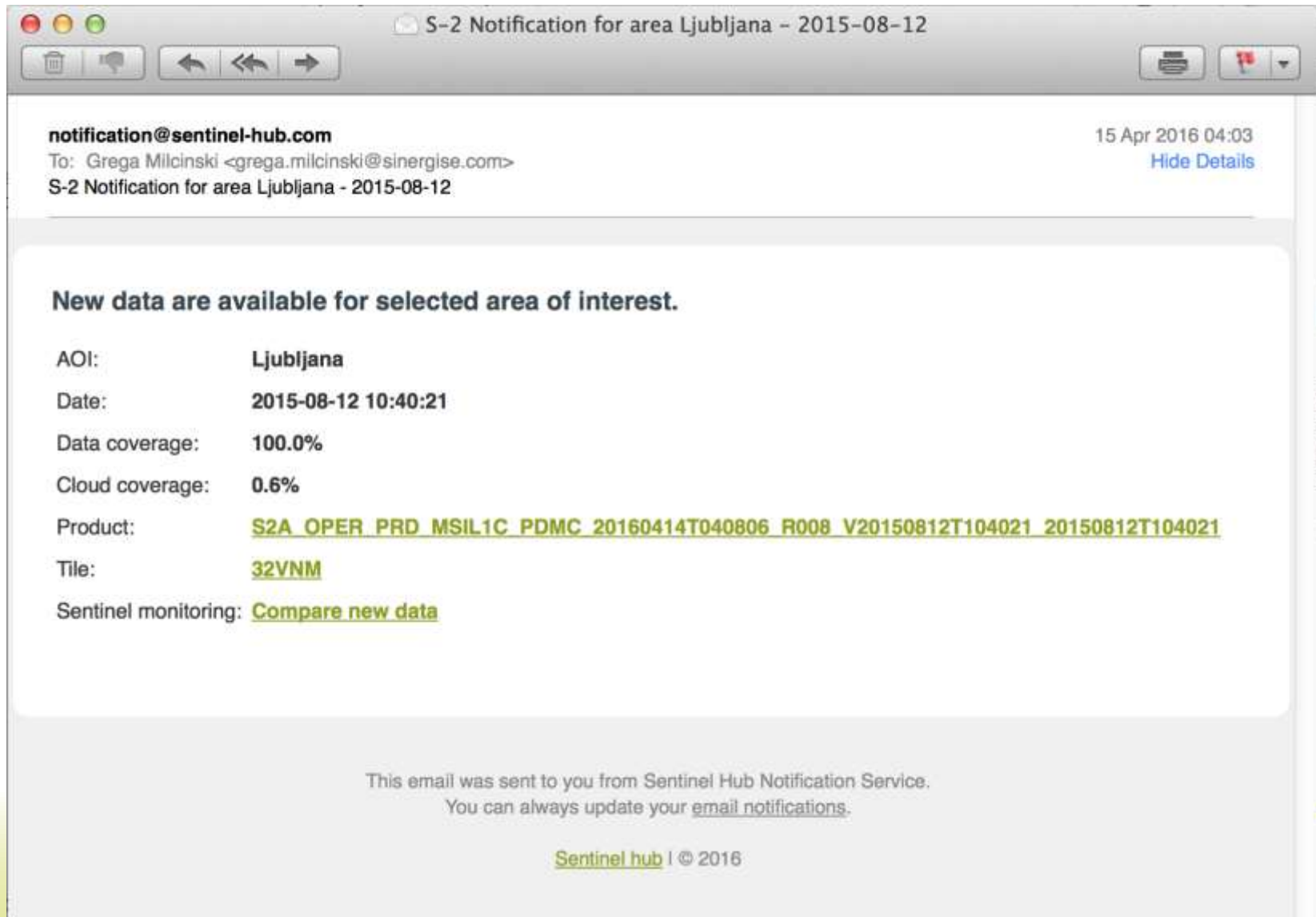
```
1 //MSAVI2 (Second Modified Soil Adjusted Vegetation Index) is
2 //self-adjusting and attempts to account for differences in soil
3 //background
4
5 var val = (2*(c4+1)-Math.sqrt(Math.pow(2*c4+1,2)-8*(c4-c2)))/2;
6
7
8 return [1,val,val,val];
9
```

At the bottom of the dialog is a 'Switch to simple editor' button and three buttons: 'OK', 'Cancel', and 'Empty'. The background map shows a satellite view of a rural area with roads and fields. The top right of the interface includes 'Portal', 'Help', 'Terms', 'En', and 'Greetings, Grega Milcinski'. The bottom right corner has a copyright notice: '© 2015 Sinergise d.o.o. | Data: terrestris GmbH'.

Added value services – EO products



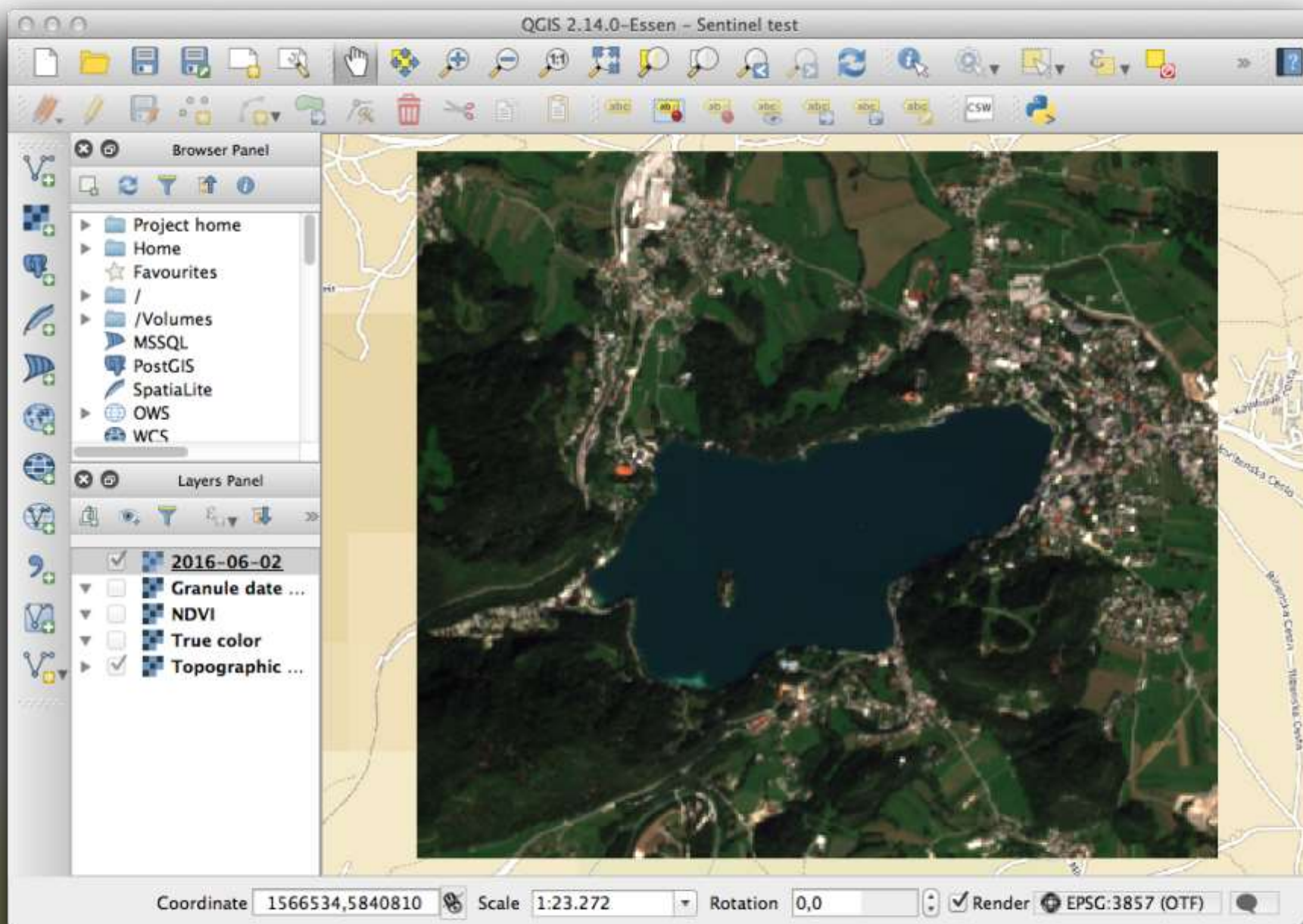
Added value services – notifications



Added value services – land change monitoring

The screenshot displays a web application interface for Sentinel Monitoring. On the left, a sidebar contains navigation options: 'Sentinel Monitoring', 'Explore latest sentinel data across the world', 'Back to first page', 'Basic configuration', 'Compare analysis' (highlighted), 'Set second set of parameters to compare with live Sentinel data', 'Date 1: 2015-08-30', 'Date 2: 2015-12-18', a 'COMPARE IMAGES' button, and 'Time lapse'. The main area features a 'Comparison dialog' window with a 'Compare mode' section containing 'Split' (selected) and 'Opacity' options. The dialog shows a satellite image of a rural landscape with a date stamp '2015-12-18' in the top right corner. The 'Geopedia' logo is visible in the bottom left of the dialog. To the right of the dialog is a map view with an 'OpenStreetMap' button at the top right and a scale bar of '1000 m' at the bottom left. The map shows a network of roads and fields with labels such as 'Ulaka', 'Blotčica', 'Velike Blotke', 'Radek', 'Studená na Blotkách', 'Blotčice', 'Blotčice', 'Blotčice', 'Blotčice', 'Blotka Polica', 'Blotka Polica', 'Podšaberk', 'Podiož', and 'Lož'. A '1000 m' scale bar is also present at the bottom left of the map area.

Added value services – mosaic generator



Future plans

- Atmospheric correction (simplified)
- Cloud removal
- Download in SAFE format
- Deployment on IPT Poland
 - Addition of S-1 and S-3
 - Addition of Landsat

Conclusion

- Real-time processing of data
 - cost efficient, flexible
- Operational
- Commercial services

- More info
 - <http://www.sentinel-hub.com/>
 - goo.gl/BWSr1I (videos)