



**SENTINEL** Hub

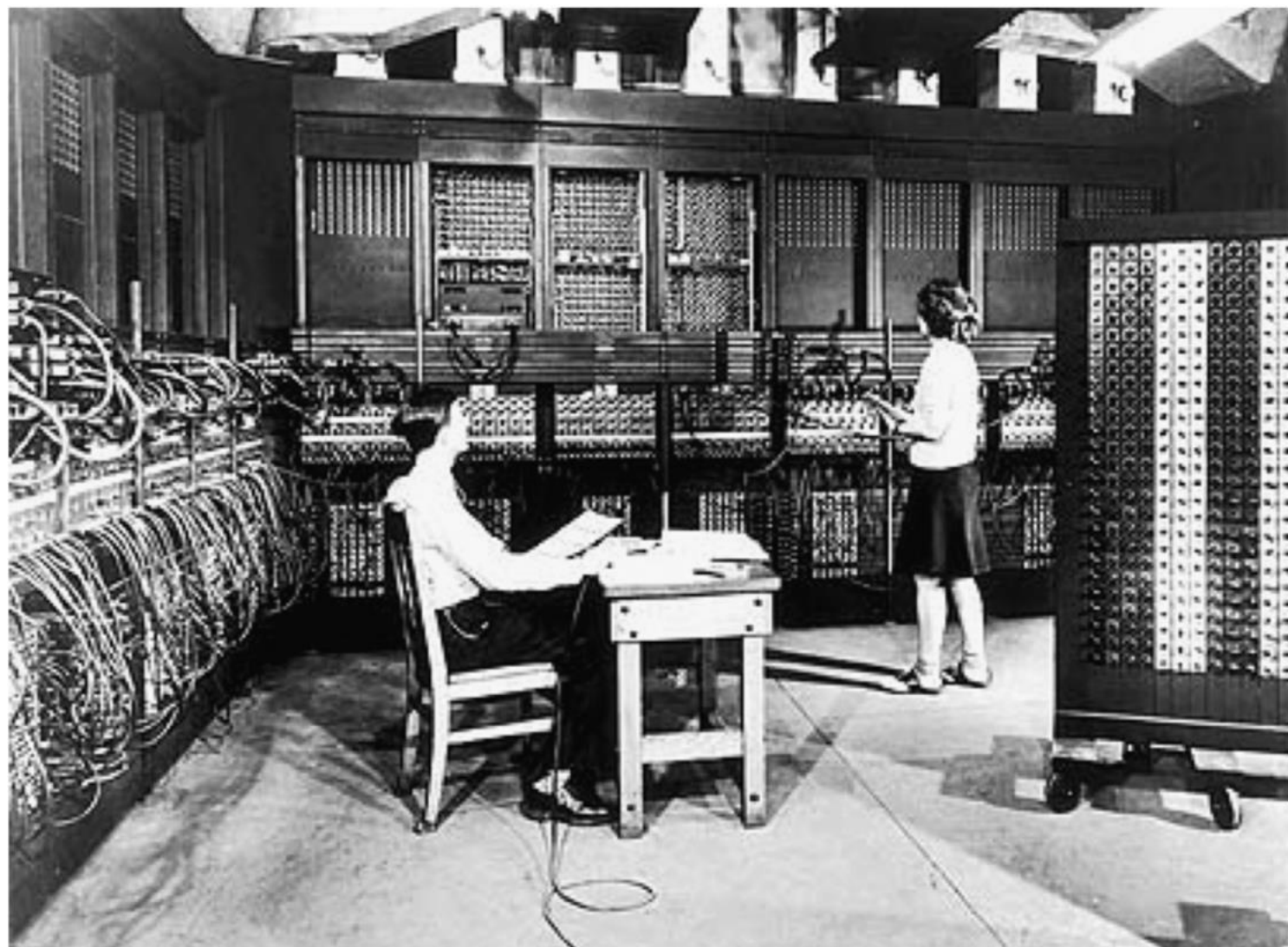
# Growing EO Community Worldwide

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SENTINEL Hub

PLAYGROUND



2018-05-23



20 %



Guinea-Bissau



Rendering



Effects



Custom

Create custom rendering



Natural Color

Based on bands 4,3,2



Color Infrared (vegetation)

Based on bands 8,4,3



False color (urban)

Based on bands 12,11,4



Agriculture

Based on bands 11, 8A and 2



Atmospheric penetration

Based on bands 12,11,8A



Bathymetric

Based on bands 4,3,1



Geology

Based on bands 12,4,2



Moisture Index

Based on combination of bands  $(B8A - B11) / (B8A + B11)$

REFRESH

GENERATE

3 km



2016-04-07

"NDVI": [

{

"date": "2015-08-30",

"basicStats": {

"min": -0.5478424429893494,

"max": 0.7815912365913391,

"mean": 0.147320137875888,

"stDev": 0.35443419609590726

}

},

{

"date": "2015-07-11",

"basicStats": {

"min": -0.5127978920936584,

"max": 0.8115044236183167,

"me

"st

}

}

}

}



Sentinel-2 L1C - NDVI

100 %

5 years

2 years

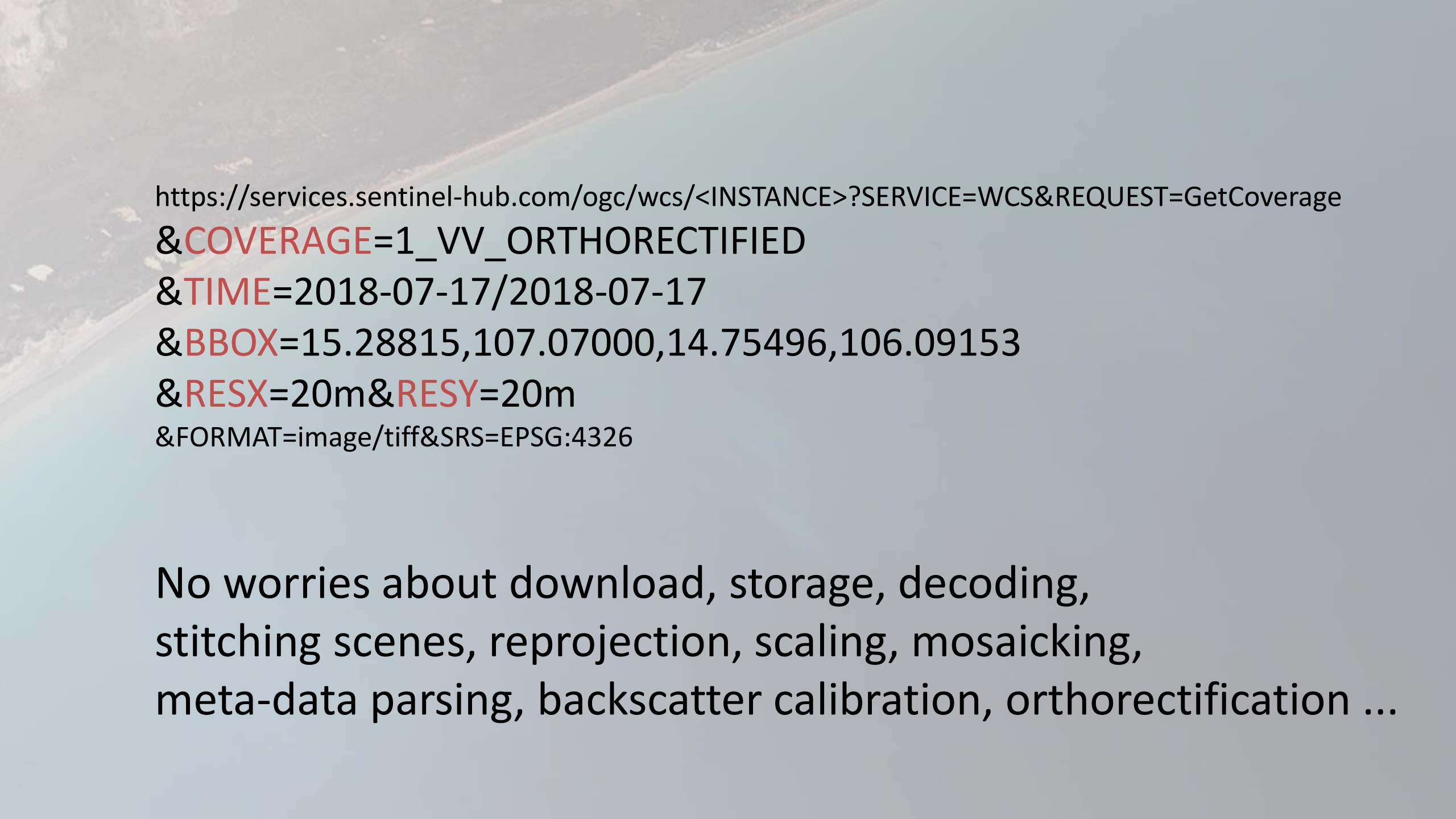
1 year

6 months

3 months

1 month





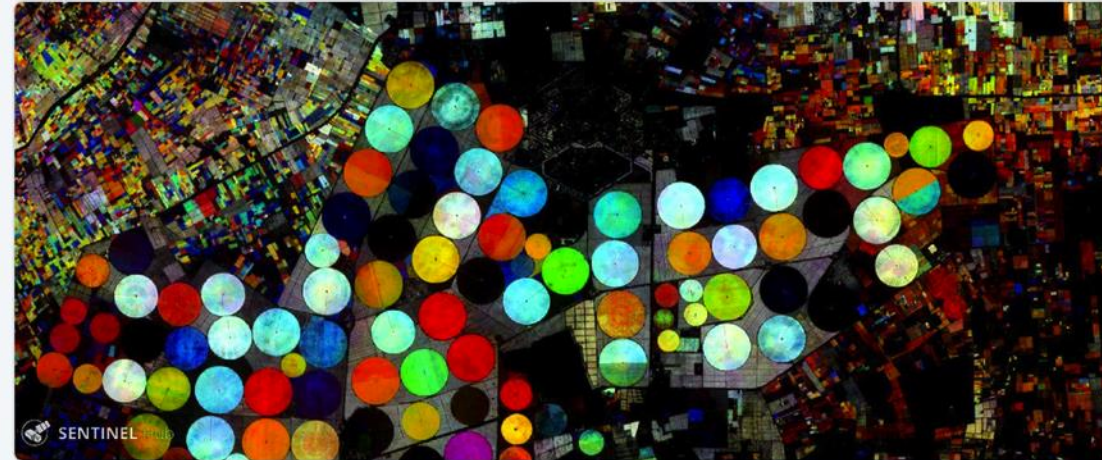
[https://services.sentinel-hub.com/ogc/wcs/<INSTANCE>?SERVICE=WCS&REQUEST=GetCoverage  
&COVERAGE=1\\_VV\\_ORTHORECTIFIED  
&TIME=2018-07-17/2018-07-17  
&BBOX=15.28815,107.07000,14.75496,106.09153  
&RESX=20m&RESY=20m  
&FORMAT=image/tiff&SRS=EPSG:4326](https://services.sentinel-hub.com/ogc/wcs/<INSTANCE>?SERVICE=WCS&REQUEST=GetCoverage&COVERAGE=1_VV_ORTHORECTIFIED&TIME=2018-07-17/2018-07-17&BBOX=15.28815,107.07000,14.75496,106.09153&RESX=20m&RESY=20m&FORMAT=image/tiff&SRS=EPSG:4326)

No worries about download, storage, decoding,  
stitching scenes, reprojection, scaling, mosaicking,  
meta-data parsing, backscatter calibration, orthorectification ...



**HD** @HarelDan · 24 Oct 2017

Tip: Blue field growing, Green fields maturing, Yellow Fields ripe, Red fields reaped/drying. Same place, 3 days ago [apps.sentinel-hub.com/sentinel-playg...](https://apps.sentinel-hub.com/sentinel-playg...)



4



5



20



**Stef Lhermitte**

@StefLhermitte

Following

Replying to [@HarelDan](#) [@sentinel\\_hub](#) and 4 others

Wow! The moment even my mom can classify petabytes in seconds on her very old computer is getting closer. Just need to teach her Javascript

8:14 AM - 25 Oct 2017

1 Retweet 9 Likes





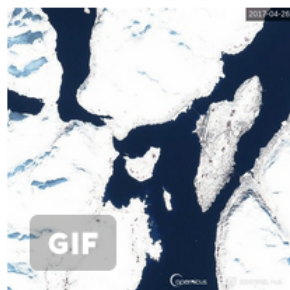
**Simon Gascoin**

@sgascoin

Following



Because of you [@sentinel\\_hub](#) my timeline is flooded by [#Sentinel2](#) gifs! You just ruined my old-fashioned bash scripts! 🙄🙄😁😁



**Ørjan H.H. Vøllestad** @hoyd

Tromsø, Norway from last April up until today using [#Sentinel2](#) satellite imagery. [@CopernicusEU](#) [@sentinel\\_hub](#) [@VisitTromso](#)

10:23 PM - 8 Apr 2018

5 Retweets 19 Likes





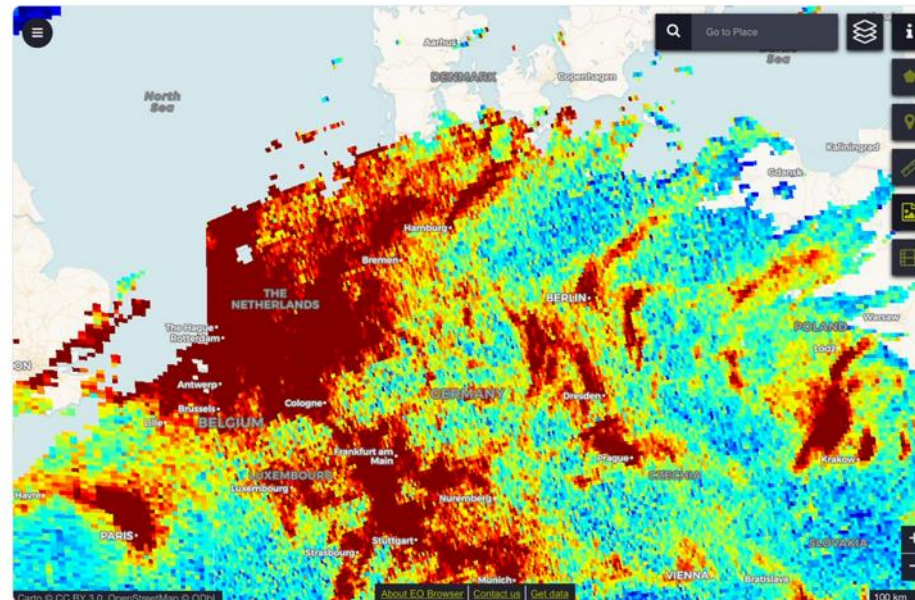
**Kees van der Leun**

@Sustainable2050

Follow



The Netherlands is that dark red country on yesterday's map of Nitrogen dioxide concentrations. Nitrogen dioxide inflames the lining of the lungs, and it can reduce immunity to lung infections. This can cause problems such as wheezing, coughing, colds, flu and bronchitis.



10:45 PM - 6 Oct 2018

100 Retweets 89 Likes





GIJN

@gijn

Follow

How [#BBCAfricaEye](#) used open source investigative tools [@googleearth](#), [@sentinel\\_hub](#), [@suncalc\\_net](#) & [#OSINT](#) to verify & geolocate a viral video of 2 women & 2 young children being shot by a group of soldiers [buff.ly/2O1Wo2o](#) [@danielsilas](#) [@Yaolri](#) [@journalismnews](#)



10:04 PM - 3 Oct 2018

6 Retweets 8 Likes



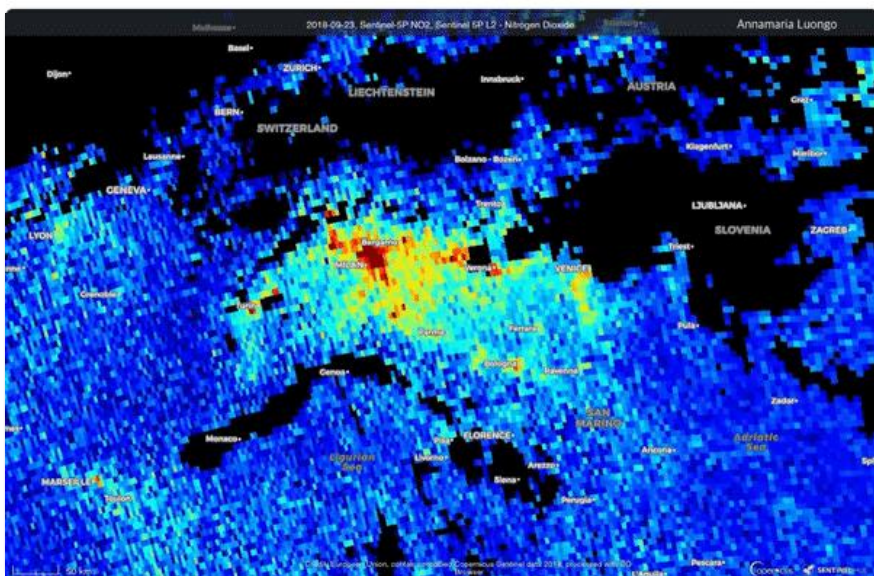
6

8





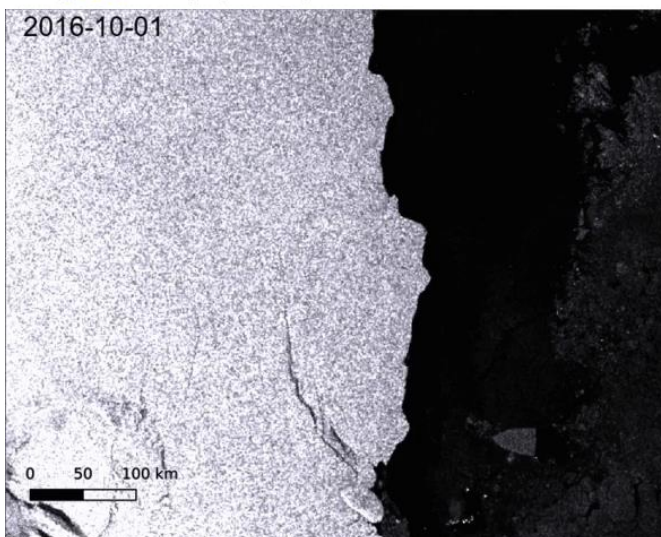
**annamaria\_84** · Sep 27  
 The breath (polluted by **#NO2**) of the **#Padana** Plain, north of **#Italy**, from Sunday 23 September to Thursday 27 September 2018 (today). **#Sentinel5p**  
**@CopernicusEU @sentinel\_hub @minambienteIT @ISPRA\_Press**



**Simon Gascoin** @sgascoin · Sep 18  
**#LarsenC** The Movie 🎬 updated

Time lapse of 56 **#Sentinel1** extra wide swath images since 2016-10-01.

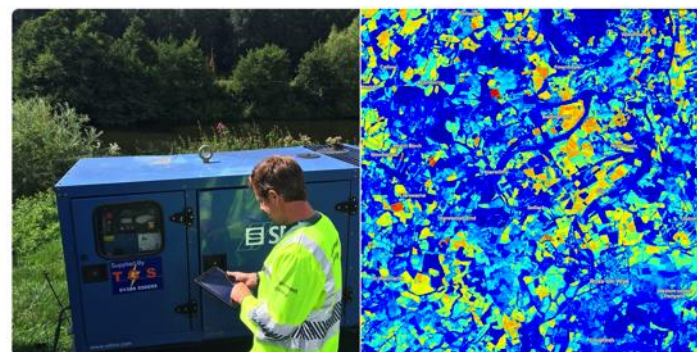
Iceberg **#A68** is leaving my bounding box!



**Dave Throup** @DaveThroupEA · Aug 19  
 It might be Sunday morning but Environment Officers are on **#waterpatrol** along the **#herefordshire** Wye. Levels & flows still very low.

Visits targeted using latest **@CopernicusEU @sentinel\_hub** imagery.

Checking pumps are legal & operating to licence conditions.



**Simon Gascoin** @sgascoin · Sep 24  
 New animation of Vavilov ice cap collapse, this time using **#Sentinel1**  
**@CopernicusEU** radar (no issue with clouds or polar night)  
 "You can literally watch an ice cap gut itself in front of your eyes"  
 quote by **@IceSheetMike**, 2018  
**@inrushmd**



**Benjamin Strick** @BenDoBrown · Sep 28  
 The birth of a drone base in Sahara's sandy plains at Dirkou, Niger.  
 Location: [goo.gl/maps/ibAehXDbf...](https://goo.gl/maps/ibAehXDbf...)  
 More info: [nytimes.com/2018/09/09/wor...](https://nytimes.com/2018/09/09/wor...) **@sentinel\_hub @CopernicusEU**  
**#drones #Niger**

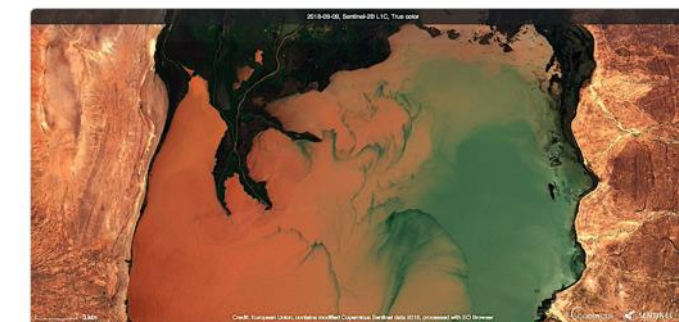


1 4 5



**Zack Labe** @ZLabe · Sep 14  
 Earth's art - runoff into Lake Turkana (Ethiopia/Kenya) located in Africa's Great Rift Valley. It is the 4th largest salt lake in the world and known for its greenish color ("Jade Sea").

[9 September 2018, Sentinel-2 satellite image]



You, ESA EarthObservation and Copernicus EU

1 23 59

# Limiting factors of Sentinel Hub's growth

- (Potential) users not understanding Earth Observation
- (Lack of) technical people for hire



**Remco Timmermans**

@timmermansr

Following



José Miguel González of [@naromasc](#) recommends the use of the simple and free [@sentinel\\_hub](#) EO Browser website to access Earth Observation data for educational (and research) purposes. Great learnings at [#IAC2018](#) this morning!



11:52 AM - 3 Oct 2018

6 Retweets 11 Likes





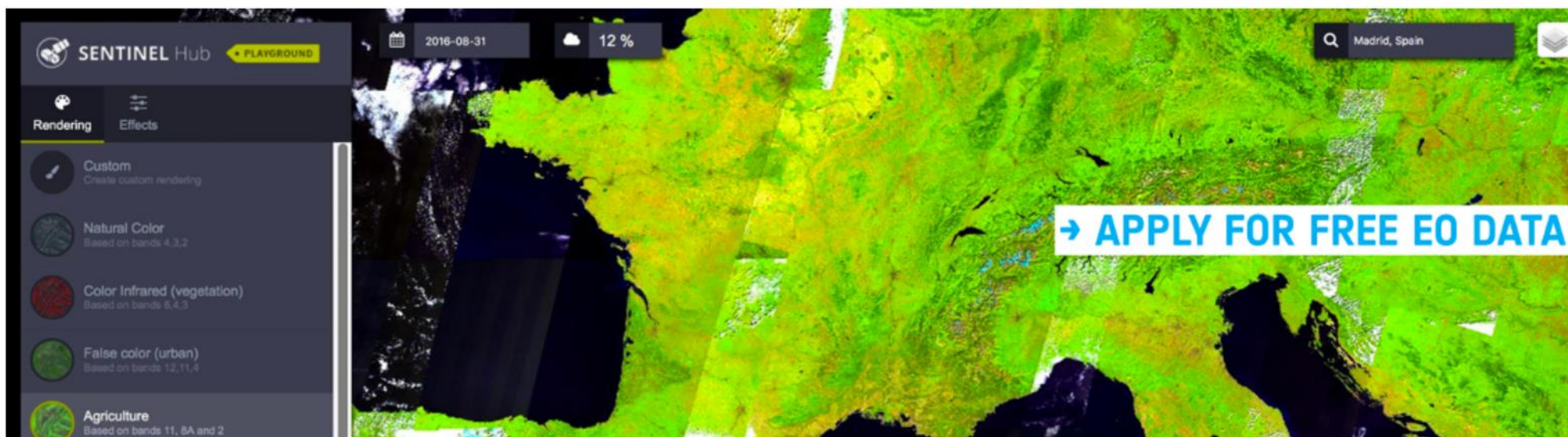
## business applications

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## SENTINEL HUB - 1 YEAR FREE EARTH OBSERVATION DATA



We've partnered with [Sentinel Hub](#) to offer your business **1 year free and easy access** to a wide range of EO data and 10 hours of support to help you build new services.

Sentinel Hub is a simple and efficient way of archiving, processing and distributing satellite data using standard web services that can be easily integrated in any desktop, web or mobile mapping application.

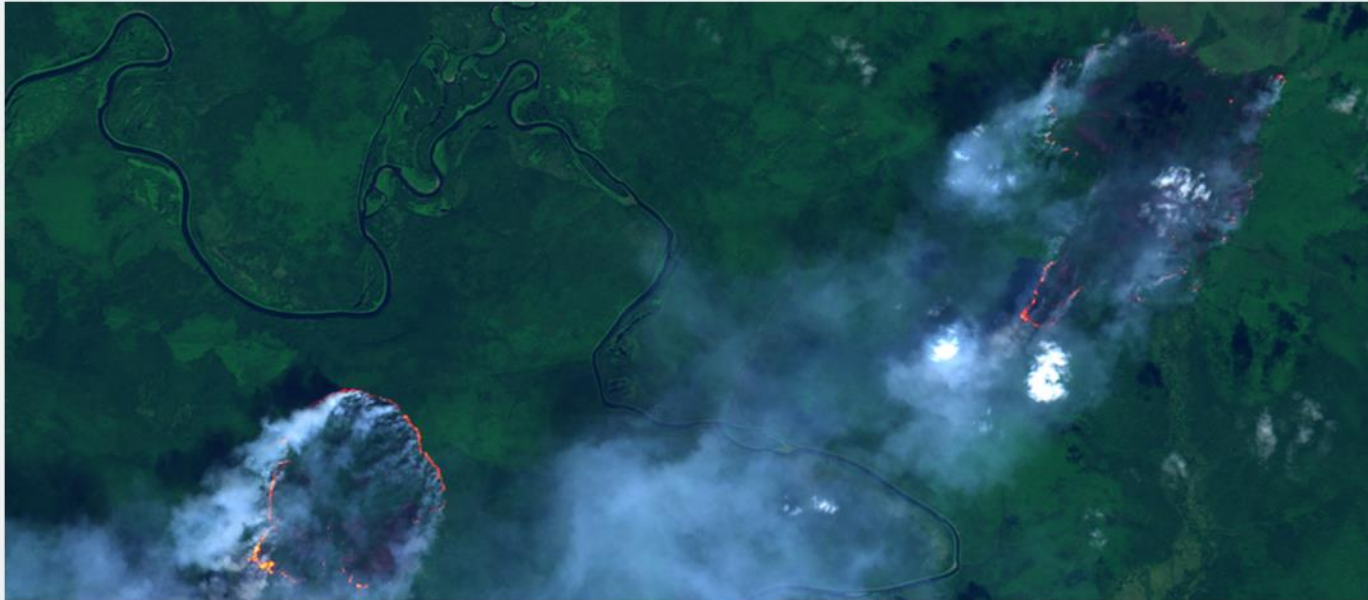


## Education

[Home](#) > [Develop](#) > Education

**Find out how you can use Earth Observation and tools to address various subjects of interest.**

### Wildfires



#### Wildfires from Satellite Images

In recent years we hear a lot of news about wildfires occurring in areas where they did not occur often in past. In spring and summer 2018 we have witnessed the boreal forests in Siberia burning at extraordinary rates, last summer the wildfires suddenly erupted in Portugal, and in September 2017 California, US was in flames, firefighters were fighting with more than 9000 fires.

[SEE WILDFIRES](#)

<https://sentinel-hub.com/develop/education>



**Before wildfire**, true color image acquired from Sentinel 2 on 7.8.2016 ([EO Browser link](#)).

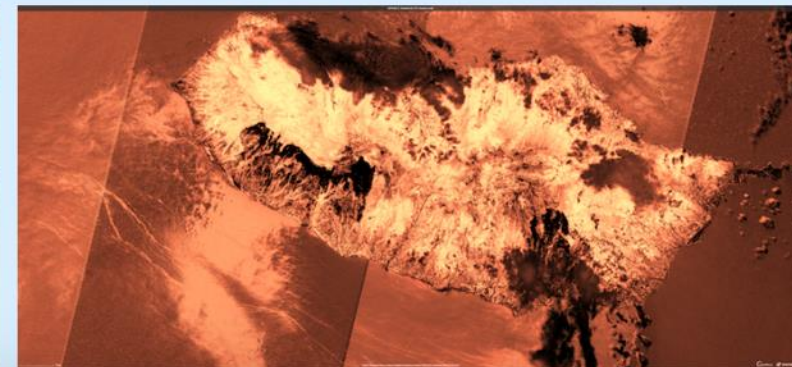
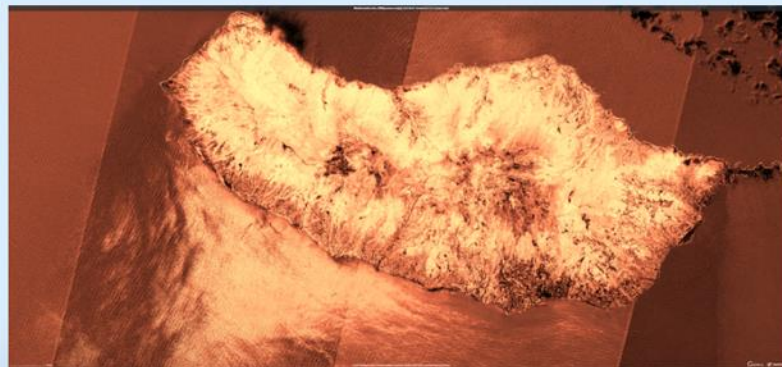


**After wildfire**, true color image acquired from Sentinel 2 on 17.8.2016 ([EO Browser link](#)).

Two bigger burn scars can be observed on southern part of the island. It is difficult to distinguish them from surrounding un-burned areas, though. To make these areas easier to detect we will visualize images of the same area on the same dates acquired in near-infrared and short-wave infrared part of the spectrum. Healthy vegetation has a high reflectance in the near-infrared portion of the spectrum (NIR), while offering low short-wave infrared reflectance (SWIR). On the other hand, burned areas have a high shortwave infrared reflectance but low reflectance in the near infrared (<https://www.skywatch.co/blog/assessing-impact-wildfire-normalized-burn-ratio-satellite>, 30.8.2018). To emphasize these difference we will calculate Normalized Burn Ration (NBR)([http://gsp.humboldt.edu/olm\\_2015/Courses/GSP\\_216\\_Online/lesson5-1/NBR.html](http://gsp.humboldt.edu/olm_2015/Courses/GSP_216_Online/lesson5-1/NBR.html)):

$$NBR = \frac{(NIR - SWIR)}{(NIR + SWIR)}$$

The formula above is applied for each pixel in the image and the result is as follows:





Search or jump to...

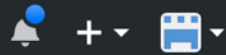



Pull requests

Issues

Marketplace

Explore



 [sentinel-hub](#) / [education](#)

 Watch ▾

3

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0

 Fork

0

 Code

 Issues 0

 Pull requests 0

 Projects 0

 Wiki

 Insights

Worked out examples for common eo topics, meant to facilitate learning and encourage curiosity.

 3 commits

 1 branch

 0 releases

 1 contributor

Branch: master ▾

New pull request

Create new file

Upload files

Find file


Clone or download ▾

 **gobaRules** Wildfire monitoring images.

Latest commit 63956ec 6 days ago

 [wildfires](#) Wildfire monitoring images.

6 days ago

 [README.md](#) Create README.md

6 days ago

 README.md



# education

Worked out examples for common eo topics, meant to facilitate learning and encourage curiosity.

<https://github.com/sentinel-hub/education>

# custom-scripts

A repository of custom scripts that can be used with Sentinel-Hub services.

[View On GitHub](#)



## Wildfire visualization

Evaluate and visualize

General description

References

## Wildfire visualization

[Hide](#) script or [download](#) it.

```
// ***
// Visualizing (wild)fires in Sentinel-2 imagery
// For use in Sinergise EO Browser (http://apps.sentinel-hub.com/eo-browser)
// Pierre Markuse (@pierre_markuse)
// ***

// Functions
function A(a, b) {return a + b};
function stretch(val, min, max) {
    return (val - min) / (max - min);
}

// Some basic colors
var BLACK = [0.0, 0.0, 0.0];
var WHITE = [1.0, 1.0, 1.0];
var RED = [0.9, 0.1, 0.1];
var YELLOW = [0.9, 0.9, 0.1];
var GREEN = [0.1, 0.9, 0.1];

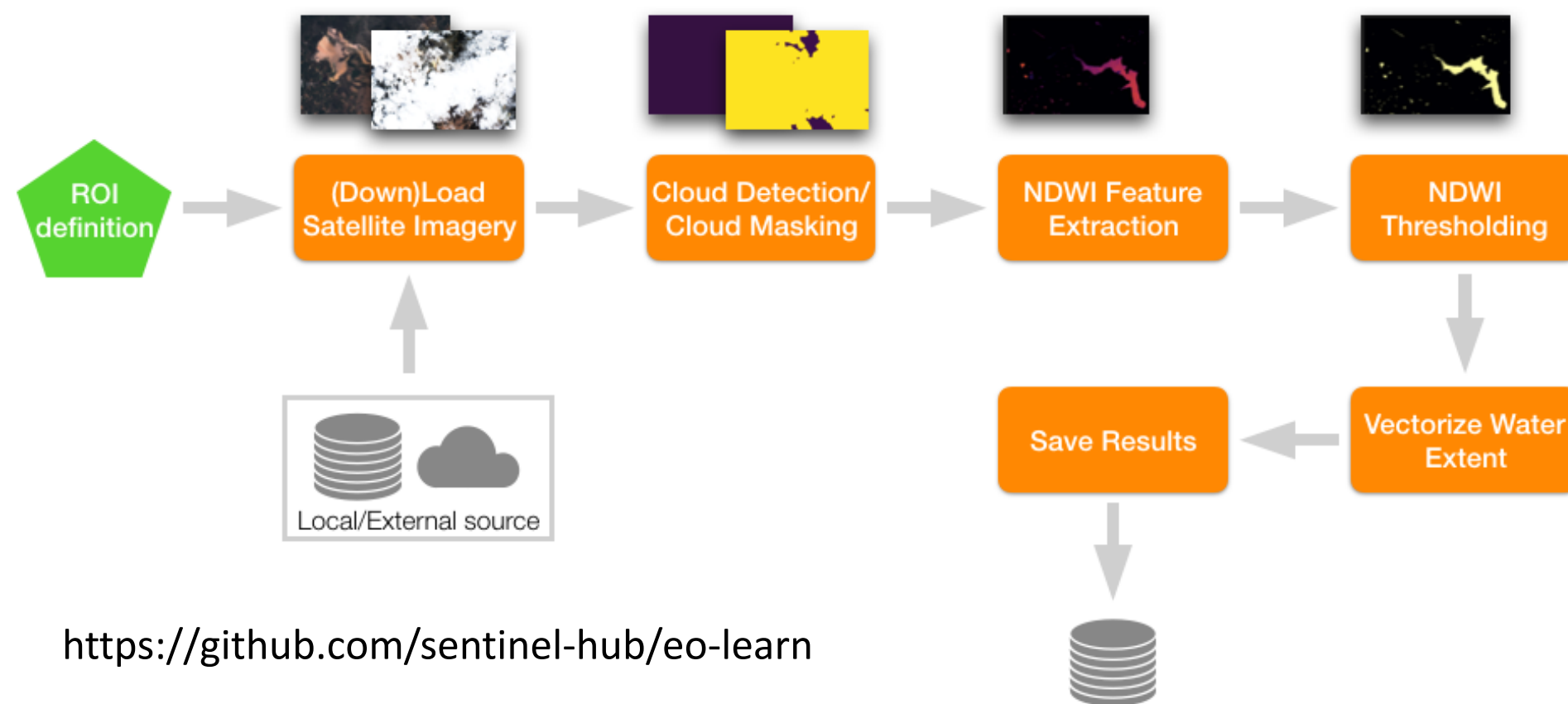
// Band combinations
```

Sentinel-Hub by Sinergise

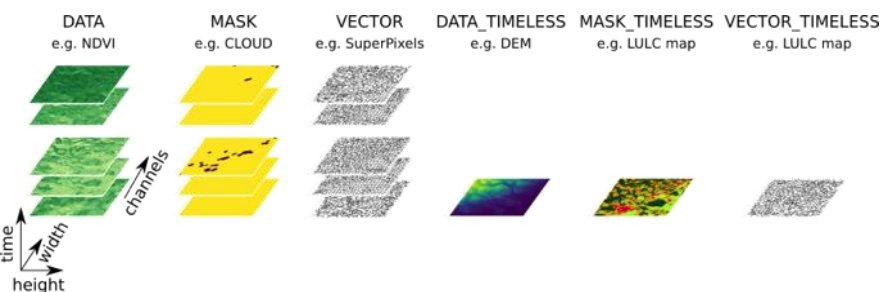
<http://custom-scripts.sentinel-hub.com>

<https://www.indexdatabase.de>

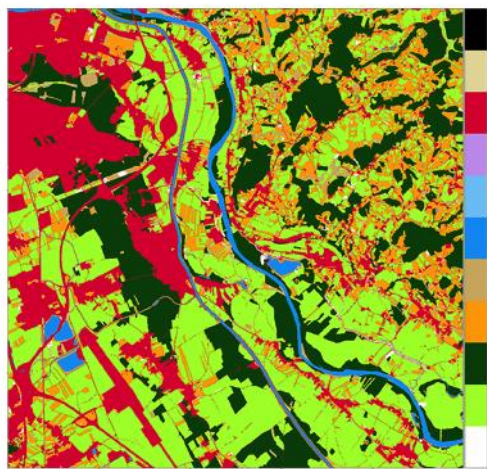




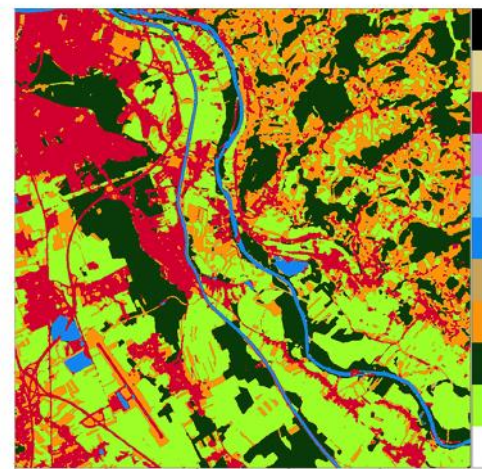
<https://github.com/sentinel-hub/eo-learn>



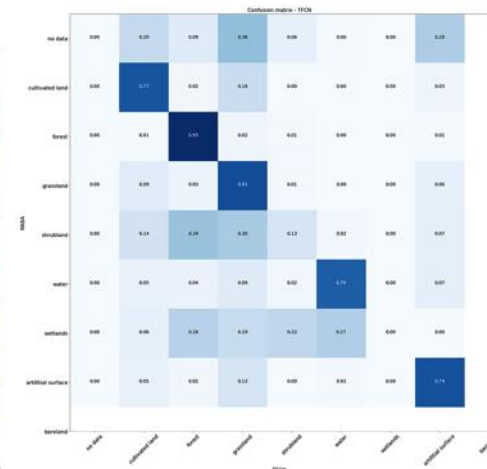
Ground truth



Predicted



Confusion Matrix



# Summary

- Let's move beyond shuffling of pixels
- Share knowledge
- Cooperate