



# Accéder, traiter et visualiser les données d'imagerie satellitaires

*Get, process and visualize remote sensed data*

Vincent Sarago  
 @\_VincentS\_

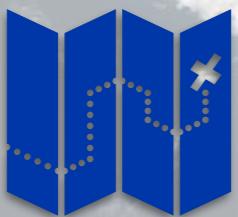
Moi



**Master en Sciences de la Terre et de l'Univers (Nantes, 2008)**



**2008 – Agence Spatiale Française  
Operations du satellite Venus Express**

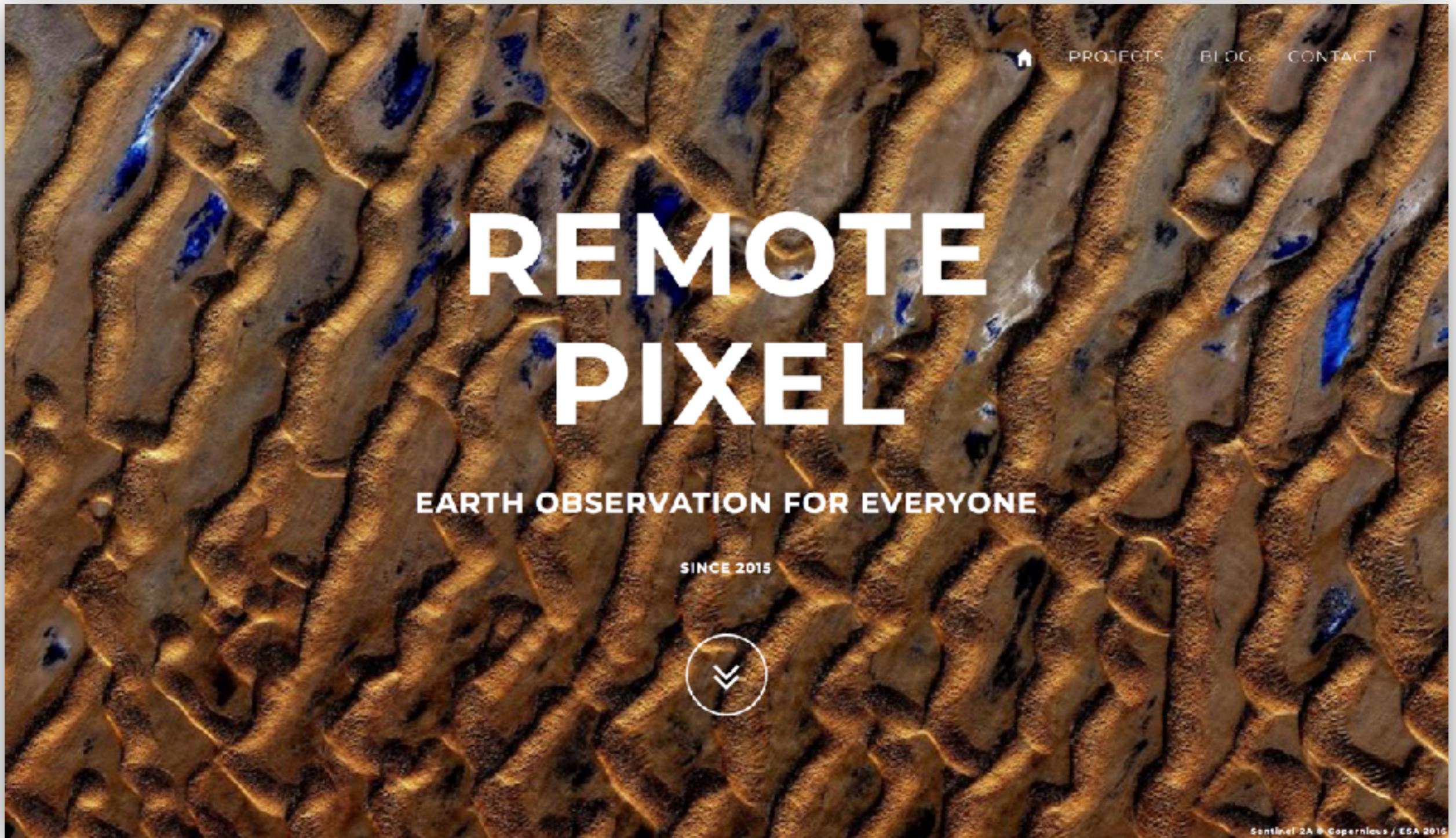


**2013 – EFFIGIS Géo Solutions  
Specialiste en Teledetection**



**2016 – Mapbox  
Satellite + Web + Cloud**

**Particularité: Aime les nuages**



PROJECTS

BLOG

CONTACT

# REMOTE PIXEL

EARTH OBSERVATION FOR EVERYONE

SINCE 2015



Sentinel-2A & Copernicus / ESA 2016



# RemotePixel.ca

The following table lists the 18 projects shown in the grid, their names, descriptions, and technologies used:

Project Name	Description	Technology
REMOTEPIXEL VIEWER	LandSat / Leaflet	Leaflet
DISASTER WATCH	Monitoring	Leaflet
LANDSAT MVT	LandSat / Vector Tiles	Leaflet / Vector Tiles
SATELLITE SEARCH	LandSat / Sentinel	Leaflet
SRTHM1ARC TILE MOSAIC	SRTHM / MapboxGL	MapboxGL
MODIS-VIIRS CIF CREATION	MODIS / WMS	Leaflet / MapboxGL
MODIS-VIIRS MAP COMPARE	MODIS / WMS / MapboxGL	Leaflet / MapboxGL
LANDSAT 8 MOSAIC	API / WebMapping	Leaflet / WebMapping
LANDSAT 8 EVOLUTION	API / WebMapping	Leaflet / WebMapping
POSTER BY REMOTEPIXEL	<a href="http://jordanremotepixel.ca/poster/">http://jordanremotepixel.ca/poster/</a>	Leaflet
LANDSAT 8 NDVI SERIE	Landsat / Cloud Computing	Leaflet
MODIS-VIIRS BEFORE/AFTER	[B1-B2] MODIS / VIIRS / WebMapping	Leaflet / WebMapping
LANDSAT 8 WEB2 TILES	API / LandSat 8	Leaflet / WebMapping
LANDSAT 8 NEXT	API / LandSat 8	Leaflet / WebMapping
LANDSAT 8 BEFORE/AFTER	Landsat 8 / WebMapping	Leaflet / WebMapping
SRTHM1ARC TILE CRASHER	Data / Graphic Design	Leaflet
SRTHM1ARC LEAFLET	Data / WebMapping	Leaflet / WebMapping
COED/DNEC LEAFLET	Data / WebMapping	Leaflet / WebMapping



# Les données



Low Resolution

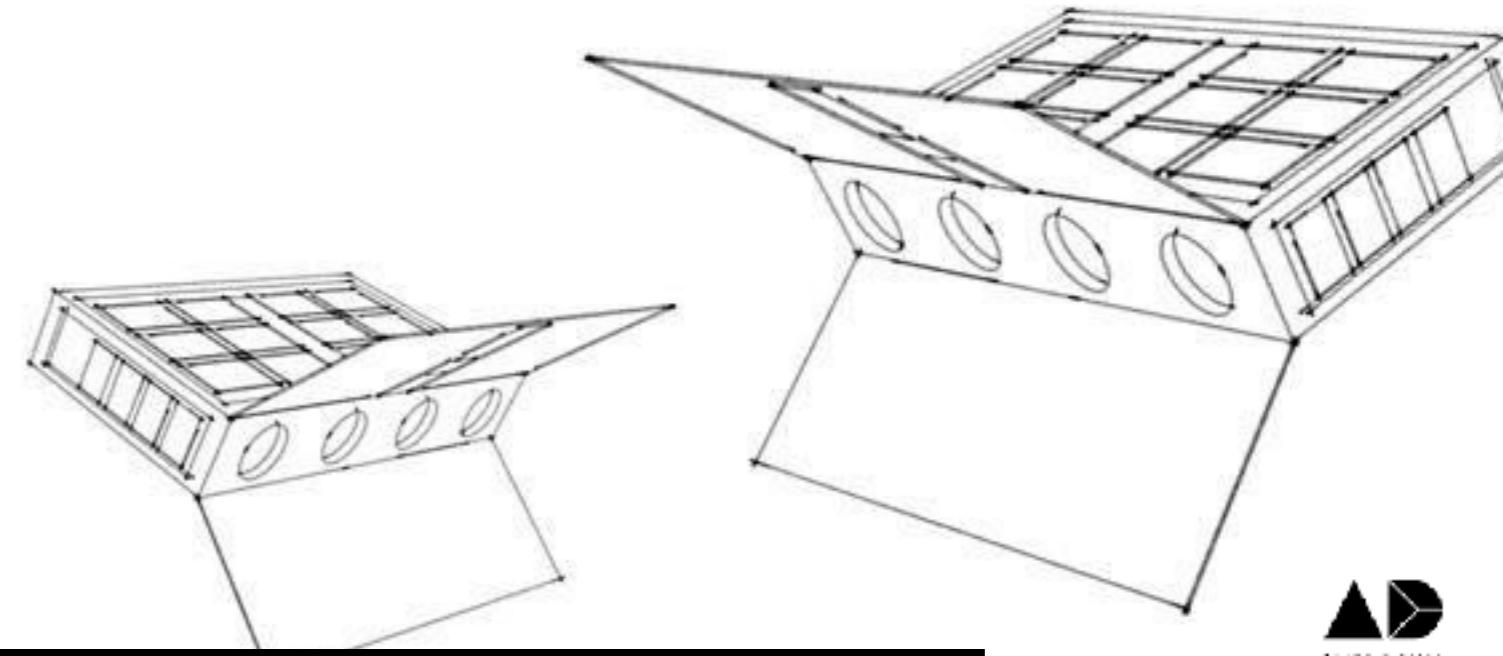
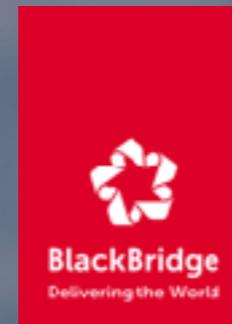
Telespazio  
A Finmeccanica/Thales Company

High Resolution



# Les données

planet.



AD  
ALTAIR D'ETIENNE

## MicroSat Constellation + API

urtheCast



New Players + New Business Model



# Les données: Landsat 8



- **Lancement: 2013**
- **Orbite: 700km**
- **Résolution: 30m (15m)**
- **Bandes: 11 (OLI + TIRS)**
- **Revisite: 16 jours**
- **Taille fichier: 60Mb/Band (700Mb)**
- **Format fichier: GeoTIFF**

# Les données: Sentinel-2



- **Lancement: A-2015 / B-2017**
- **Orbite: 786km**
- **Résolution: 10m**
- **Bandes: 13**
- **Revisite: 5 jours**
- **Taille fichier: 100Mb/Band**
- **Format fichier: Jpeg2000**



# Accès aux données

USGS science for a changing world

EarthExplorer

Page Expires in 1:59:54 C

Home Login Register RSS Feedback Help

Search Criteria Data Sets Additional Criteria Results

2. Select Your Data Set(s)

Check the boxes for the data set(s) you want to search. When done selecting data set(s), click the *Additional Criteria* or *Results* buttons below. Click the plus sign next to the category name to show a list of data sets.

Use Data Set Prefilter ([What's This?](#))

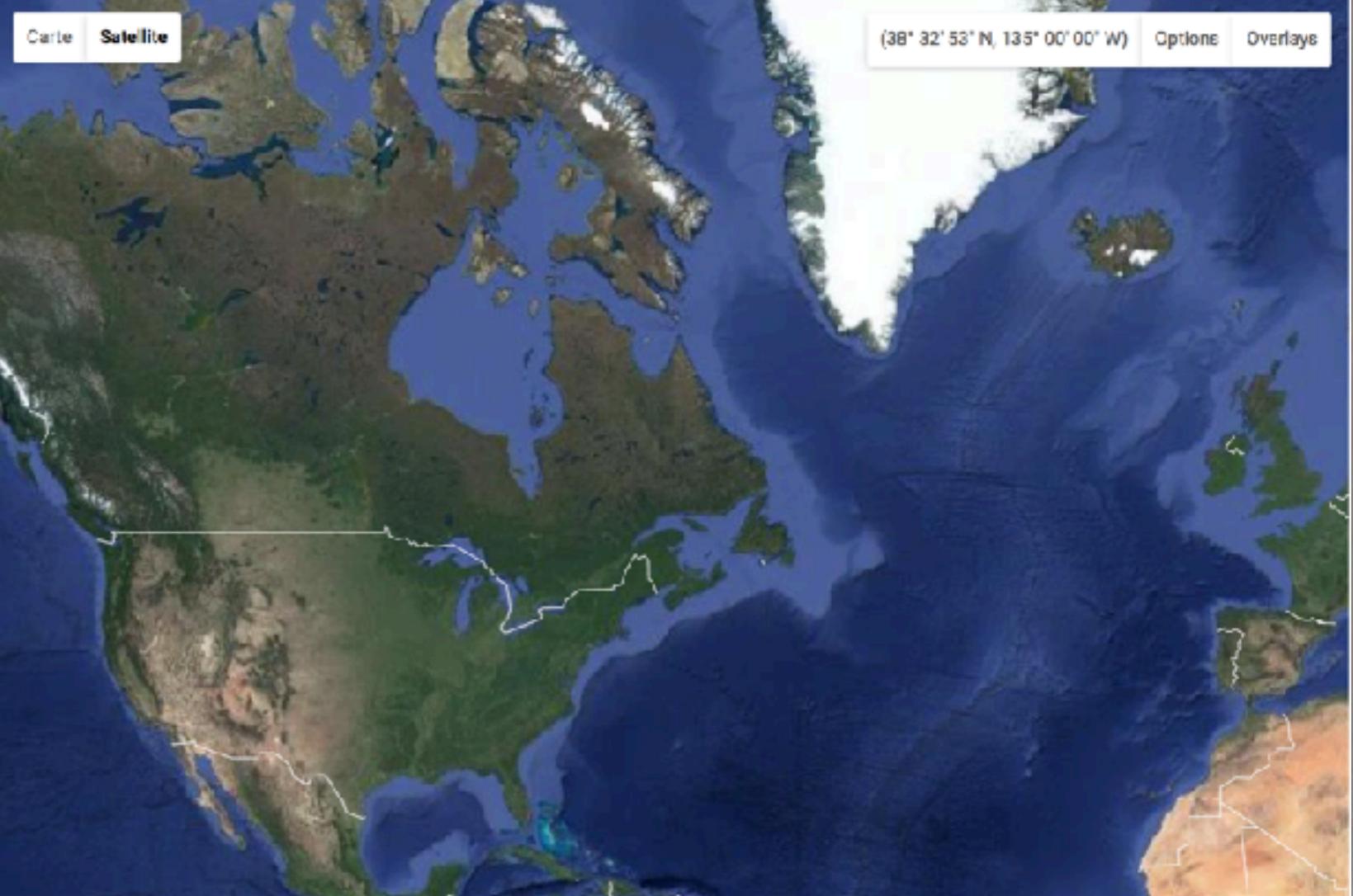
Data Set Search:

- Aerial Imagery
- AVHRR
- CEOS Legacy
- Commercial Satellites
- Declassified Data
- Digital Elevation
- Digital Line Graphs
- Digital Maps
- EO-1
- Global Fiducials
- HCMM
- ISERV
- Land Cover
- Landsat
- NASA LPDAAC Collections

Search Criteria Summary (Show) Clear Criteria

Satellite

(38° 32' 53" N, 135° 00' 00" W) Options Overlays



The map displays a satellite view of North America, focusing on the Great Lakes region. The terrain is shown in various shades of brown and green, indicating different land cover types. The Great Lakes are clearly visible as large bodies of water. A white line, likely a survey or boundary, is drawn across the map, passing through the Great Lakes and extending inland. The map includes a legend at the top left labeled "Carte" and "Satellite". At the top right, there are buttons for "Options" and "Overlays". A coordinate box in the top right corner shows the location as (38° 32' 53" N, 135° 00' 00" W).

[earthexplorer.usgs.gov](http://earthexplorer.usgs.gov)



# Accès aux données

Copernicus Open Access Hub

Insert search criteria...  

» Sort By: Ingestion Date

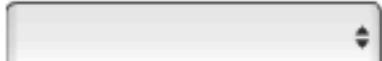
» Order By: Descending

» Sensing period From: \_\_\_\_\_ to: \_\_\_\_\_

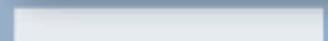
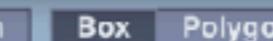
» Ingestion period From: \_\_\_\_\_ to: \_\_\_\_\_

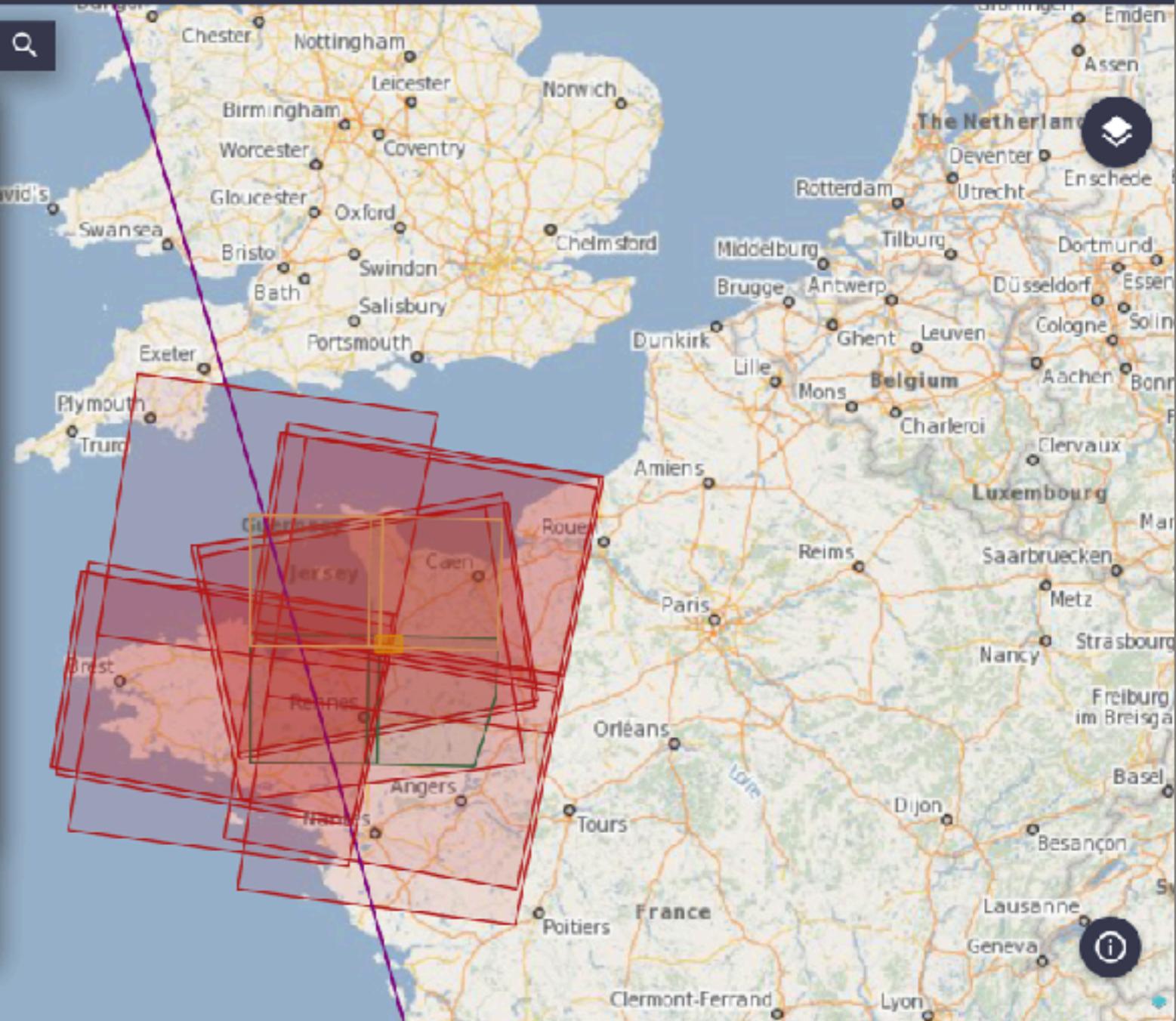
Mission: Sentinel-1

Satellite Platform  Product Type 

Polarisation  Sensor Mode 

Relative Orbit Number (from 1 to 175)  Collection 

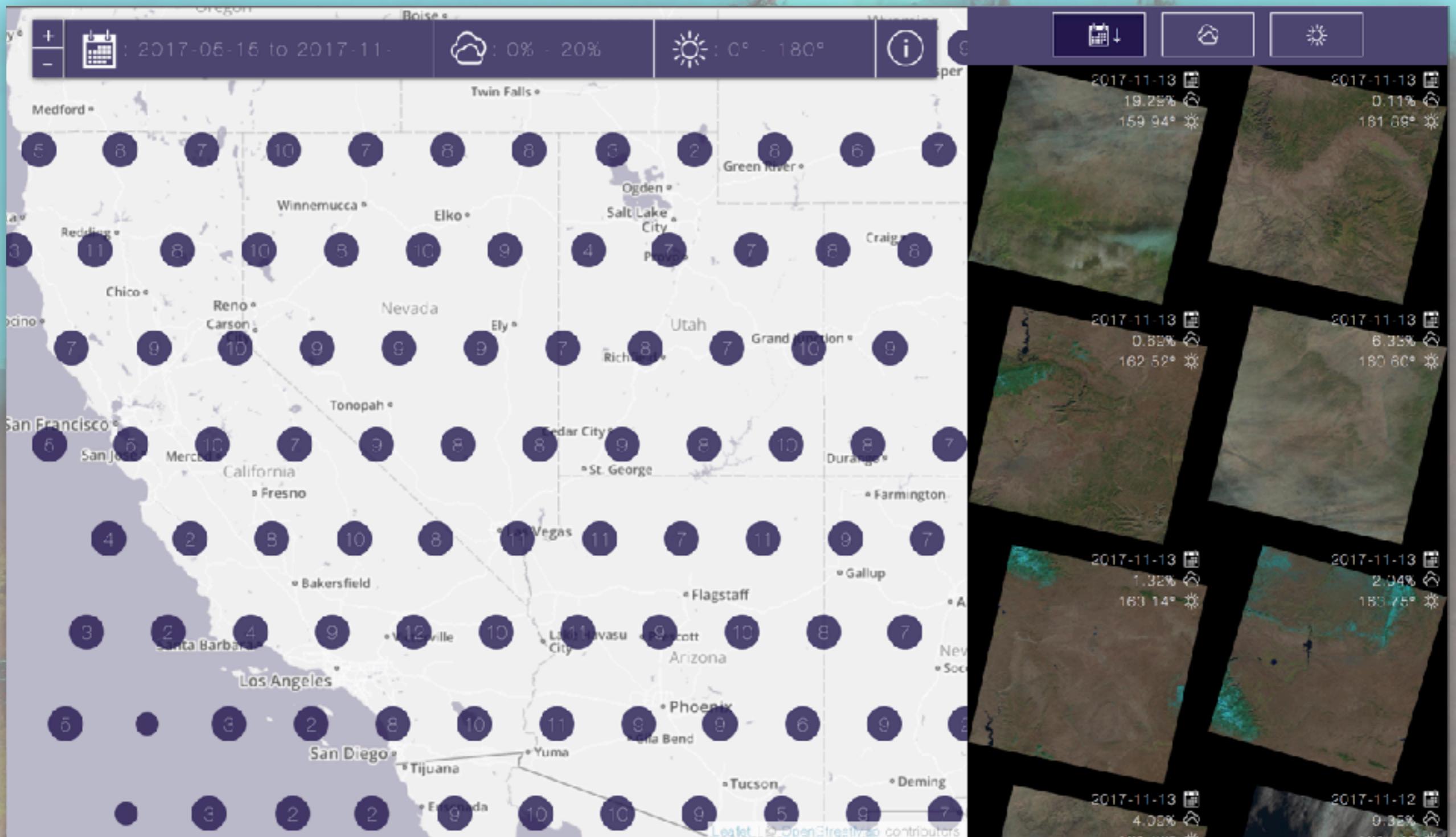
   



The map displays a complex multi-layered polygon selection over the United Kingdom and France. The layers are rendered in various shades of red and purple, indicating different spatial queries or products. A yellow dot is positioned within one of the innermost red polygons near the center of France. The map also shows major cities and road networks across the region.

[scihub.copernicus.eu](http://scihub.copernicus.eu)

# Accès aux données: 2.0



**libra.developmentseed.org**



# Accès aux données: 2.0

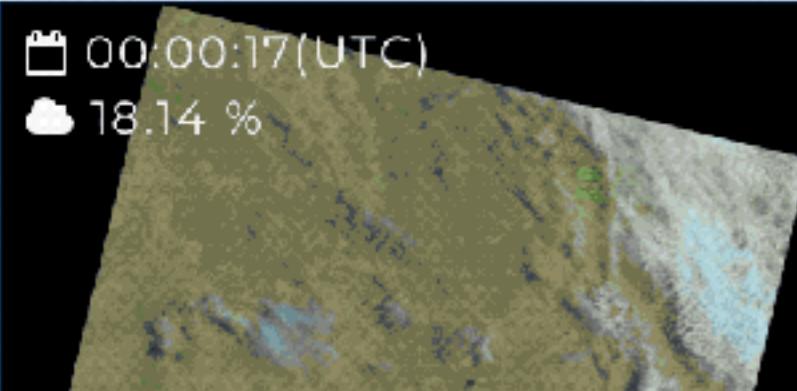
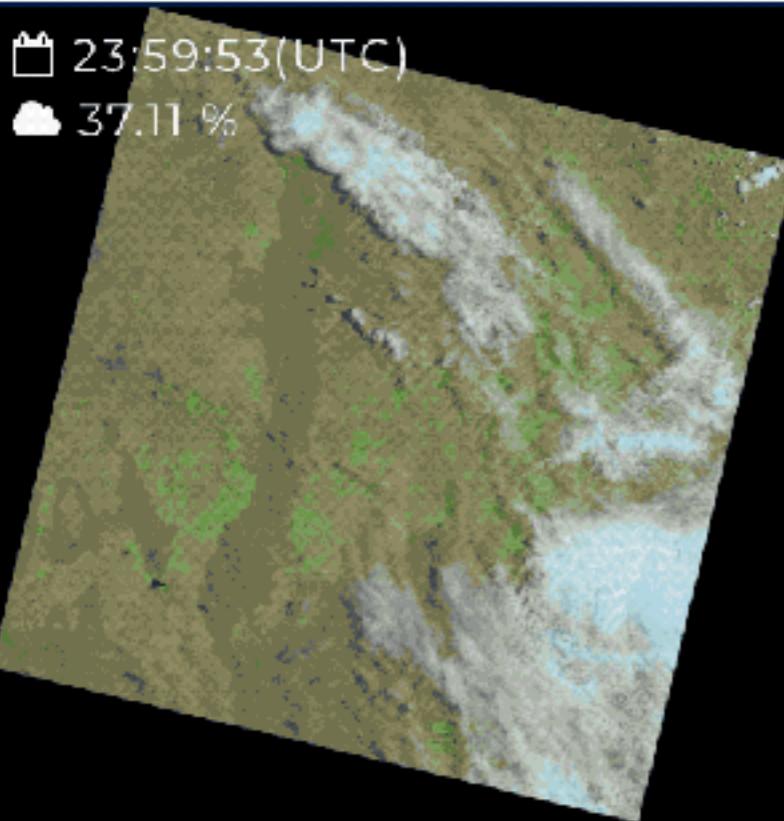
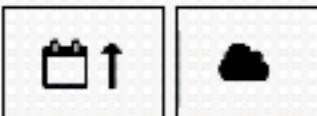
[► BACK TO PROJECTS](#)



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2017-11-06



Leaflet | © OpenStreetMap

[remotepixel.ca/projects/adayoflandsat8.html](http://remotepixel.ca/projects/adayoflandsat8.html)

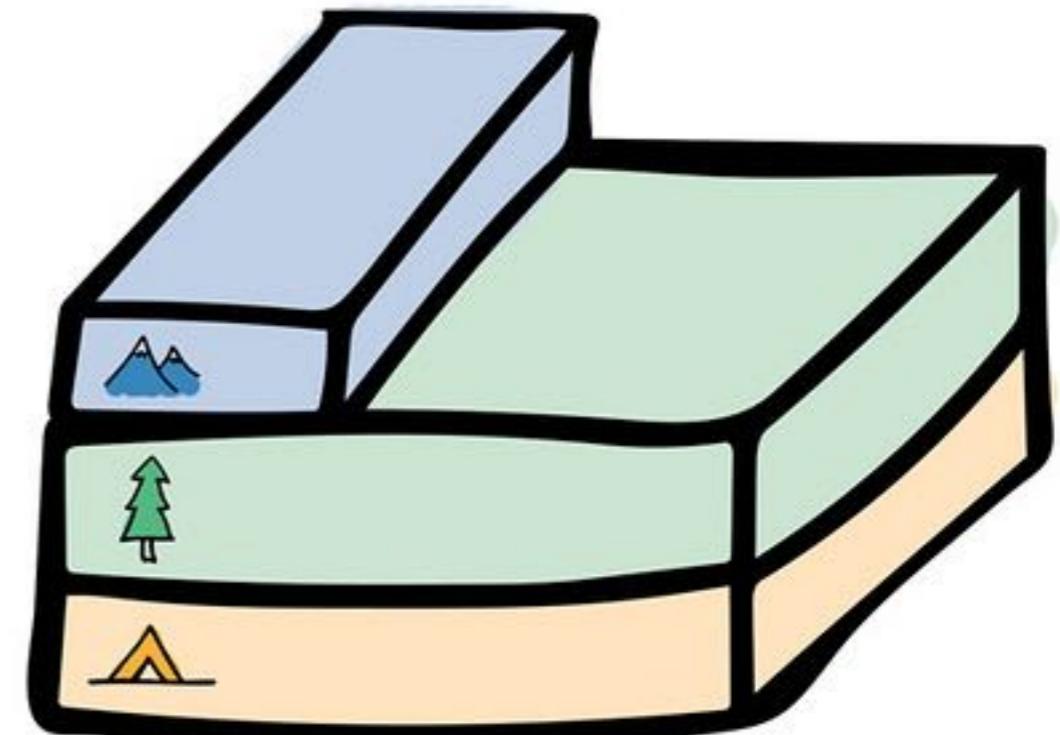


# Accès aux données: 2.0

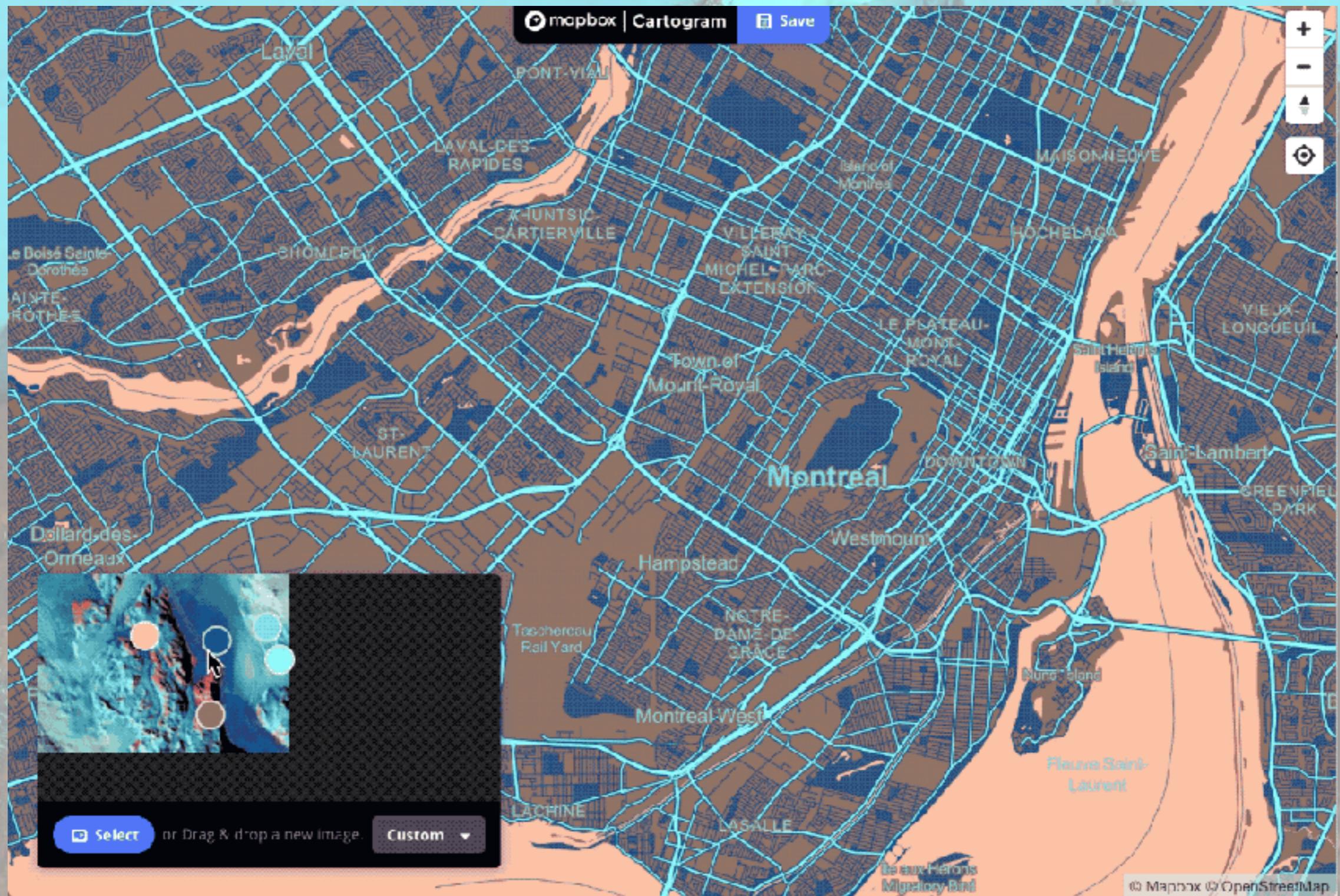
Raster tiles

(0,0)	(1,0)	(2,0)	(3,0)	(4,0)	(5,0)	(6,0)	(7,0)
(0,1)	(1,1)	(2,1)	(3,1)	(4,1)	(5,1)	(6,1)	(7,1)
(0,2)	(1,2)	(2,2)	(3,2)	(4,2)	(5,2)	(6,2)	(7,2)
(0,3)	(1,3)	(2,3)	(3,3)	(4,3)	(5,3)	(6,3)	(7,3)
(0,4)	(1,4)	(2,4)	(3,4)	(4,4)	(5,4)	(6,4)	(7,4)
(0,5)	(1,5)	(2,5)	(3,5)	(4,5)	(5,5)	(6,5)	(7,5)
(0,6)	(1,6)	(2,6)	(3,6)	(4,6)	(5,6)	(6,6)	(7,6)
(0,7)	(1,7)	(2,7)	(3,7)	(4,7)	(5,7)	(6,7)	(7,7)

Vector tiles



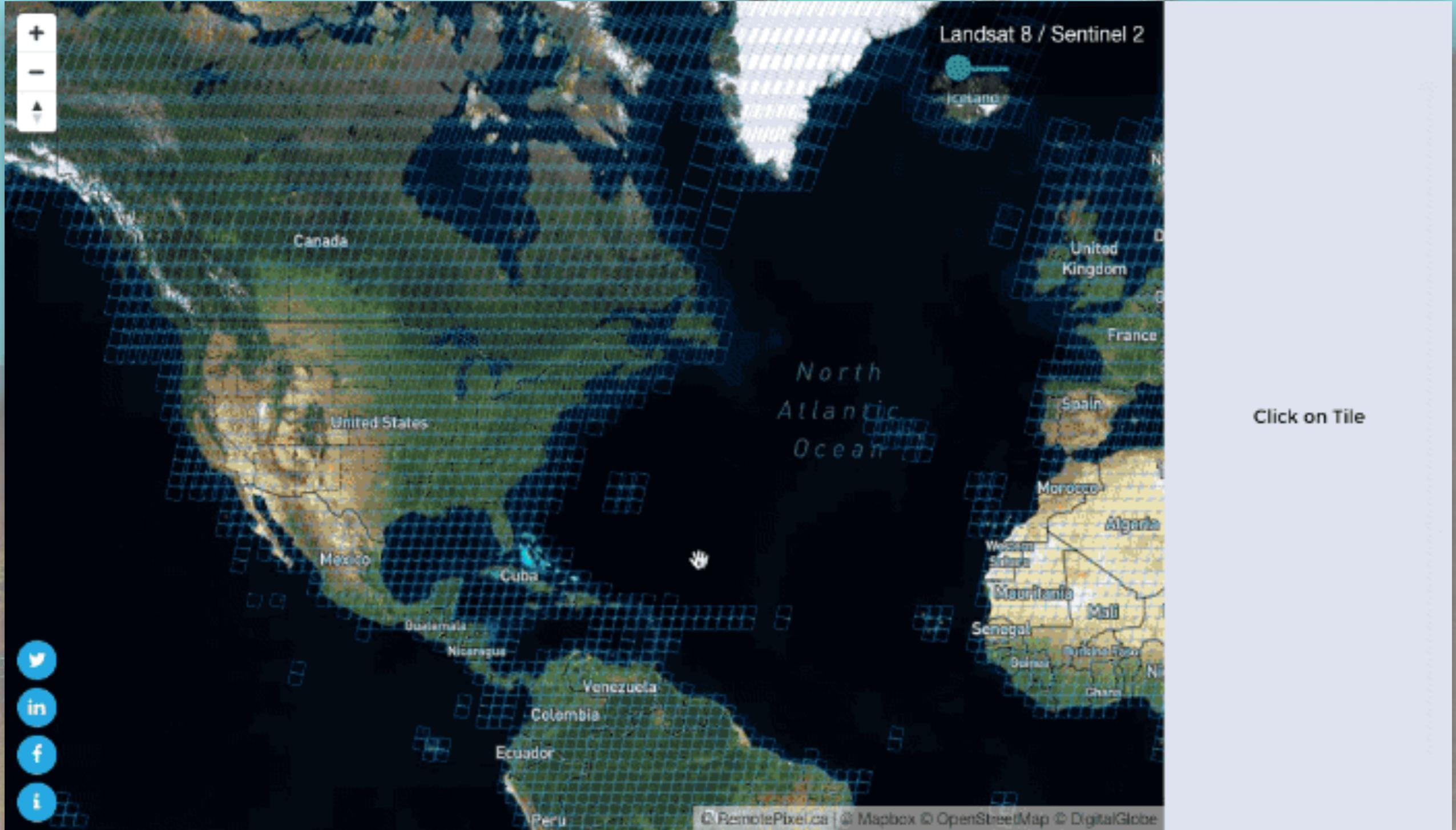
# Accès aux données: 2.0



Vector tiles



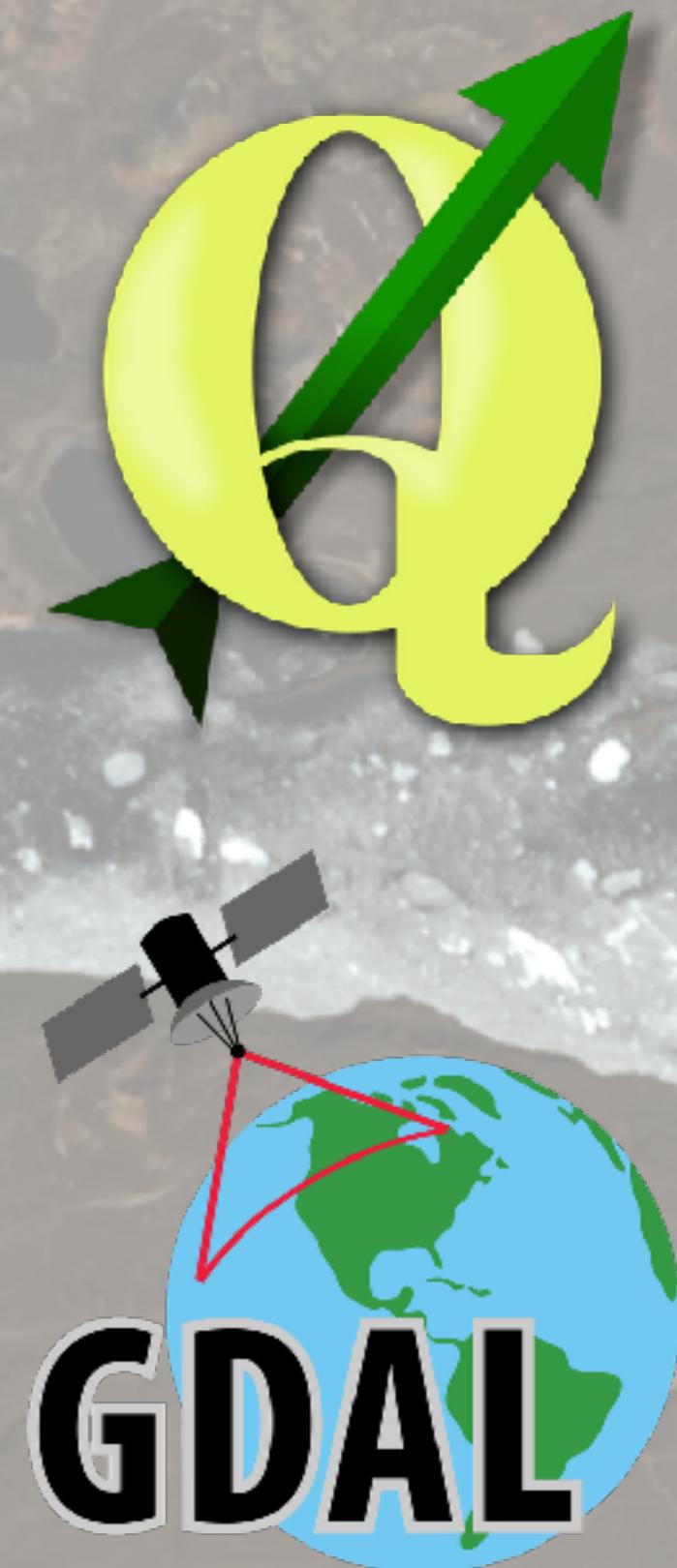
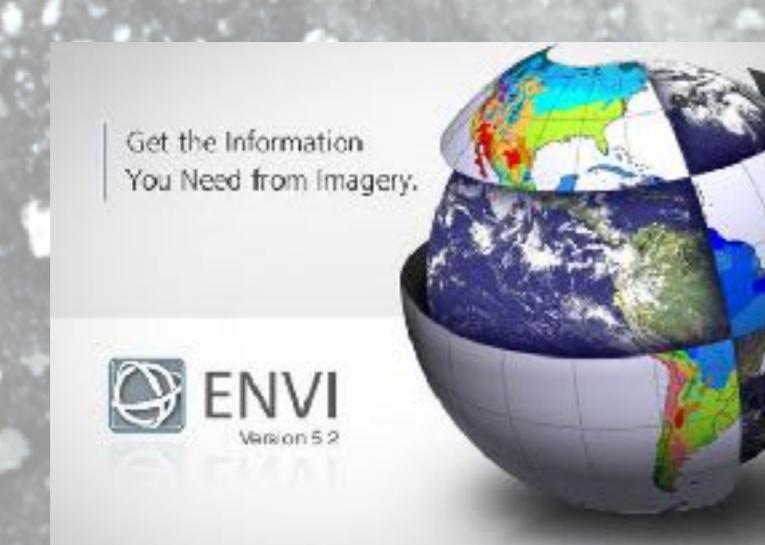
# Accès aux données: 2.0



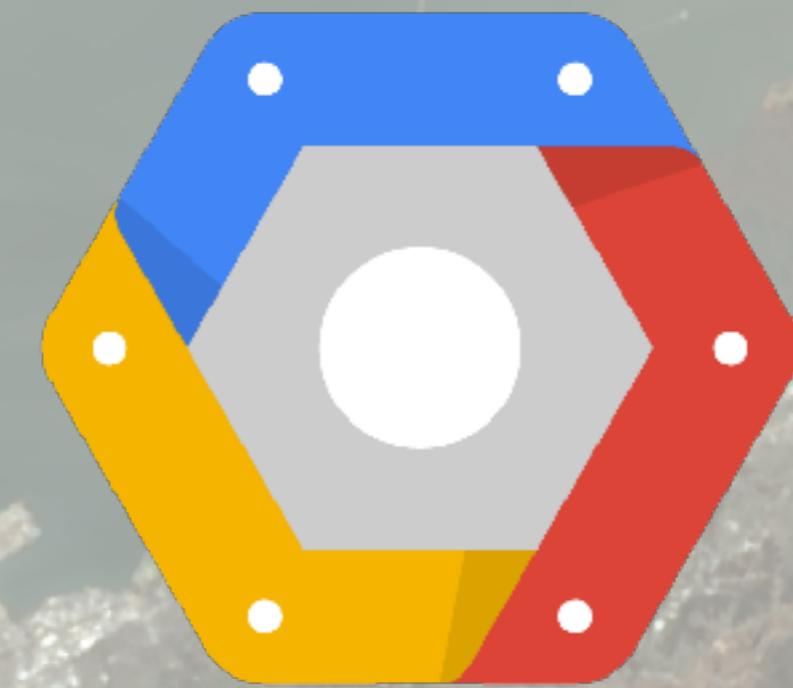
[remotepixel.ca/projects/satellitesearch.html](http://remotepixel.ca/projects/satellitesearch.html)



# Traitements

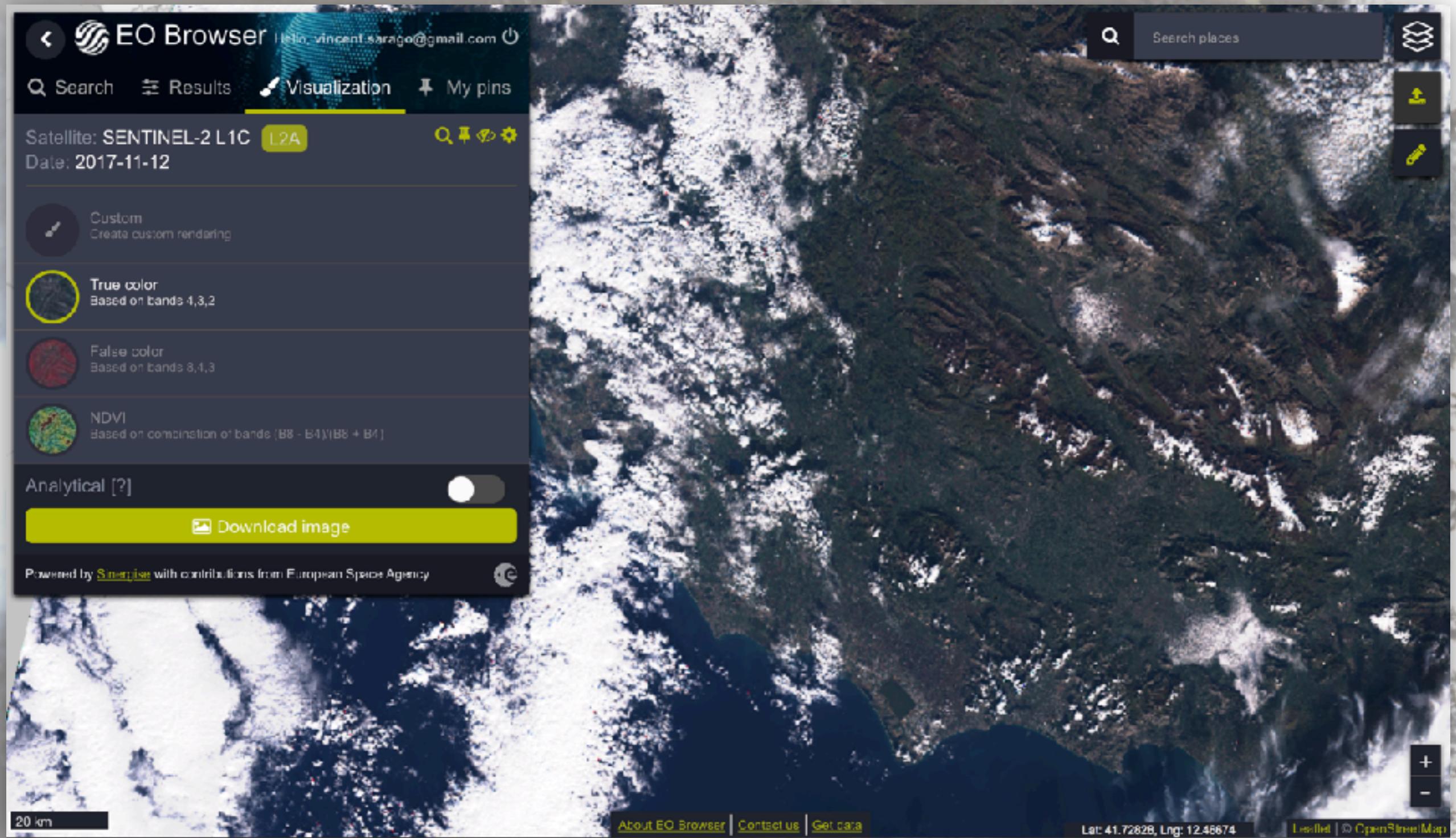


Cloud



Google Cloud Platform

# Accès aux données: Services



[apps.sentinel-hub.com/eo-browser](https://apps.sentinel-hub.com/eo-browser)

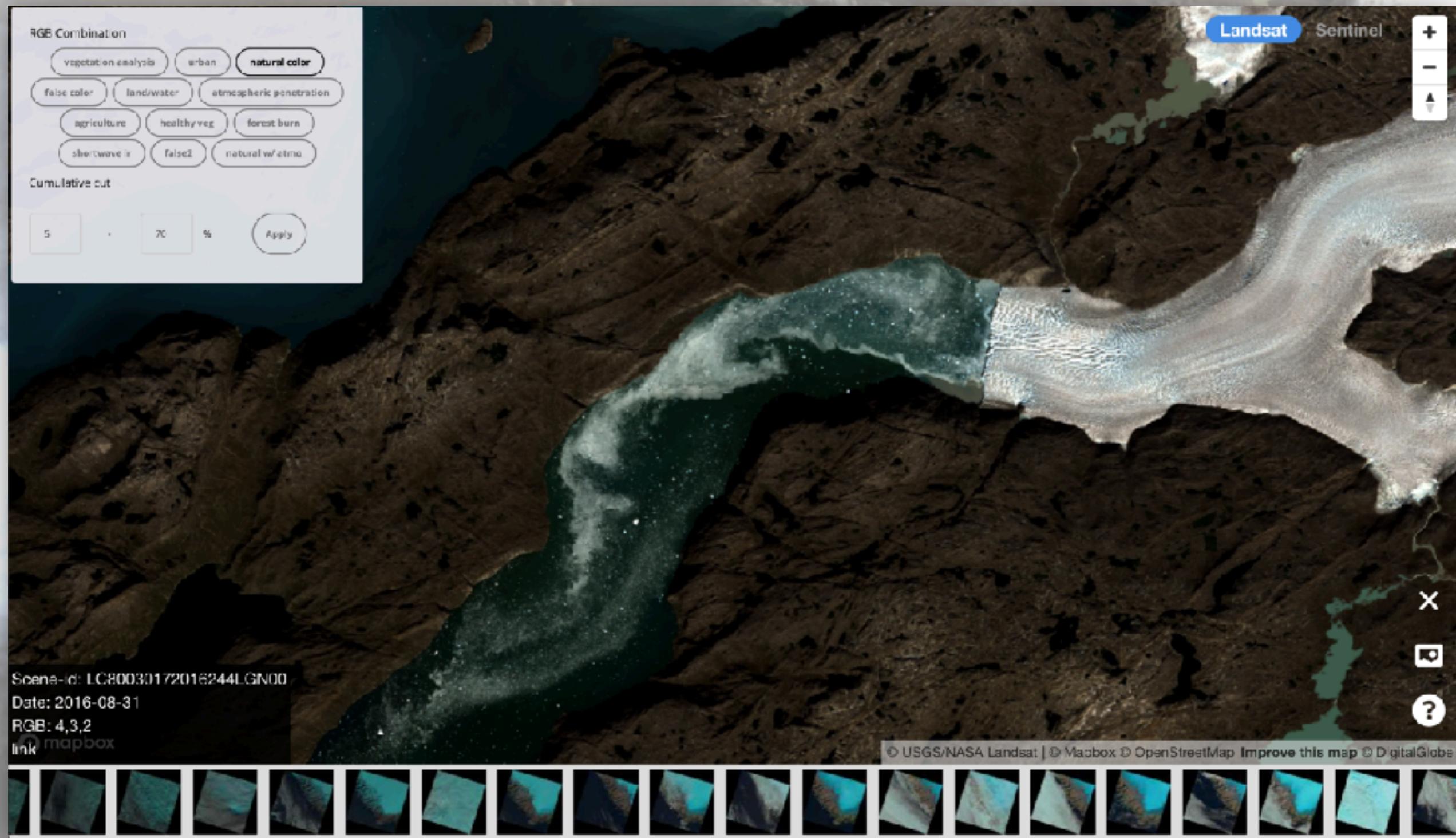
# Accès aux données: Services

The screenshot shows the LANDVIEWER web application interface. On the left is a satellite map of a coastal region, likely Galveston Bay, with various land cover types and water bodies. The map includes a legend, zoom controls, and a scale bar indicating 20 km. On the right is a sidebar titled "BAND COMBINATIONS" listing different combinations of satellite bands:

Band Combination	Date	Angle	Cloud Cover
Natural Color, Pansharpen 4, 3, 2 pan-sharpened	15 Oct 2017	48.25°	22.03%
Natural Color 4, 3, 2			
False Color (Urban) 7, 6, 4			
Color Infrared (Vegetation) 5, 4, 3			
Agriculture 6, 5, 2			
Atmospheric Penetration 7, 6, 5			
Healthy Vegetation 5, 6, 2			
Land/Water 5, 6, 4			
Atmospheric Removal 7, 5, 3			
Chlorophyll Infrared			

[eos.com/landviewer/](https://eos.com/landviewer/)

# Accès aux données: Services



[viewer.remotepixel.ca](http://viewer.remotepixel.ca)

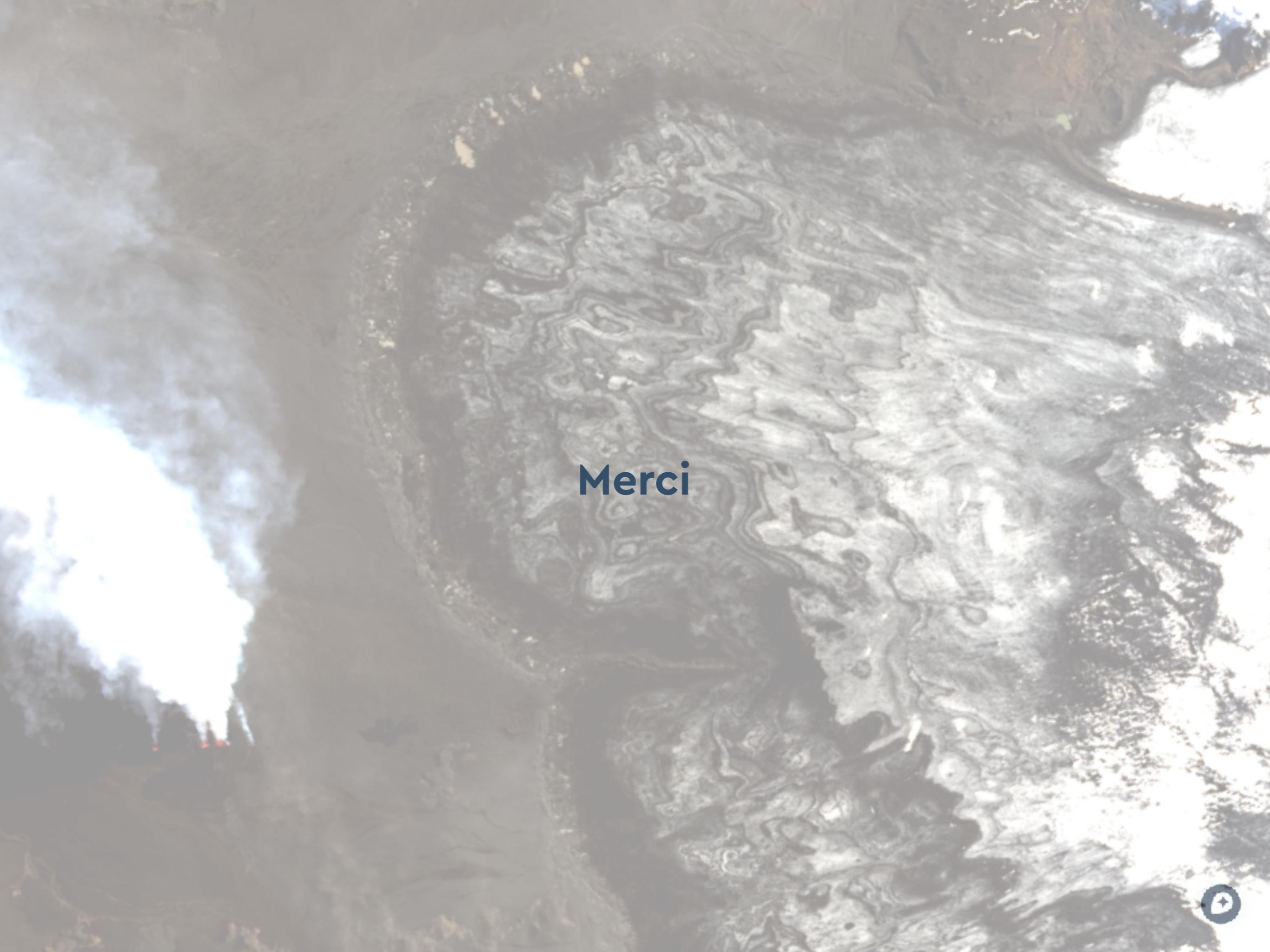


# Accès aux données: Services



[github.com/mapbox/rio-tiler](https://github.com/mapbox/rio-tiler)

[github.com/mapbox/landsat-tiler](https://github.com/mapbox/landsat-tiler)



Merci