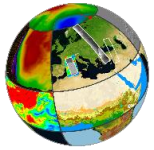
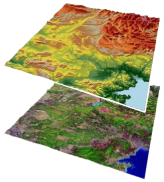
Interactive presentations of Web platforms



VtWeb

DEMIX operations platform



DEM4S2,

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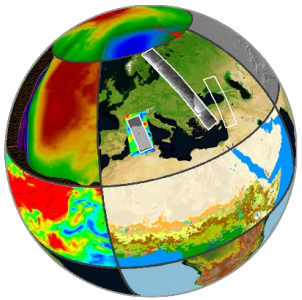
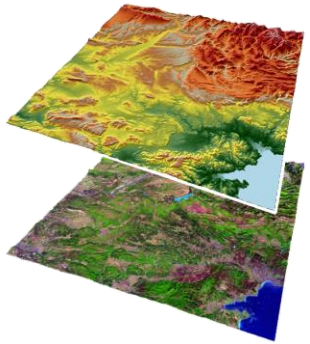
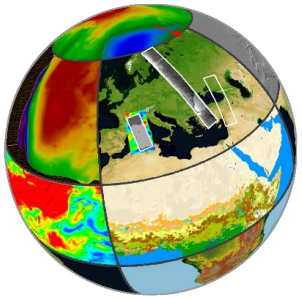


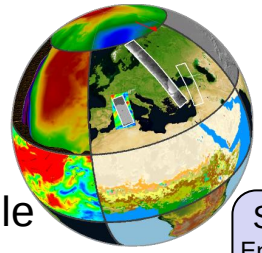




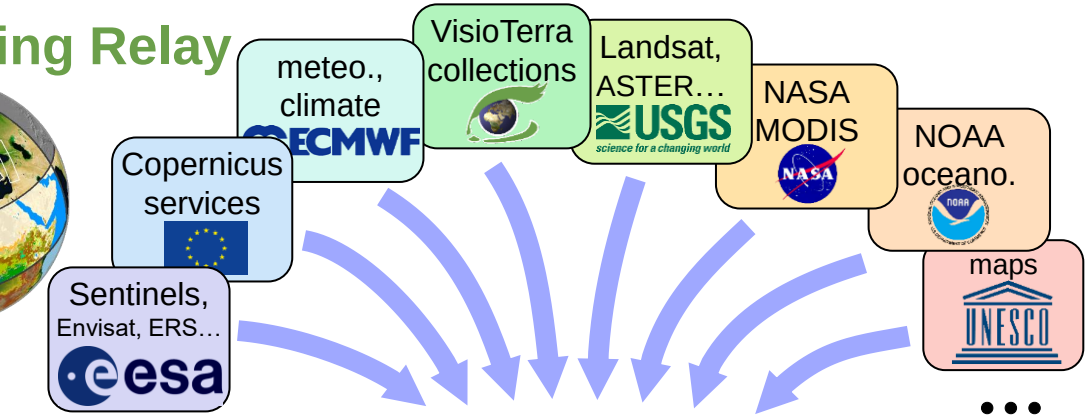
VtWeb

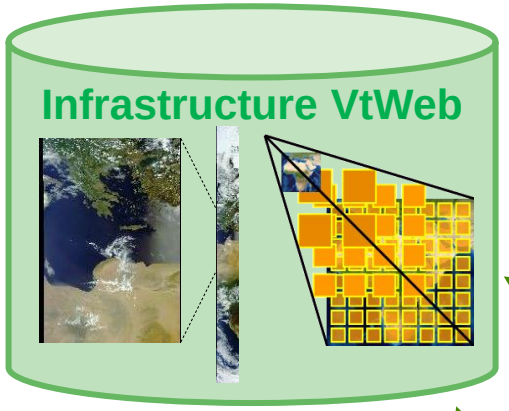
On-the-fly processing platform

VtWeb – Data Processing Relay

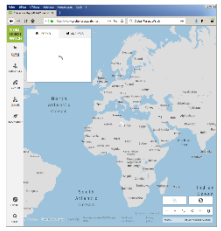


- VtWeb infrastructure
  - 1 PB (1000 TB) available
    - 50 TB ASAR and ERS
    - 150 TB MERIS
  - 1 Gb/s symmetric fibre
  - 6 powerful servers

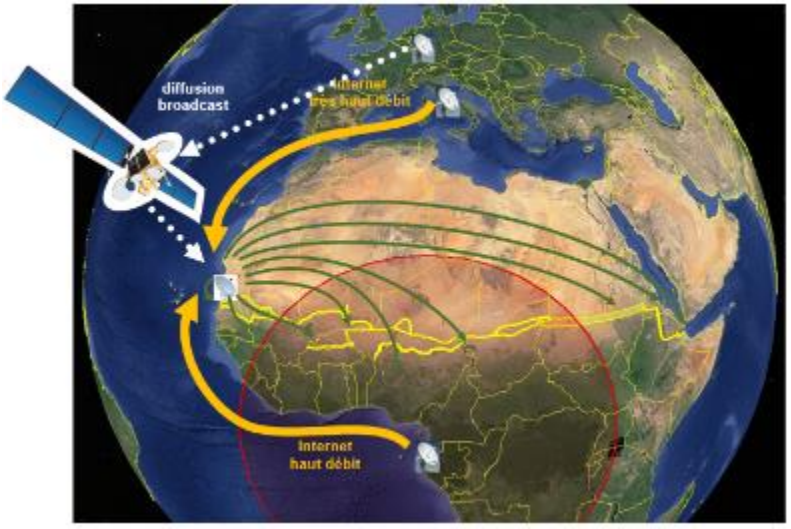




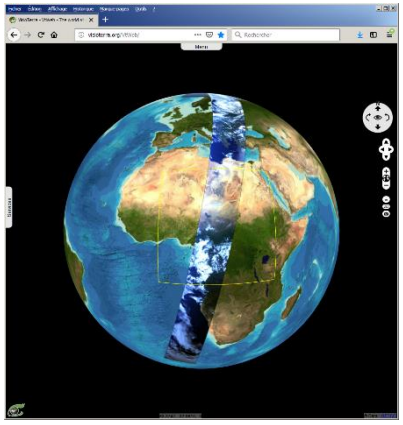
Other infrastructures



- DPR as a solution for Africa



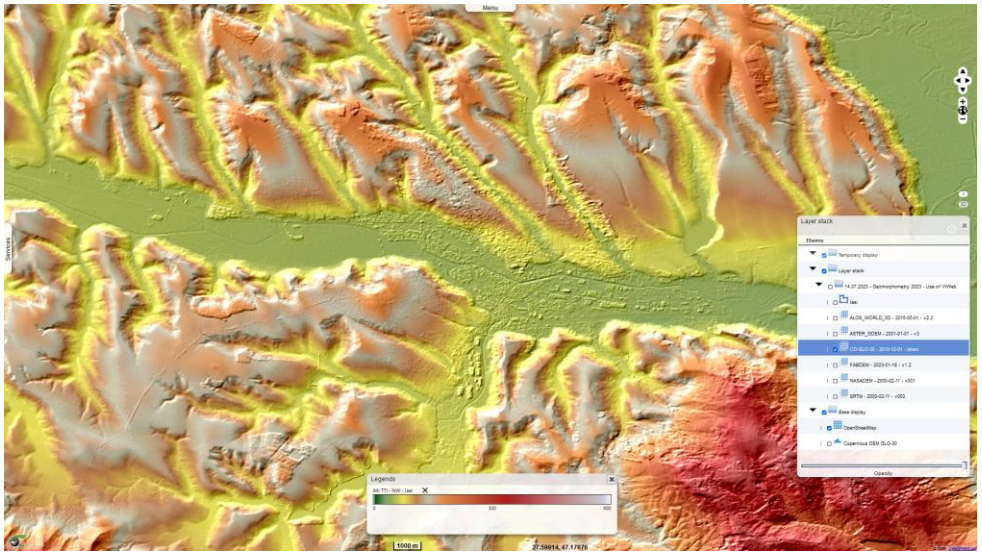
VtWeb client



Google Earth

G.I.S.

VtWeb - Client-server application

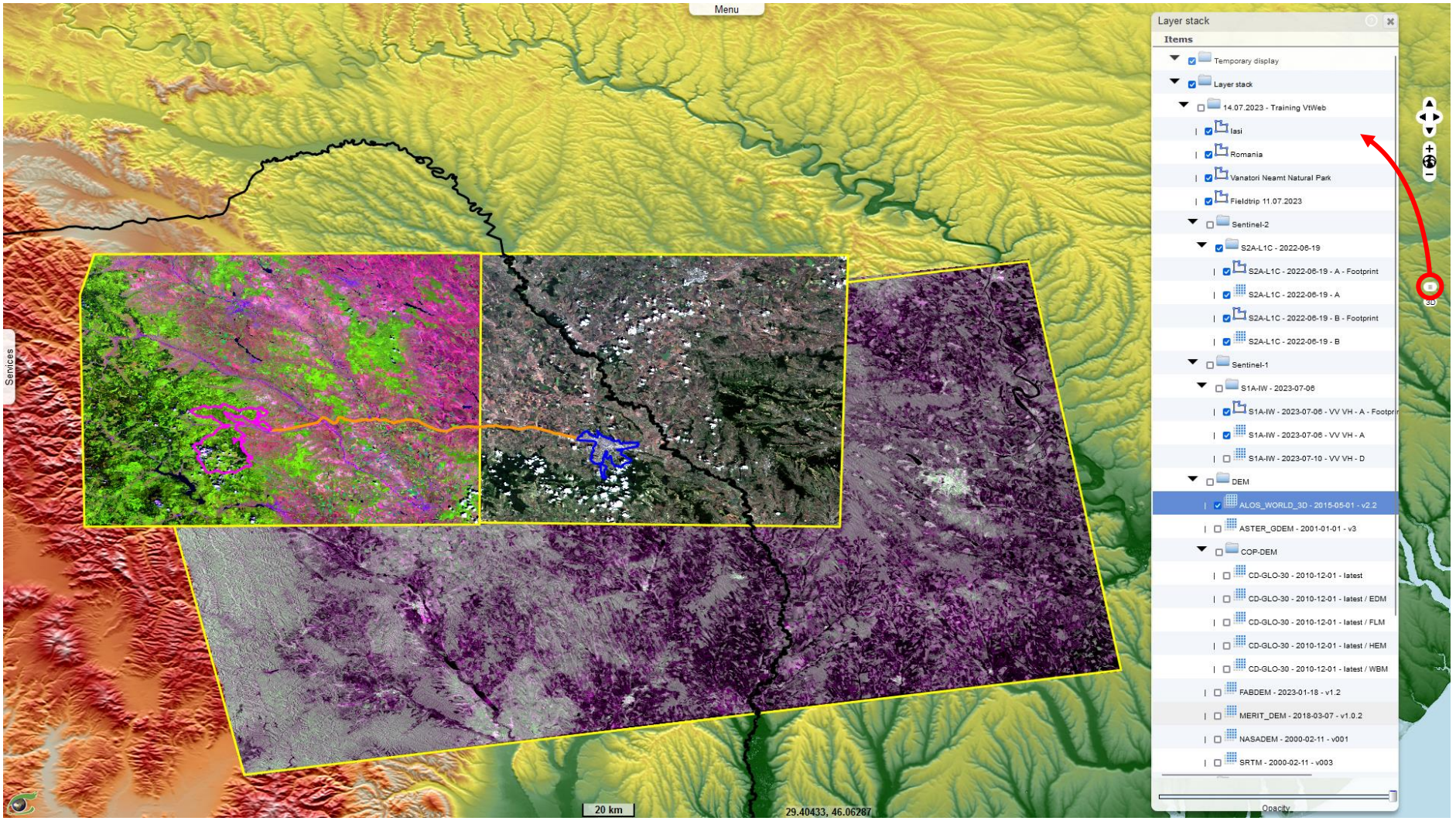


- Main features
  - Open access without registration
  - Many datasets in input (image, LiDAR, altimeter, vector fields…)
  - Processing on-the-fly
  - POF-ML macro-language
  - Sharing with hyperlooks → Iasi 2D layer stack
  - Analysis tools
  - Export

- Hyperlook documents
  - HYP-080-VtWeb-E_SRTM_ASTER-GDEM_ALOS-World-3D_comparison
  - HYP-082-VtWeb-E_SRTM_ASTER-GDEM_local_statistics_comparison
  - HYP-086-VtWeb-E_DEM_impact_on_orthorectification
  - HYP-087-VtWeb-E_Presentation_of_ICESat-2_ATLAS
  - HYP-089-VtWeb-E_Comparison_of_DEMs_in_Chott_Melghir_Algeria
  - HYP-091-VtWeb-E_MERIT_DEM_first_assessment
  - HYP-094-VtWeb-E_Assessment_of_slopes_in_Alaska_LiDAR_DEM
  - HYP-095-VtWeb-E_Comparison_of_Copernicus_DEM_releases_2020_vs_2019
  - HYP-096-VtWeb-E_Comparison_of_LiDAR_GEDI_vs_ICESat-1_ICESat-2
  - HYP-097-VtWeb-E_NASADEM_SRTMGL1_comparison
  - HYP-098-VtWeb-E_COP-DEM_EU-DEM_comparison
  - HYP-099-VtWeb-E_COP-DEM_GLO-90_vs_GLO-30_for_Sentinel-2_orthorectification
  - HYP-106-VtWeb-E_Comparison_of_FABDEM_releases_1.0_vs_1.2
  - HYP-107-VtWeb-E_Comparison_of_Copernicus_DEM_releases_2022_vs_2021

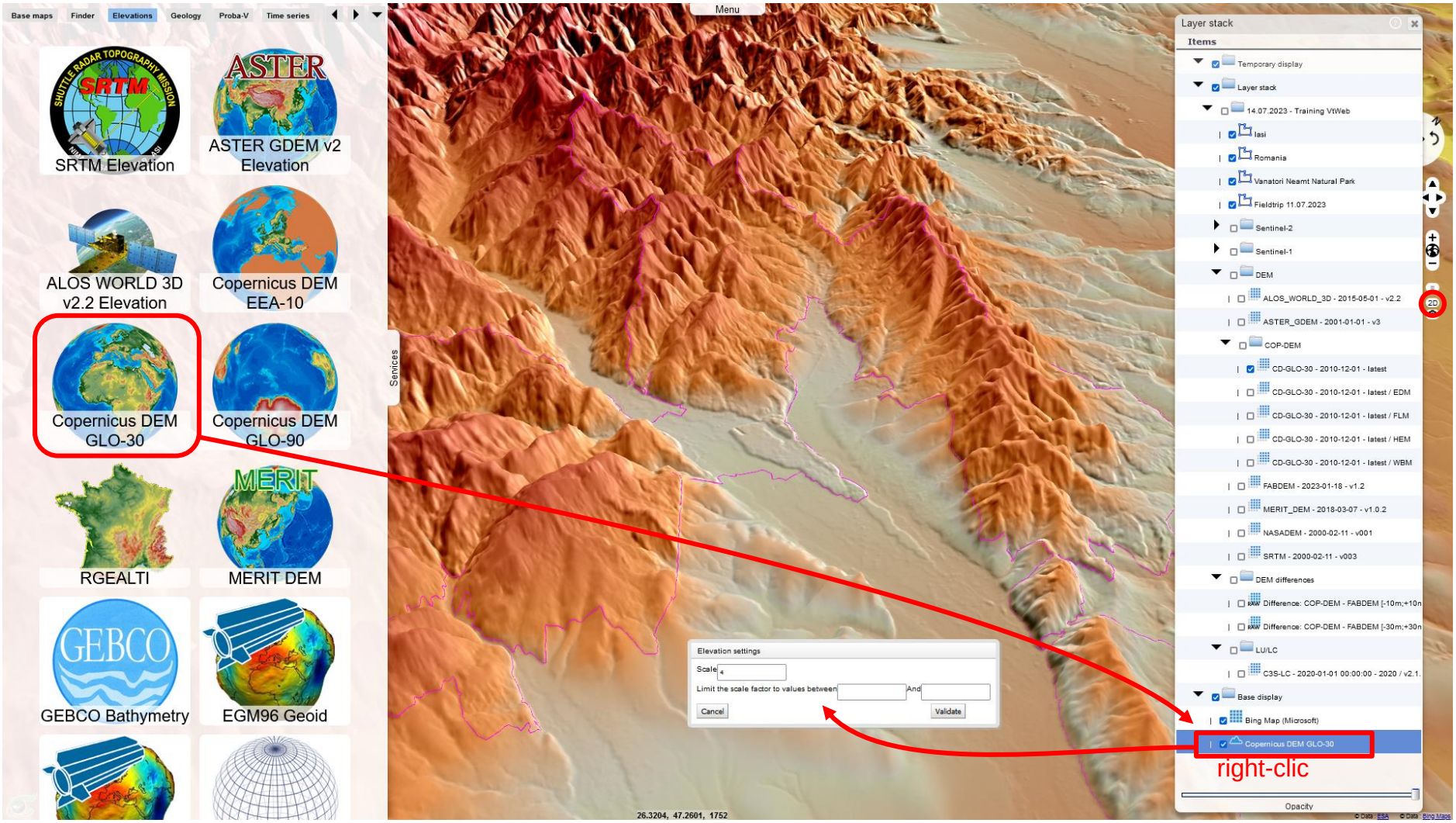
Hyperlook and layer stack

https://visioterra.org/VtWeb/hyperlook/d03758e5f4a04dcab29898503cf70073



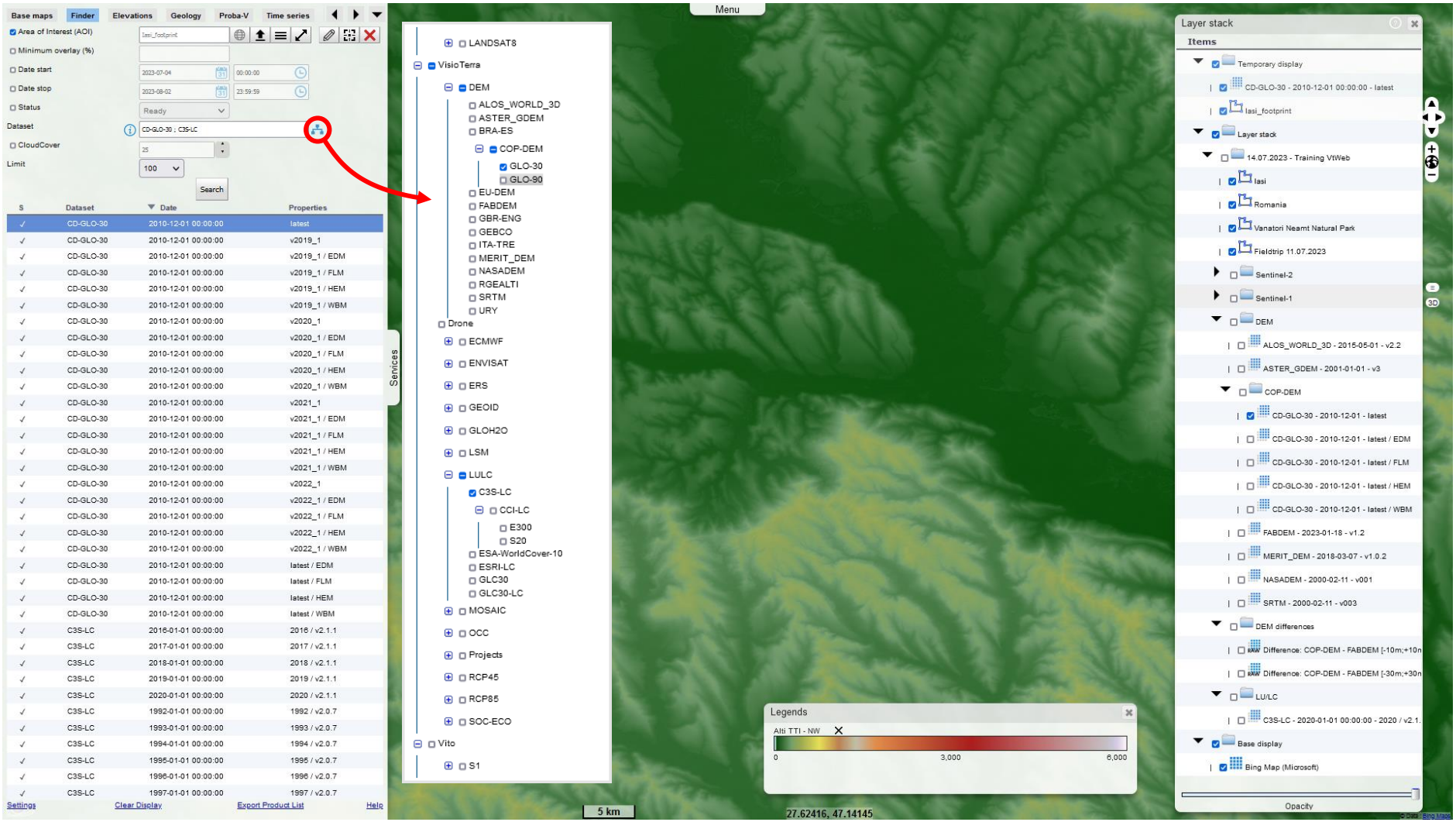
“Elevations” service - 3D display

Selection and setting of the altimetry model



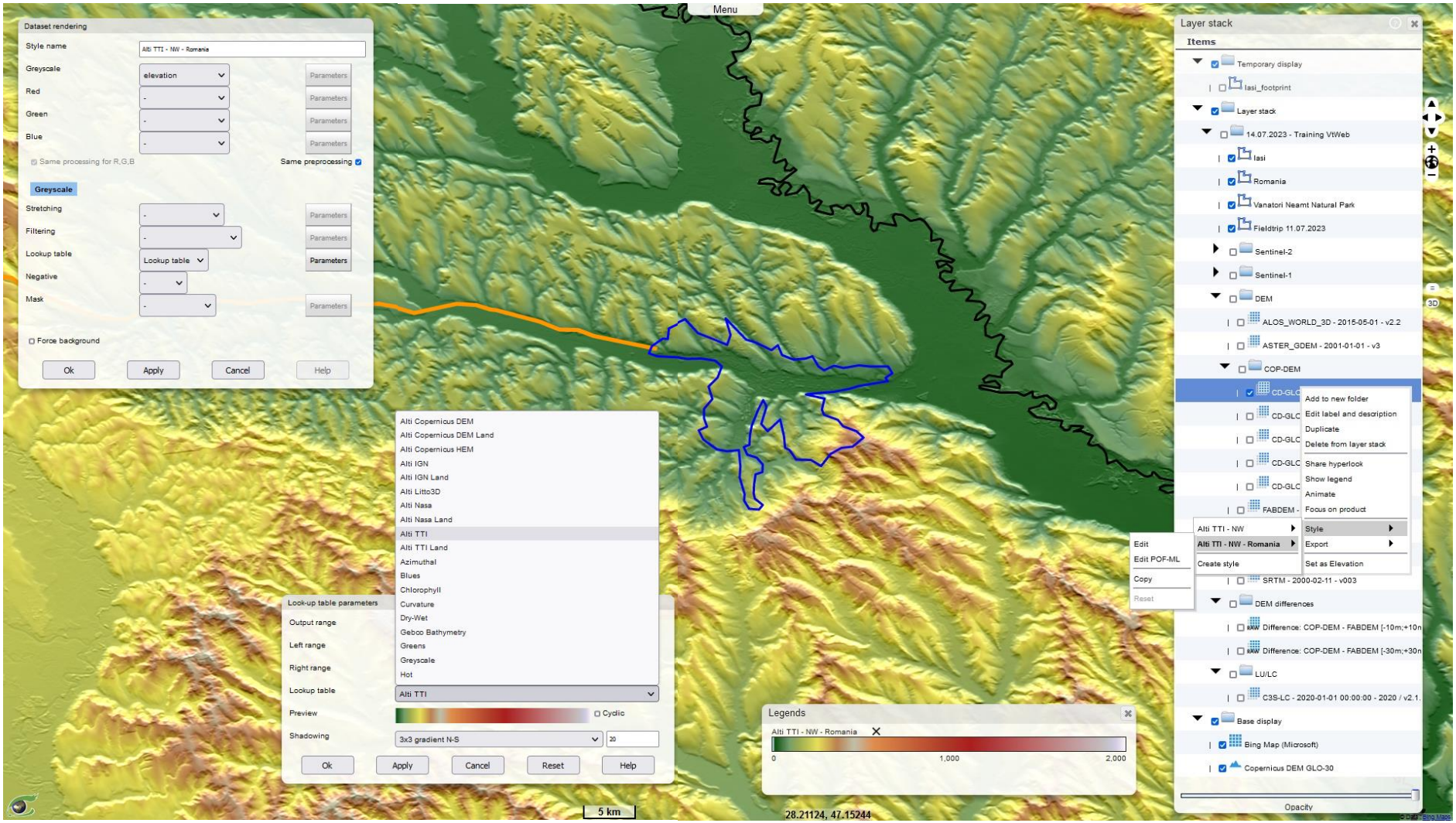
“Finder” service

Selection of a DEM and Land Use / Land Cover (LU/LC) datasets



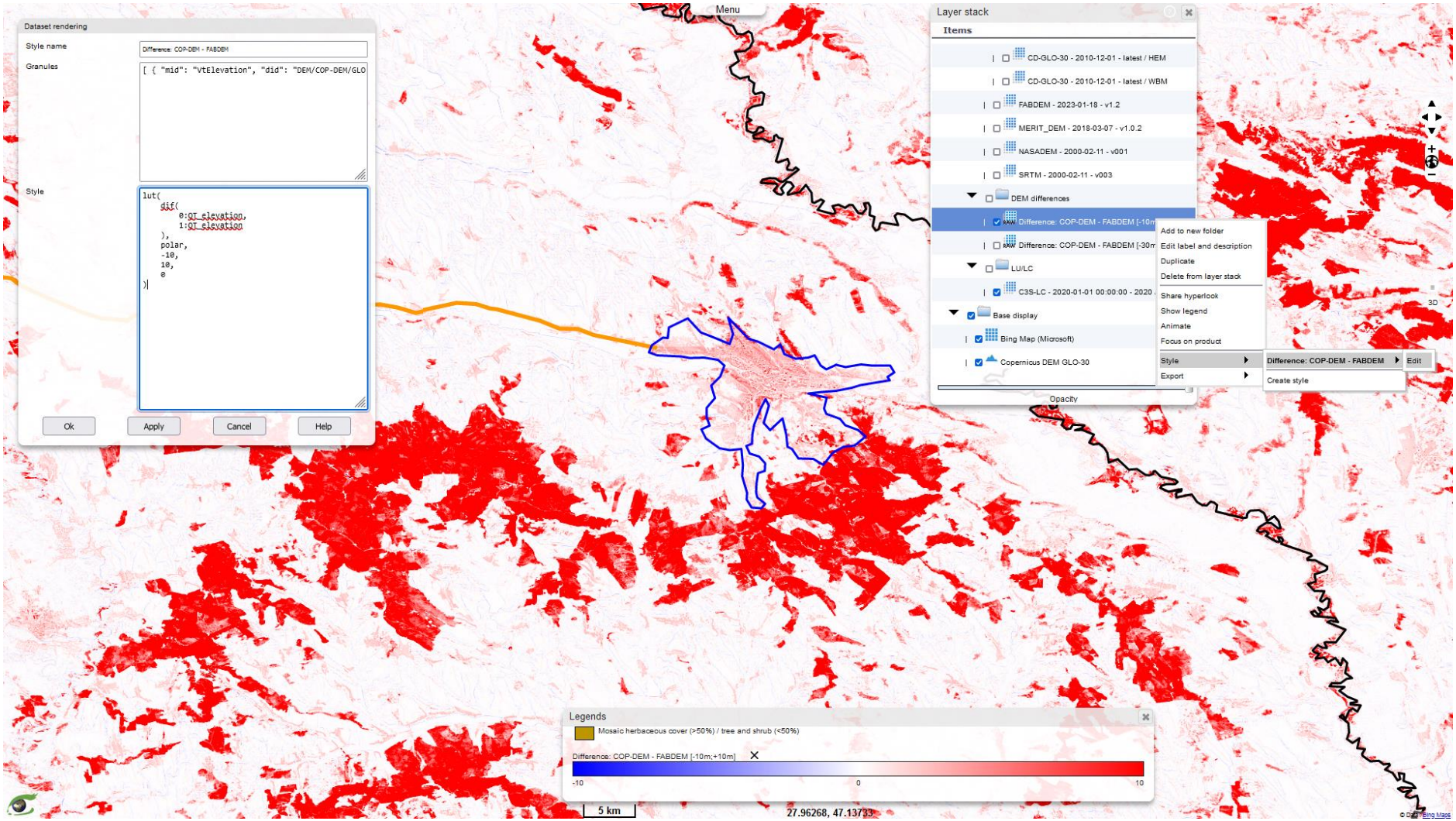
DEM styles

Default / predefined / user-defined styles



DEM difference

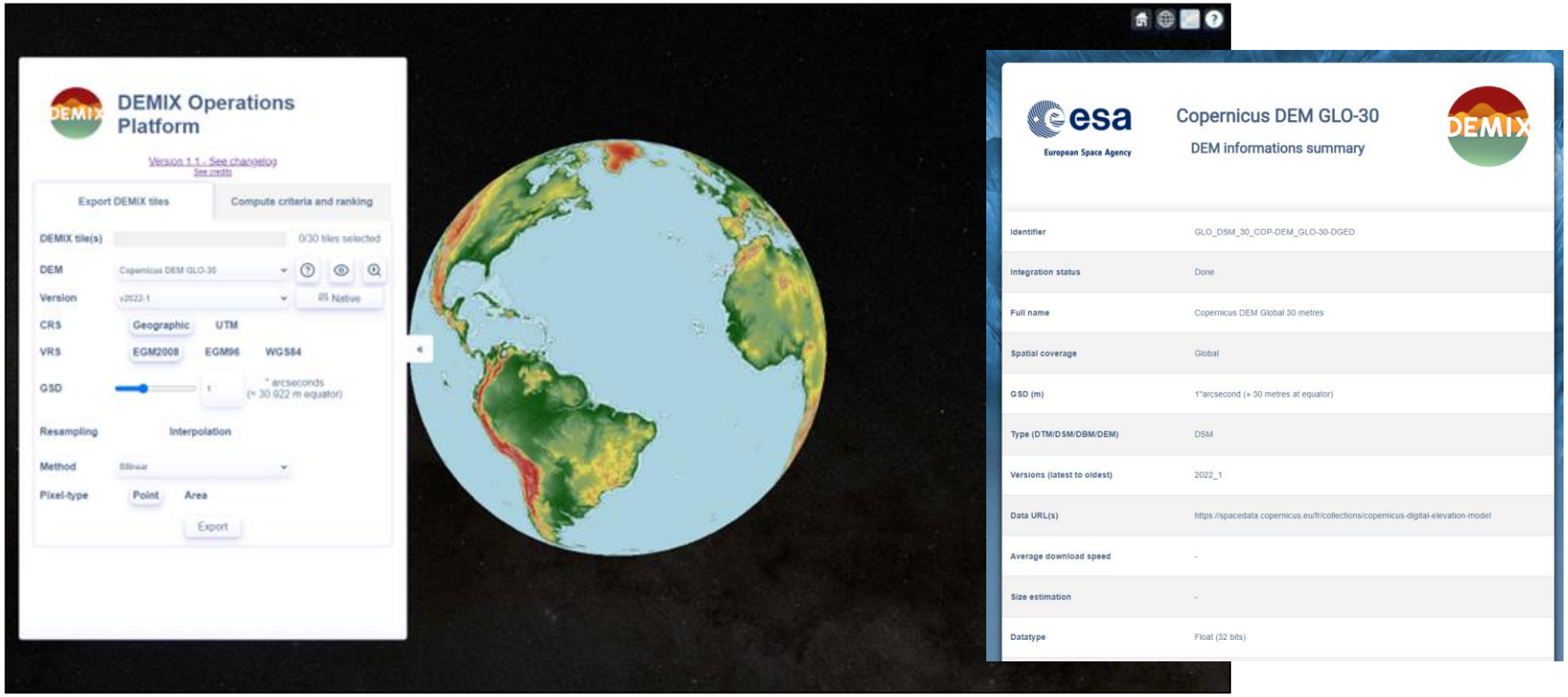
POF-ML - Processing On-the-Fly Macro-Language



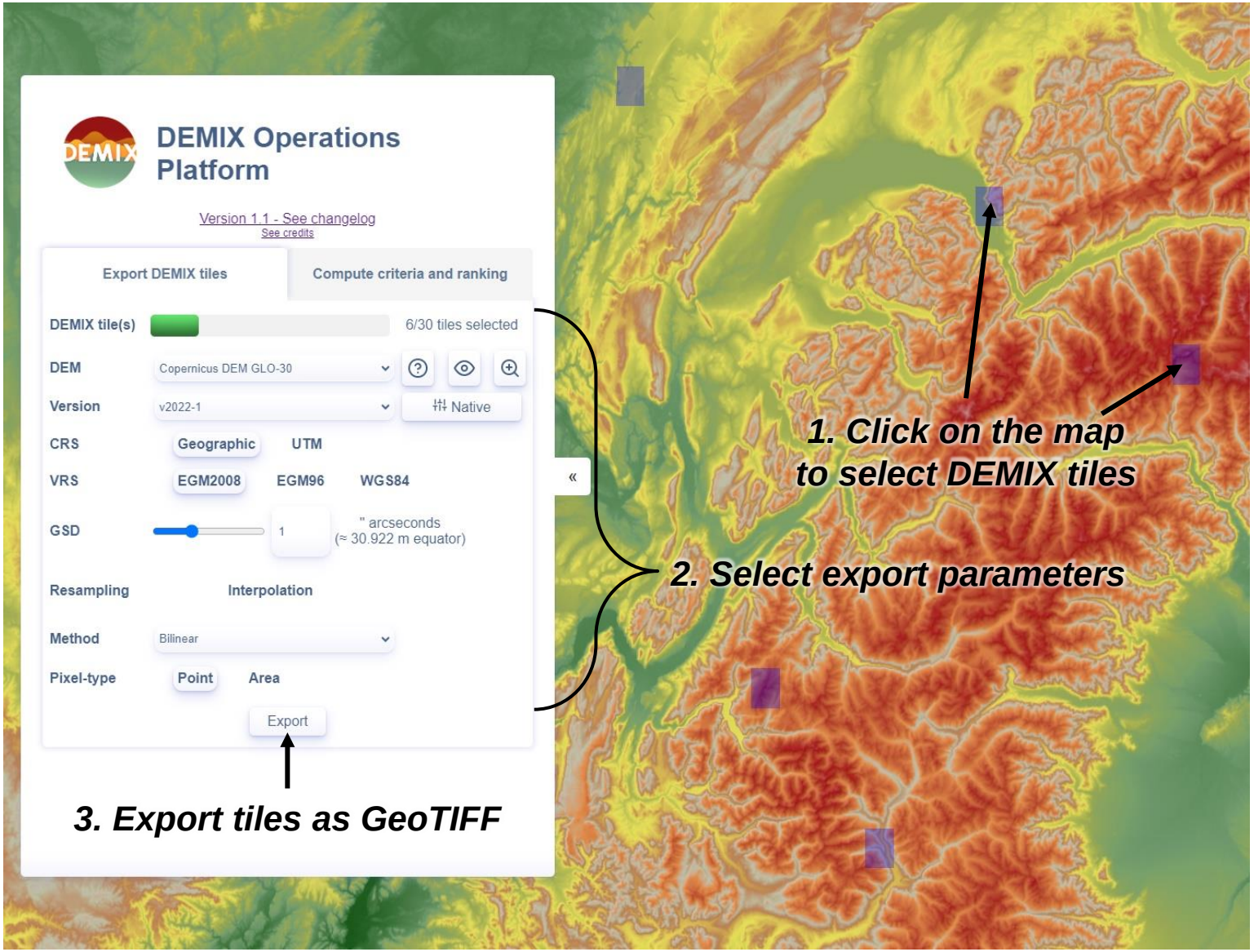
DEMIX operations platform

General presentation

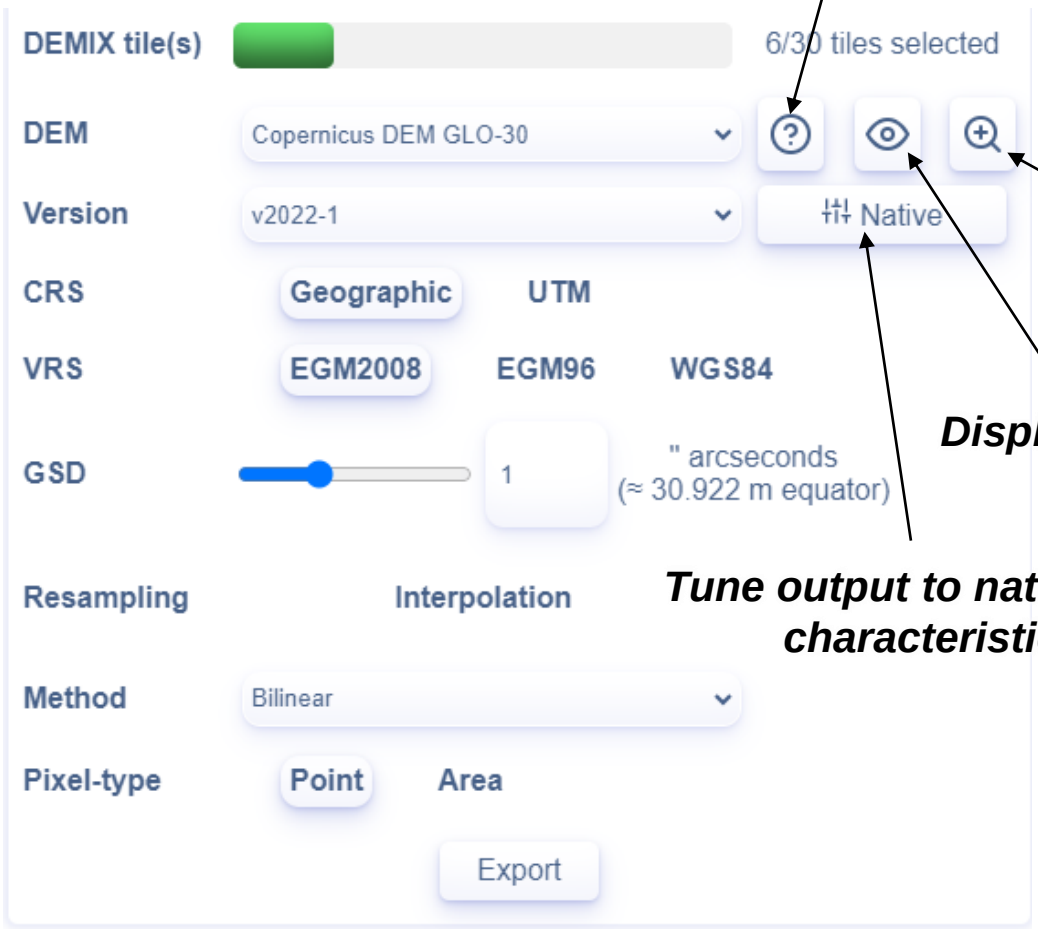
- DEMIX Operations Platform
  - Open - **https://visioterra.org/DemixOperationsPlatform/**
  - Current version – v1.1 (changelog)
  - Retrieve DEM elevations inside DEMIX tiles (10x10km areas)
  - Compute ranking of DEMs (Work in progress)



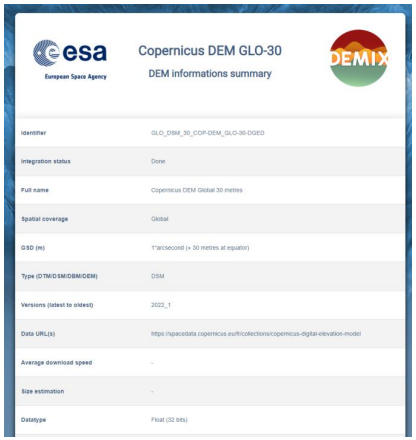
Left panel interface - “Tile export” function



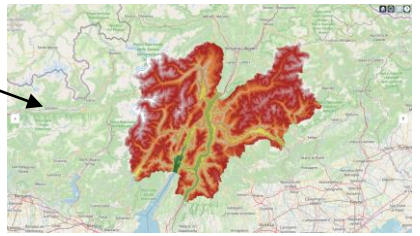
Selection of DEMIX tile(s) and DEM



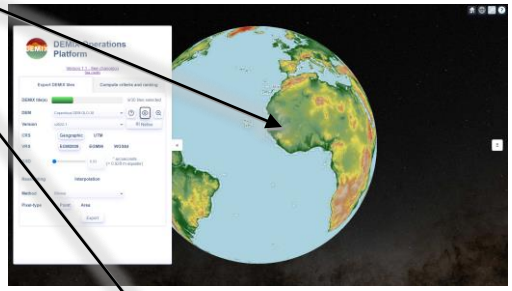
See DEM informations

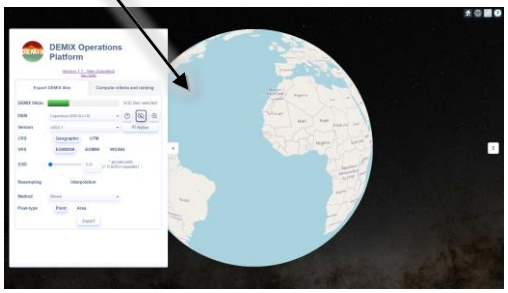


Zoom on full extent



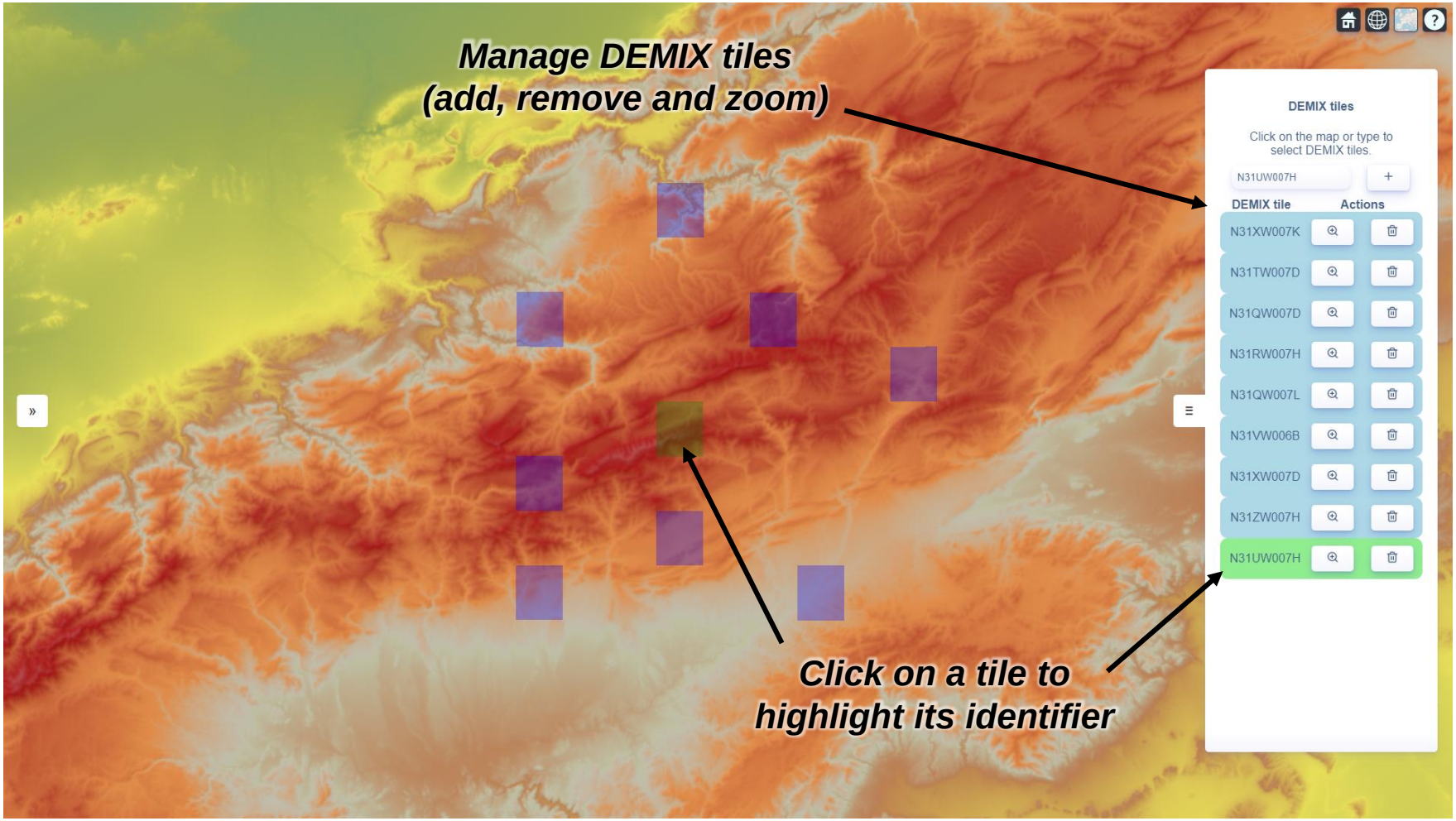
Display / hide DEM





Tune output to native DEM characteristics

Right panel interface (tile list)



QGIS installation and tile selection

- 1. Download and install QGIS (any version)
  - https://www.qgis.org/en/site/forusers/download.html
- 2. On the DEMIX Operations Platform, add the tile « N46PE010J » to the DEMIX tiles list

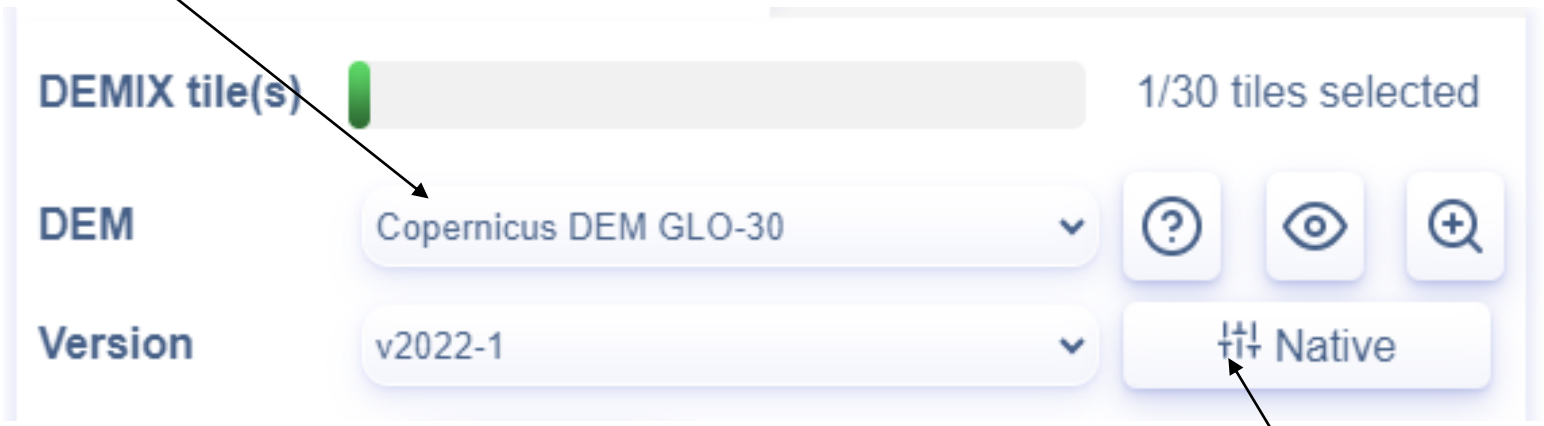
1. Enter the identifier

2. Click on « + »

DEM selection and export

- 3. Select « Copernicus DEM GLO-30 » in the left panel and click on « Native »

1. Select the DEM



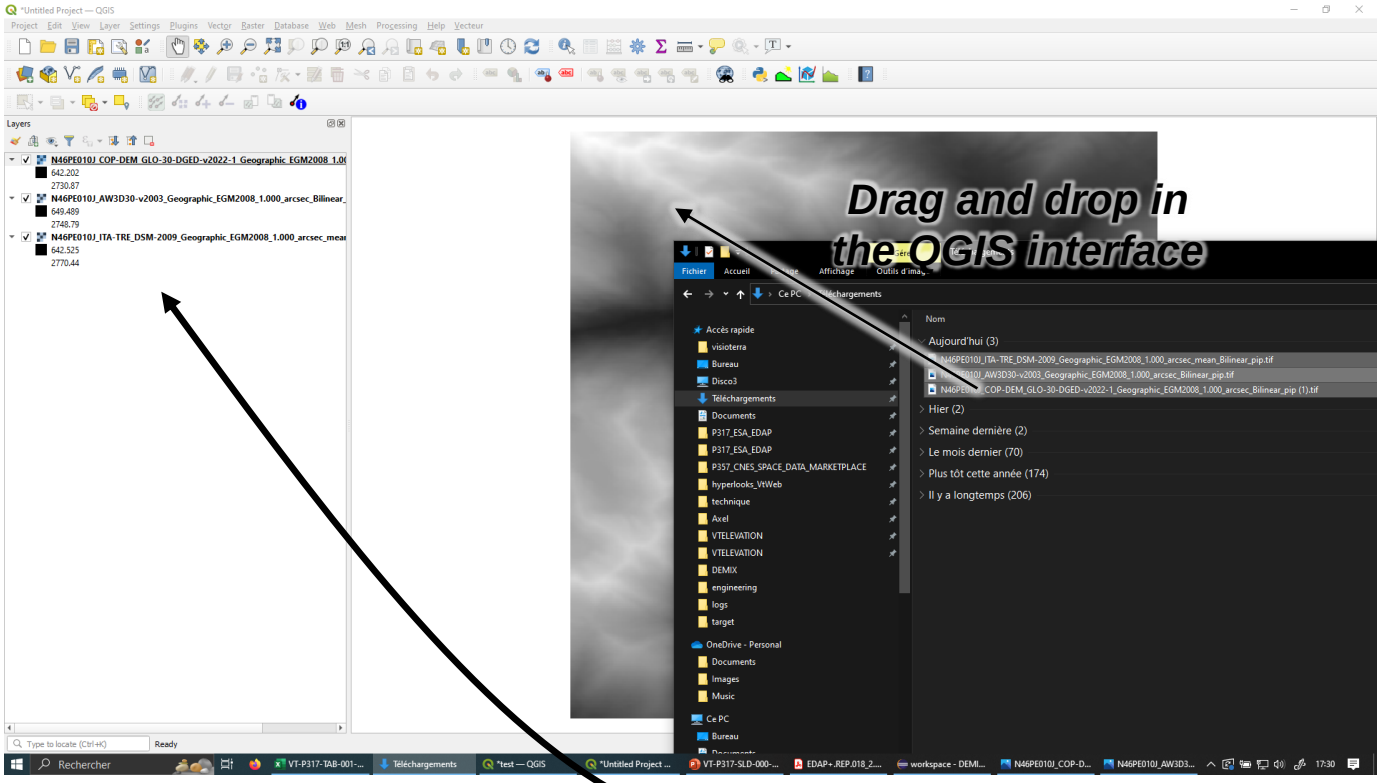
2. Click on « Native »

- 4. Click on Export
- 5. Once downloaded, select « ALOS World 3D » and click on « Export »
- 6. Once downloaded, select « ITA-TRE_DSM_1-2 » and click on « Export »

You should retrieve 3 GeoTIFF files, one for each of the DEMs.

Import DEMs in QGIS

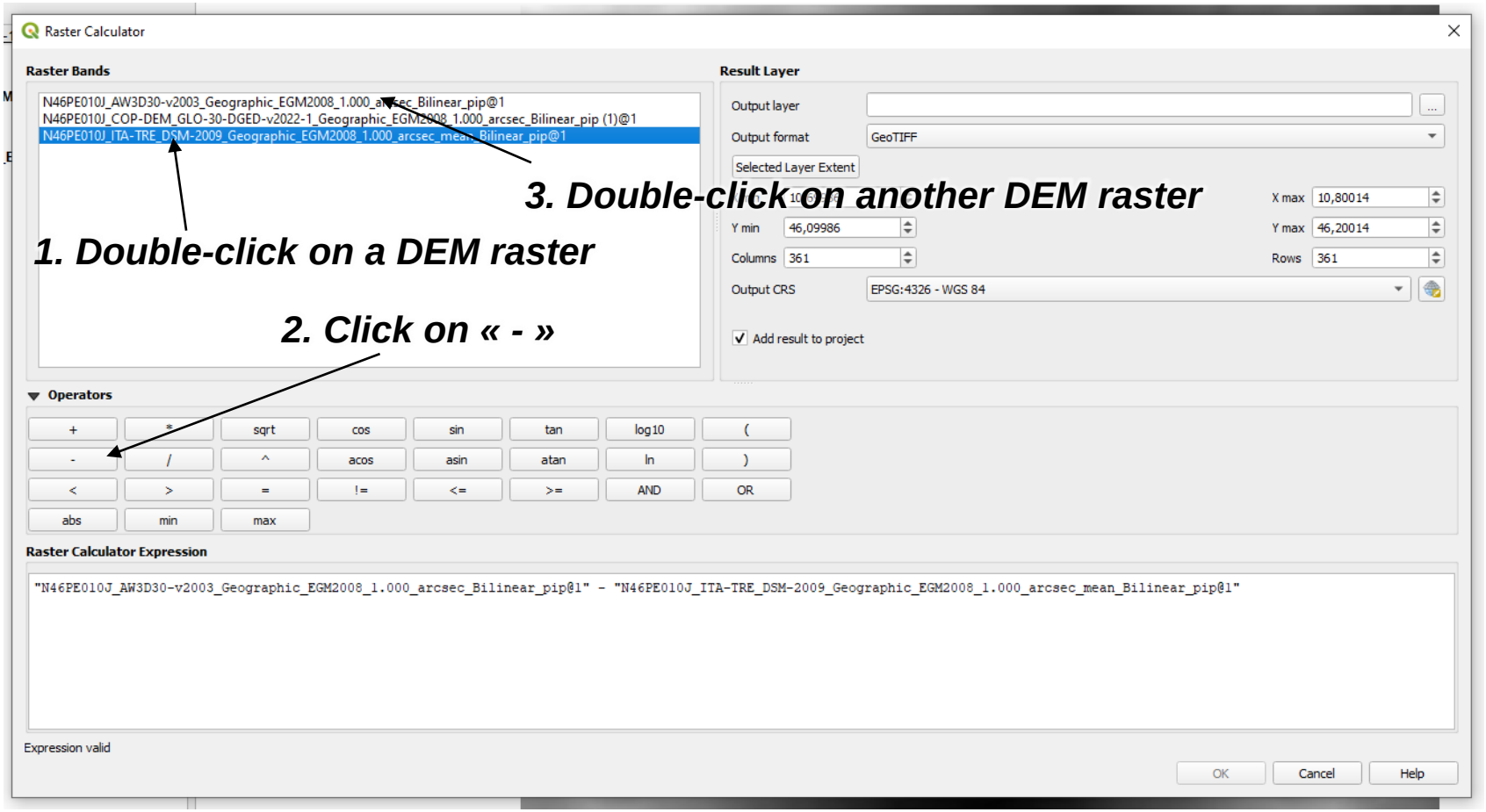
- 7. Open QGIS and click on the « Project » tab, then « New ».
- 8. Add the three GeoTIFF DEMs by dropping them onto the interface.



You should now be able to see the three DEMs in your QGIS layers

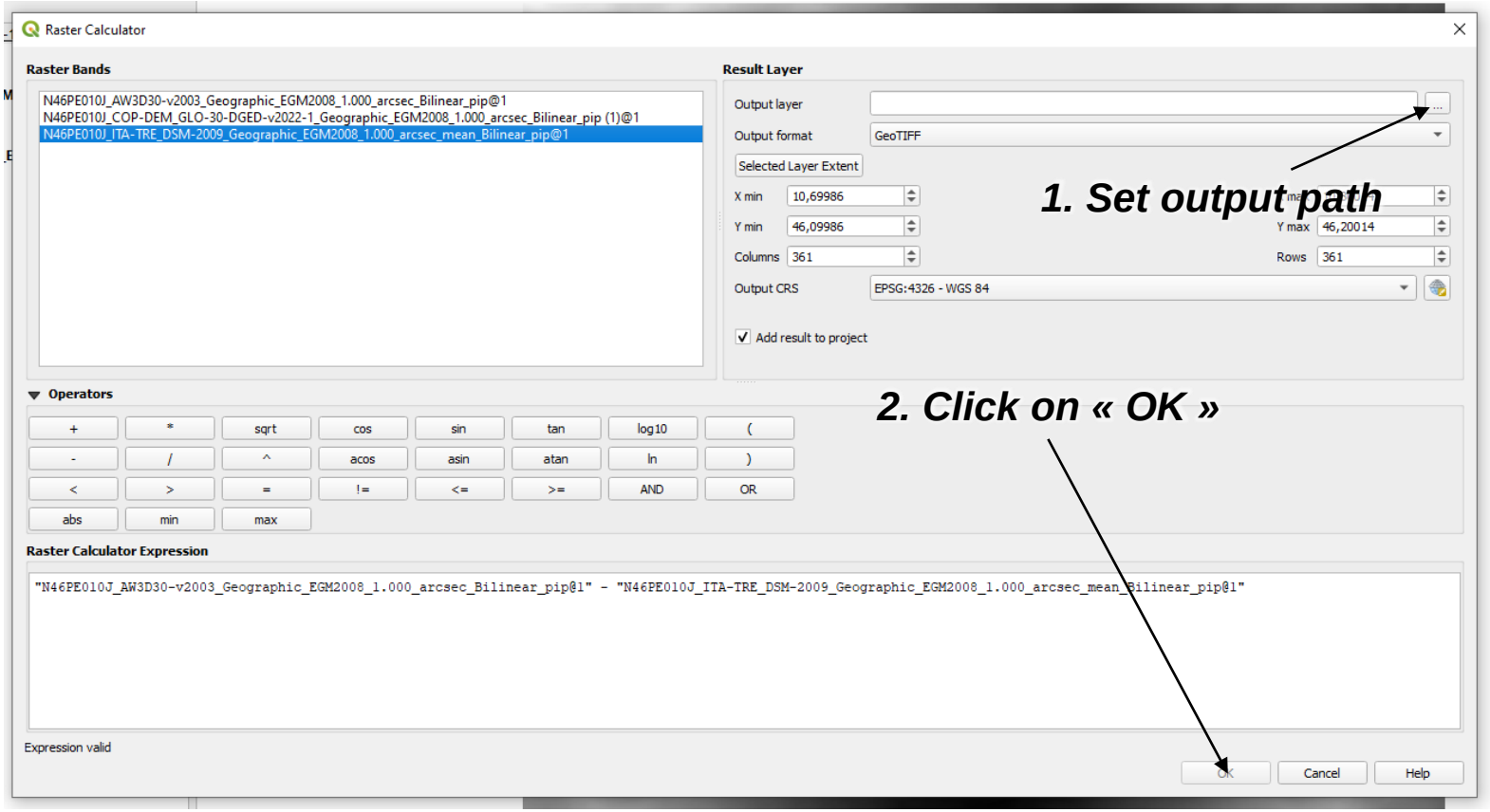
Set the difference operator in QGIS

- 9. Click on the « Raster » tab, then « Raster Calculator ».
- 10. To perform a height difference, double-click on any DEM raster, then click on « - », then double-click on another DEM raster.



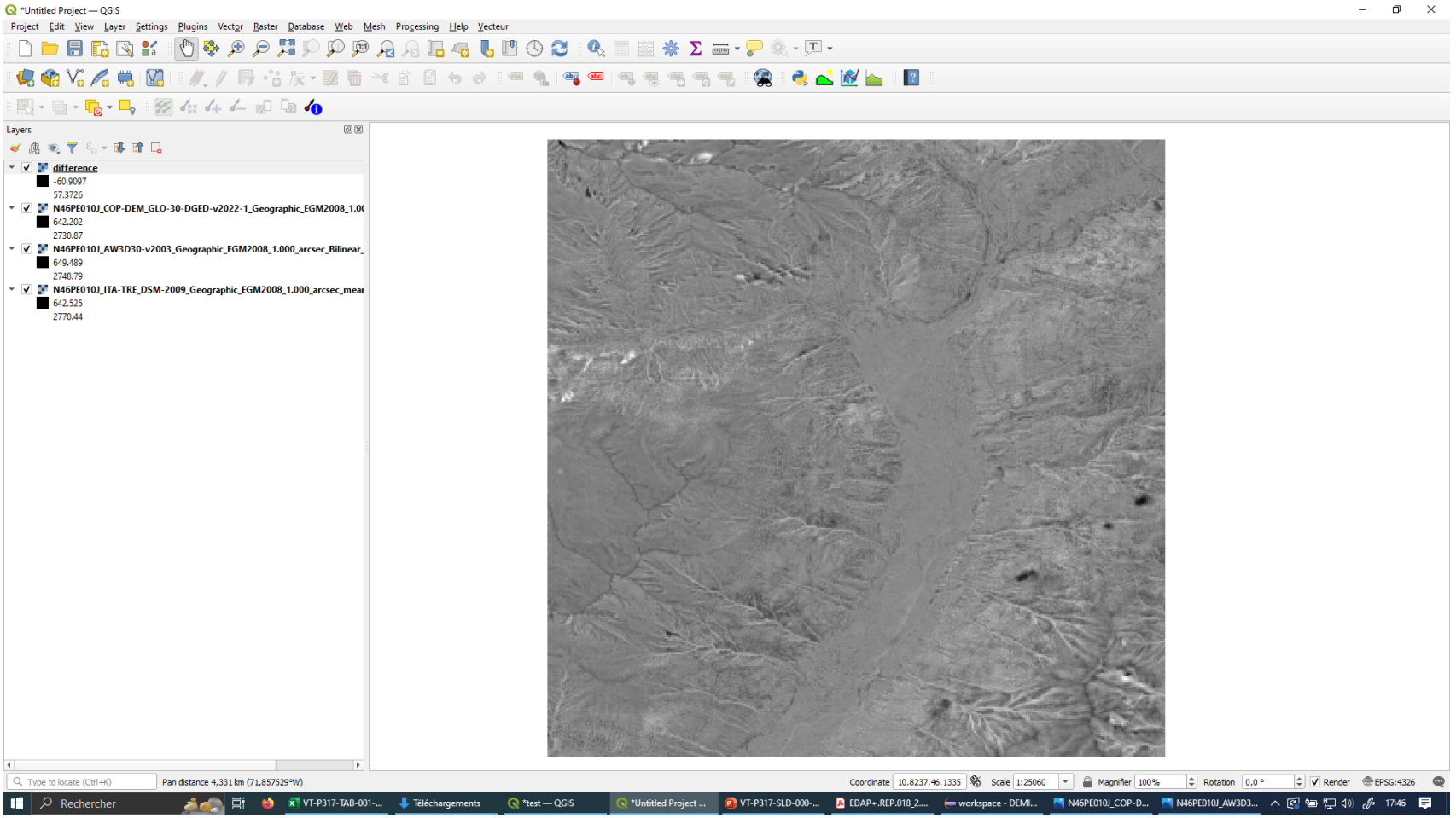
Make the “difference” layer in QGIS

- 11. Click on « … » to set the output path of your difference raster
- 12. Click on « OK »



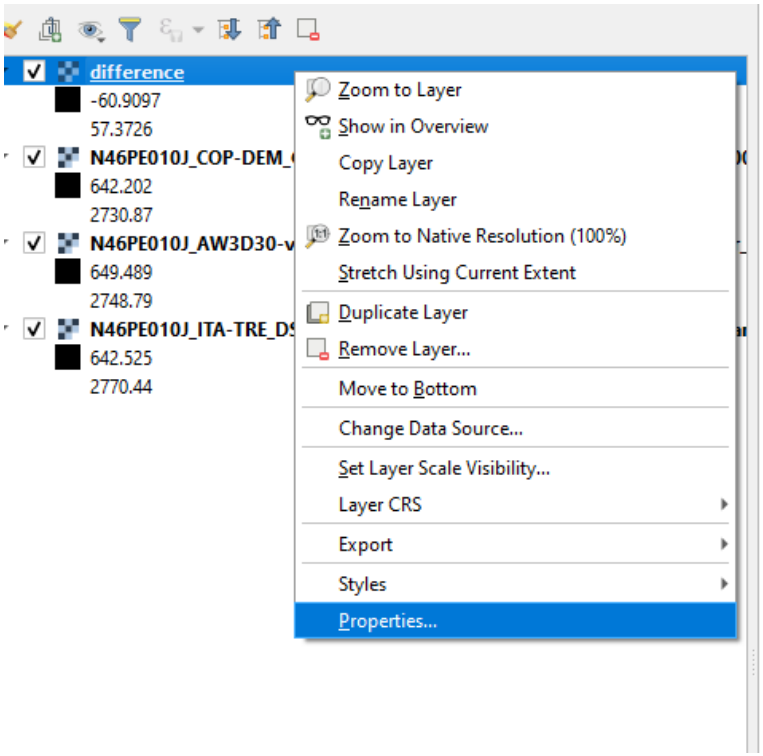
Display the DEM difference in QGIS (grayscale)

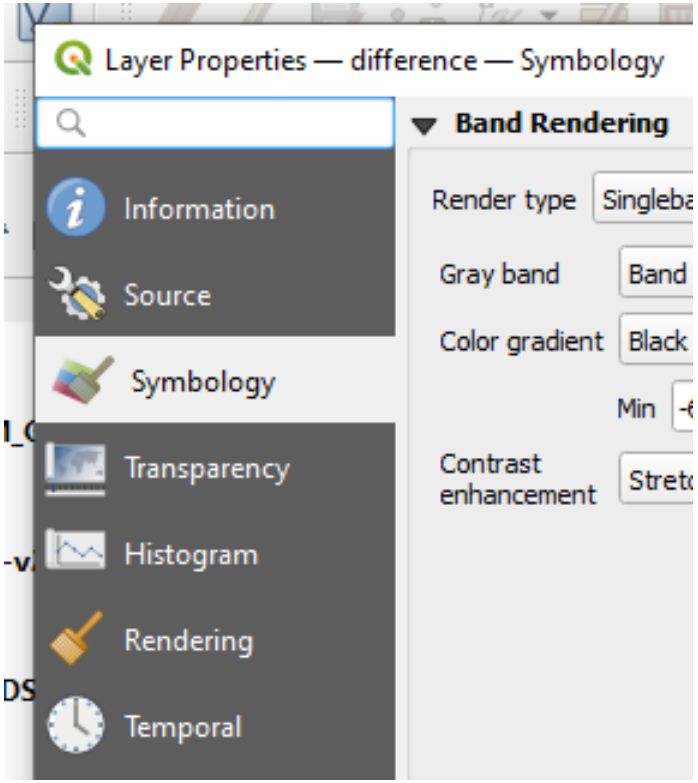
If everything went correctly, you should now see your difference raster directly into QGIS !



Set a colour map to highlight the negative / positive differences

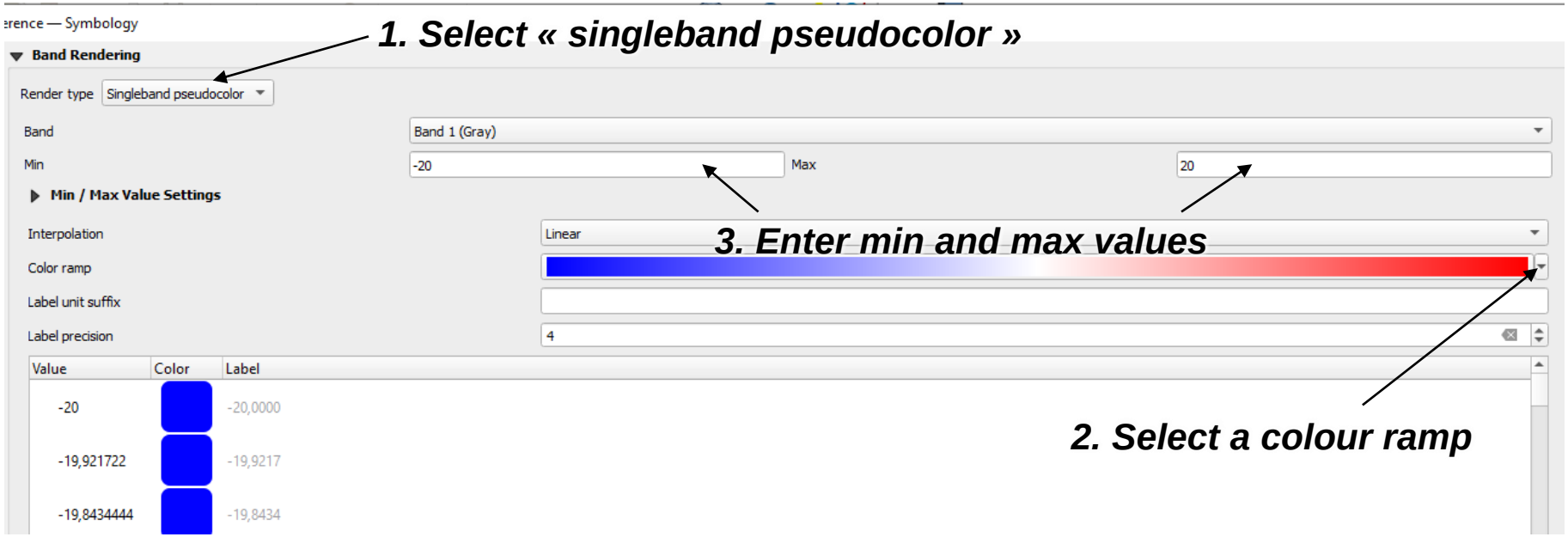
- 13. To add a color map to the raster, right click on the difference layer (left panel) and click on « Properties », then get to the « Symbology » tab.





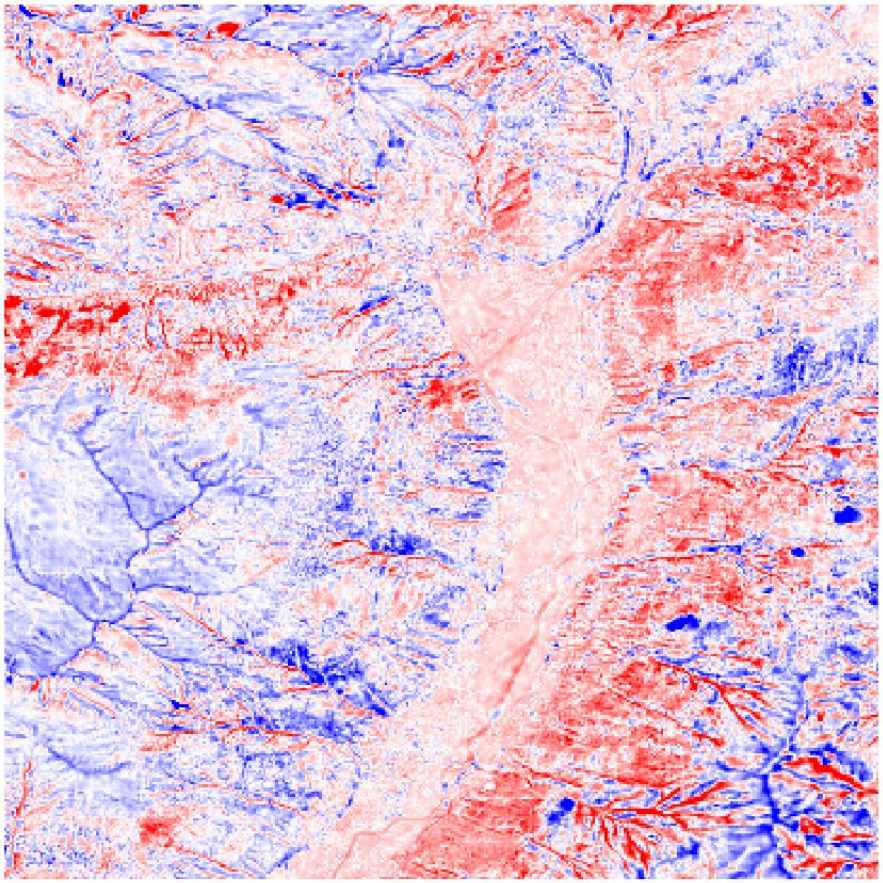
Set colour map parameters

- 14. Select the render type « Singleband pseudocolor », then select the colour ramp of your choice
- 15. Enter the min and max values of the color bands (here, -20 to +20)

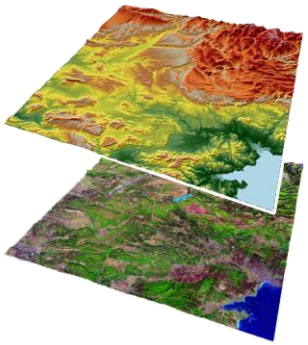


Display the DEM difference in QGIS (colourmap)

Your differences should now be coloured accordingly !



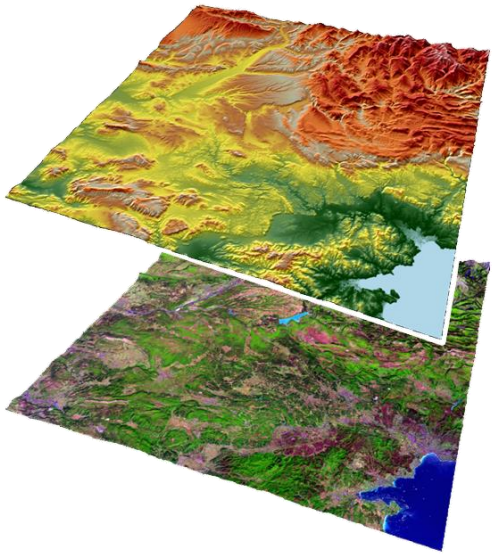
Thank you for your attention !



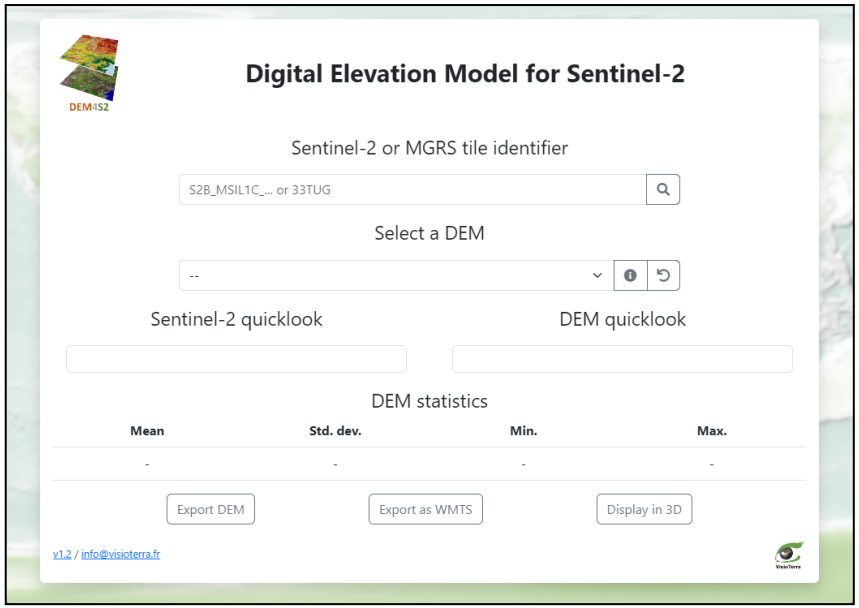
DEM4S2

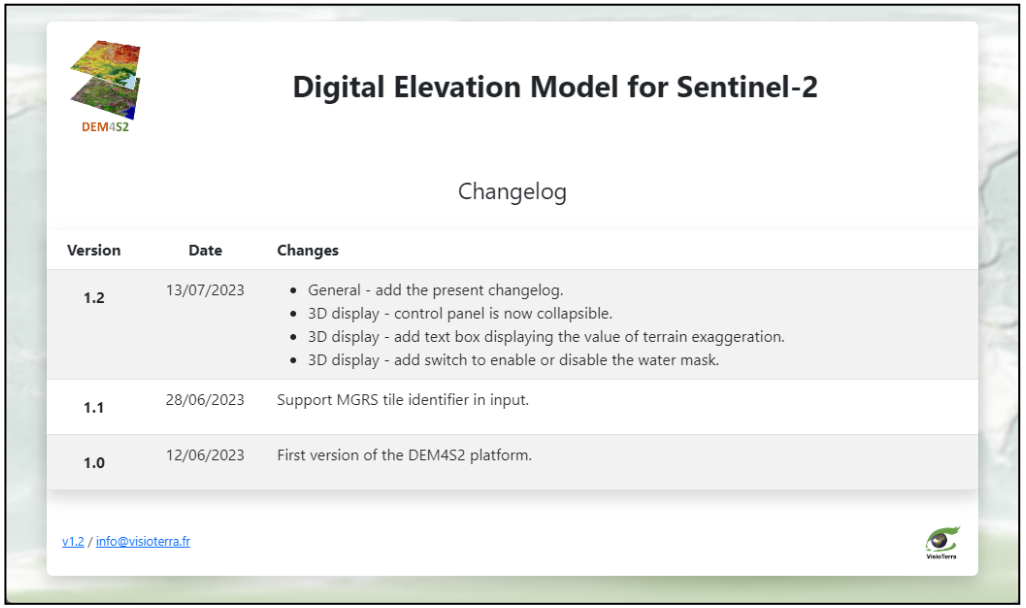
Production of DEM used to orthorectify a Sentinel-2 tile

General presentation



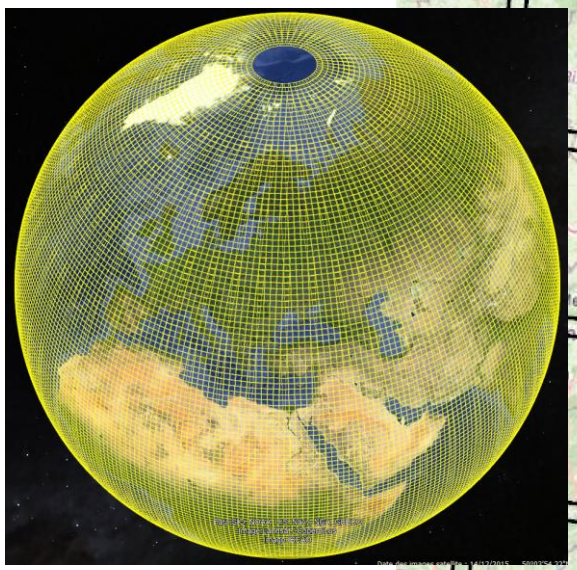
- Digital Elevation Model for Sentinel-2
  - Open - **https://visioterra.org/DEM4S2/**
  - Current version – v1.2 (changelog)
  - Works with Sentinel-2 or MGRS tile identifier
  - Allows to display and download 3 DEMs
    - Copernicus DEM GLO-30 (latest version – currently v2022_1)
    - Copernicus DEM GLO-90 (latest version – currently v2022_1)
    - NASADEM (v001)

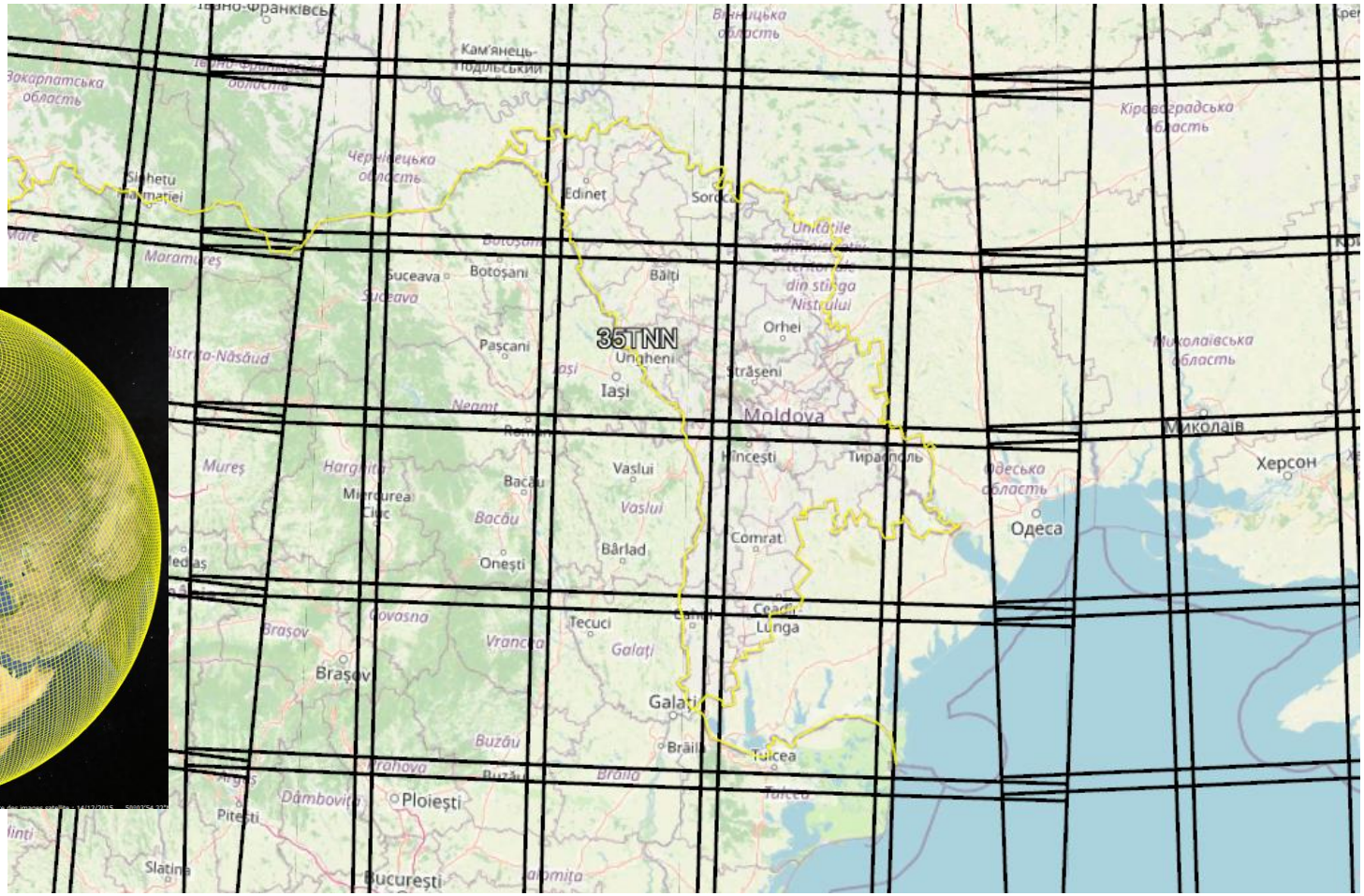




Sentinel-2 MGRS (Military Grid Reference System)

- KML file available at
  https://sentinel.esa.int/documents/247904/1955685/S2A_OPER_GIP_TILPAR_MPC__20151209T095117_V20150622T000000_21000101T000000_B00.kml/ec05e22c-a2bc-4a13-9e84-02d5257b09a8

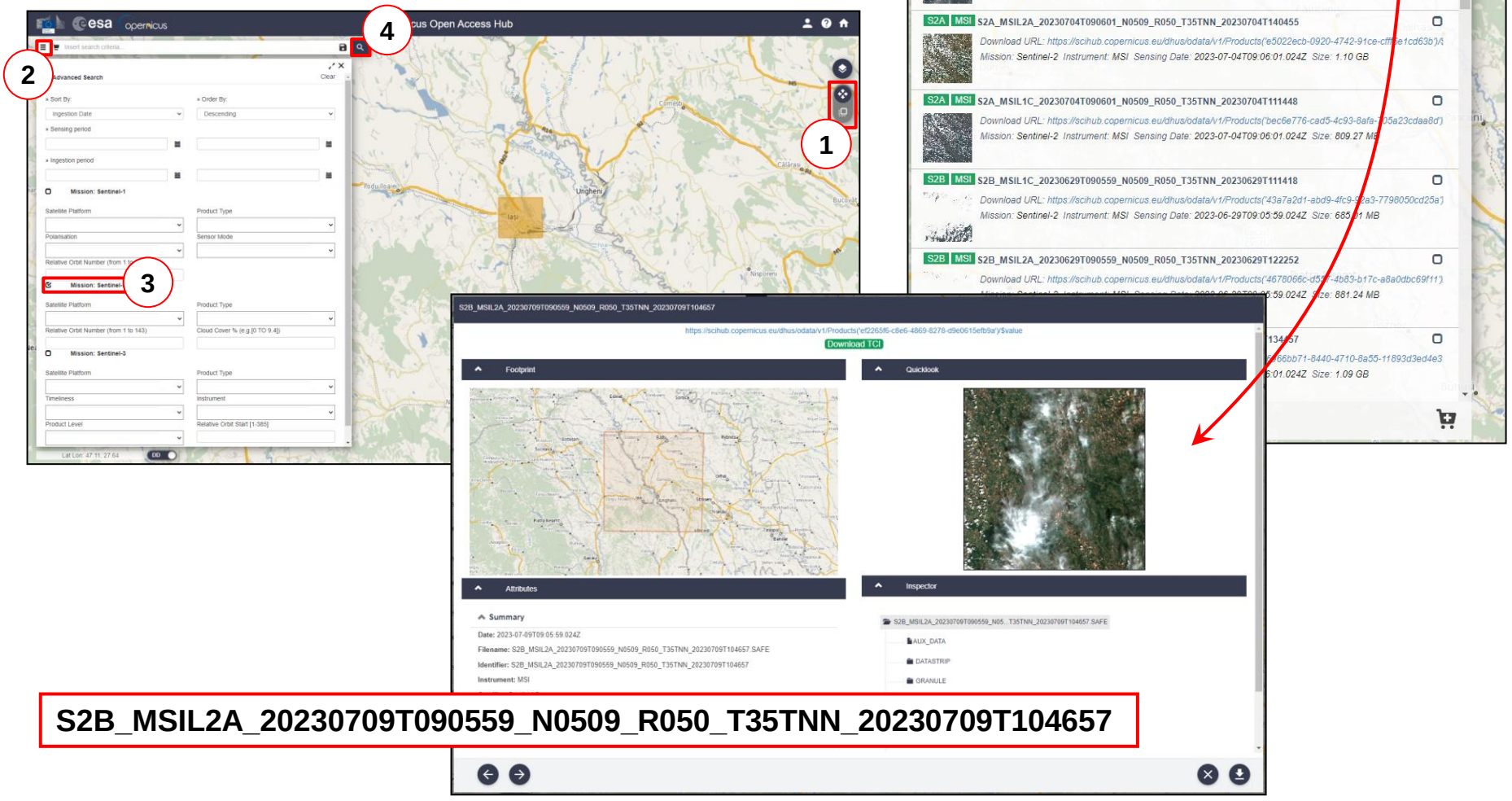




Sentinel-2 product identifier

- Search Sentinel-2 product

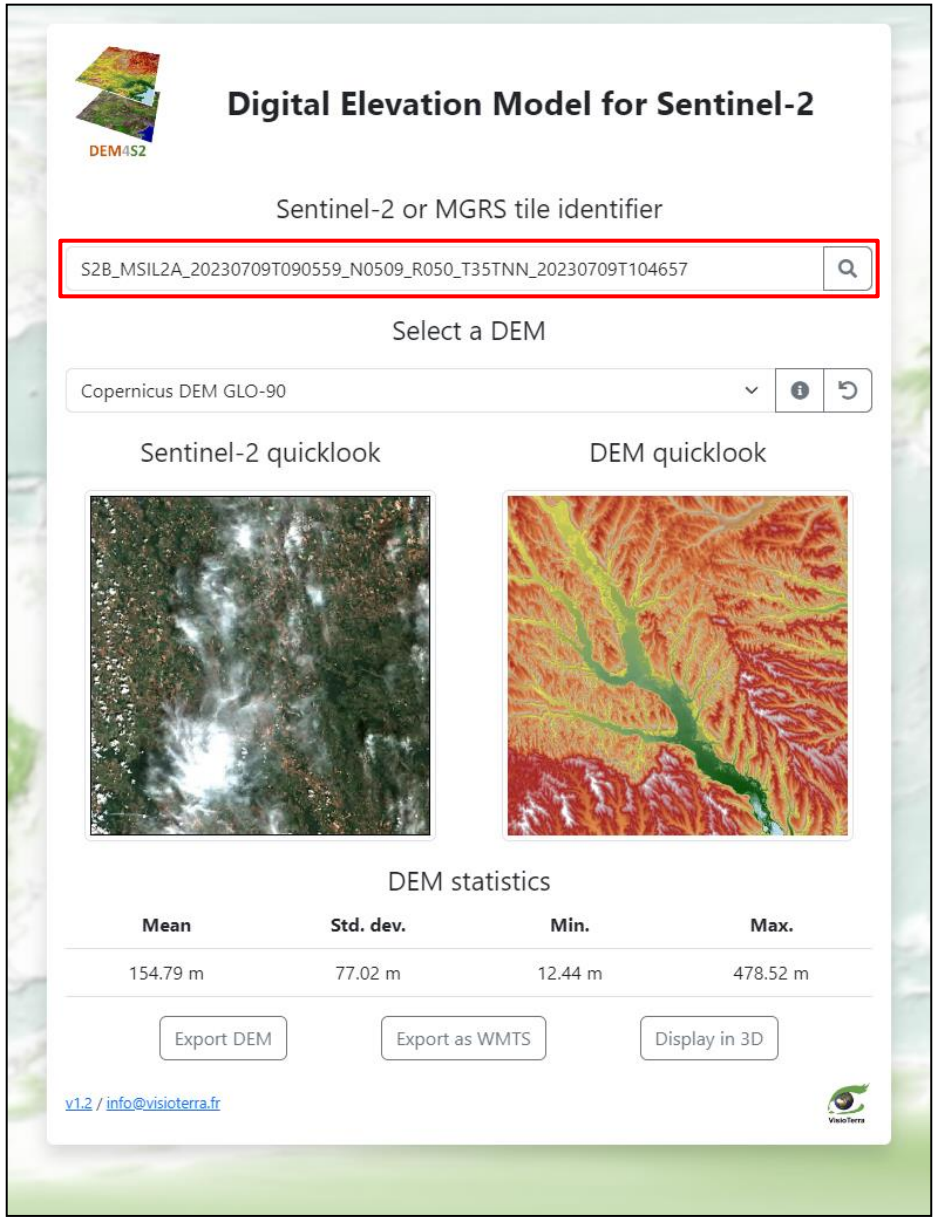
  [Open Access Hub]



S2B_MSIL2A_20230709T090559_N0509_R050_T35TNN_20230709T104657

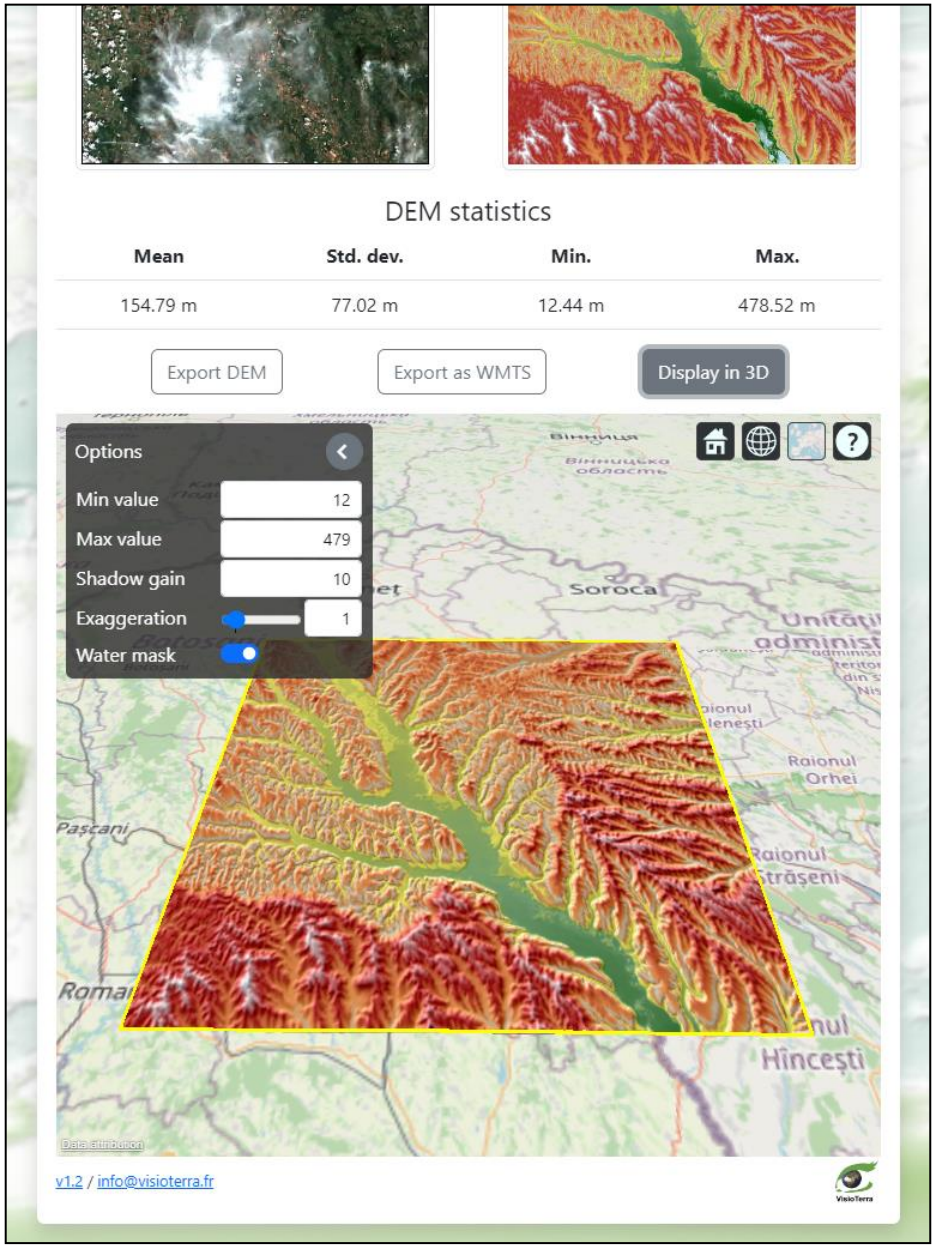
GeoTIFF export / WMTS export

- Set identifier in DEM4S2 (https://visioterra.org/DEM4S2/?s2Id=S2B_MSIL2A_20230709T090559_N0509_R050_T35TNN_20230709T104657)
- Validate with
  - Default is retrieved from the processing baseline
  - Quicklook is loaded
  - Basic statistics are computed
- Export DEM
  - Download the DEM with the same CRS/GSD than the S2
- Export as WMTS
  - Create a WMTS stream compatible with GIS like QGIS
- Display in 3D
  - Display in a 3D globe directly in the web page



Display in 3D

- Min value
  - Define the minimum value to be rendered, lower value will be saturated
- Max value
  - Define the maximum value to be rendered, greater value will be saturated
- Shadow gain
  - Define the gain applies to the shadowing, greater gain strengthen the shadowing
- Exaggeration
  - Define the vertical exaggeration of the 3D elevation, between 0 and 10
- Water mask
  - Enable or disable the water mask (based on Copernicus DEM GLO-30)



Merci de votre attention

Thank you for your attention

Questions ?

Serge RIAZANOFF Director serge.riazanoff@visioterra.fr

www.visioterra.fr