

# Processing of Sentinel Data



Attila Varga  
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# Using Sentinel Data

Sentinel 1 (1A, 1B)



SAR

Sentinel 1 (1A, 1B)



Optical (MSI)

Free access of Sentinel data: Copernicus Open Access Hub (<http://scihub.copernicus.eu>)



Insert search criteria...

Display 1 to 25 of 1647 products. Order By: Ingestion Date 1 product selected

Request Done: ( footprint:"Intersects(POLYGON((18.264524328831943 47.25673767582529,18.266755246668616 47.077006137386746,18.58075693218017

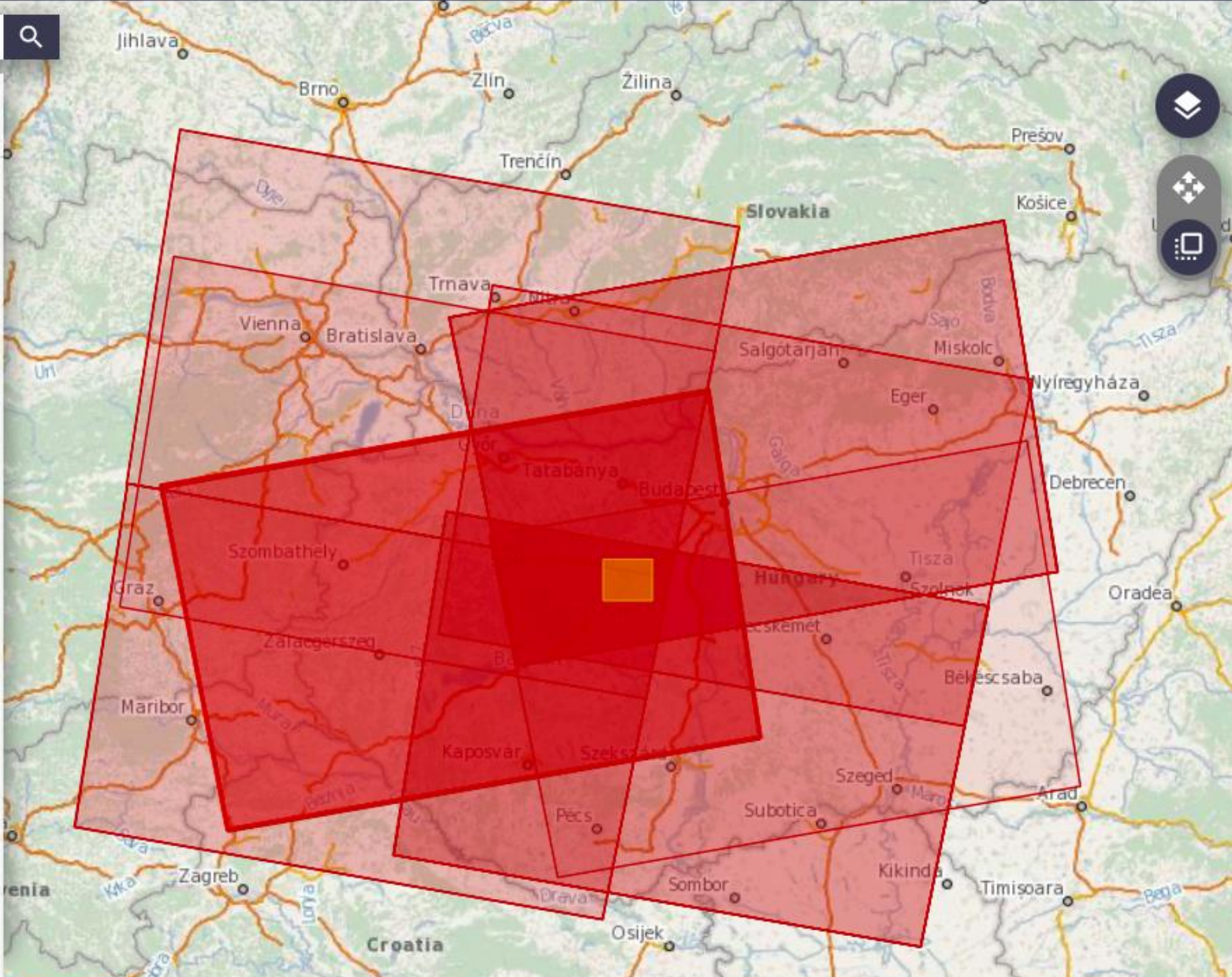
S1A SAR-C S1A\_IW\_GRDH\_1SDV\_20220206T164241\_20220206T164306\_0417... Download URL: https://scihub.copernicus.eu/dhus/odata/v1/Products('f8d203f...

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S1A SAR-C S1A\_IW\_GRDH\_1SDV\_20220129T050229\_20220129T050254\_0416... Download URL: https://scihub.copernicus.eu/dhus/odata/v1/Products('a4ed9b...



Map navigation controls: Layer, Full Screen, Home, Search icons



# Processing and Analysis Sentinel Data



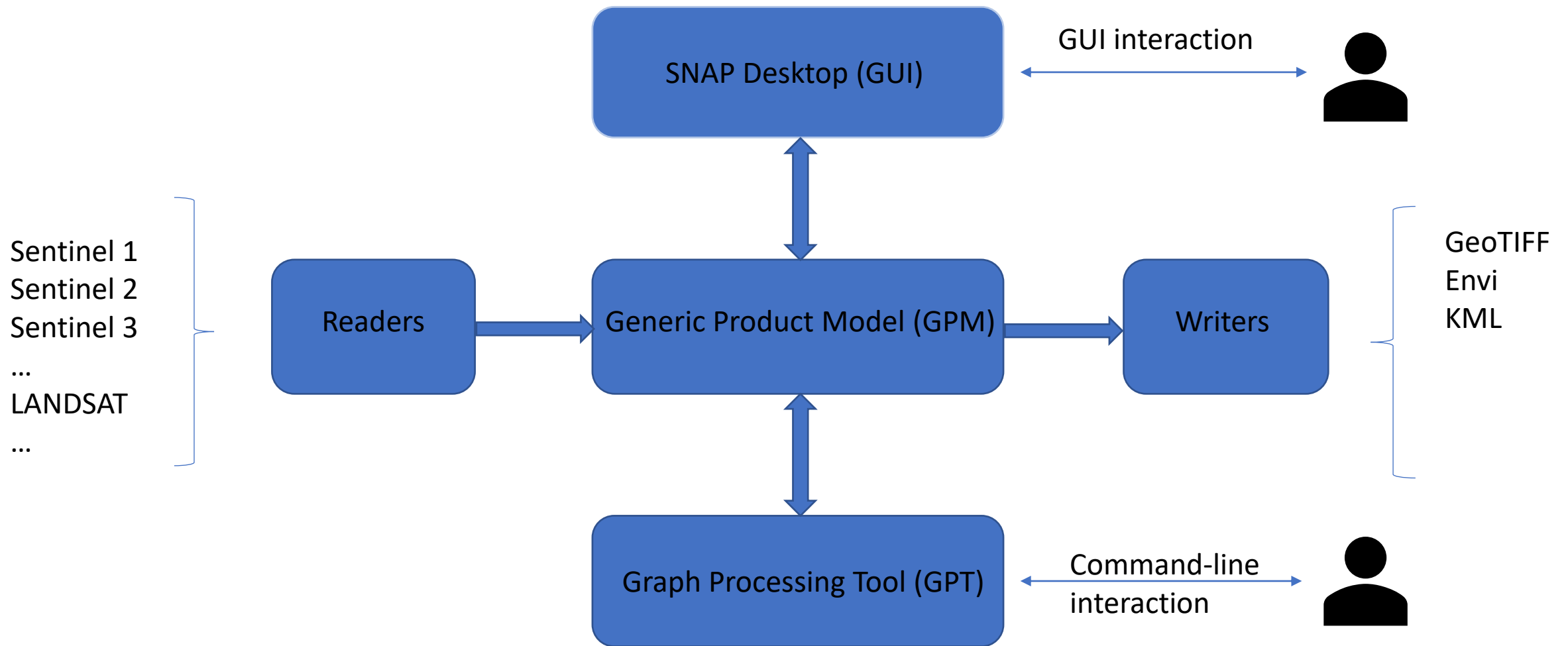
Common platform and tools for processing: SNAP (Sentinel Application Platform)

- Fully open-source
- Use of various EO data (not only Sentinel data)
- GUI and command-line
- Java and Python implementation

Main functions and tools:

- Raster and vector data tools (for data manipulation)
- Visualisation (masking, colour management, filtering)
- Data analysis (functions for radar and optical data)
- Data processing (reprojection, mosaicking, geometry correction, segmentation)

# SNAP Data Flow





File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help

Product Explorer x Pixel Info Projects

- [1] S2A\_MSIL2A\_20220129T094241\_N0400
- Metadata
- Index Codings
- Vector Data
- Tie-Point Grids
- Bands
  - sun
  - view
  - quality
  - detector\_footprint
  - snow\_and\_ice\_areas
  - opaque\_clouds
  - cirrus\_clouds
  - qualit\_mask
  - B1 (443 nm)
  - B2 (490 nm)
  - B3 (560 nm)
  - B4 (665 nm)
  - B5 (705 nm)
  - B6 (740 nm)
  - B7 (783 nm)
  - B8 (842 nm)
  - B8A (865 nm)
  - B9 (945 nm)

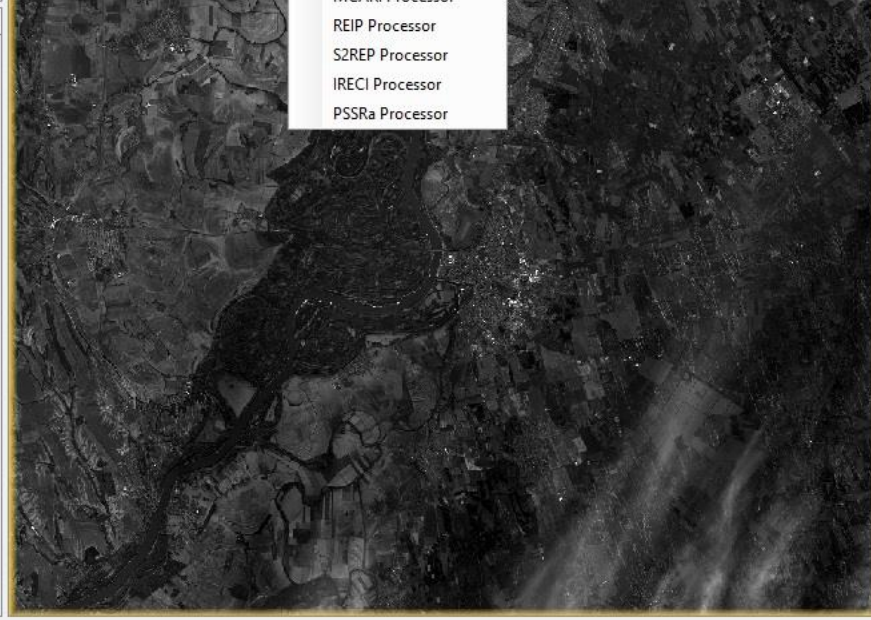
Spectrum View

- Spectral Unmixing
- Geometric
- Preprocessing
- Thematic Land Processing**
  - Biophysical Processor (LAI, fAPAR...)
  - Soil Radiometric Indices
  - Vegetation Radiometric Indices**
    - SAVI Processor
    - NDVI Processor
    - TSAVI Processor
    - MSAVI Processor
    - MSAVI2 Processor
    - DVI Processor
    - RVI Processor
    - PVI Processor
    - IPVI Processor
    - WDVI Processor
    - TNDVI Processor
    - GNDVI Processor
    - GEMI Processor
    - ARVI Processor
    - NDI45 Processor
    - MTCI Processor
    - MCARI Processor
    - REIP Processor
    - S2REP Processor
    - IRECI Processor
    - PSSRa Processor
  - Water Radiometric Indices
  - MERIS/(A)ATSR SMAC Atmospheric Correction
  - Forest Cover Change Processor
- Thematic Water Processing

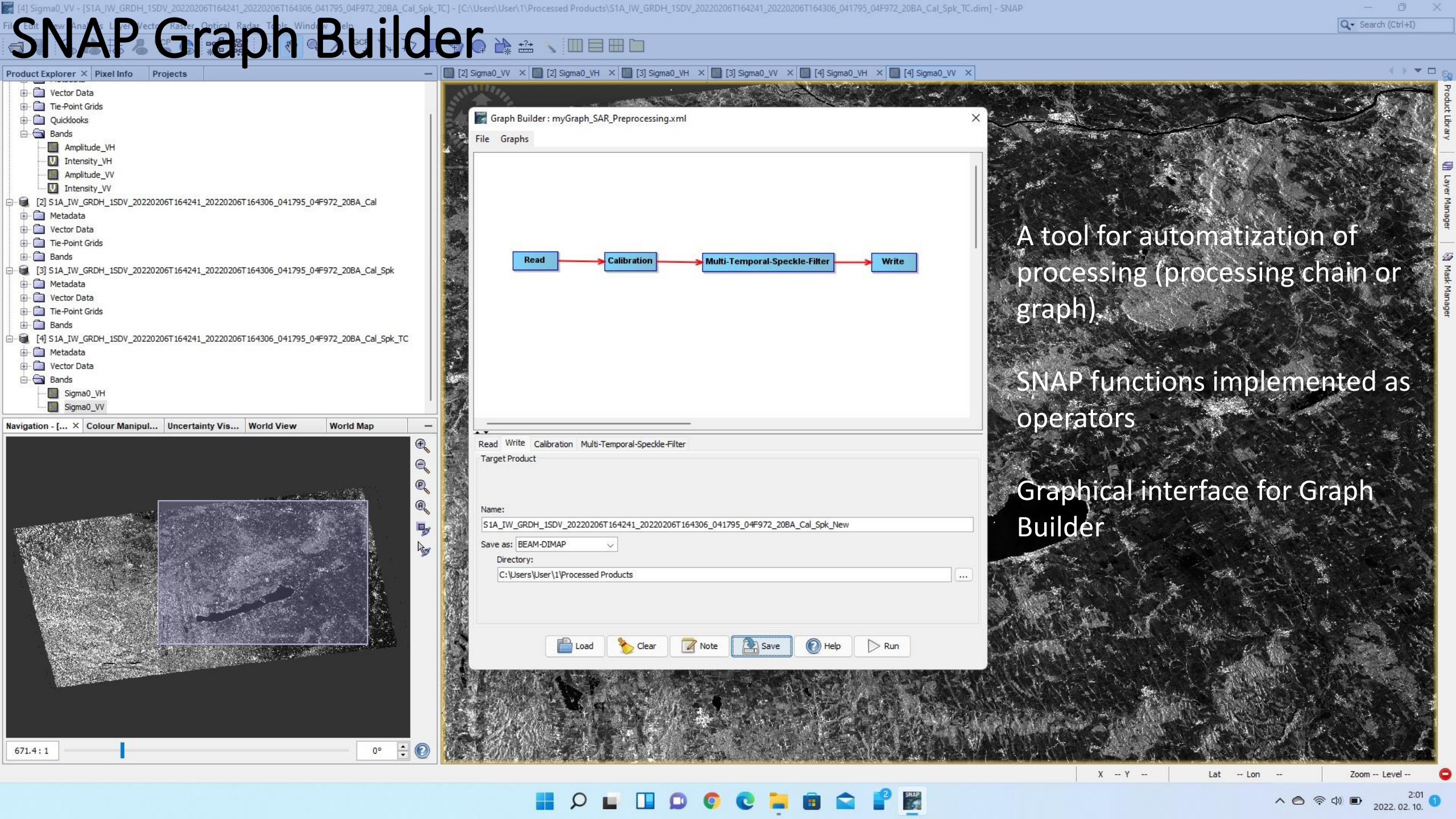
[1] B2 x [1] Sentinel 2 MSI Natural Colors RGB x

Navigation - [1] B2 x Colour Manipulatio... Uncertainty Visuali... World View World Map

1:62.61 0°







# SNAP Graph Builder

A tool for automatization of processing (processing chain or graph)

SNAP functions implemented as operators

Graphical interface for Graph Builder