EnMAP-Box 3

Bridging Imaging Spectroscopy and GIS with Free and Open Source Software

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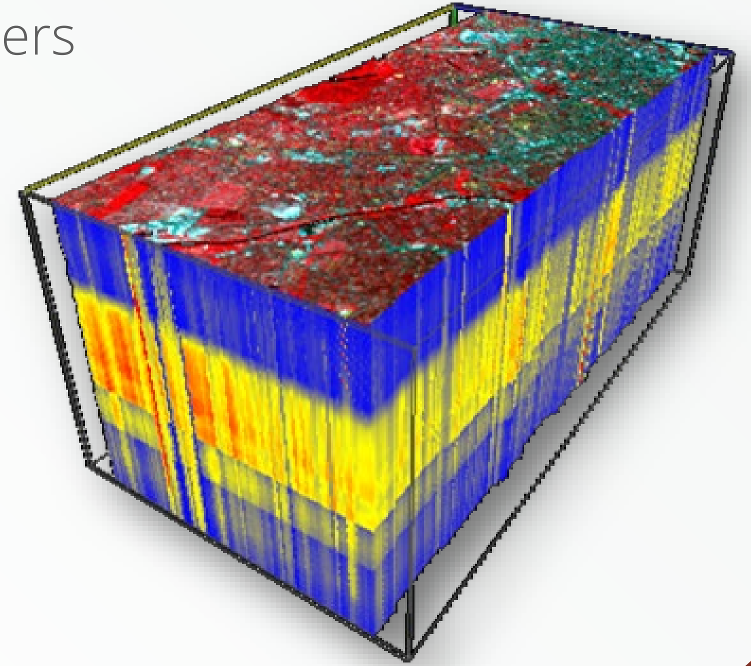
Wissen lockt. Seit 1456

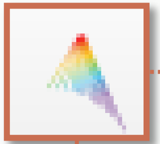
EnMAP-Box – Motivation and Aims

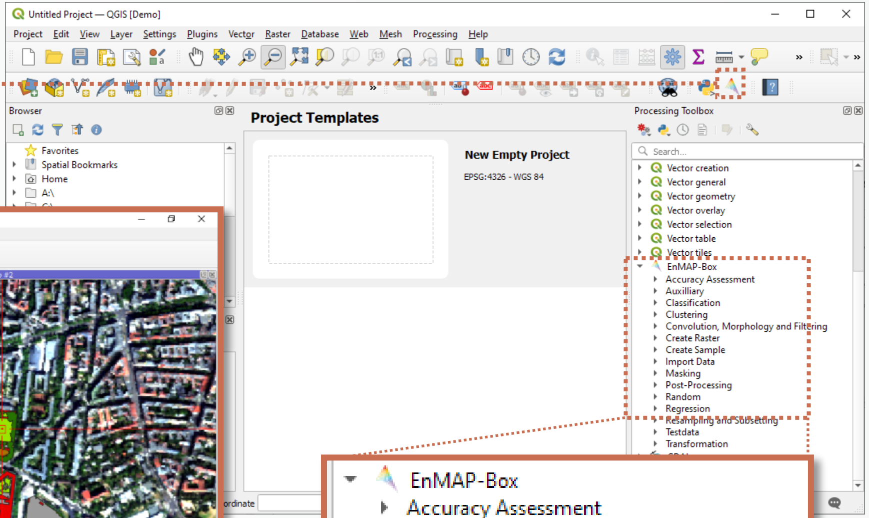
- Offer a free and open source environment for visualizing and analyzing EnMAP data
- Increase the number of EnMAP data users
- Integrate full GIS functionality with advanced image/spectral processing
- Suite of application-oriented advanced Workflows (Vegetation, Geology)
- Foster the availability and exchange of state-of-the-art approaches for the analysis of imaging spectroscopy data and spectral libraries

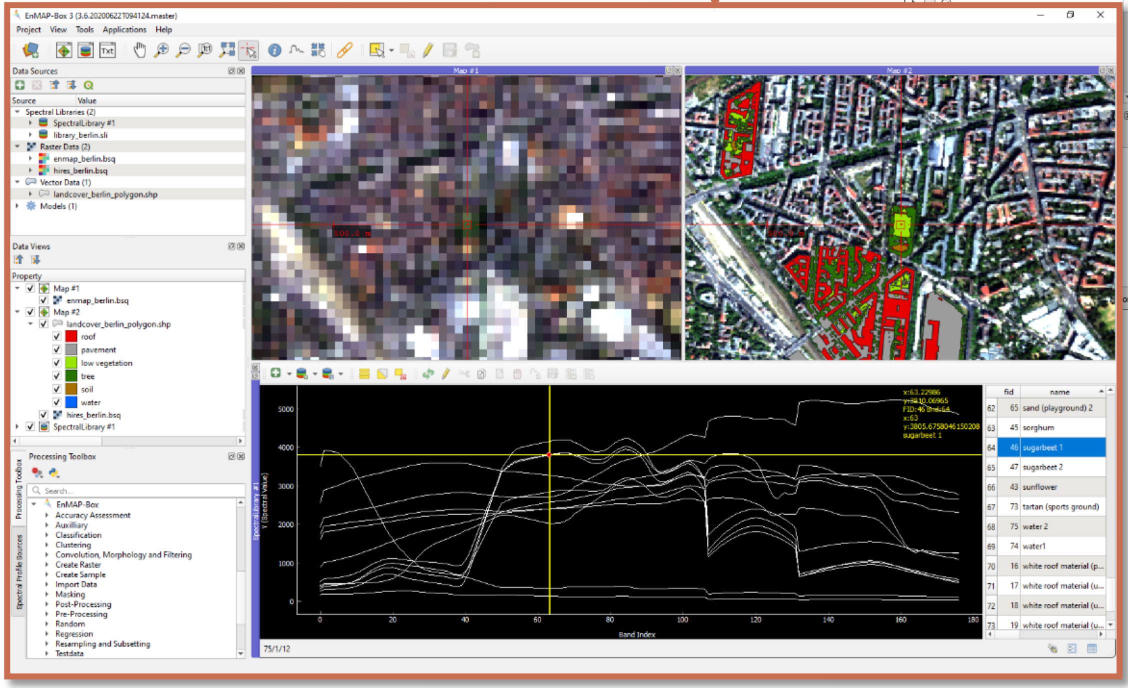


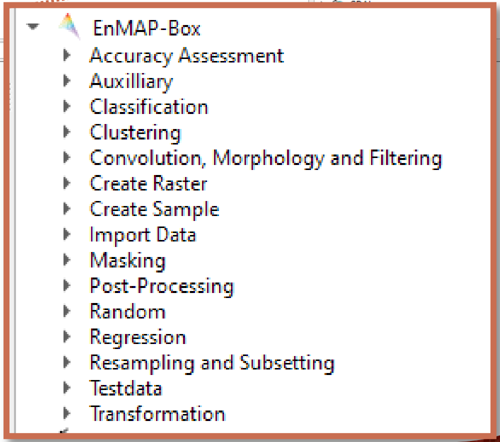
EnMAP-Box – Imaging Spectroscopy for QGIS

❖ EnMAP-Box GUI and Algorithm Provider

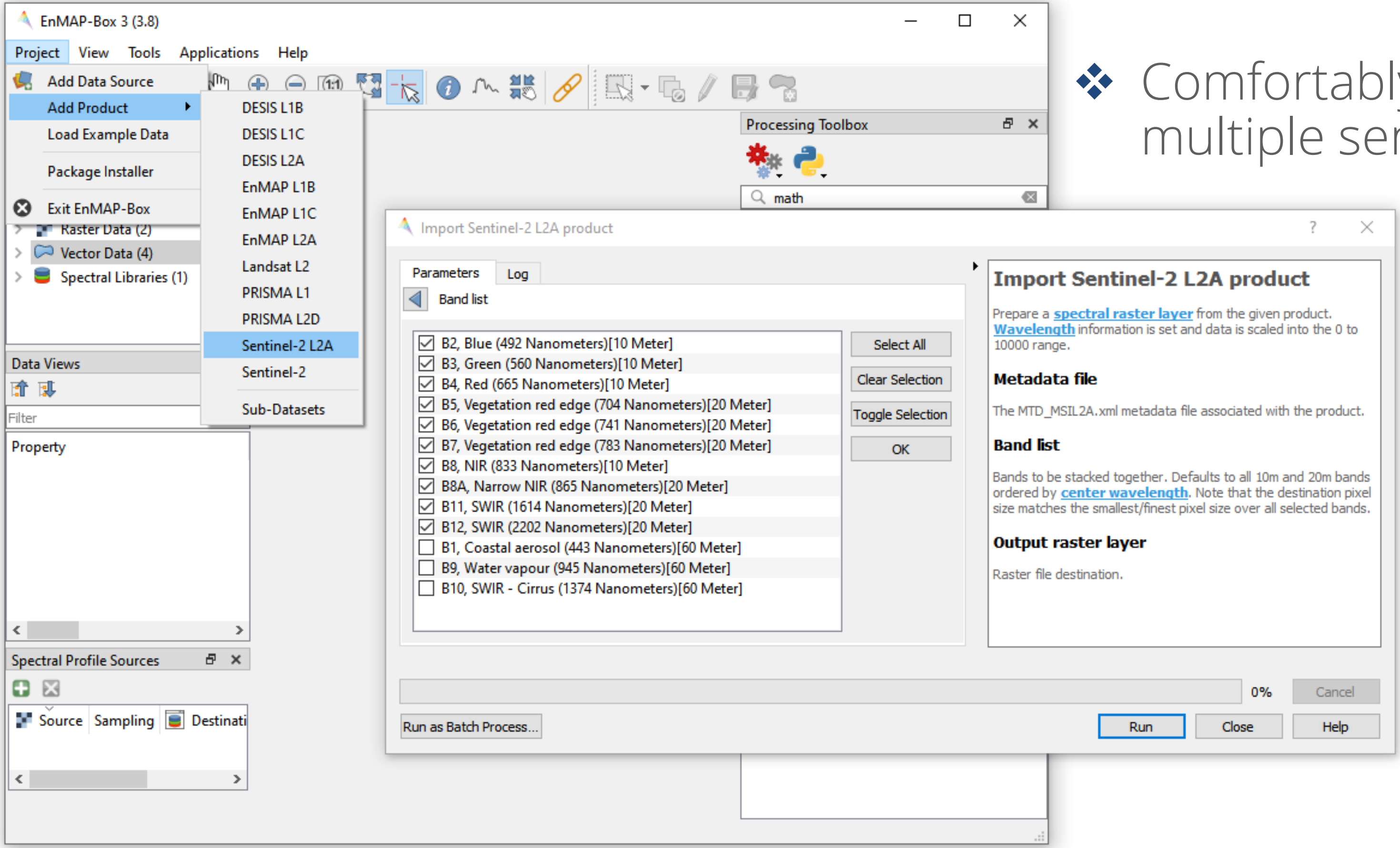








EnMAP-Box – Create Sensor Synergies



- Comfortably import multiple sensors

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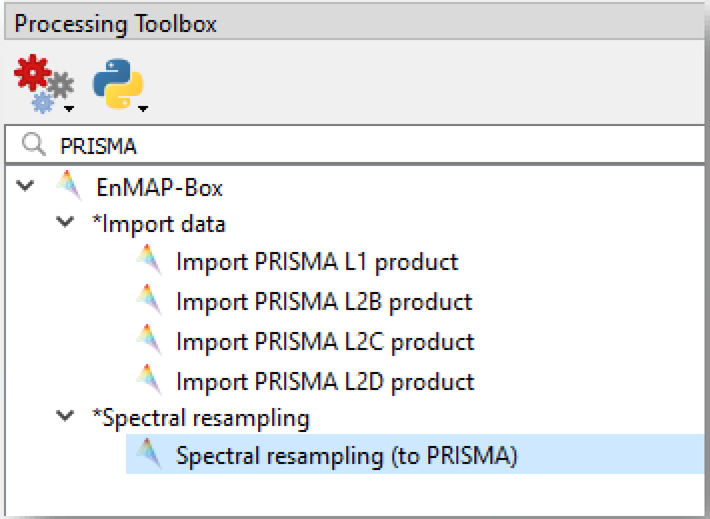
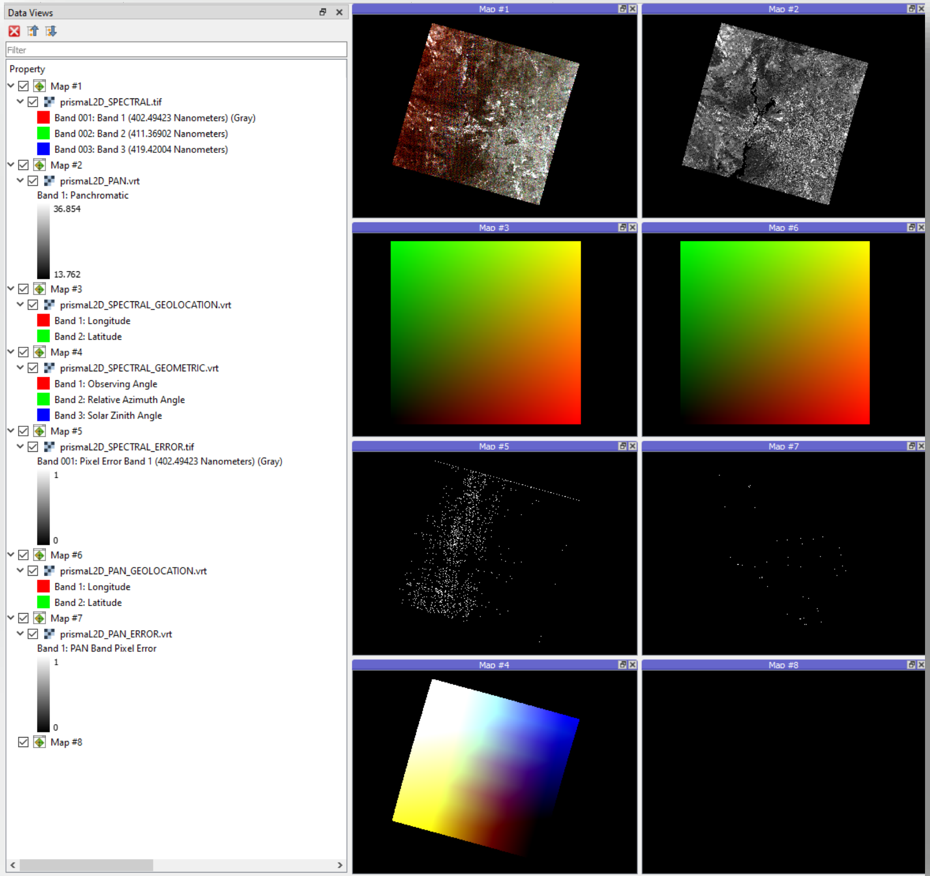
EnMAP-Box – Create Sensor Synergies





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EnMAP-Box – Classification Statistics

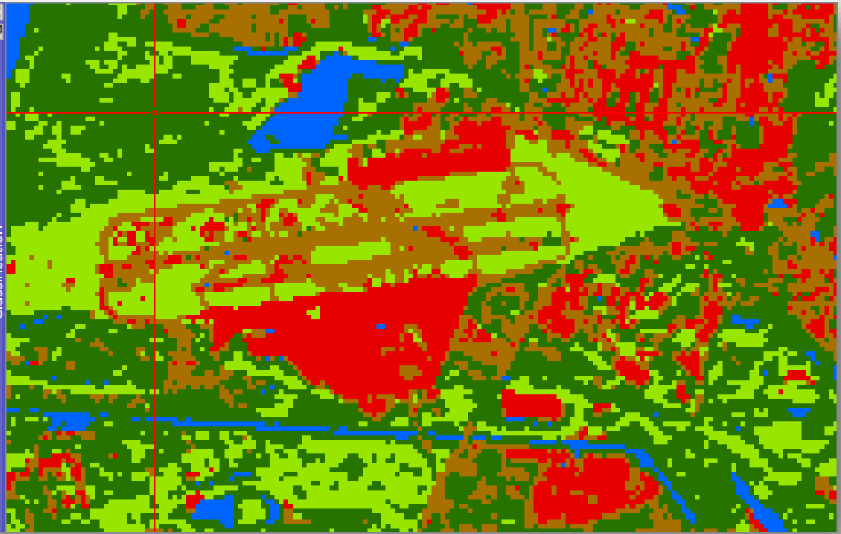
- General tools with increased functionality

Classification Statistics

Classification layer: classification.tif

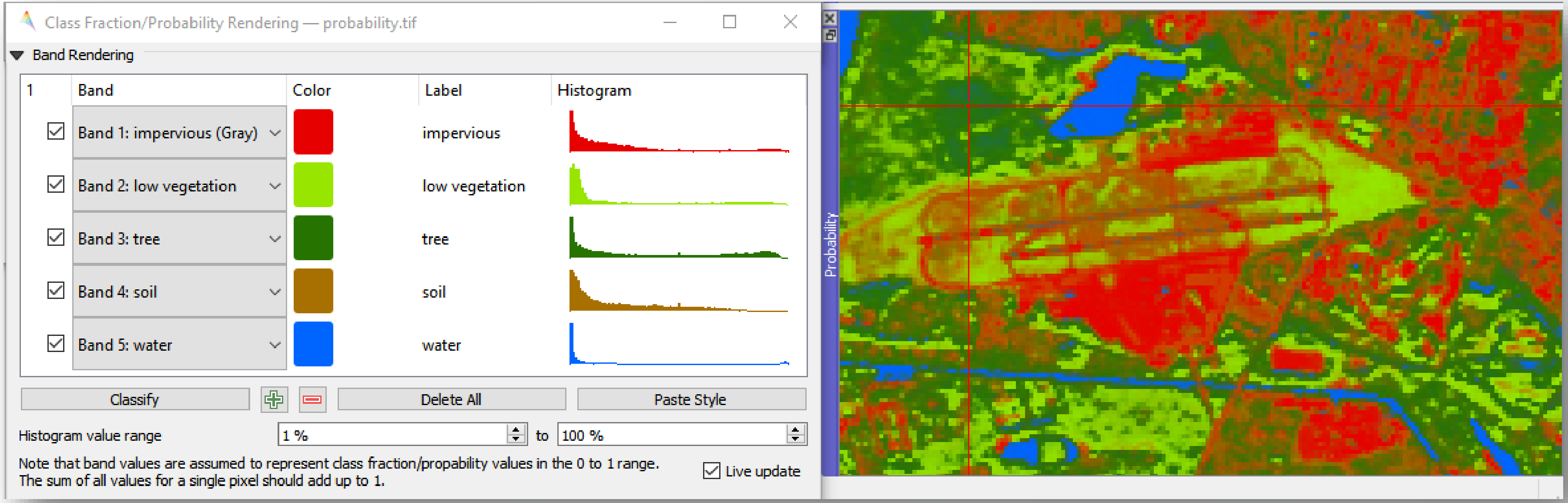
Value	Label	Histogram	Percentage	Pixel	Area
☑ 1	impervious		15.57	3238	291.42
☑ 2	low vegetation		21.16	4400	396.0
☑ 3	tree		38.32	7967	717.03
☑ 4	soil		21.3	4428	398.52
☑ 5	water		3.66	760	68.4

Classification



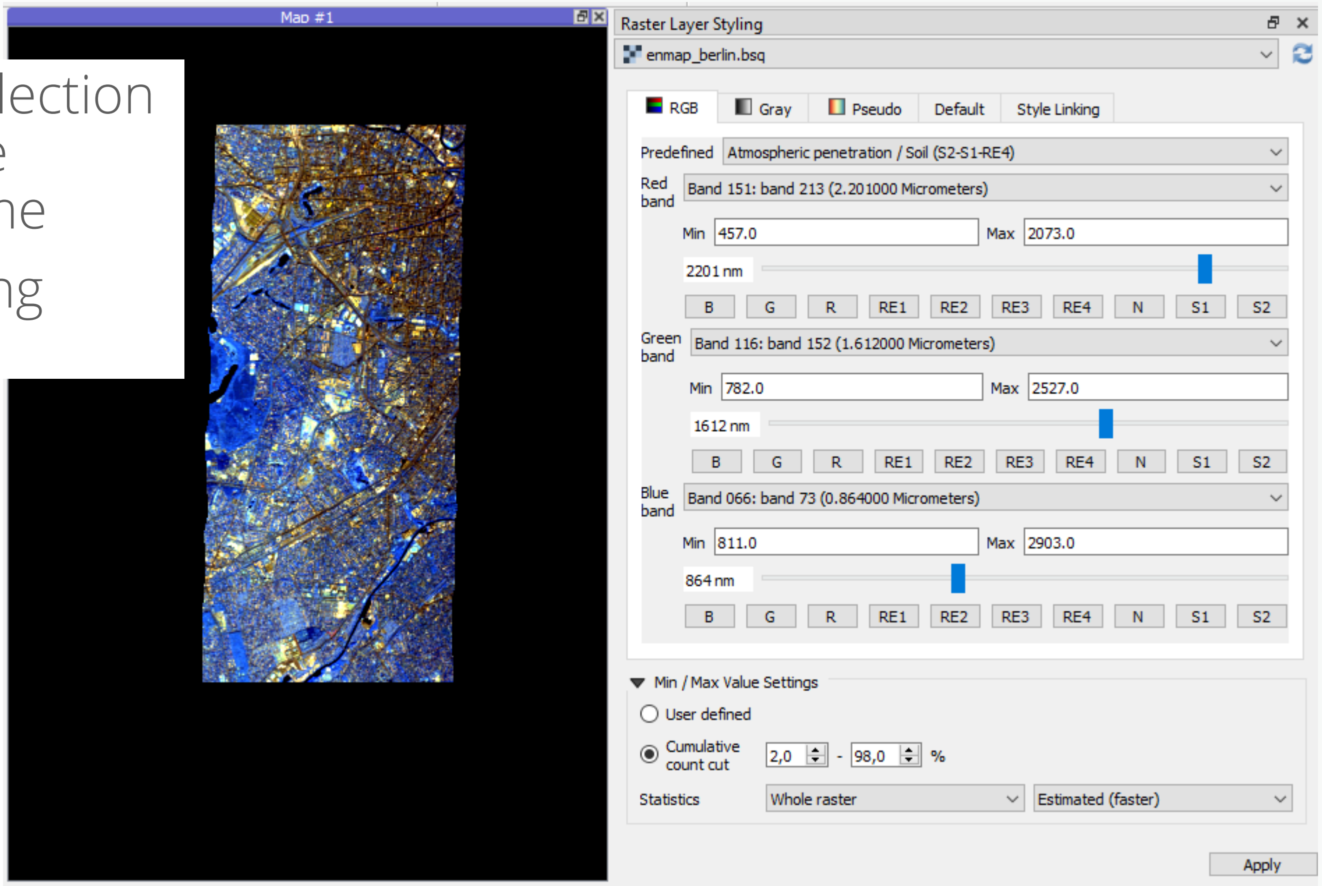
EnMAP-Box – Class Fractions/ Quant. Variables

- General tools optimized for quantitative results from EnMAP products



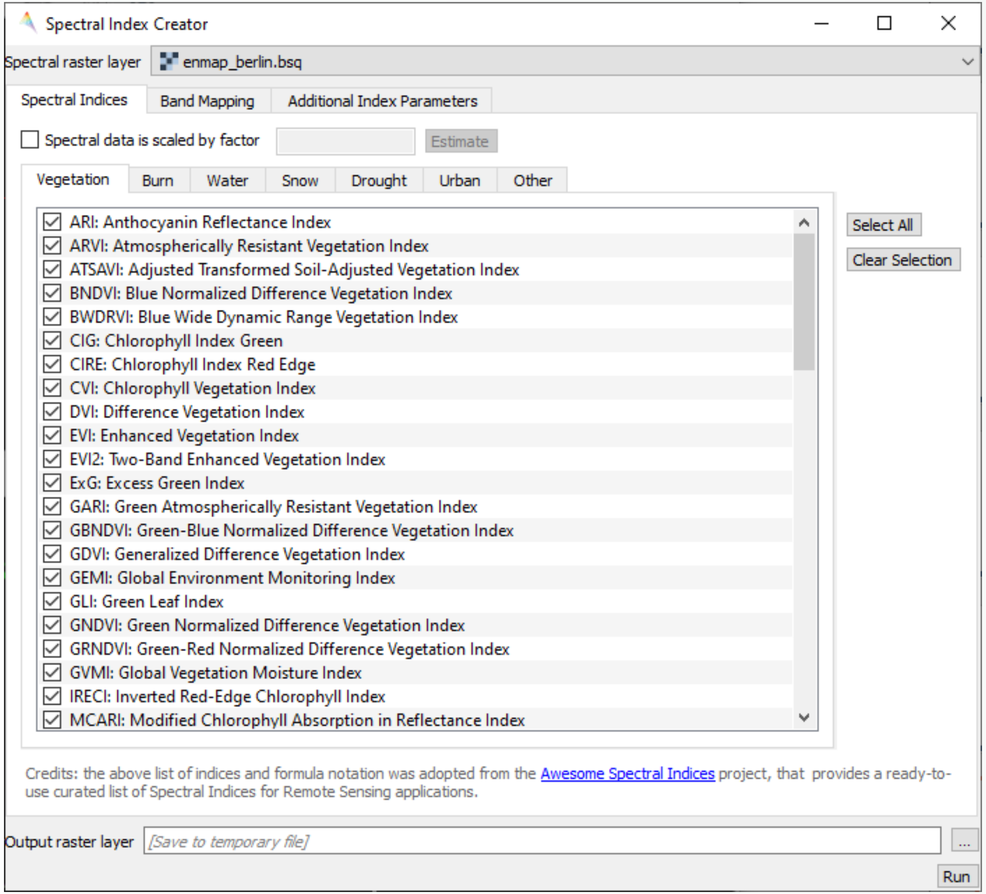
EnMAP-Box – Raster Layer Styling

- Easy band selection along favorite sensor scheme
- Spectral linking



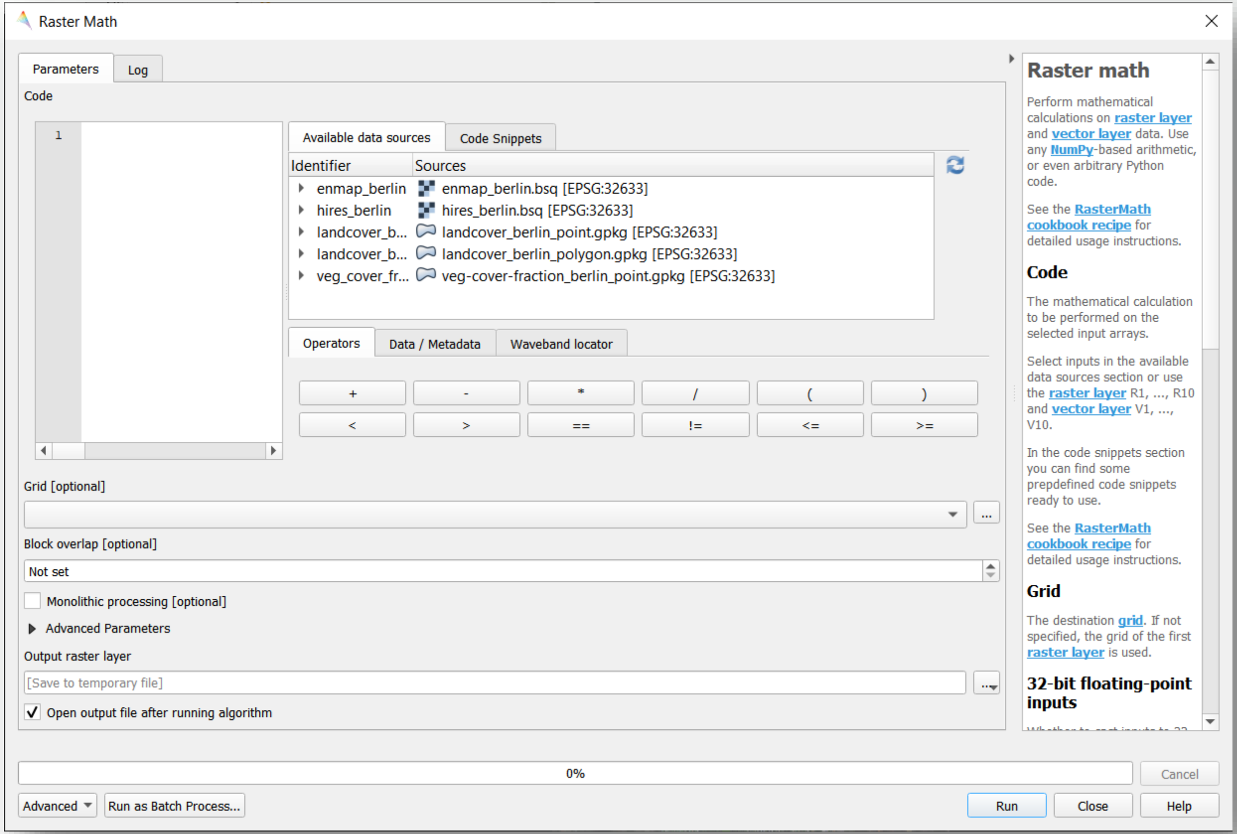
EnMAP-Box – Spectral Index Creator

- Extensive <u>index list</u> taken from *AwesomeSpectral Indices* project.

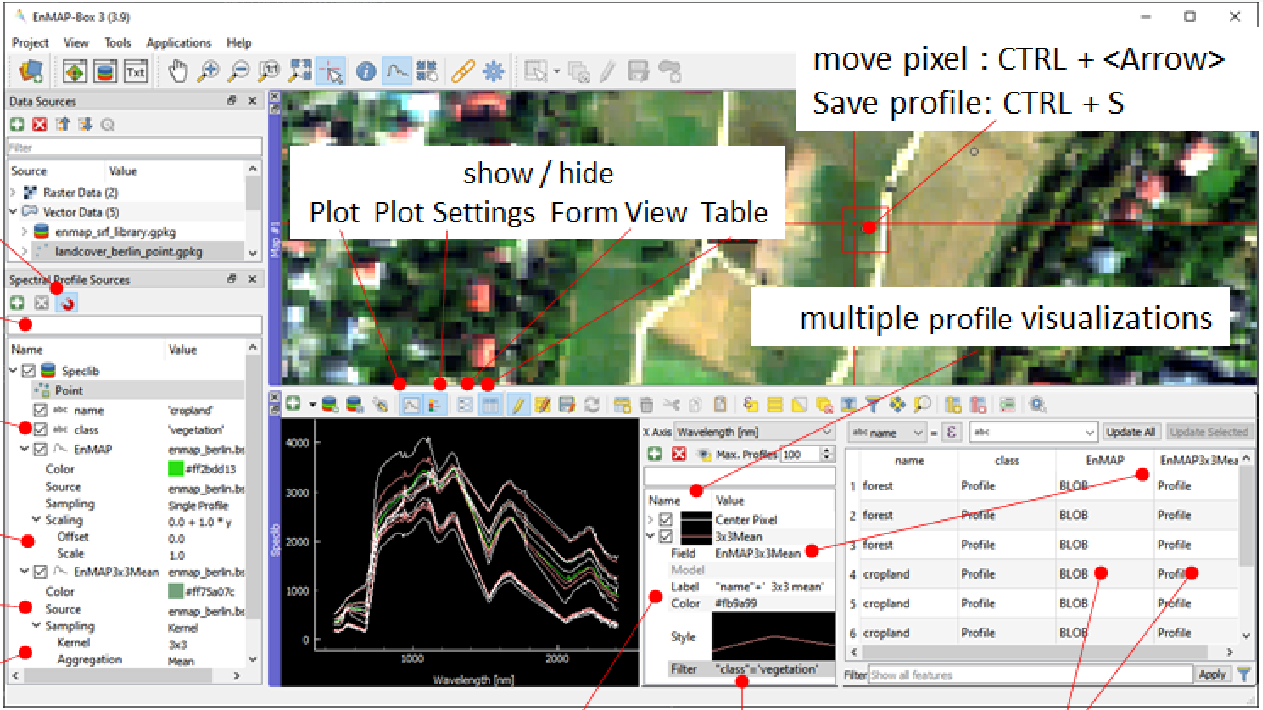


EnMAP-Box – Raster Math

- Easy numpy scripting with data IO fully handled



EnMAP-Box – Advanced Spectral Library Tools



Snap to pixel center

search settings

define values for each field

scale profiles

overlay color

sampling

Enhanced Profile Source Panel

Enhanced Plot Settings

Individual / generated labels and colors

filter profile by attributes

multiple profile fields

GEE Time Series Explorer

Presentation on
GEE Time Series Explorer
by Andreas Janz
Thursday, 26th, 2:00 pm
Santiago de Chile

EnMAP-Box – Programming Interface

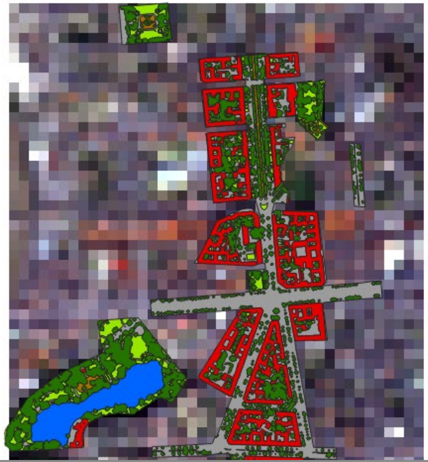
Clip a raster with a vector

Clip a raster with the extent from a vector.

```
import enmapboxtestdata
from hubdc.core import *

rasterDataset = openRasterDataset(filename=enmapboxtestdata.enmap)
vectorDataset = openVectorDataset(filename=enmapboxtestdata.landcover_polygons)
grid = rasterDataset.grid().clip(extent=vectorDataset.extent())
clipped = rasterDataset.translate(grid=grid, filename='raster.tif', driver=GTiffDriver())
```

Note that the result raster grid is snapped to the original raster grid to prevent subpixel shifts. Because of this, some vector geometries may slightly lap over the grid borders.



EnMAP-Box – Conclusions

- Free and open-source EO toolbox with extensive GIS functionality
- Good solution for processing imaging spectroscopy data from EnMAP, PRISMA or other imaging spectrometers
- GUI-based functionality for many advanced imaging spectroscopy applications
- New approach for working with spectral libraries
- Good solution also for the work with multi-spectral data
- Good example how FOSS plugins for QGIS offer excellent possibilities for EO data analysis

Contact

- For detailed information, installation, application tutorials have a look at https://enmap-box.readthedocs.io/en/latest/

- Or write us: enmapbox@enmap.org