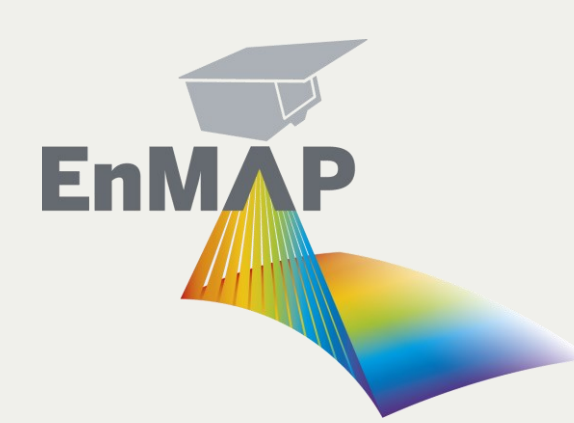


The EnMAP-Box

Advanced visualization and analysis of EnMAP data and beyond

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Objectives

- Ease visualization & analysis of imaging spectroscopy data and spectral libraries
- Support wide range of multi- and hyperspectral datasets and other geodata formats (raster/vector)
- Provide access to state-of-the-art algorithms
- Multi-platform support (Windows, Linux, macOS)

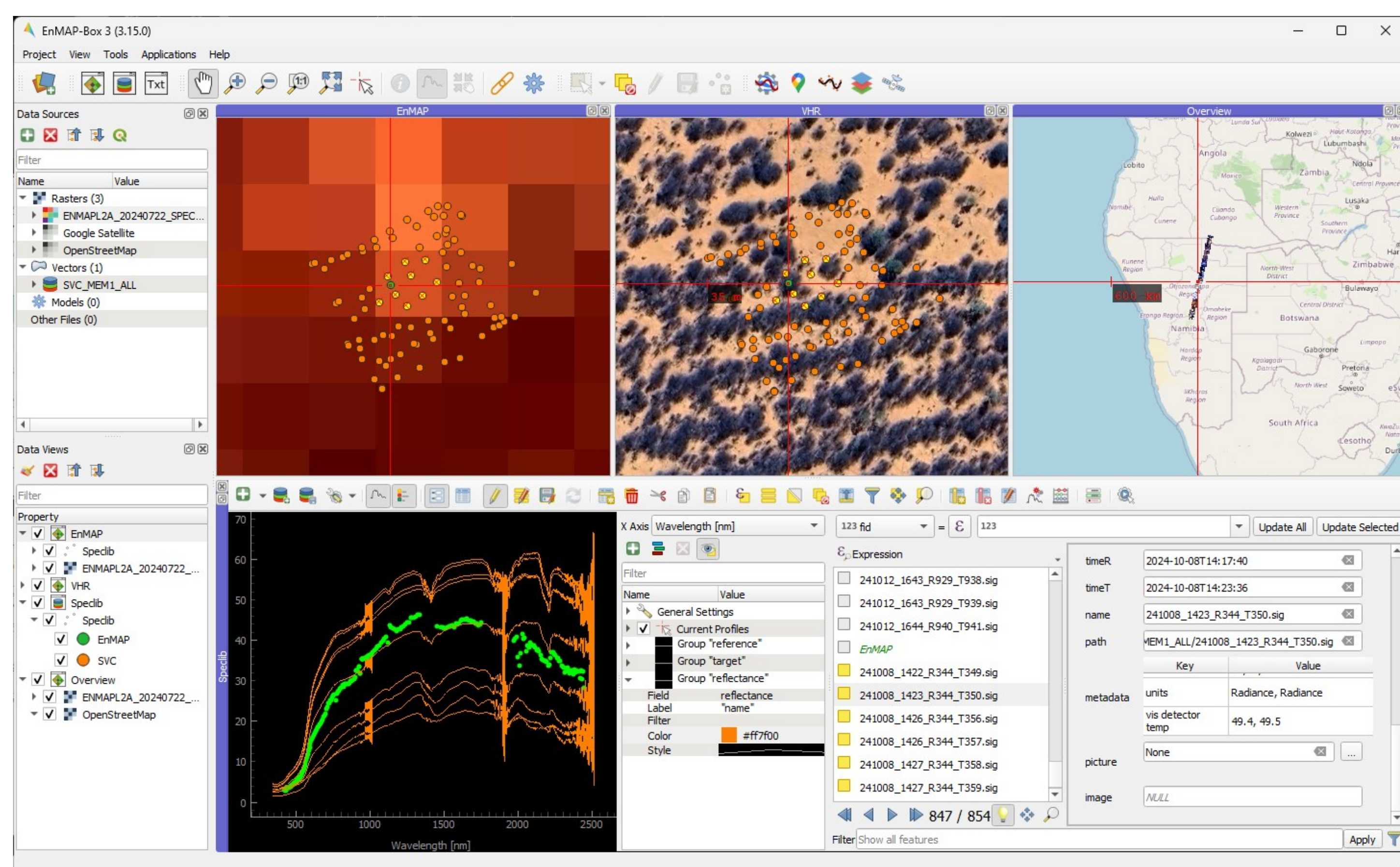


Fig 1. EnMAP-Box GUI, showing (top row) an EnMAP + VHR image + the OpenStreetMap. The Spectral Profile viewer (bottom) visualizes the profiles measured in field (SVC HR-1024i) and their attributes. Profile locations are shown on top of the EnMAP and VHR rasters.

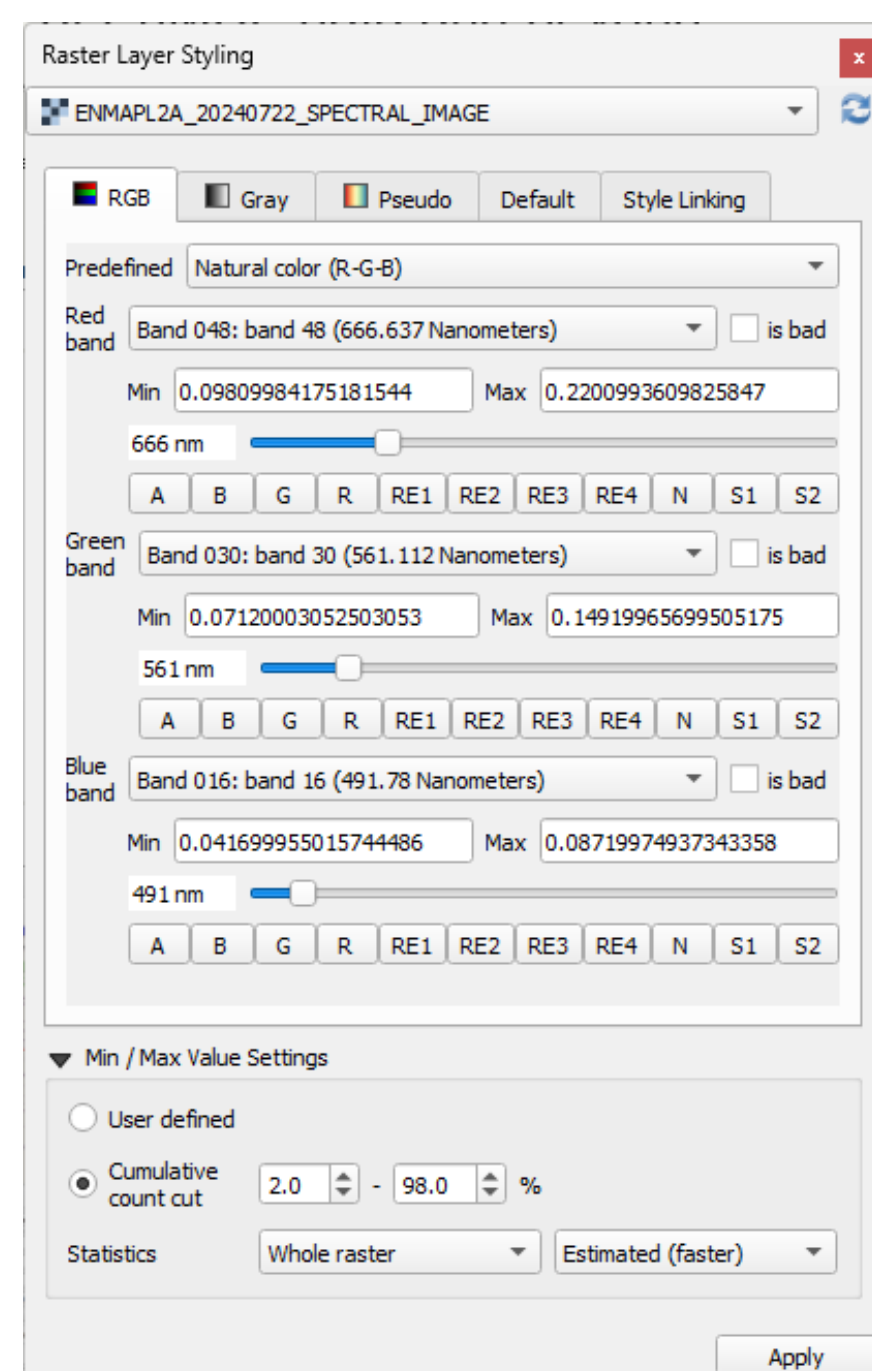


Fig 2. Panel for quick selection of bands or band combinations.

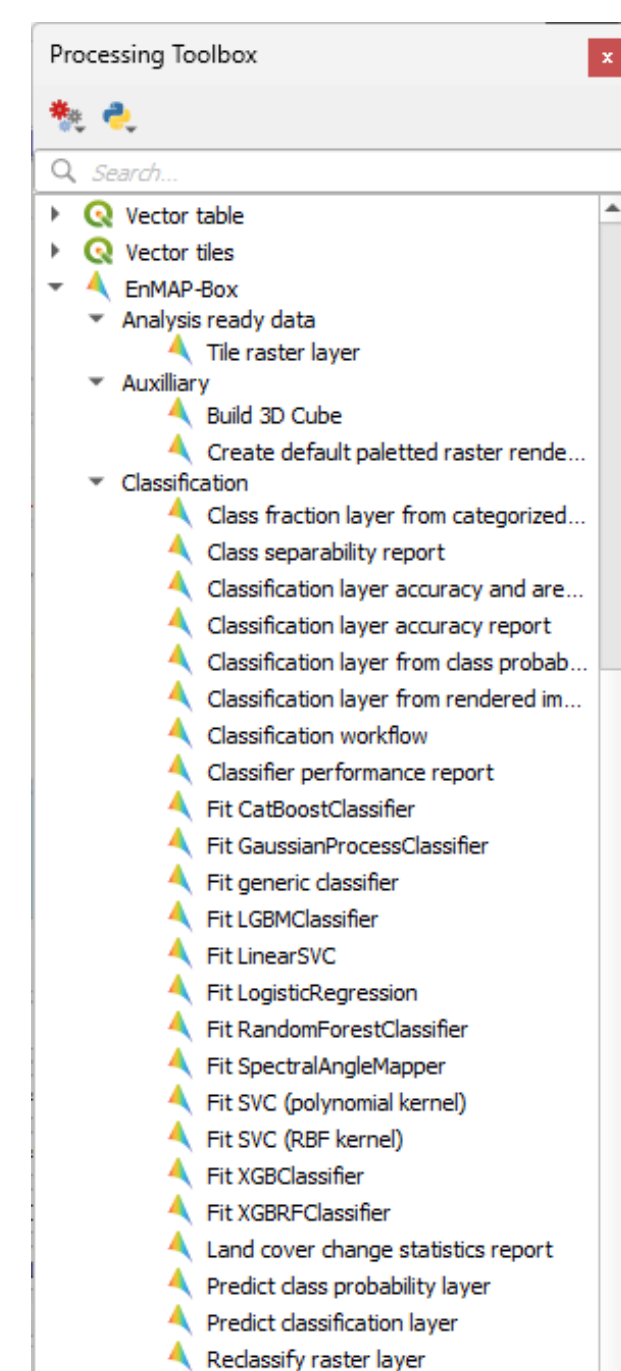


Fig 3. QGIS Processing Toolbox with EnMAP-Box algorithms.

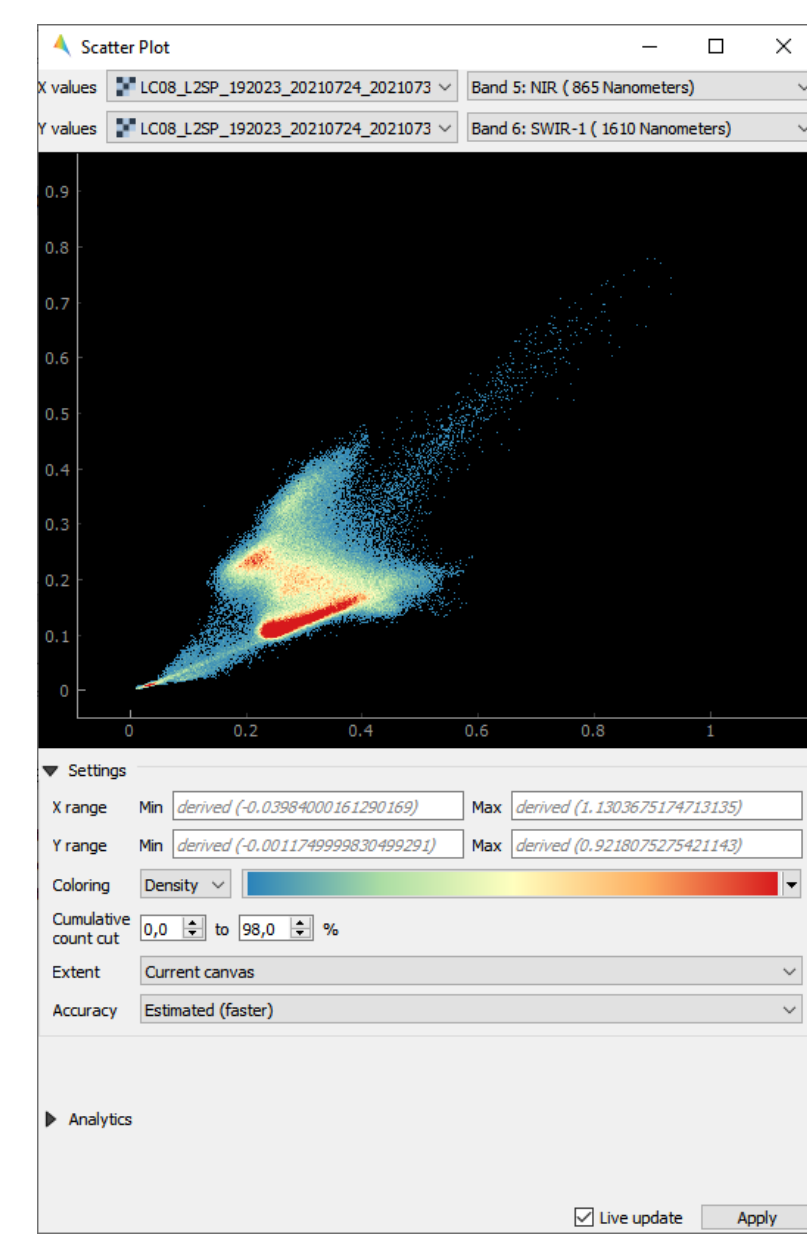


Fig 4. Interactive scatter plot, showing the density of NIR vs. SWIR values for the current map canvas extent.

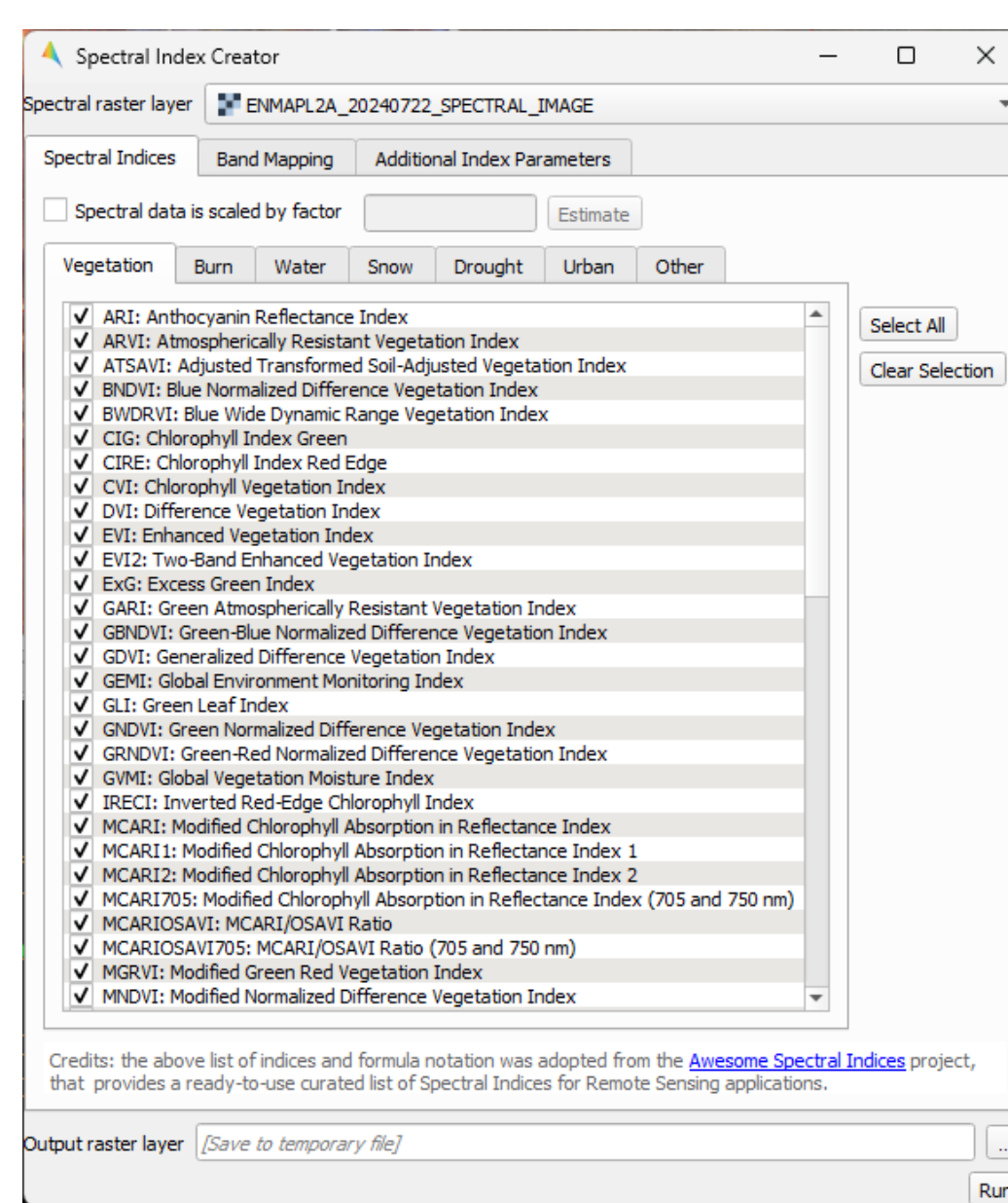


Fig 5. Spectral Index Creator with automatic selection of required bands.

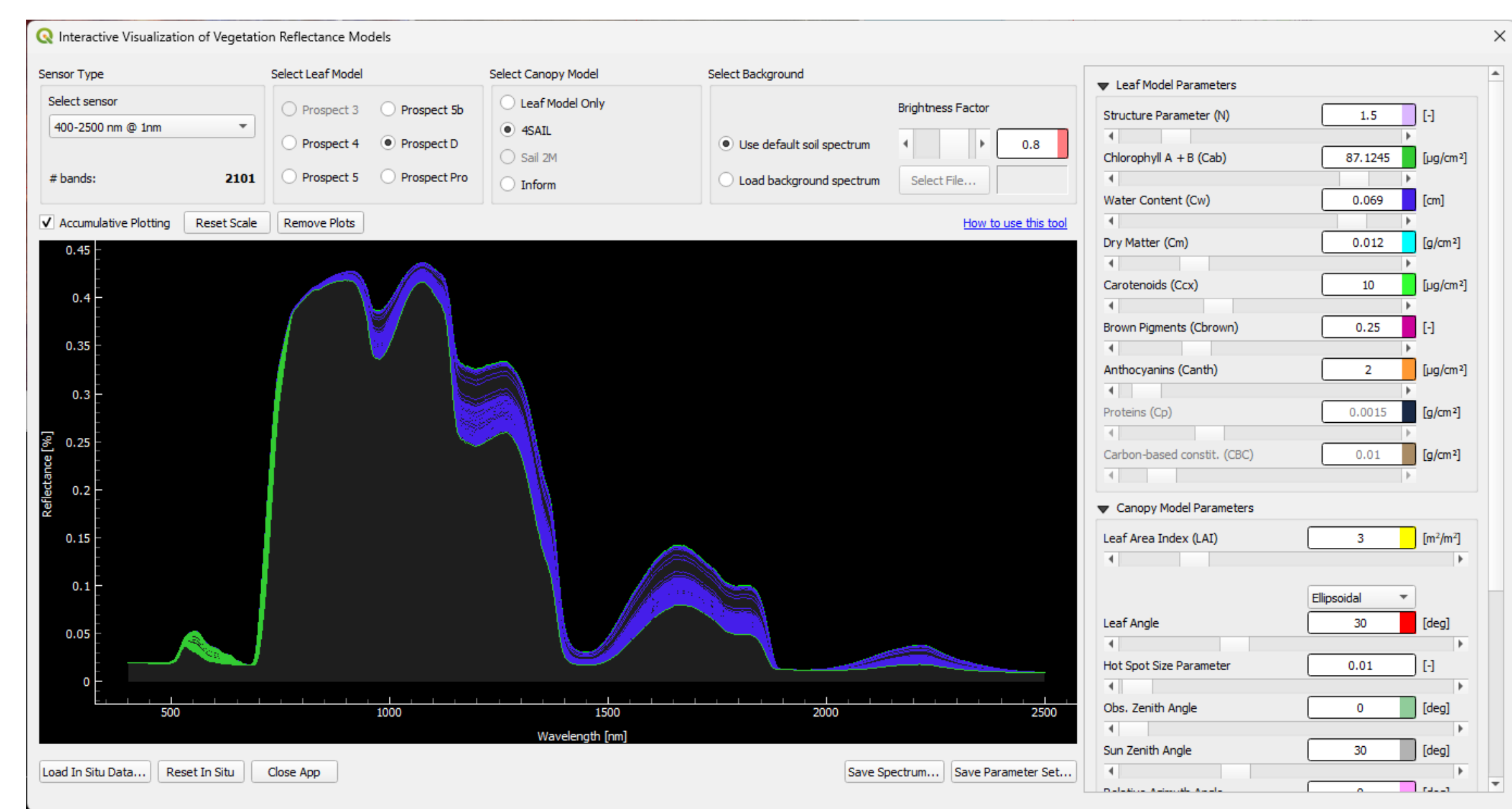
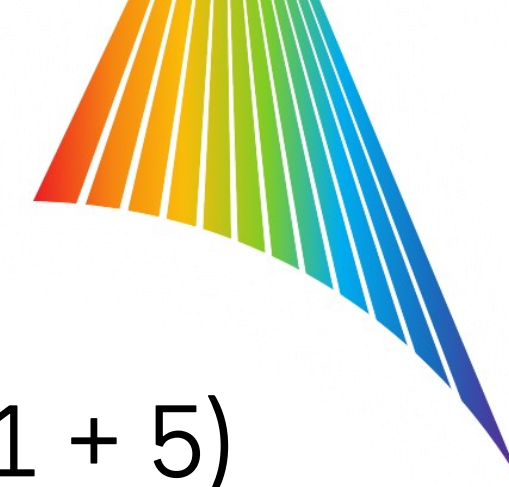


Fig 6. Interactive Visualization of Vegetation Reflectance Models (IVVRM).

Features

EnMAP-Box



- QGIS python plugin
- Joint visualization of raster-, vector- and spectral library data (Fig. 1 + 5)
- Quick selection of band combinations (Fig. 2)
- Specialized raster renderers, e.g., for bi-variate colors, class-fractions, decorrelation stretches, ...
- 150+ algorithms to QGIS Processing Framework (Fig. 3) callable from GUI, Python and command line
- Spectral libraries + attributes in standard vector sources imports profiles from ASD, SVC and Spectral Evolution spectrometers

Applications

Provide research/domain-specific features, e.g.:

- EnMAP Preprocessing Tools (EnPT)
- Spectral Index Creator (Fig. 5)
- Interactive Visualization of Vegetation Reflectance Models (IVVRM, Fig. 6)
- EnMAP Hybrid Retrieval Workflow (Poster ID 121)
- EnMAP Geological Mapper (EnGeoMap) and EnMAP Soil Mapper (EnSoMap)
- GEE Time Series Viewer
- Interactive Sankey Plots for classification time series

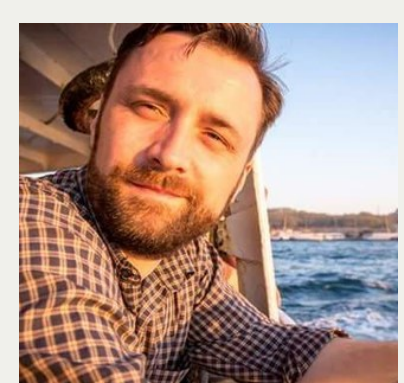
Outlook

- SpecDeepMap – fully supervised training for deep learning architectures (Unet, Unet ++ or DeepLabV3+, Thomas 2024)
- Preprocessing & Analysis of EnMAP time series
- 3D visualization of spectral-temporal/spatial surfaces
- HPC processing of EnMAP-Box algorithms using SLURM

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- Chabrillat et al. 2024. The EnMAP spaceborne imaging spectroscopy mission: Initial scientific results two years after launch. Remote Sensing of Environment 114379.
- Docs: <https://enmap-box.readthedocs.io>
- Code: [git@github.com:EnMAP-Box/enmap-box.git](https://github.com:EnMAP-Box/enmap-box.git)
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