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# Raster Data Plotting

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**This documentation is structured as follows:**



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## Raster Data Plotting

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**Raster Data Plotting is a QGIS plugin for creating plots visualizing raster data for all pixels currently visible inside the map canvas.**

The **Raster Data Plotting** plugin adds a panel for creating plots (e.g. 2-d scatter/density plot) visualizing all visible pixel for selected raster layers and bands. The plot data is adapting in real-time, whenever the map canvas extent changes.

### 1.1 Getting started

**Installation:** In QGIS select **QGIS > Plugins > Manage and Install Plugins...**, search for *RasterDataPlotting* and install the plugin.



**Start:** In the toolbar click  to show the **Raster Data Plotting** panel.

**Create a Scatter Plot:** Select two raster bands (e.g. *Red* and *NIR* bands of a *Landsat 8* image).

**Interactive plotting:** Zoom to the raster layer and navigate to specific locations of your choice. Notice how the plot is adopting to the map canvas content.

### 1.2 Scatter / Density Plot

The scatter plot is using Cartesian coordinates to display values for two raster bands. Data density is derived by 2-d histogram binning. The number of points falling onto the same bin are color-coded.

#### 1.2.1 Spectral region of interests

Create **spectral region of interests** (spectral ROI) inside the scatter plot to overlay/colorize pixels in the map canvas with the same spectral characteristics.

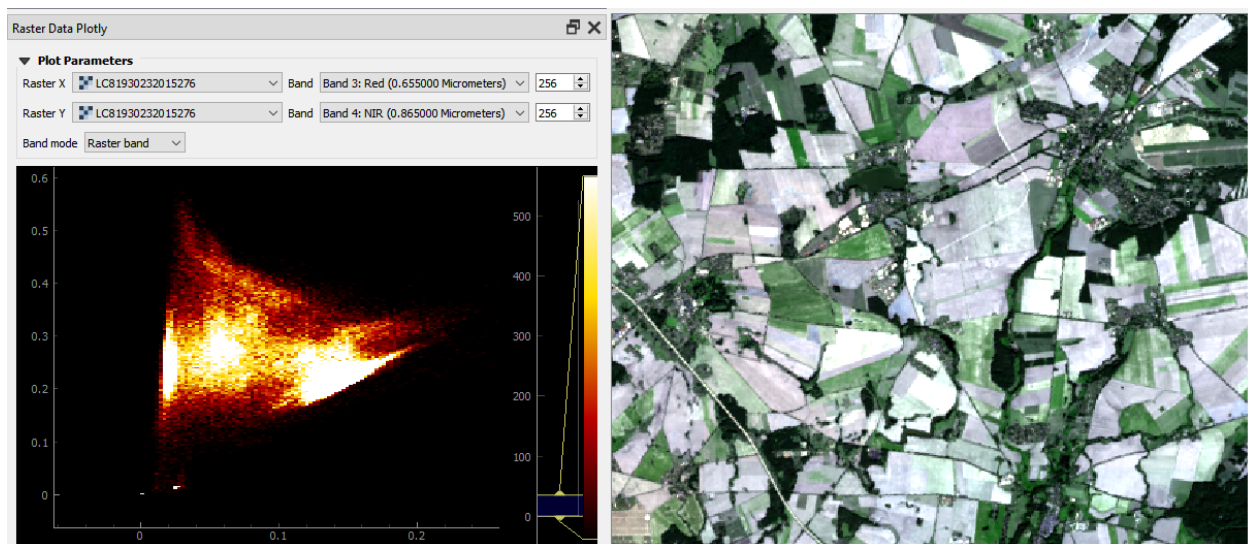


Fig. 1: Agricultural area.

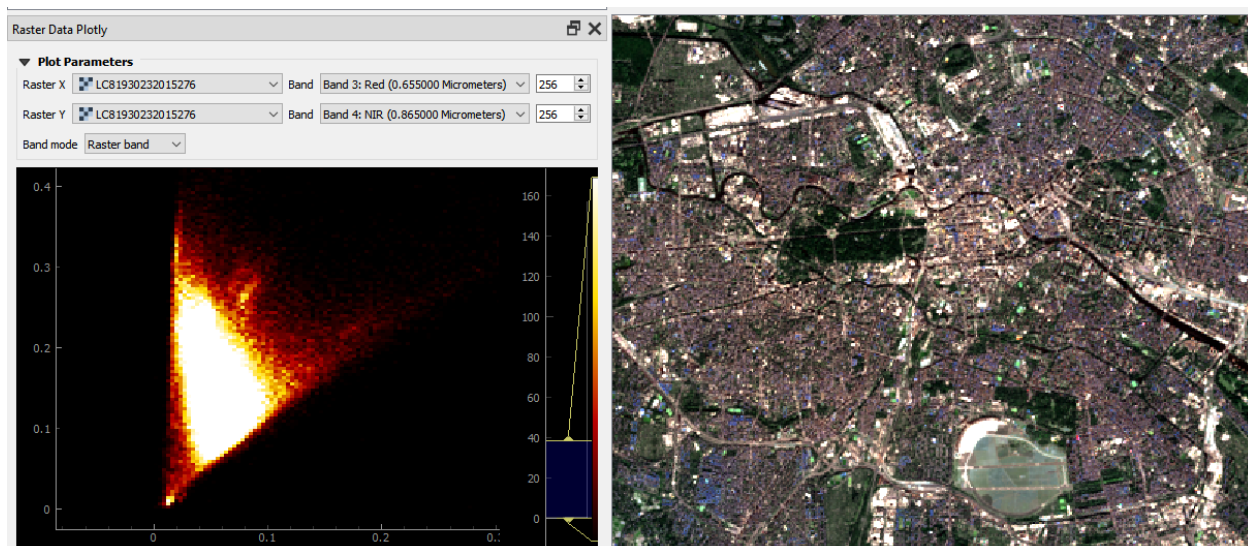
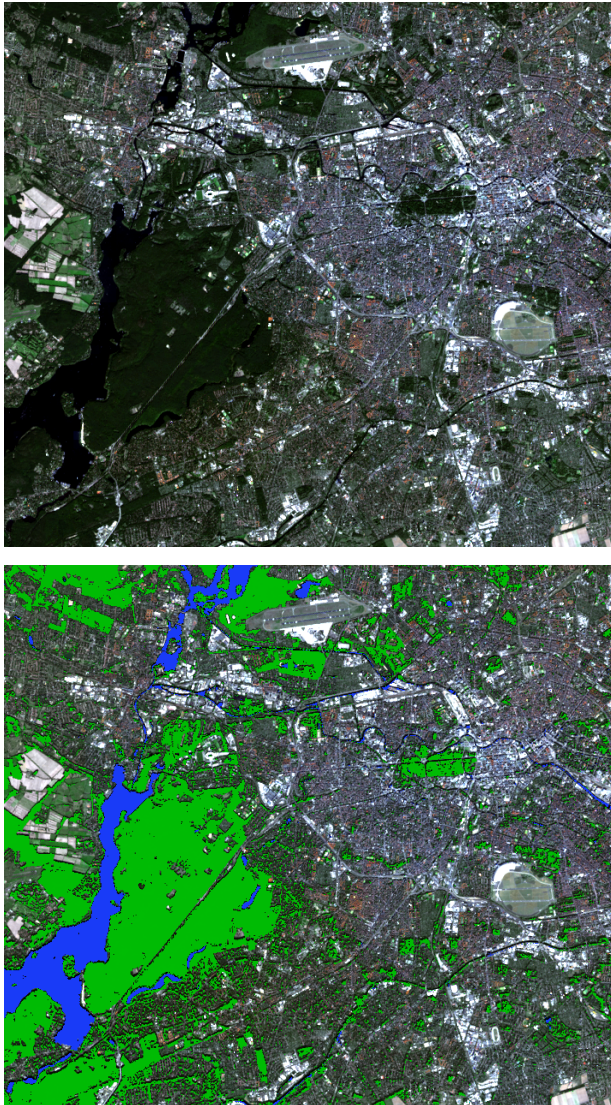


Fig. 2: Urban area.



E.g., in this *Landsat 8* image, it is quite easy to identify *Water* and *Forest* pixels inside a *Red* vs. *NIR* scatter plot:



*Map Canvas: Landsat 8 in true-color composition (left) and together with spectral ROIs overlay (right).*

### 1.2.2 Spatial region of interests

Select **spatial region of interests** (spatial ROI) to focus the analysis on specific regions in the map canvas (e.g. urban, forest, water or agriculture areas).

Given a *Landsat 8* image and some landcover polygons, different kinds of plots are available.

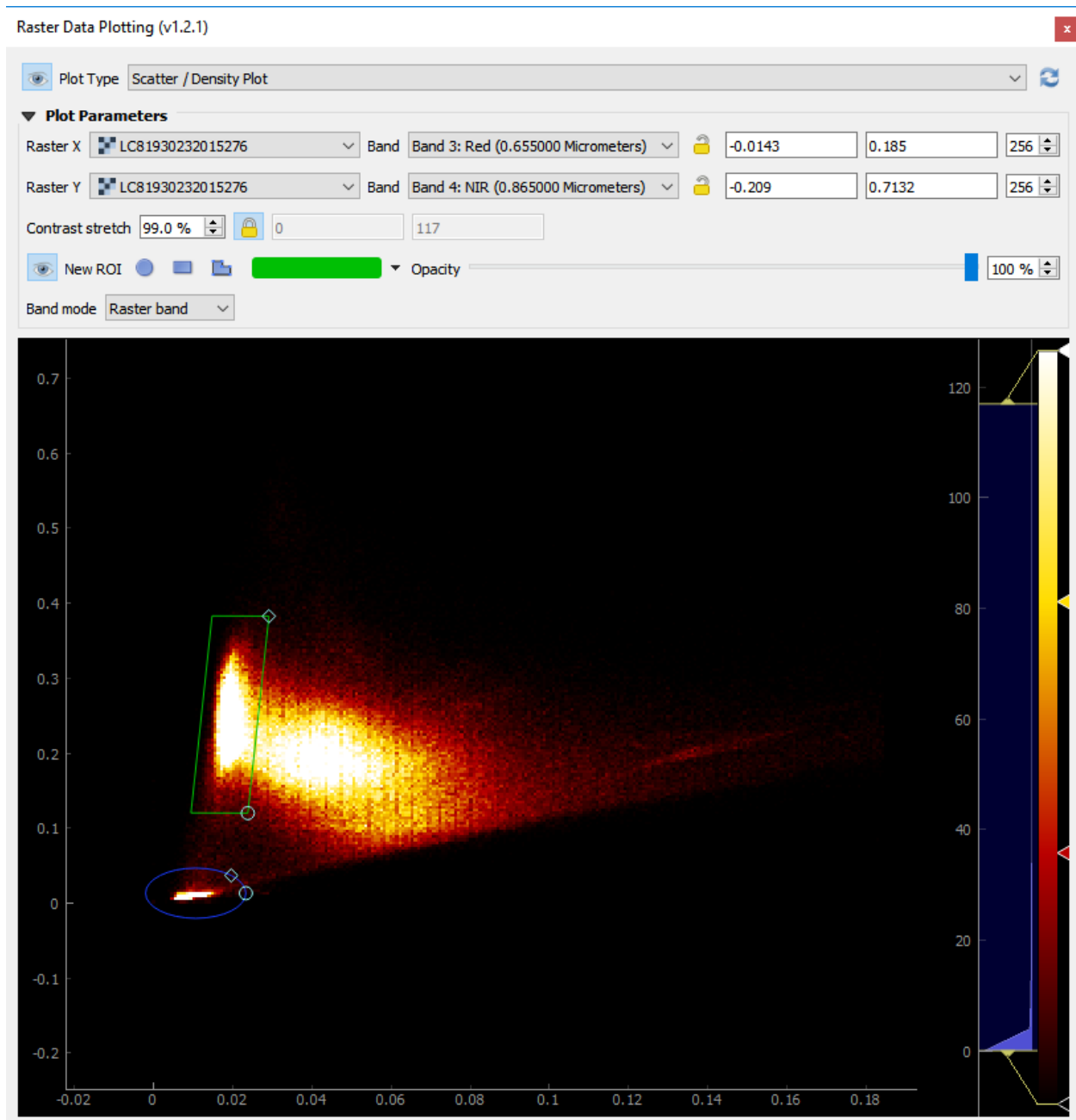
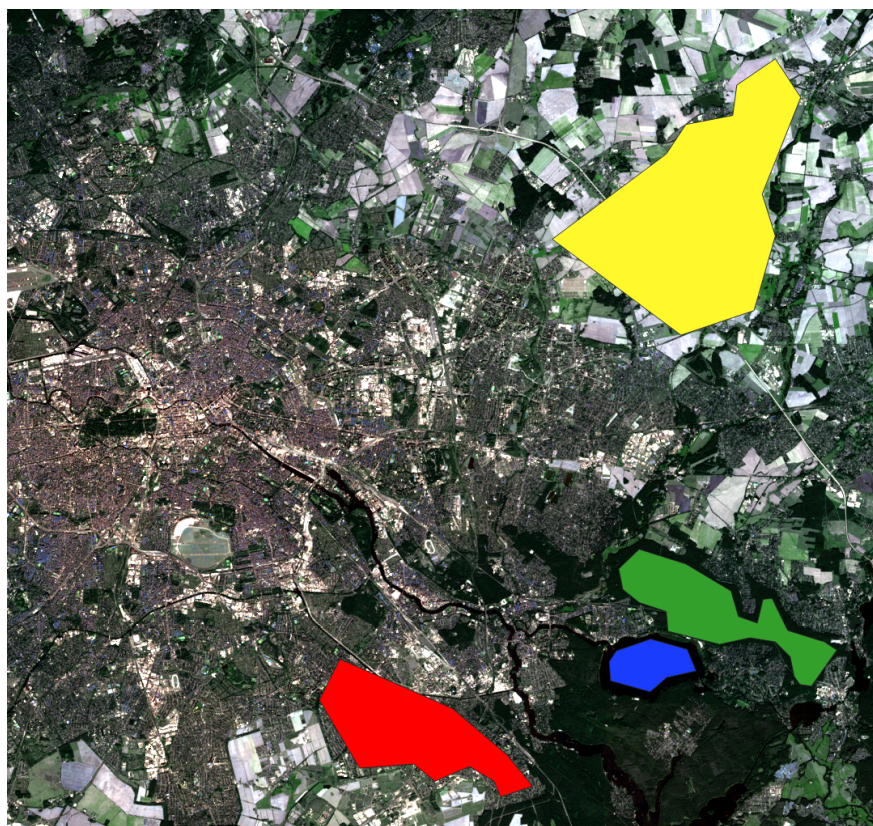
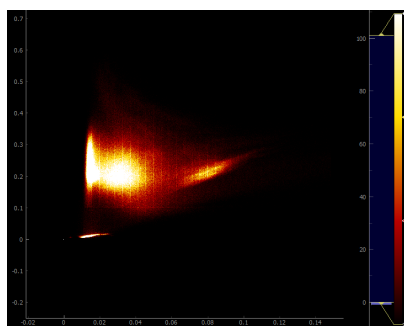
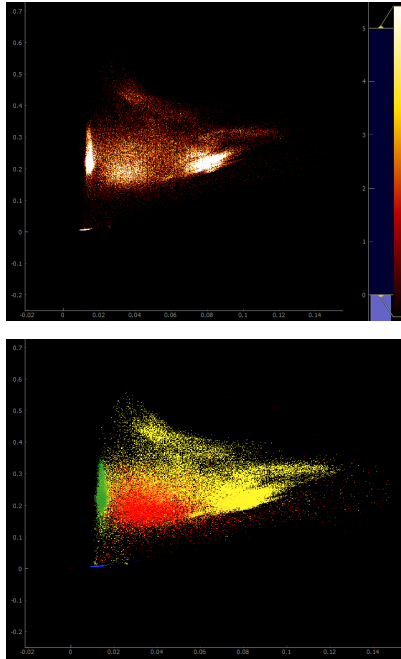


Fig. 3: Scatter Plot: Landsat 8 Red vs. NIR with two regions capturing Water and Forest pixels.



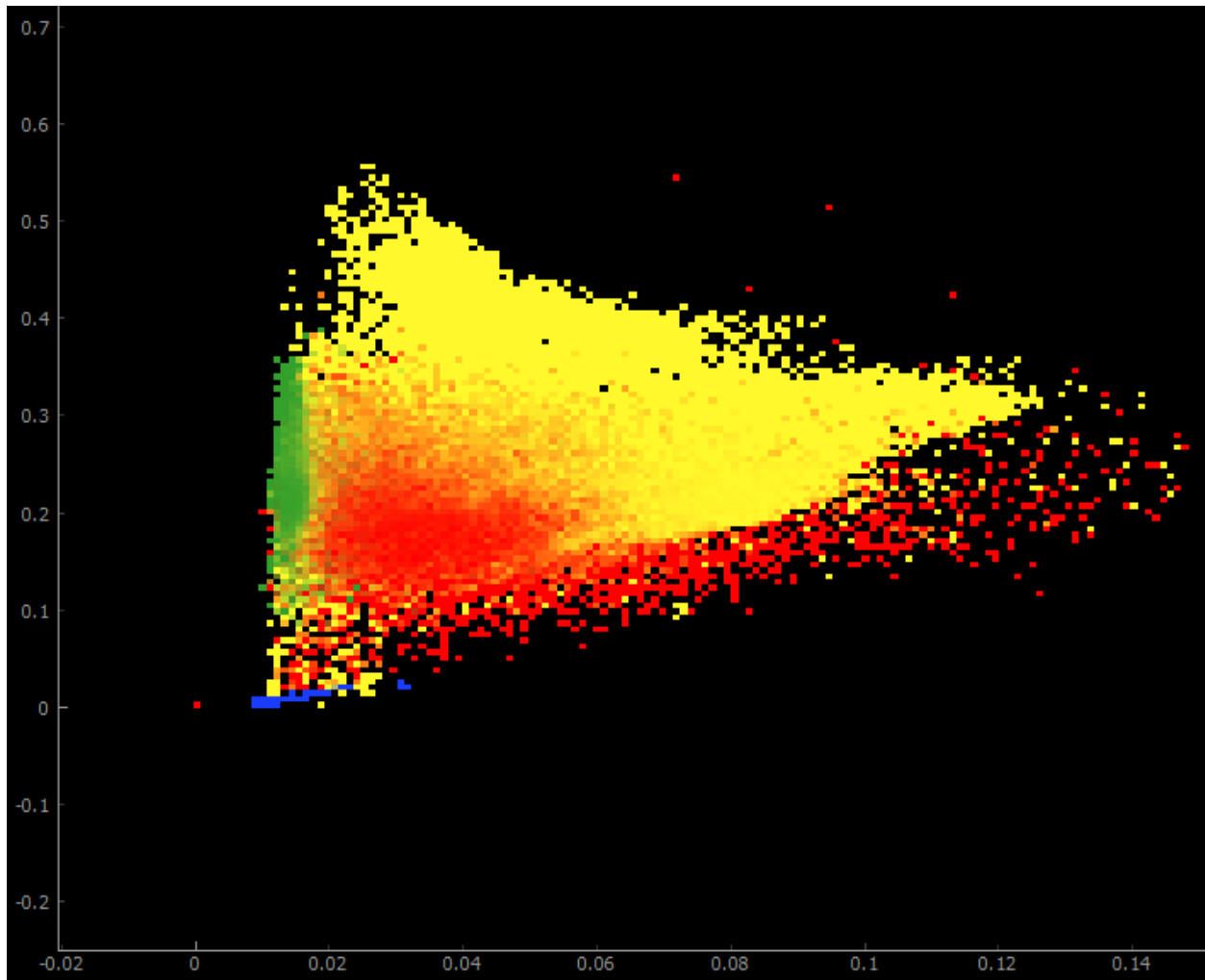
*MapCanvas: Landsat 8 in true- color composition and four different landcover polygons as spatial ROISs.*





*Scatter Plots: density of all pixels (left), density for spatial ROIs (middle), and colorized scatter for spatial ROIs (right).*

Note that for coarser binnings, it is very likely that points from different ROIs will fall into the same bin. In those cases, the bin color is given by a weighted average of the involved ROI colors.



### 1.2.3 Animated plotting

Create an animated scatter plots by choosing raster bands of a timeseries that is manages by the [Raster Timeseries Manager](#) plugin.

*Example of an animated scatter plot with Tasseled Cap Brightness vs. Greenness.*

## 1.3 Spectral Profile Plot

## 1.4 Temporal Plot

### Plugin Dependency

For *Temporal Profile Plots* install the **RasterTimeseriesManager** plugin.



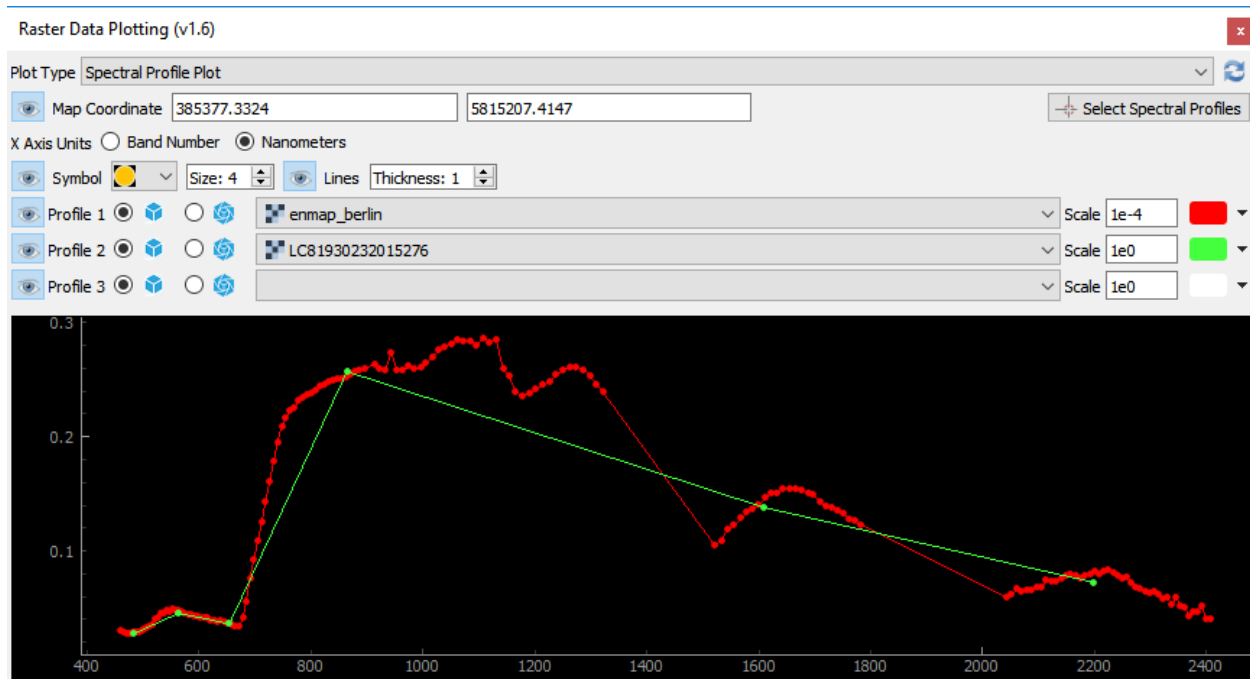


Fig. 4: Spectral Profile Plot: multi-spectral Landsat 8 and hyperspectral HyMap profiles for the same map location.

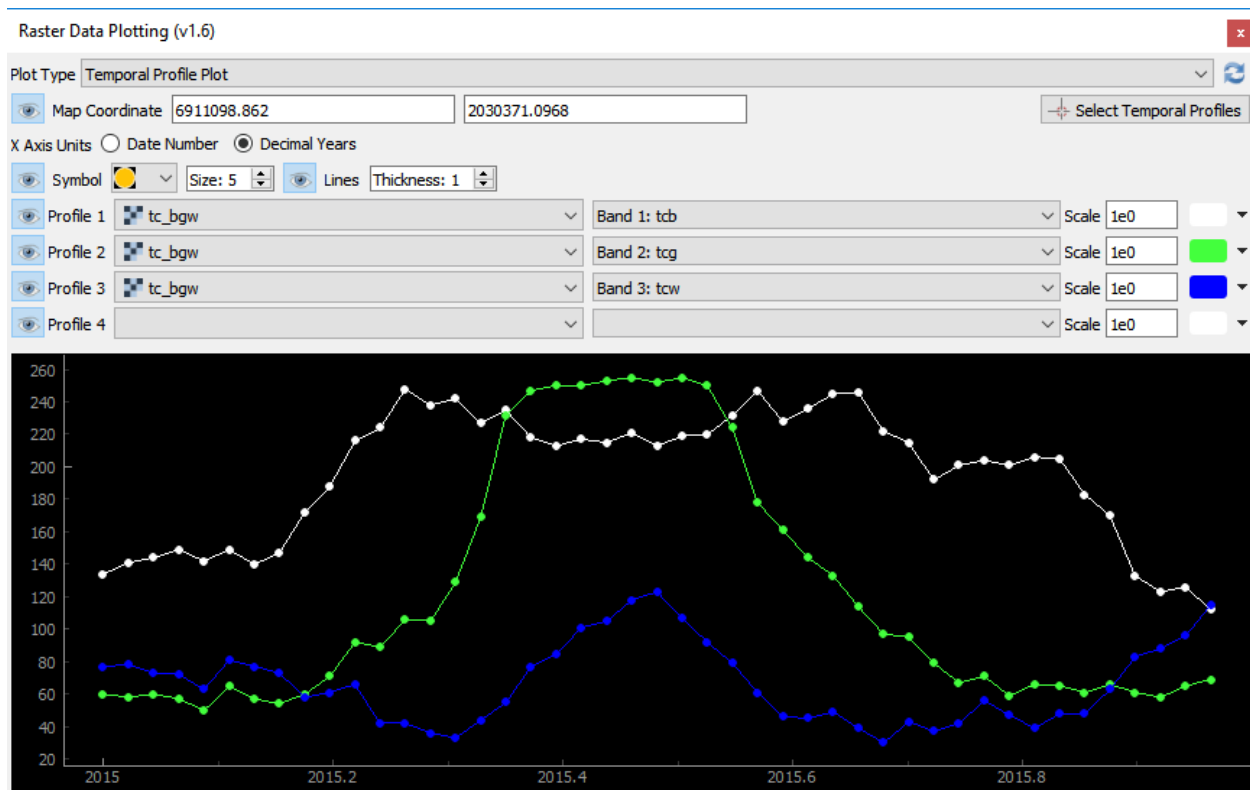


Fig. 5: Temporal Profile Plot: Landsat timeseries temporal profiles for Tasseled Cap Brightness (white), Greenness (green) and Wetness (blue) for the same map location.

## 1.5 Contact

Please provide feedback to [Andreas Rabe](mailto:andreas.rabe@geo.hu-berlin.de) ([andreas.rabe@geo.hu-berlin.de](mailto:andreas.rabe@geo.hu-berlin.de)) or [create an issue](#).