Workflow:

Spectral Classification:

Preprocessing

1. Identify spectral training areas (classes: tree, shrub, gras, soil, shadow)
2. Compute vegetation indices for training area
3. Perform Principal Component Analysis (PCA) on training area vegetation indices
4. Rasterize training area shapes
5. Combine RGB-data with PCA-data (pca1,pca2,pca3) and rasterized training areas and clip by extent of training areas
6. Use clipped data to train RandomForest machine learning algorithm (with forward feature selection)

🡪 RandomForest prediction model

Data processing

1. Compute vegetation indices for study area
2. Perform Principal Component Analysis (PCA) on study area vegetation indices
3. Combine RGB-data with PCA-data
4. Use RandomForest model to predict the combined data

* Classified Raster for study area

1. Tree
2. Shrub
3. Gras
4. Soil
5. Shadow

Segmentation:

1. Estimate tree/shrub positions 🡪 Treeposition layer
2. Use Cenith BestSegVal (Treeposition Layer + Canopy Height Model) to find the best segmentation settings 🡪 Segmentation settings
3. Use best settings for segmentation of the study area 🡪 Cenith segments
4. Use Treeposition Layer to compute segments by other algorithms 🡪 Other segments to compare
5. Add elevation value to segments
6. Add RandomForest classification to segments
7. Remove segments with unmatching classes (gras, soil,shadow)🡪 RF prediction segs
8. Filter segments by height shrub 0.6-2, tree 2-30 🡪 Seg classification by rf plus height

Vegetation Indices

Contents:

* RGB data
* Near infrared and RGB generated artificial layers "NDVI","TDVI","SR","MSR"
* RGB generated artificial layers "VVI","VARI","NDTI","RI","CI","BI","SI","HI","TGI","GLI","NGRDI"
* Canopy Height Model data