**Workflow**

**Qgis** – prepare input data for GEE

* Extract study site 3 from beech tree feature collection
* Create 5m buffers of trees to simulate tree crowns
* Draw aoi polygon around study site 3
* Export buffered trees & aoi
* Import them as assets in GEE
* Create Overview map of Study Site 3 (Spatial Location)
  1. Include in Poster
  2. Add the buffered tree features

**GEE** – creation of annual Indices/band time-series per tree feature

* load input data
* tree mask function
* cloud mask function
* rescaling & renaming functions
* Indices Functions
* Tasseled Cap Indices (TC) & Forest Disturbence Index (FDI) Functions
* load & pre-process S2 SR Harmonized for vegetation period 2018-2023
* Composite of annual median Indices/band values + mean TC values + stdv TC values
* calculate FID
* time series of annual indices values per tree feature as feature collection
* exporting the feature collection as CSV to drive

**Excel**

* load CSV created in GEE
* seperate columns and filter out „system-index“ & „geom.“ Columns
* save CSV

**R**

* load the CSV
* correlation anaylses
  1. Pearson and Spealman correlation between the indices and leaf loss
     + Create barplot of values with threshold lines for
       - 0.0 to +- 0.3 = no correlation
       - +- 0.3 to +- 0.5 = low correlation
       - +- 0.5 to +-1 = high correlation
  2. scatter plot of each index against leaf loss
     + export plots
     + Include in Poster 🡪 add Pearson correlation and p-value to each plot
* Regression analysis
  1. simple linear regression
     + Create Barplot of P-values per Indices with significance threshold line (0.05)
  2. multiple linear regression
     + include P-value in Barplot from Linear regression??
* Other statistical analyses??