

# Data Acquisition

Identify satellite imagery suitable for assessing Arctic vegetation (MODIS, Landsat 8, Sentinel 2)

Determine spatial and temporal resolution required for study



## Preprocessing

Correct for atmospheric effects (atmospheric scattering, absorption, clouds)

Apply radiometric (sensor) and geometric (topography) corrections to ensure consistency

Perform image registration (common spatial reference) when using multiple satellite images



## Vegetation Indices Calculation

Depending in interest, calculate Normalised Difference Vegetation Index (NDVI), Enhanced Vegetation Index (EVI) or Normalised Difference Moisture Index (NDMI)

Calculate Growing Season Metrics such as Start of Season, End of Season, Cumulative Indices



## Calibration and Validation

Potentially verify indices using ground-truth data such as field measurements or other in-situ observations

Quantify agreement/ discrepancies between satellite indices and ground-truth data with statistics such as correlation and regression analysis or error metrics



## Classification and Mapping

Employ machine learning algorithms to classify vegetation types based on derived indices (random forest)

Utilize supervised or unsupervised classification to delineate vegetation classes for vegetation maps, if of interest



## Dataset Generation

Compile processed data into dataset including relevant metadata such as temporal and spatial resolution of satellite imagery, indices and classifications used

Organise dataset into structured format (csv) for easy access and upload to data sharing platform