Method and validation

2017 Sentinel-1 VV and VH imagery is aggregated for three time periods, April-May, June-July, August-September. Each time-period’s imagery is then averaged together to form a new GeoTIFF raster.

After downloading pre-proccessed imagery from Google Earth Engine, further processing is completed in ArcGIS Pro 2.6.0. The semi-proccessed SAR products are downloaded from GEE to one’s Google Drive. Each scene has been split into two rasters due to the large spatial extent of the region of interest. In ArcGIS, Each individual scene is mosaicked together and reprojected from EPSG:4326 (WGS84) to EPSG:338 (NAD1983). Resampling is done using Bilinear interpolation. This is the Alaska Equal Area Conic projection which minimizes distortion at the north pole and relocates the central meridian through Alaska. Furthermore, this pixel values are multiplied by 10 and then converted from a double to an integer to ease data extraction.

Afterwards, these rasters are clipped to a set of nine multi-polygon study areas. These study areas are defined by a combination of the change in landcover, as determined by the National Landcover Database (Years 2001 and 2016) and the number of wildfire that had occurred on a given pixel since 1970 as determined by the Alaska Interagency Coordination Center wildfire history database.

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| **Landcover Transition** | Evergreen 🡪 Evergreen | Evergreen 🡪 Deciduous/Mixed | Evergreen 🡪 Early Successional |
| **Fire Frequency** | No Fires | One Fire | Two+ Fires |

Pixel value histograms for each of these nine classes is exported as .csv’s for both Sentinel-1 VV and VH imagery. These documents contain two columns, pixel value and frequency for a given landcover class. These data are then exported into R and will be used for a preliminary ANOVA and Tukey’s HSD. The R code can be seen in my project repository.