**Data download and processing**

Extract googleVision labels for each photo, save as .rdata

Flickr\_googlecloudvision\_label.r

Clean up flickr tags, save as .rdata

Sub in Arctic data

Convert to .shp

Add

* year mon yearmon
* region

Drop

* points outside 60N

Dataset of photos from each major region (North America, Russia, Norway, Finland, Marine), not overlapping developed land for validation

Figures

Interactive figures

Htmls

Flickr\_leaflet\_map.r

Flickr\_input\_exploration\_check\_Iceland.r

(Iceland region was corrupted in the furst download, this script checks the new dowload)

Raw Flickr data for arctic, and iceland

Flickr\_validation\_dataset.r

Flickr\_tidy\_flickrtags.r

Flickr\_input\_exploration.r

raw\_data\_download.r

Flickr\_googlecloudvision\_postprocessing.r

Dataset output:

(Flickr\_Artic\_60N\_googlelabels \_userinfo\_tidy\_amap.Rdata)

* Add google labels and scores to flickrshp
* Clip flickrshp to flickr\_AMAP60N\_dissolve.shp
* add regions matching flickr\_AMAP60N\_all\_level\_one\_subdivisions\_svalbard\_simplified\_EEZ.shp
* Add info on whether users are regular or superuser, tourist or local.
* Subset flickrshp to 2004:2017 photos only.
* Drop rows without google labels
* save as Flickr\_Artic\_60N\_googlelabels\_userinfo\_tidy\_amap.Rdata

Which points fall within protected areas (this was later recalculated Flickr\_spatialoverlaps\_for\_gams.r as I changed the PA layers used)

Tourism density and ES mapping

Models & footprint analysis

Dataset output and used for analysis:

(Flickr\_Artic\_60N\_escodes\_amap\_plusPAs.Rdata)

Flickr\_protectedarea\_overlap.r

Dataset output and used for analysis:

(Flickr\_Artic\_60N\_escodes\_amap.Rdata)

Flickr\_googlecloudvision\_datasummary.r

* categorise google labels according to ES they represent and add to flickrshp.
* Make wordclouds of google labels
* Summary tables of labels by region, user and escode.

**Models & footprint analysis**

Dataset used for analysis:

(Flickr\_Artic\_60N\_escodes\_amap\_plusPAs.Rdata)

ArcticAMAP\_templatehexgrid\_5000\_m.Rdata (for footprint)

ArcticAMAP\_templatehexgrid\_10000\_m.Rdata (for models)

ArcticAMAP\_griddedaccessibilitydata\_10000\_m.Rdata

Flickr\_photos\_per\_year.r

Extract number of photos uploaded to Flickr globally (per hr, 2004-2018) from Flickr API

Flickr\_global\_nphotostaken\_byhr\_2000to2018.csv

Calculations of Arctic tourism footprint across time.

GAM\_footprint.r

GAM\_models.r

GAM models of accessibility vs presence/absence of tourists.

Calculated PUD in each grid cell

Make hexagonal grid then spatial overlap of hexagonal grid with shapefiles of accessibility (roads, airports etc) and protected area boundaries to estimate coverage in each grid cell.

Flickr\_spatialoverlaps\_for\_gams.r

GAM models of protected areas vs presence/absence of nature photos.

Paper 3b Nature gaze

GAM\_models\_nature.r

gridYearPUD\_models\_10000\_m.Rdata

gridYearPUD\_models\_10000\_m\_bioticnature.Rdata

GAM\_model\_input.r

Paper 3a Tourism footprint

Paper 3a Tourism footprint

**Mapping of tourism density and ecosystem service use**

Dataset used for analysis:

(Flickr\_Artic\_60N\_escodes\_amap.Rdata)

Paper 3a Tourism footprint

Flickr\_density\_mapping.r

Raster maps of tourism footprint as PUD (photo-unit-days).

Make nice plots of the ES rasters

Flickr\_googlecloudvision\_esmapping.r

Raster maps of ecosystem services, based on PUD of each ES.

Flickr\_googlecloudvision\_esplots.r