## Files to use in QGIS:

**Towards a Random-Representative Sampling Scheme**

* Table

  Description automatically generated**stack\_masaimara\_18feb00\_8jun16\_cln.img**   
  a spatial-temporal stack of 375 cleaned MODIS-Terra NDVI-images. Each NDVI-image is rescaled to the 0-255 DN-value range. Each image represents the Maximum Value Composite of daily imagery across a 16-day period. There are 23 images each year. Cleaning is carried out through the TimeSat upper-envelop filter. source: MOD13Q1 v5 see: <https://lpdaac.usgs.gov/products/mod13q1v006/>
* **Mamase\_AOI.shp**

A polygon that defines the study-area for (benchmark-) mapping the grazing lands of the Masai Mara.

Graphical user interface

Description automatically generated

## Explore the Stack

* Install the plugin: “Temporal/Spectral Profile Tool”
* Select the raster file
* Select the  option (the plugin), and select any raster-cell to see its temporal NDVI-profile

Graphical user interface, text, application, chat or text message

Description automatically generated

## Mask the raster through the AOI polygon

* Select the IMG and SHP
* Save the result as: **Stack\_Mamase\_AOI.TIF**

## Calculate the SD and Median Images

* Select: Graphical user interface, application

  Description automatically generated
* Select: Text

  Description automatically generated with medium confidence
* Then: Select as input layer the AOI-stack,   
   Select either Standard Deviation or Median  
   Specify output files [*NOTE: it seems this routine is providing incorrect outputs*]
* NOTE: Under directory **/ORIG/** I have provided correct output files: **stack\_masaimara\_Median.img** and **stack\_masaimara\_SD.img**, and two masked files **Median\_AOI.TIF** and **SD\_AOI.TIF**.   
  You are advised to use this very set of TIFs.

## K-Means unsupervised classification

* Install the plugin: A screenshot of a computer

  Description automatically generated with medium confidence

Refer for info to: <https://www.youtube.com/watch?v=tRDk0tAkQ94>

* And select: Graphical user interface, text, application

  Description automatically generated
* Then first select a single “Band set”, and then use from “Band processing” the K-Means clustering method, to create a 5 (or more) clusters TIF. Select to use “0” as no-data.   
  Also save the resulting signatures to a file. Various iterations will follow. Repeat this for both files (SD and Median). I got using the above, the following clusters.

Graphical user interface, text

Description automatically generatedMap

Description automatically generated Map

Description automatically generated

## Convert these 2 TIFs to SHPs

* Use “Polygonize” for each of the 2 TIFs and save as SHPs: Graphical user interface, application, PowerPoint

  Description automatically generated
* Graphical user interface

  Description automatically generated with medium confidenceGraphical user interface, text, application, chat or text message

  Description automatically generatedUse the “Intersection” option to

combine both SHP-files into one

SHP-file (and check the Attribute Table):  
Mak  
[*make sure it is a “****S****ingle-****P****art” SHP-file*]

## Graphical user interface, application Description automatically generatedAdd the required Geometry info the SHP-file

* Add the polygon areas to each polygon through:
* Table

  Description automatically generatedAnd save the results in a new SHP file.

## Select the larger Polygons

* Open the “Attribute Table” of the file with the GeoMetry, and select all polygons that are smaller than 1,000,000 m2 (100 ha or about 16 pixels). Also remove the background along the AOI [put “Edit” on to delete polygons]. I am now left with 599 polygons.
* Create in the Table a new field and put there the result of: { 10\*DN + DN\_2 }.
* Create a nice coloured legend using that new field.
* I now got:

Map

Description automatically generatedChart, bar chart

Description automatically generated

## Next steps to do / Considerations / Discussion

* Add a road/paths layer and clip the above to about 1km distance to roads: these are the accessible areas to survey (unless you have an off-road permit from the park-management).
* Divide your available time by 11 (11 unique SD-Median combinations to sample equally!
* Sample each SD-Median combination multiple times either randomly within given polygons or representative after observing the contents of a polygon. The latter option is important when you have little time and must collect proper representative (observer defined!!) samples.
* Keep track that each combination is sampled and that you do cover the full range of variability.

Underlying assumption: The long-term SD and Median values of NDVI readings capture the actual variability in range-types (cover-types) in the study-area. Note: many of the above classes are NOT grasslands; thus classification must be more specific (it is now too generalized).

Our experience: YES that is correct at macro level, BUT locally (micro-level) terrain also creates lots of variability in range-types. Thus: combine the above with a Relative DEM (of 30m resolution). See the PPT.