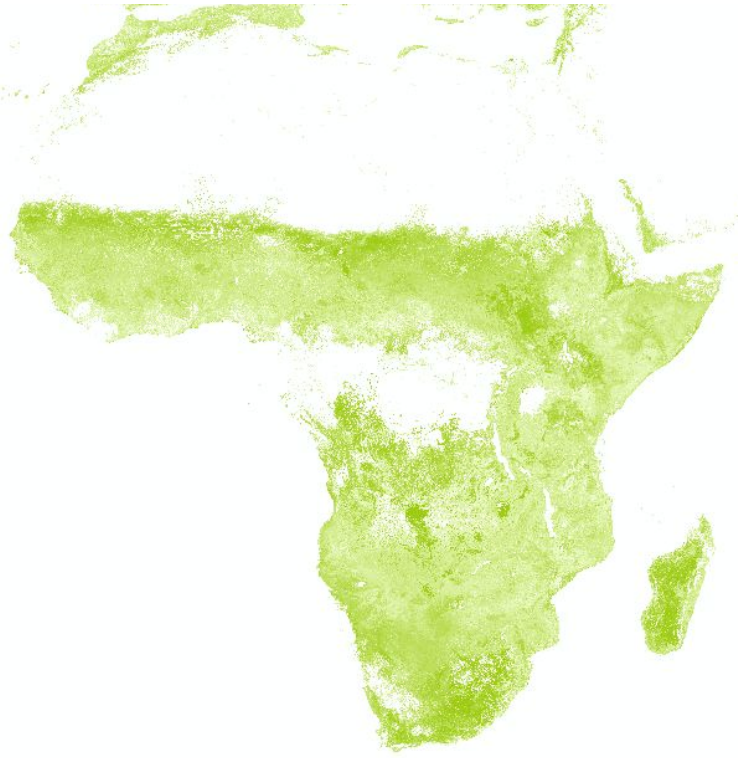
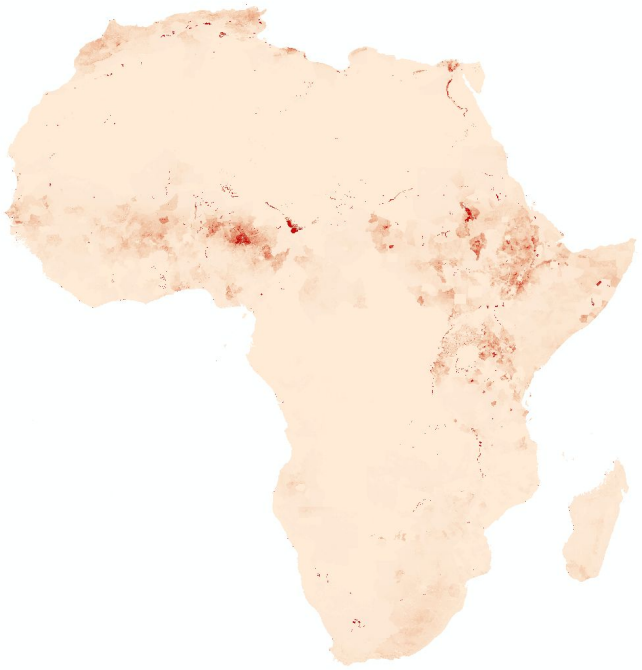
Pastures in Africa

Since the definition of Pastures is “land covered with grass and other low plants suitable for grazing animals” we proceeded extracting grasslands from the grass cover fraction (Grassland) from the Copernicus LC 100 m res. may 2019. See the figure below.



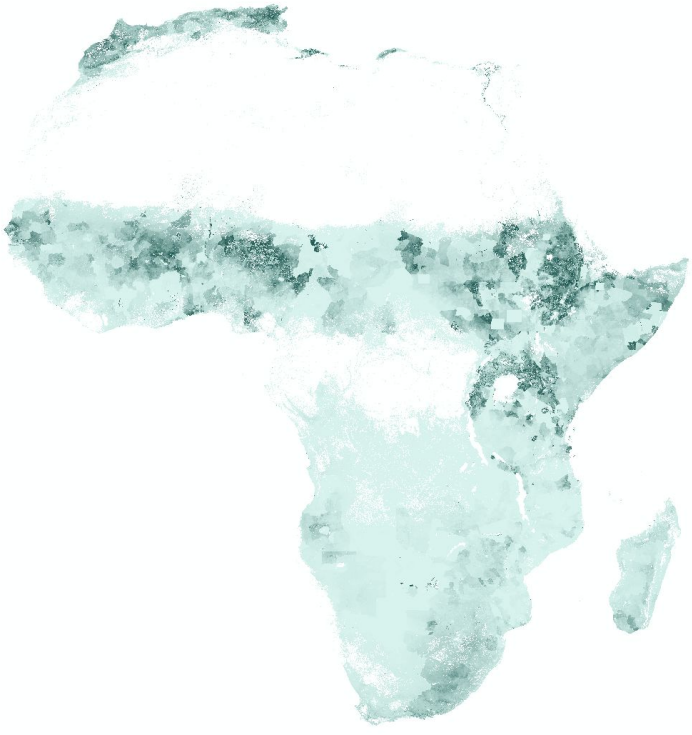
The Gridded Livestock of the World (GLW) 2010 from FAO has been downloaded from http://www.fao.org/livestock-systems/global-distributions/en/ and merged by the number of Cattle, Sheep and Goats to compute the distribution of grazing animals as displayed in the figure below.

```
RasterCalculator (cattle.tif + sheep.tif + goat.tif) → livestock_all.tif
```



Afterwards we extracted the number of grazing animals within the grass cover fraction to define where grassland areas are used as pasture, including the animal density (number/km2) obtaining the map below.

```
Con ("base_grassland.tif",1,0, "Value >=1") → grassland_mask.tif;
Con (grassland_mask.tif livestock_all.tif) → livestock_in_grassland.tif;
```



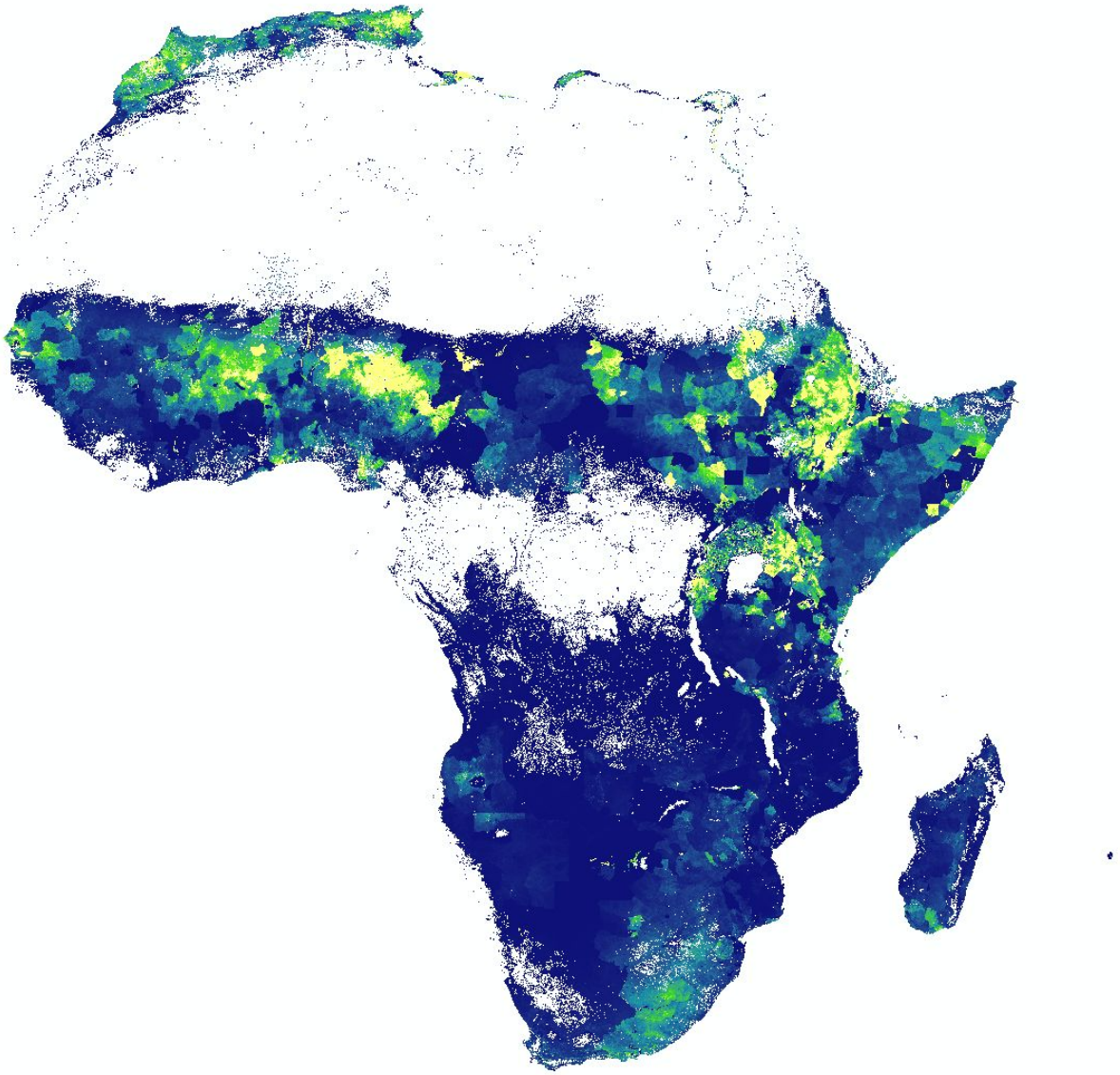
To compute an **index** (between 0 and 100) **of the use of grassland for pasture purposes** we proceeded normalising the livestock using the following formula:

```
RasterCalculator ("livestock_all.tif" - "livestock_all.tif".minimum) /
("livestock_all.tif".maximum - "livestock_all.tif".minimum) * 100 → norm_livestock.tif;
```

In a second stage we extracted the values within grassland area.

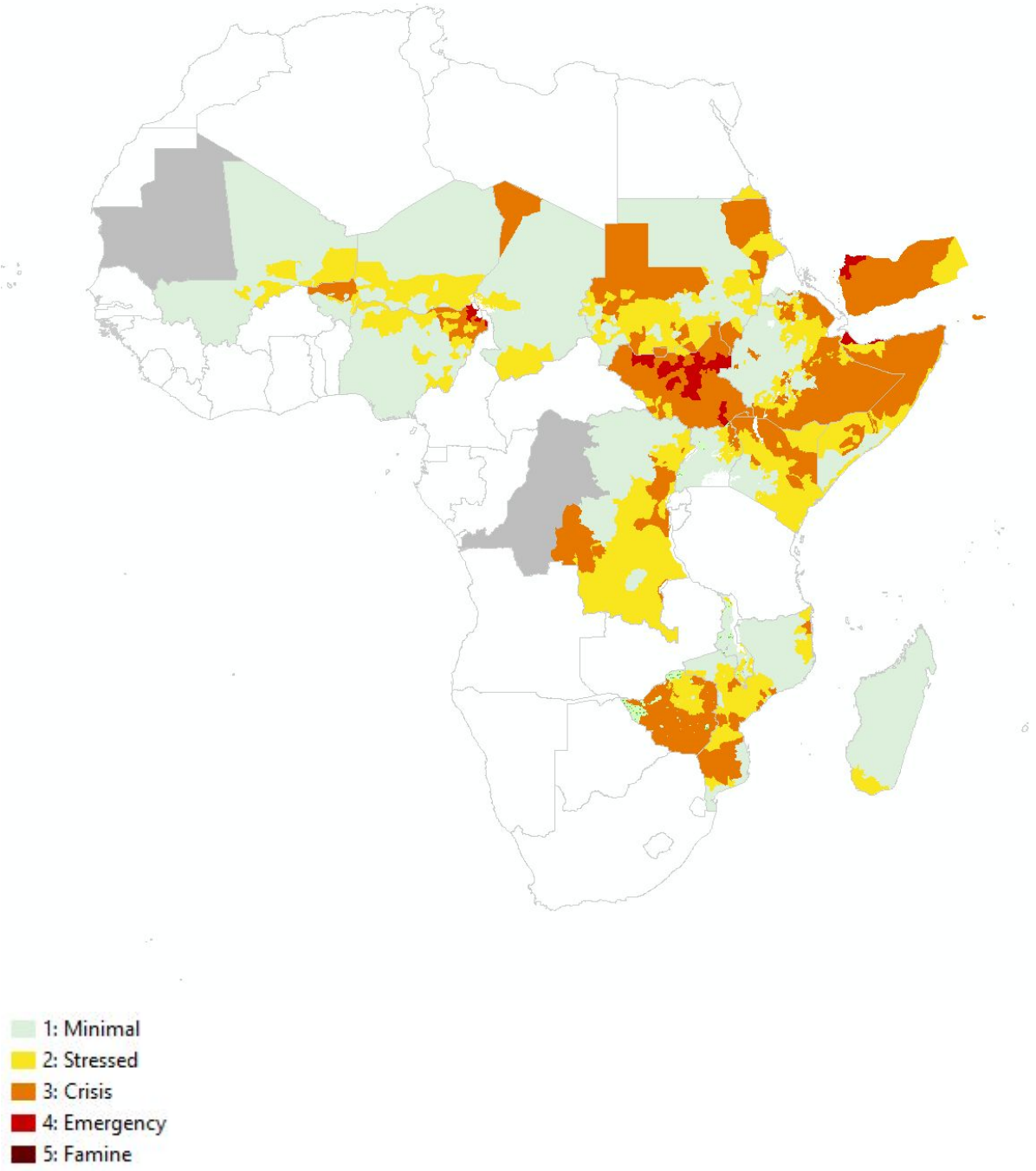
```
Con (grassland.tif norm_livestock.tif) → pasture_in_grassland_index.tif;
```

Obtaining the map below:



Food insecurity in Africa

Data has been downloaded and merged for est, west and south Africa from http://fews.net/ (Last update: September 2019) obtaining the following map:



Security incidents in Africa

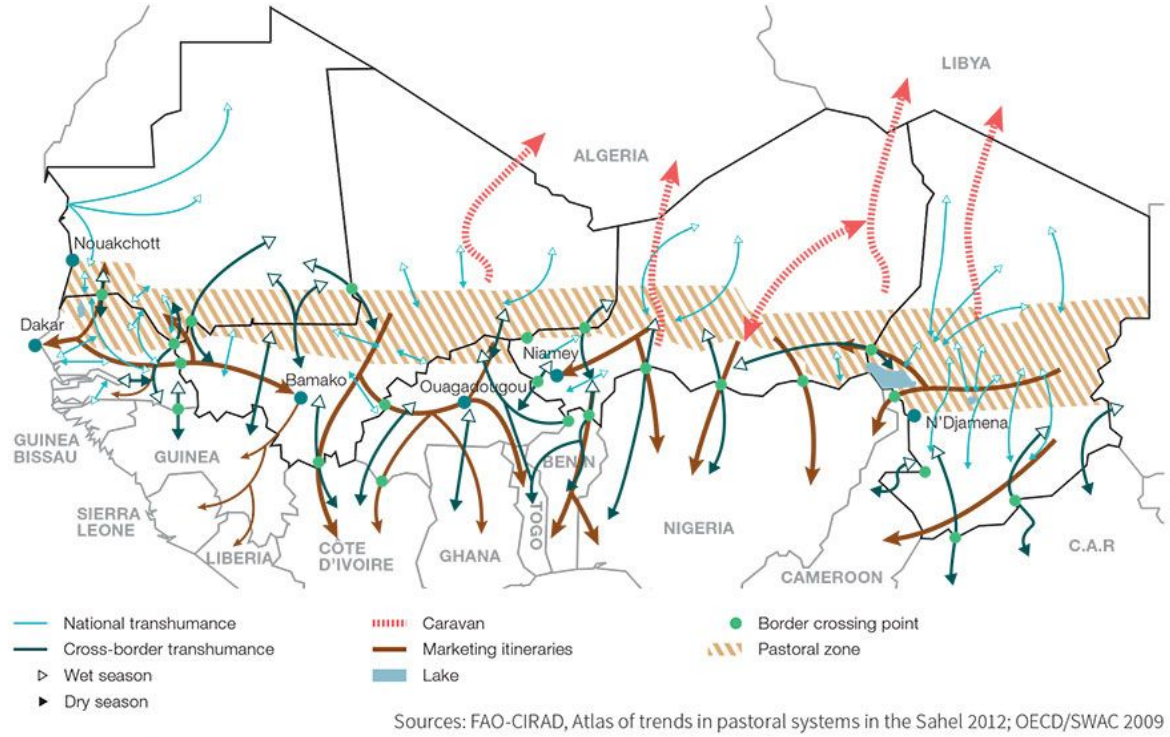
Security incidents in Africa displayed in the map below can be obtained from
Https://emm.newsbrief.eu/emmMap/?type=top&language=&language=en
An API have been already requested, awaiting their response.

Protected Areas in Africa

Protected Areas in Africa displayed in the map below can be obtained from
https://www.protectedplanet.net
Here is the October 2019 version.

Transhumance routes in Africa

The map (only west africa) can be obtained from
http://www.west-africa-brief.org/content/en/transhumance-and-nomadism
No raw data available



Extract: OECD (2014), An Atlas of the Sahara-Sahel: Geography, Economics and Security, OECD Publishing, Paris.

Water points in Africa

I propose to use the Global Surface Water product (https://global-surface-water.appspot.com/) to extract permanent and seasonal water in grassland. This might take a while to be computed as it is very high resolution.