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# World Heritage Sites KENYA

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# About Kenya Wildlife Service (KWS)

KWS has sole jurisdiction over approximately 8% of the country's landmass:

27 National Parks = 30,418.38 km<sup>2</sup> (5.2%)

32 National Reserves = 17,184.40 km<sup>2</sup> (2.9%)

5 National Sanctuaries = 71.34 km<sup>2</sup> (0.01%)

Controls 125 Wildlife Stations outside protected areas

## Kenya's Biodiversity

CLASS	SPECIES
Mammals	407
Birds	1,103
Reptiles	261
Amphibians	63
Fish	314
Arthropods	??
Higher plants	6,506
Microbes	??

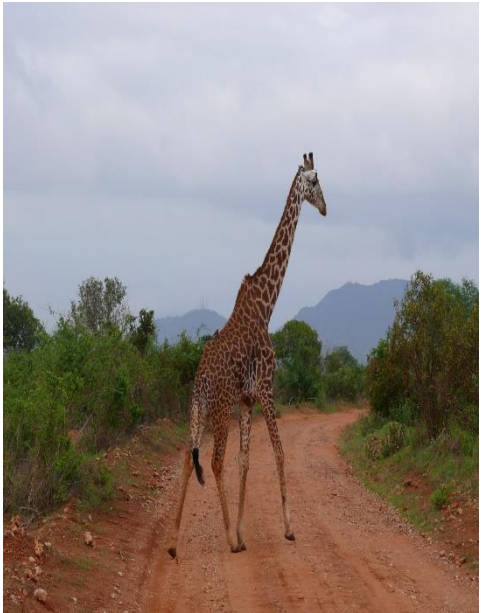






# Biodiversity

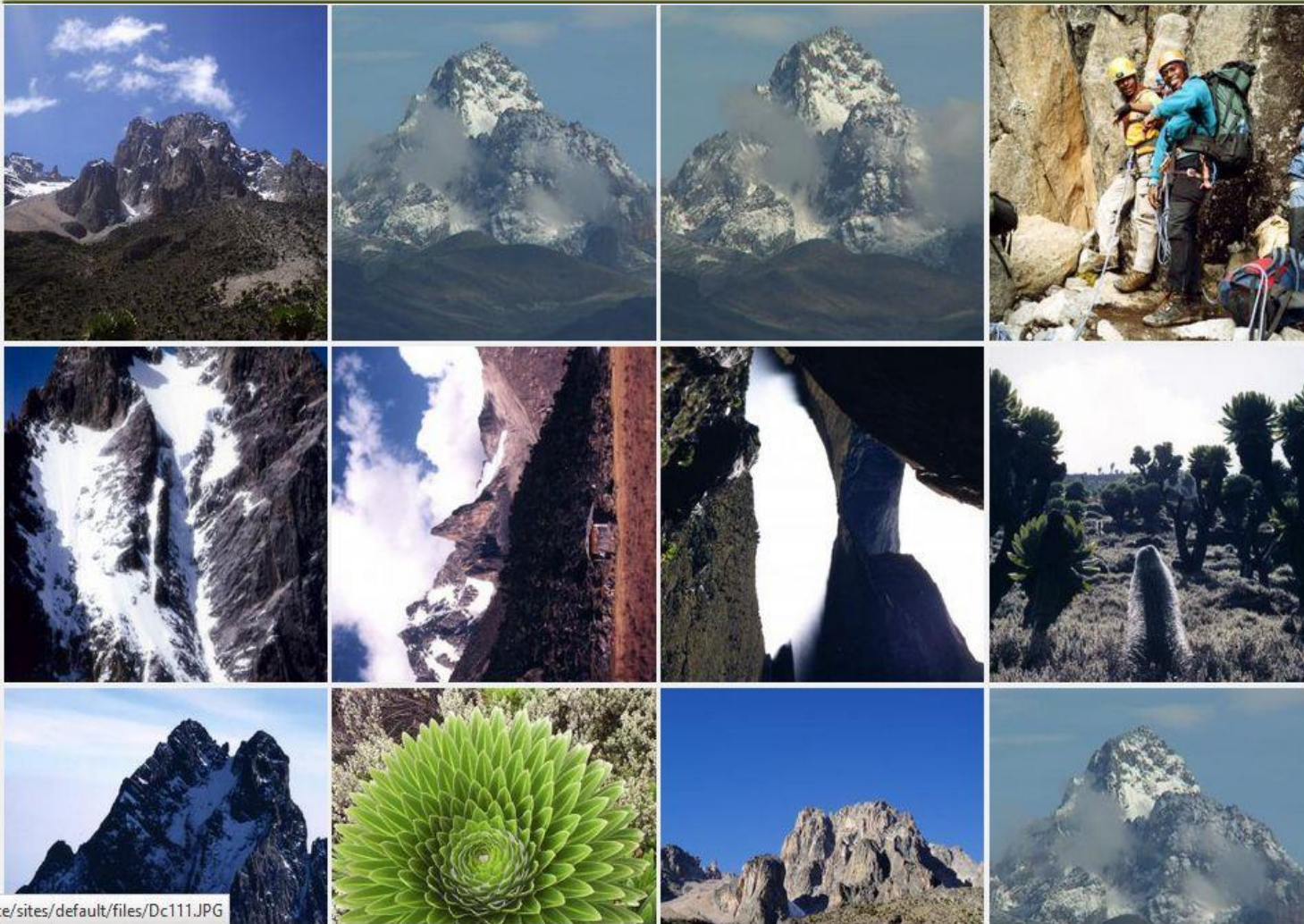
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# Mt. Kenya World Heritage Site

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## “Come Touch The Sky”

At 5,199 Meters, Mount Kenya is the second tallest mountain in Africa with a breath-taking scenery. It is a pristine wilderness with lakes, tarns, glaciers, dense forests, mineral springs and a selection of rare and endangered species which are highly adapted to high altitudes and unique montane and alpine vegetation



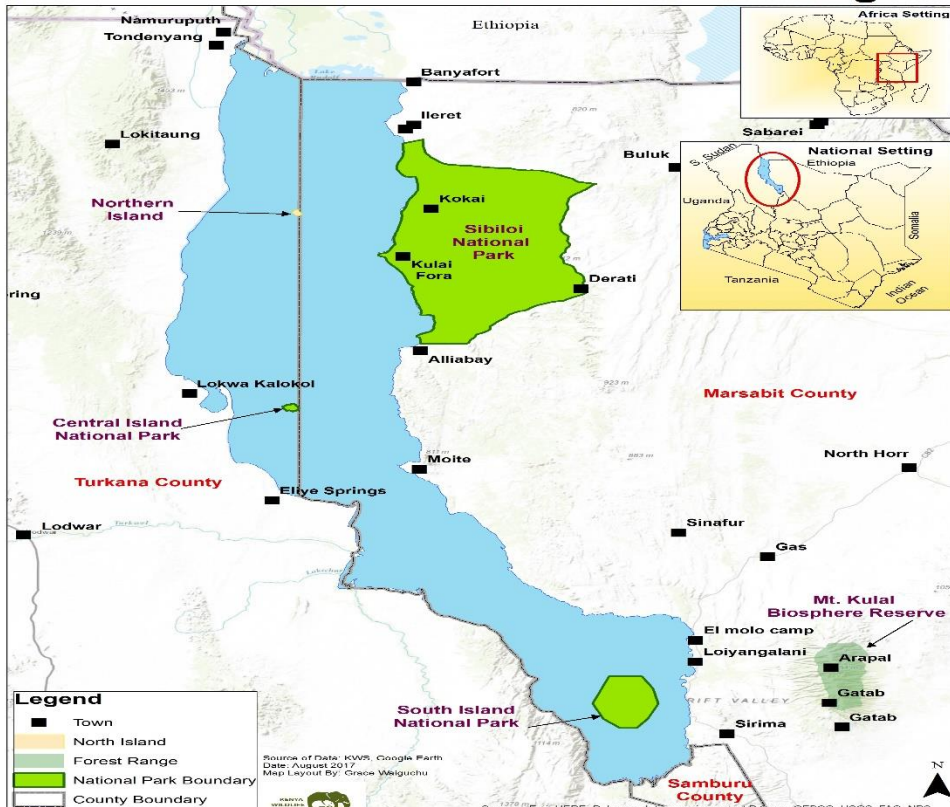
Inscribed in 1997 with an extension in 2013  
Area: 202,334 Ha with a buffer of 69,339 Ha





# Lake Turkana National Parks World Heritage Site

## Lake Turkana National Parks World Heritage Site



### Sibiloi National Park “The cradle of mankind”

It is home to important archaeological sites including Koobi Fora where the fossil remains have contributed more to the understanding of human evolution than any other site in the continent. The area is characterized by semi-desert habitat and open plains flanked by volcanic formations. Sibiloi serves as a stopover for migrant waterfowl and is a major breeding ground for the Nile crocodile. Terrestrial wildlife includes zebras, Grant gazelles, lions, leopards, striped hyenas, Beisa Oryx, greater kudu, cheetahs and northern topi among others. A total of over 350 species of aquatic and terrestrial birds have been recorded in Lake Turkana.

1997: Inscribed on the World Heritage List under Natural Criteria viii and x (Sibiloi and Central Island).

2001: Extended to South Island National Park, also under Natural Criteria vii, ix & x.



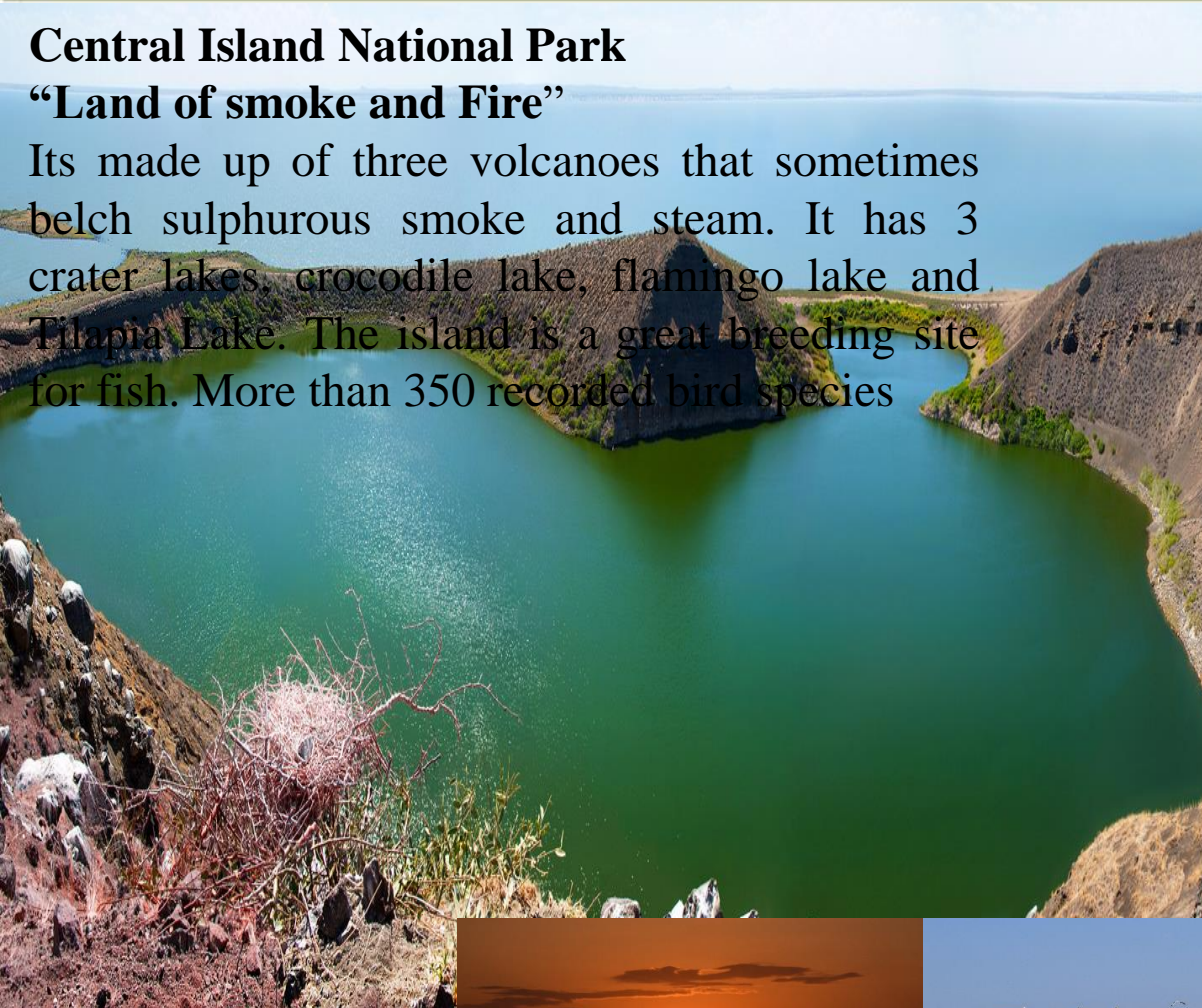


# Lake Turkana National Parks World Heritage Site

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## Central Island National Park “Land of smoke and Fire”

Its made up of three volcanoes that sometimes belch sulphurous smoke and steam. It has 3 crater lakes, crocodile lake, flamingo lake and Tilapia Lake. The island is a great breeding site for fish. More than 350 recorded bird species



## South Island National Park “The Isle of Mystery”

Covered end to end in volcanic ash, the nightly glow of the island’s luminous vents has inspired many tales of evil spirits and ghosts. It has over 34 species of European migrants of which at least 24 breed here





# Great Rift Valley Lake system

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Lake Elementaita



Kenyan Lake system comprises of 3 lakes and their surrounding territories, Lake Bogoria, Lake Nakuru and Lake Elementaita covering 32,034Ha. These lakes are found on the floor of the Rift Valley. There's an exceptional range of geological and biological processes which include geysers, hot springs, marshes, open grasslands, and forests within this WHS. It is home to 13 globally endangered bird species including the lesser flamingo.

Inscribed in 2011.

Total Area coverage: 32,034 Ha with a Buffer of 3,581 Ha





# Great Rift Valley Lake system

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“The Bird Watcher’s Paradise”  
Lake Nakuru



Flamingoes in lake Bogoria

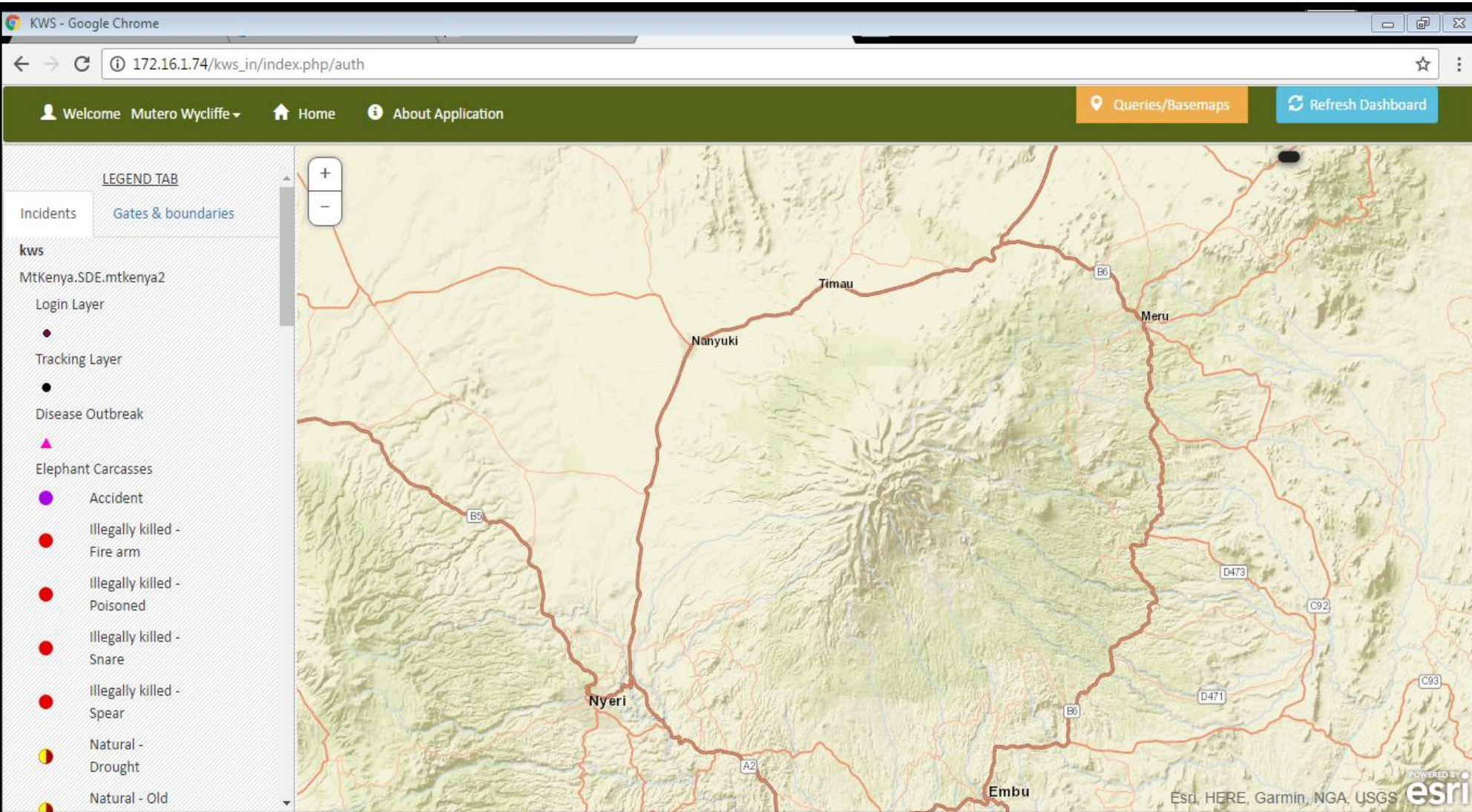




# Remote Sensing use in management of WHS

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## MT. KENYA RANGER PATROL SYSTEM



-KWS and Rhino Ark Project supported by ESRI EA using Safaricom as a platform for sending data.

-Involves realtime data collection and streaming to the server located at KWS Hq.



# MT. KENYA AV MAP PROJECT

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- Collaboration between KWS, University of Innsbruck and Austrian Alpine Club
- Project using 50m resolution Pleiades imageries
- 2 Drafts out; 3<sup>rd</sup> draft expected before December 2017 (project end date)

## **Benefits/ Opportunities**

- ❖ Free 50m resolution Pleiades Images in the project ( done and copy at GIS)
- ❖ 5 day training for GIS and Mweiga Research Station staff on GIS and Remote sensing methodologies used in developing intermediary and final project products
- ❖ Complete Geodatabase of all datasets and project products





# Ground Receiving Station at KWS HQ

- MaMaSe Project Aimed at protecting/ Restoring Key forest and savannah ecosystems and wildlife access to habitats and water resources
- Has installed a GEONETCast Ground receiving station at KWS Hq (Parabolic antennae, computer and external data storage)

Datasets available:  
Rainfall,  
MODIS,  
Temperature,  
Biomass,  
Vegetation  
(High temporal resolution)



Mau Mara Serengeti Sustainable Water (MaMaSe) Initiative (ITC)



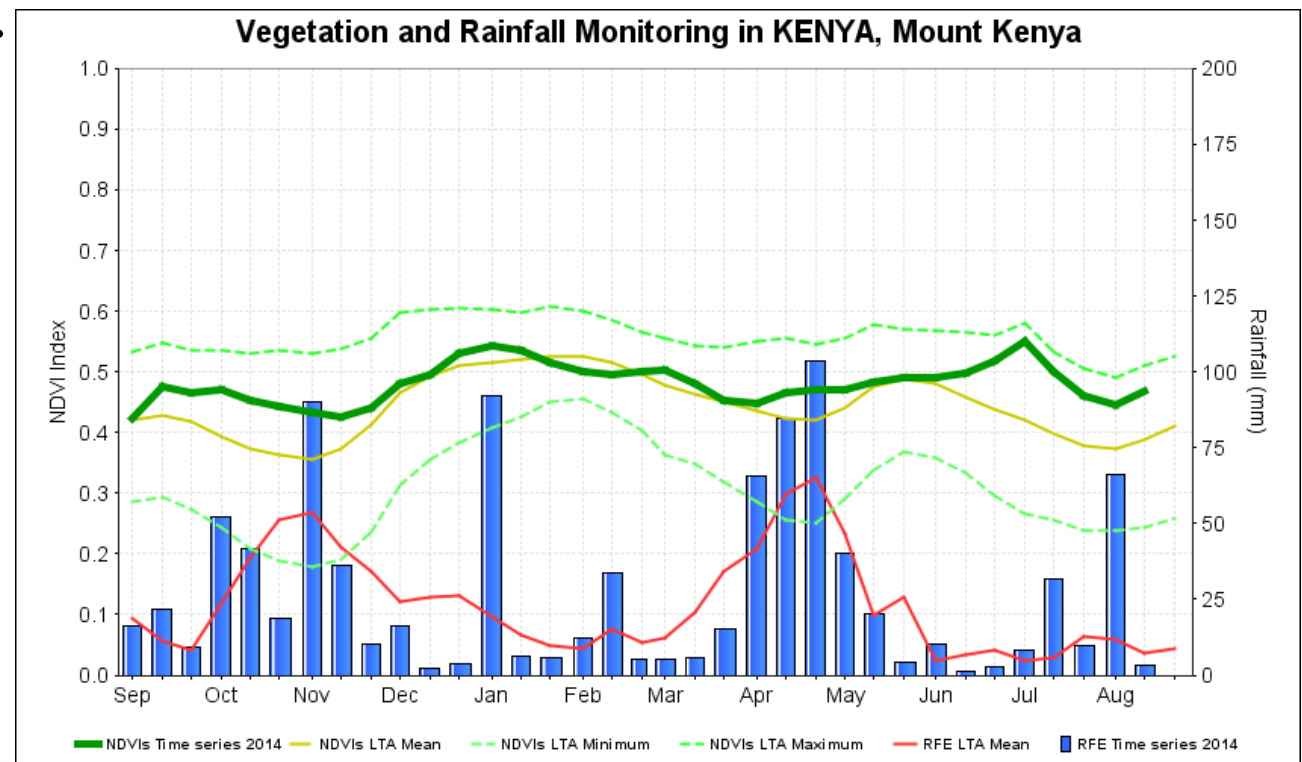


# MESA PROJECT

Project focuses on Natural Habitat Conservation through development of high and low resolution level products (Land use land Cover -LULC, NDVI, LST, FEWSNET, MODIS, Biomass etc).

## Status

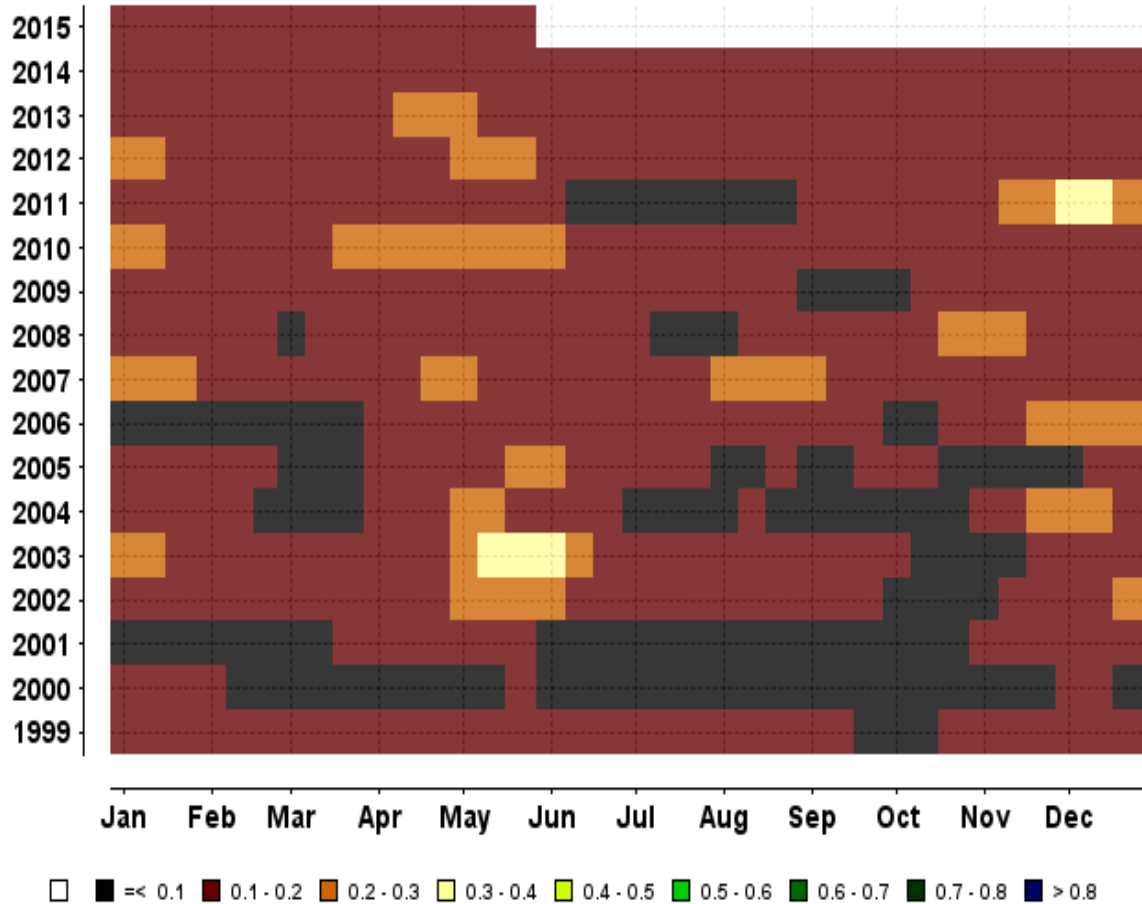
- Developed LULC maps for several protected areas
- Vegetation indices
- Vegetation index Anomalies
- Long term evolution



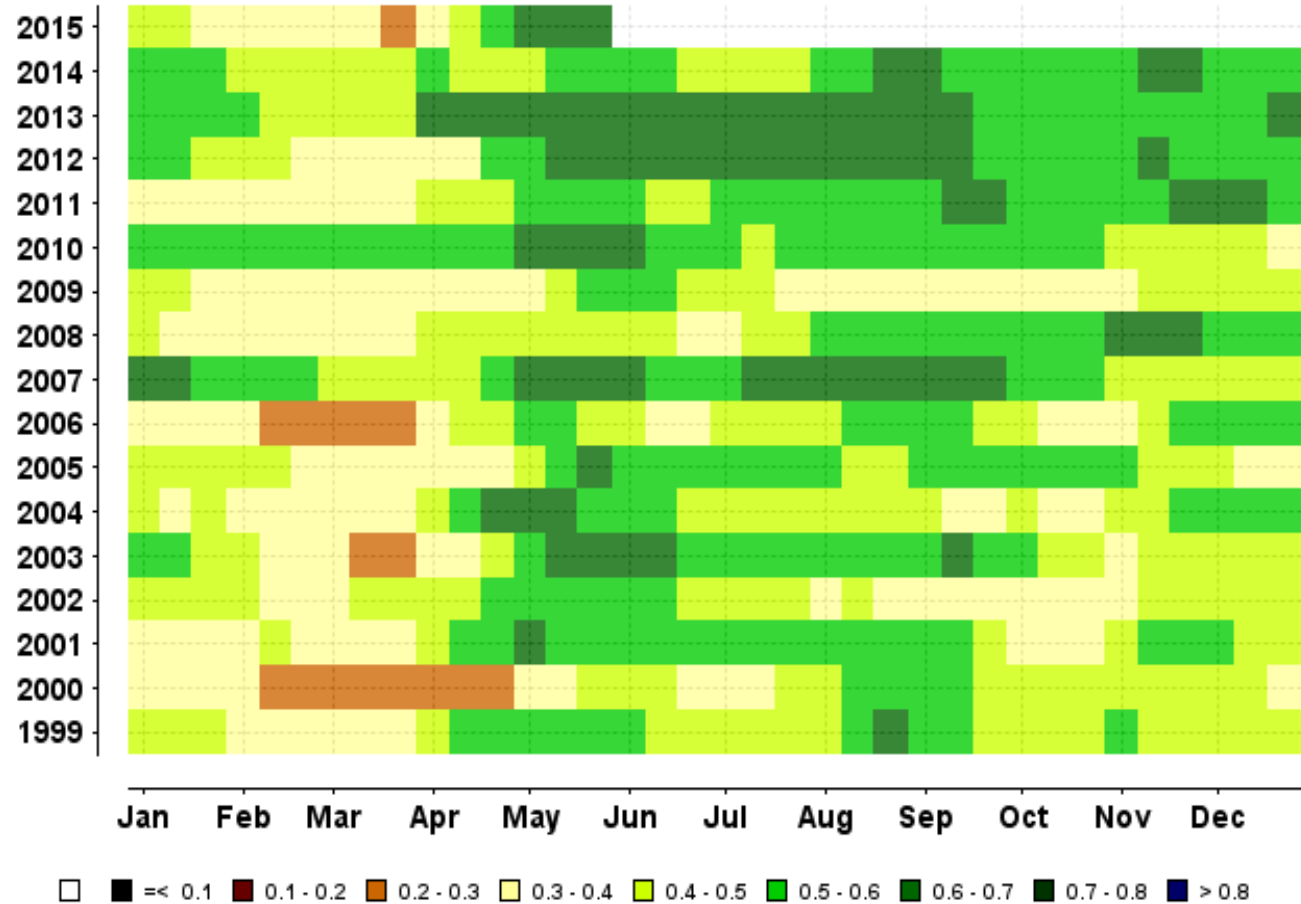


# Vegetation Index Long Term Evolution

### NDVI evolution in Sibiloi



### NDVI evolution in Lake Bogoria

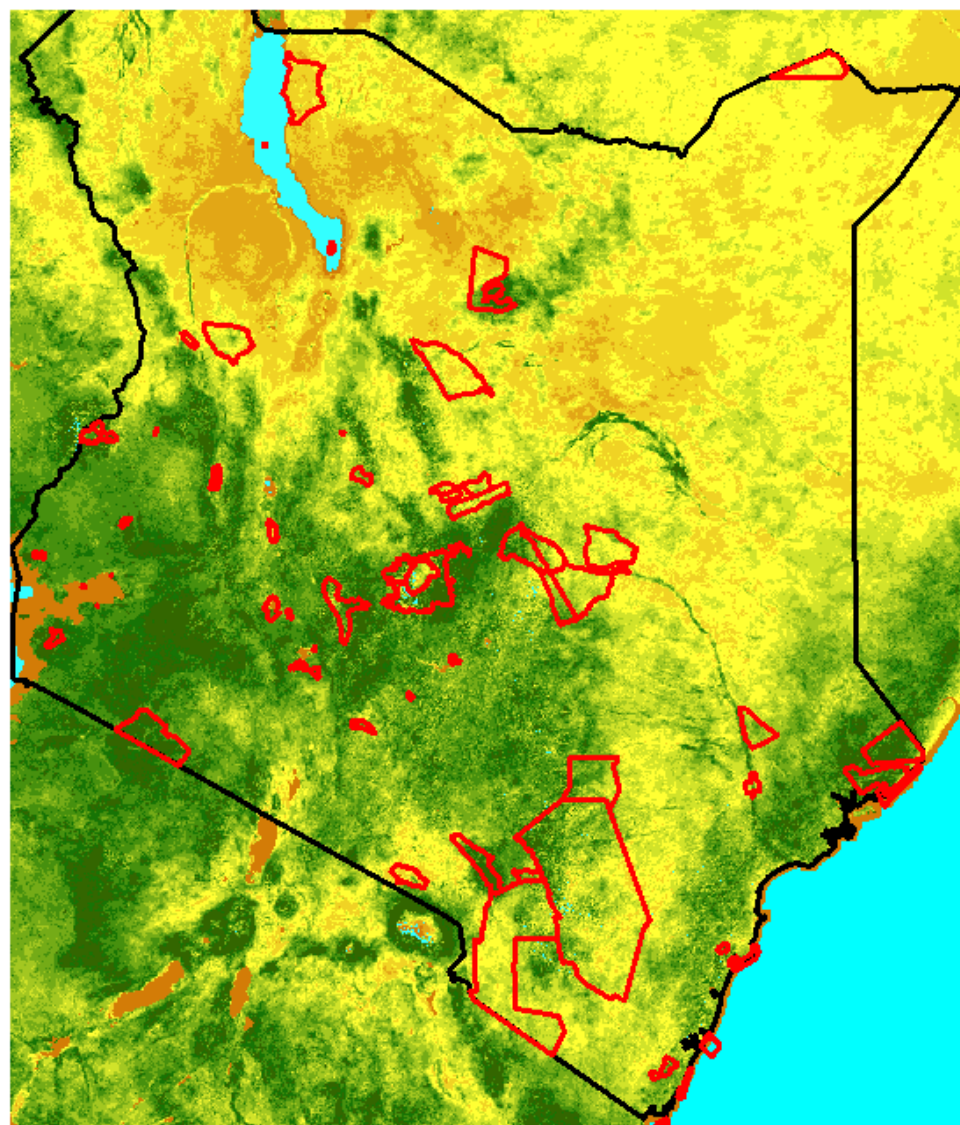




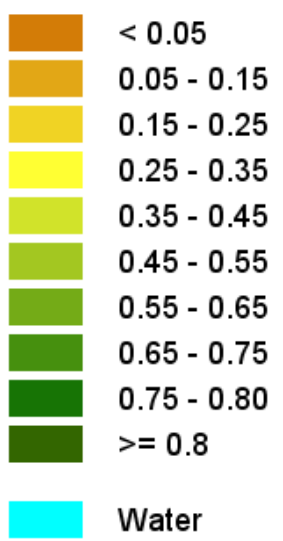
# Vegetation Index

Kenya

Dekad start: 11 Jan 2016



## NDVI



# Vegetation Monitoring

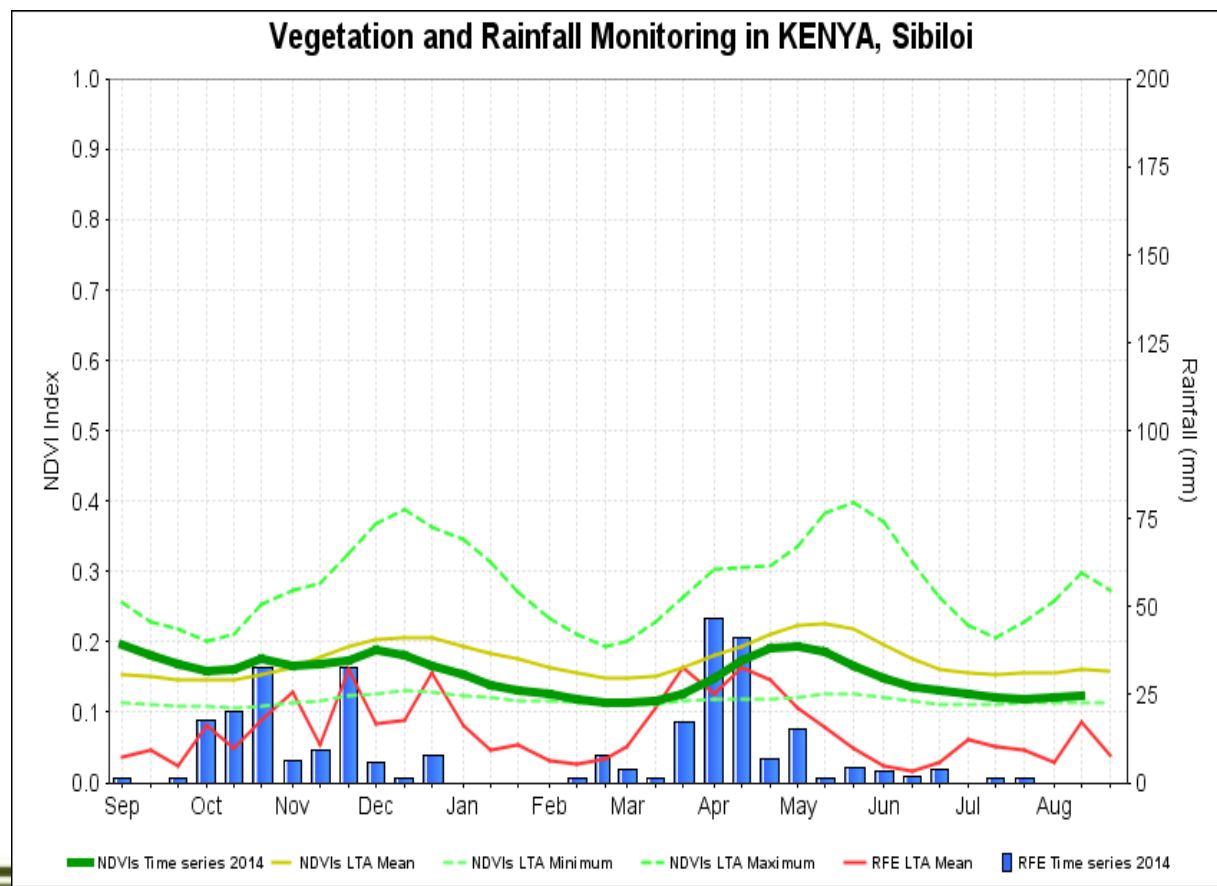


Image: SPOT VGT- PROBA V - Vector: KWS 2016  
Map: Geographic, WGS 84 - Resolution: 1 km

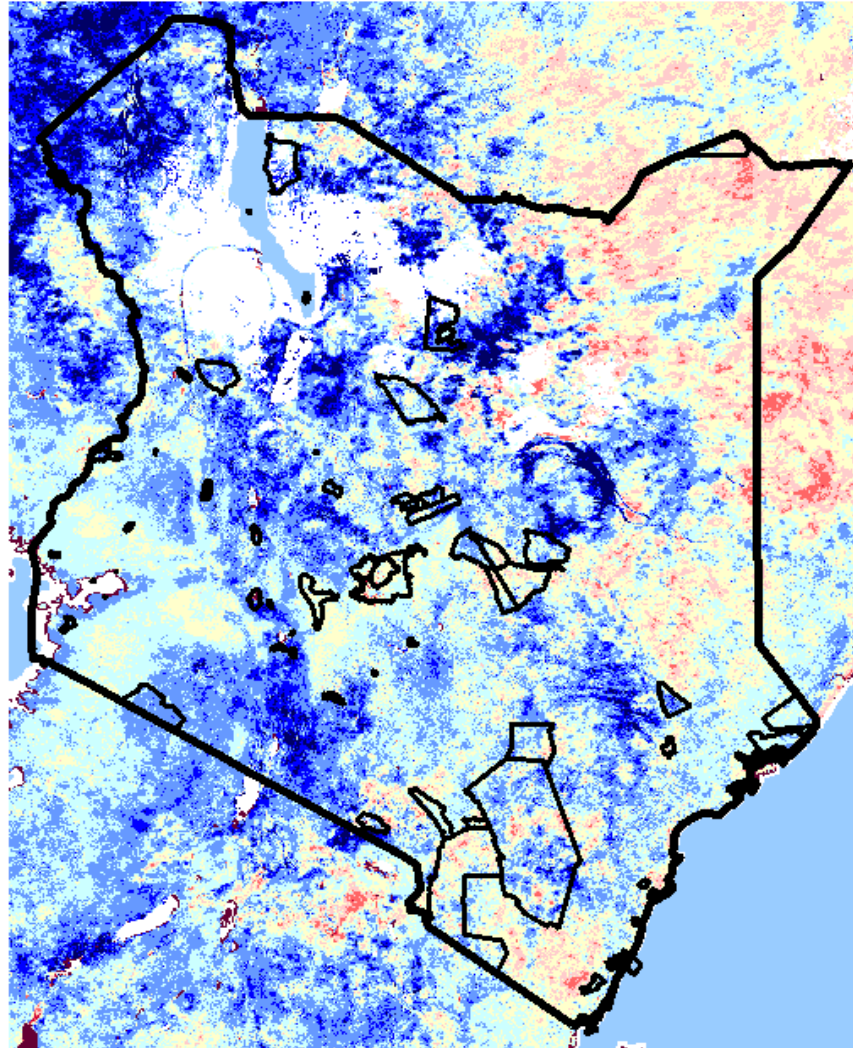




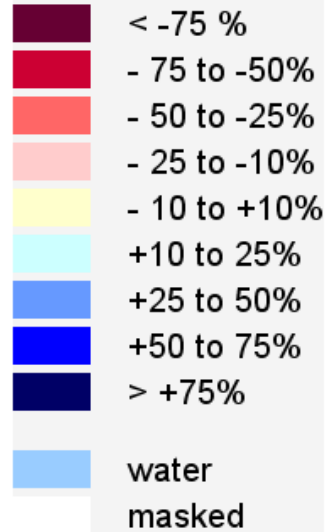
## Vegetation Index Anomalies

Kenya

Dekad start: 1 Jan 2016



### RDIF



RDIF: Relative difference  
(CURRENT-MEAN)/MEAN  
Mean of 1999 to 2015

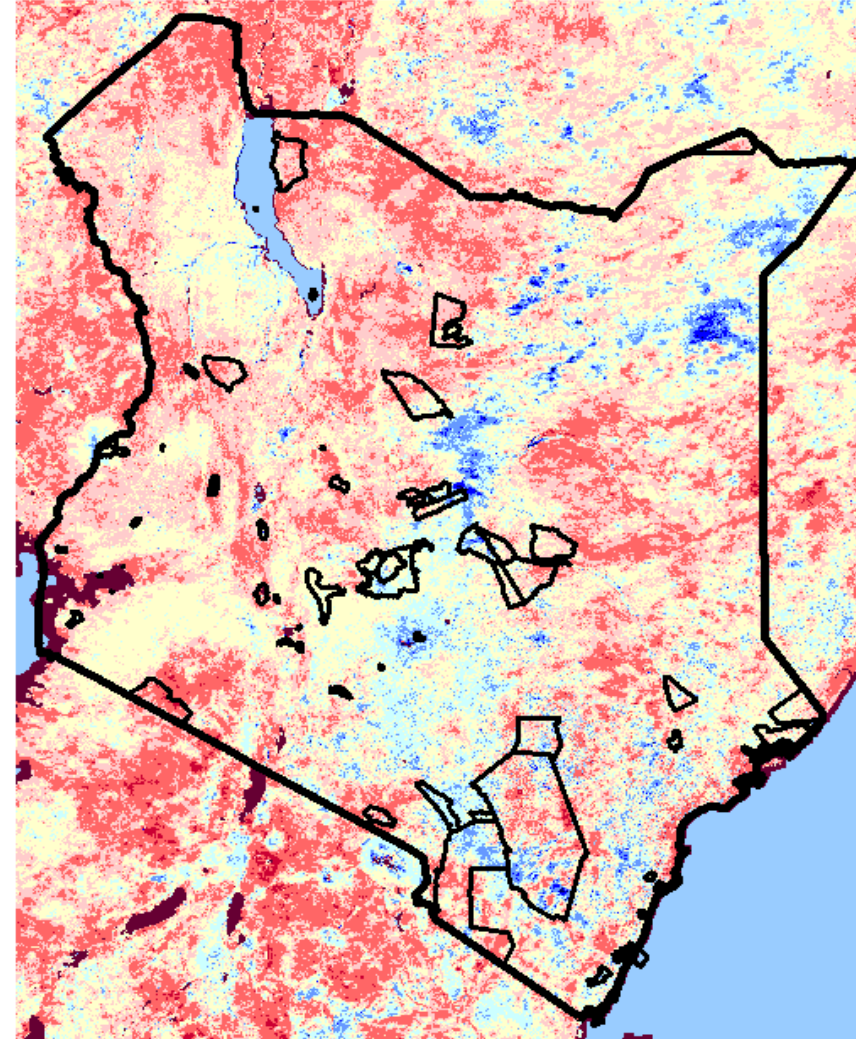


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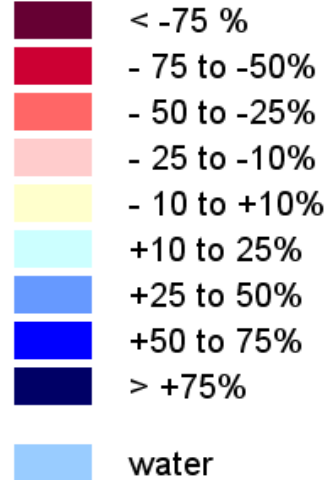
## Vegetation Index Anomalies

Kenya

Dekad start: 1 Jan 2017



### RDIF



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Image: SPOT VGT- PROBA V - Vector: KWS  
Map: Geographic, WGS 84 - Resolution: 1 km



- Inadequate Financial and Human Resources
- Poaching/ Illegal activities within Protected areas
- Unsustainable development projects
- Drought
- Human Wildlife Conflicts
- Poor infrastructure (Internet Connection, Park Remoteness..etc)

Relevance of RS in  
problem solving





Integrating (Interpreting and Making use of) Remotely sensed Data in Decision Making in our PAs





Ivory Burning event to send a message that ivory is not worth unless it is on elephants





**Thank you !  
Asante sana!  
謝謝!**

