# SERVIR
# Applying Earth Observation data to support decision making

Africa Flores, April 2016
NASA/SERVIR Science Coordination Office
africa.flores@nasa.gov

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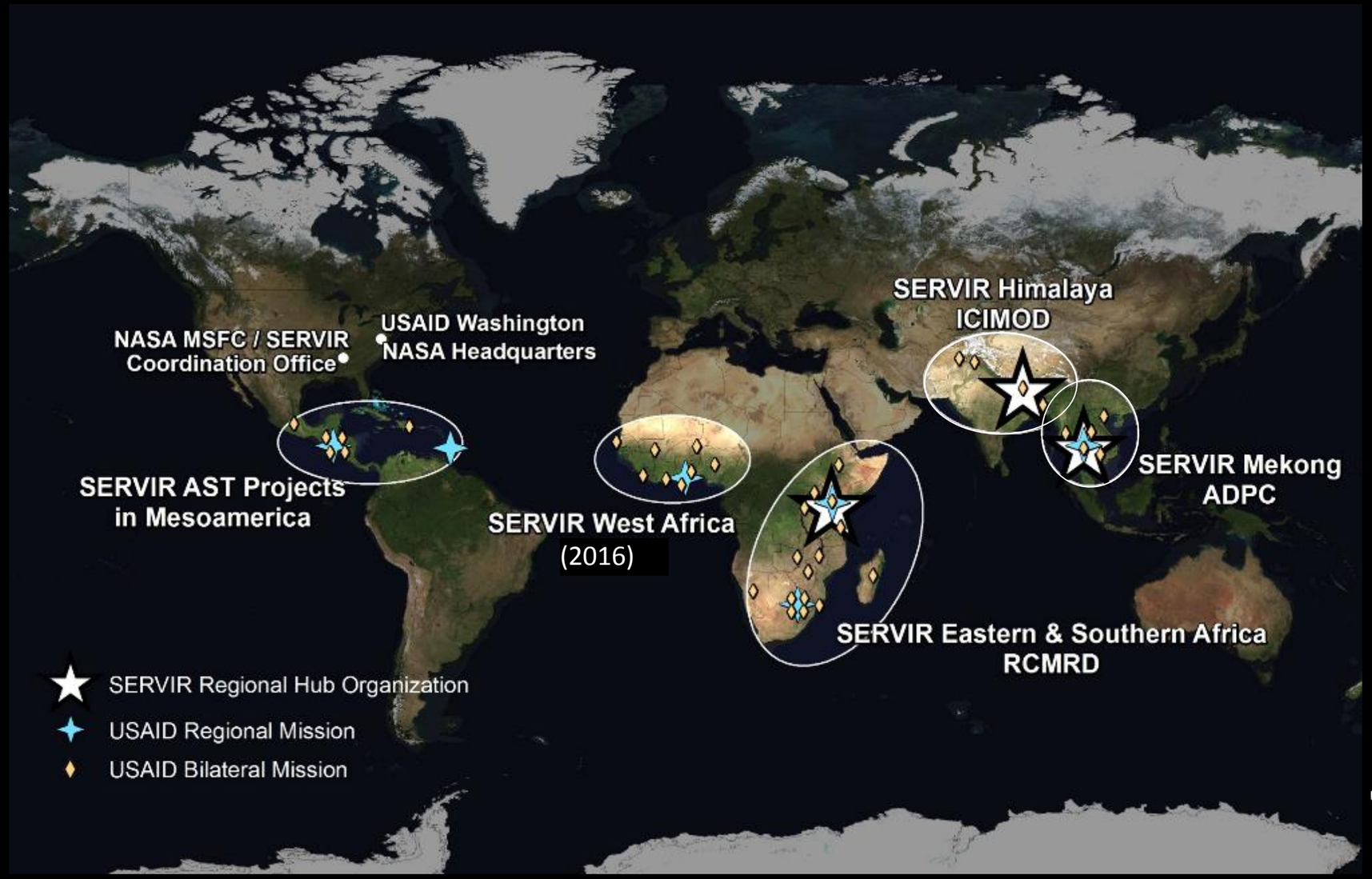
NASA




**From space, we can view our planet in new ways.**

SERVIR empowers people to use that view for gaining knowledge and insights about their environments and adaptation to a changing climate.

We work with regional decision-makers to foster use of Earth observation satellite data, GIS, and predictive models for addressing water and land use, natural disasters, agricultural problems, biodiversity, and more.

These tools can improve the lives, livelihoods, safety, and future of people in communities around the world.

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RCMRD

ICIMOD
30

adpc

# SERVIR: Linking Science to End User Needs

- SERVIR is a link between research institutions and end user decision making.
- SERVIR efforts are led by the needs of the region. Some examples include hydrologic modeling, crop yield estimation, land cover change detection, and hydro-meteorological hazard monitoring


- Presence of SERVIR Hubs, such as ICIMOD, RCMRD, and ADPC, with regional governmental support, makes the linkage sustainable.

# Results framework

**Goal:** Improved environmental management and resilience to climate change

**Objective:** Increased integration of earth observation information and geospatial technologies into development decision-making

*Intermediate Results (IR)*

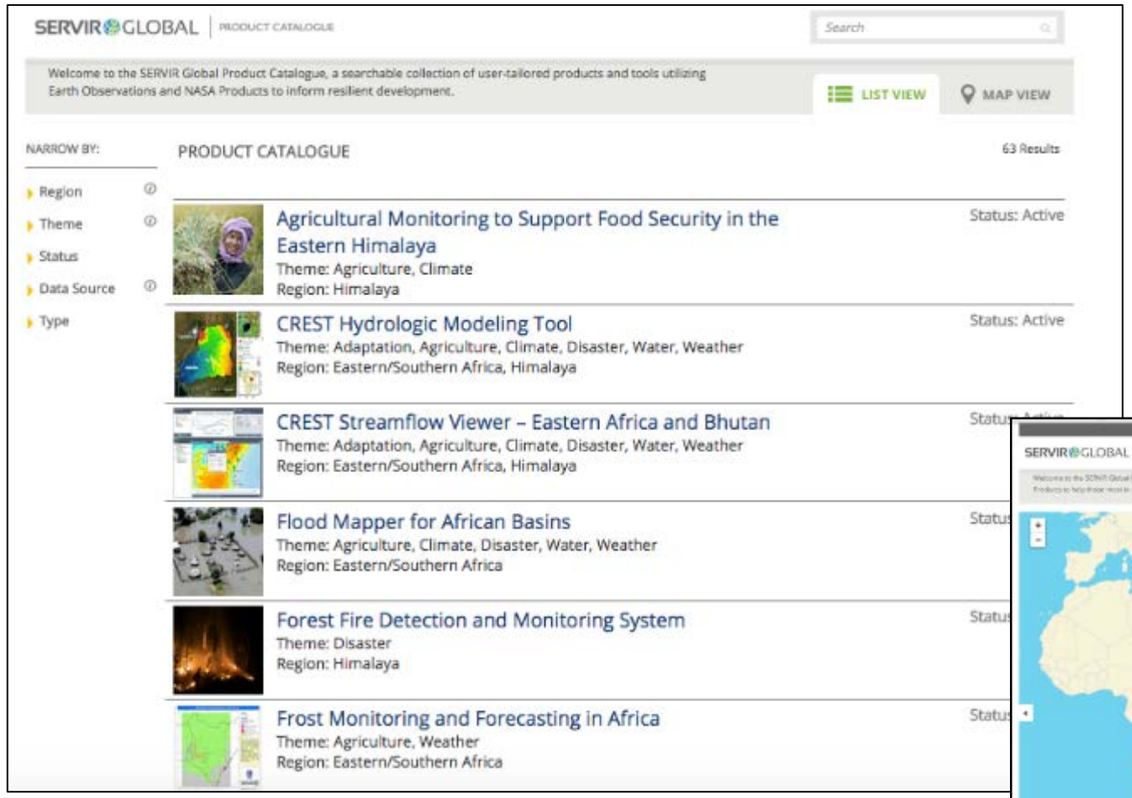
- IR1. Improved capacity of analysts and decision-makers to use earth observation information and geospatial information technologies
- IR2. Improved awareness of and access to geospatial, data, products, and tools
- IR3. Increased provision of User-tailored geospatial data, products, and tools to inform decision-making

*Sub-Intermediate Results*

- 1.1 Capacity needs and opportunities identified
- 1.2 Capacity building and training delivered
- 1.3 Science-policy ex-change enhanced
- 2.1 Data awareness and access needs and opportunities identified
- 2.2 Practices for data, products, and tool sharing improved
- 2.3 Platforms for data awareness, access, and analysis strengthened
- 3.1 Data, product, and tool needs and opportunities identified
- 3.2 Tools, models, and applications co-developed
- 3.3 Uptake and application of tools supported


Mexico
Guatemala
El Salvador
Nicaragua
Costa Rica
Panama
Belize
Honduras
Dominican Republic
South Sudan
Uganda
Rwanda
Burundi
Zambia
Botswana
Namibia
Ethiopia
Kenya
Tanzania
Malawi
Mozambique
Seychelles
Mauritius
Madagascar
Swaziland
Lesotho
South Africa
Pakistan
India
Nepal
Bhutan
Bangladesh
Cambodia
Laos
Myanmar
Thailand
Vietnam

# Comprehensive online catalogue of products





SERVIRcatalog.net / SERVIRcatalogue.net

- Water, water related disasters, weather, climate, LCLUC, ecosystems, food security and agriculture

# SERVIR in Numbers


**4**

**Regions**

**37**

**Countries**

**62**

**Tools**

**322**

Institutions with increased capacity

**28**

Small grants/scale applications

**120**

University fellows

**2,000 +**

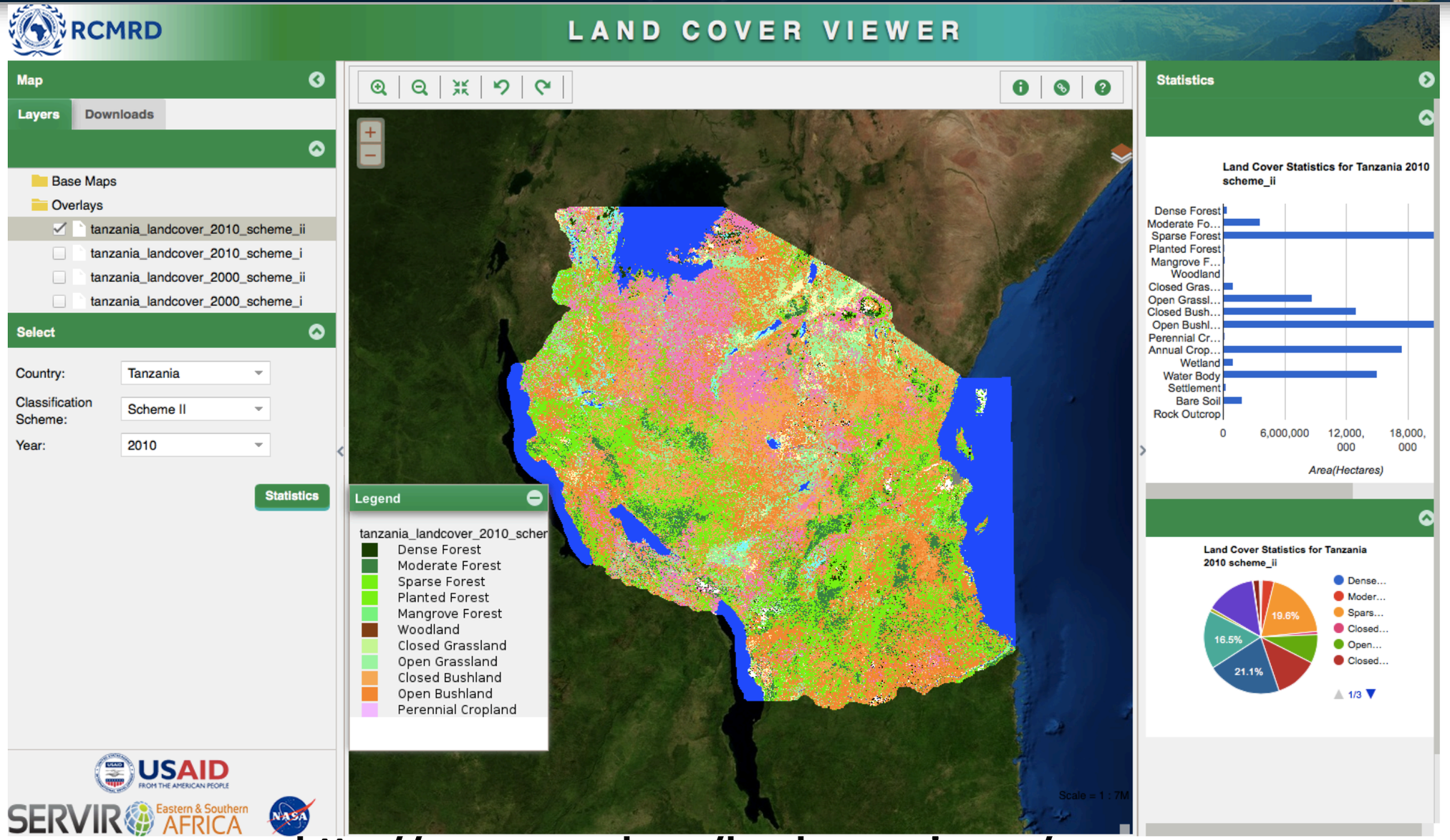
People trained

**2 M+**

Online map requests

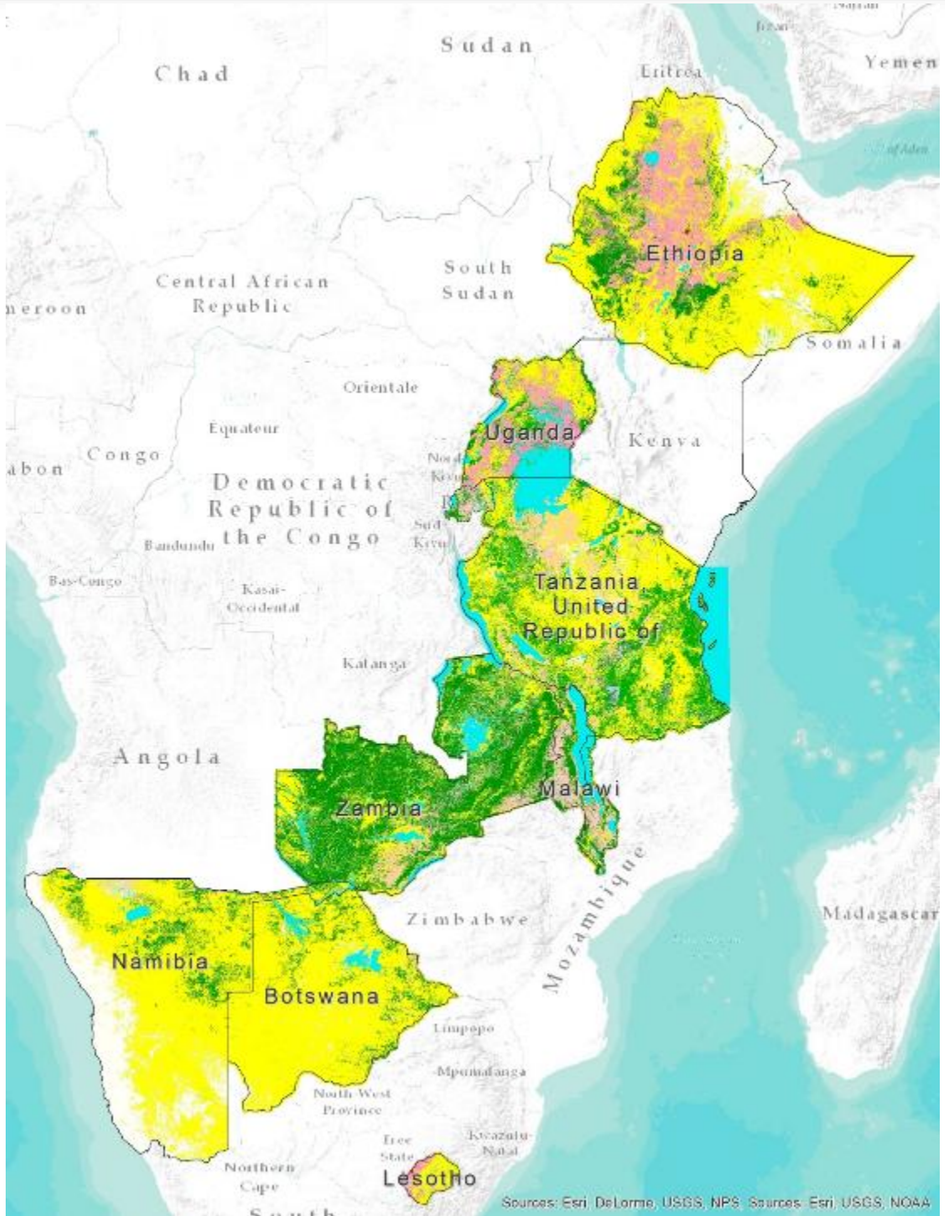
http://servirglobal.net

# SERVIR E&S Africa Land Cover Viewer




http://apps.rcmrd.org/landcoverviewer/

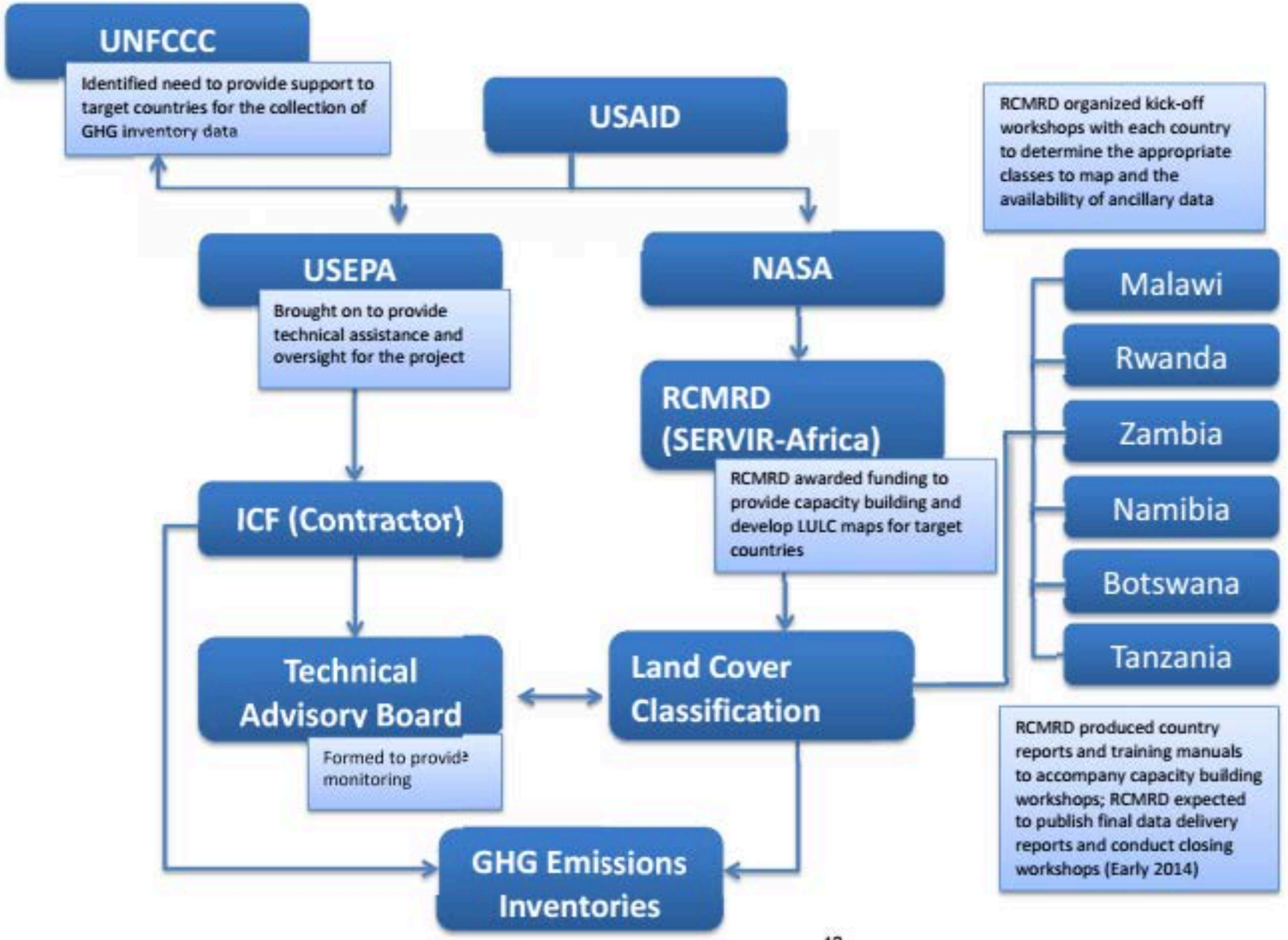
# SERVIR E&S Africa/RCMRD

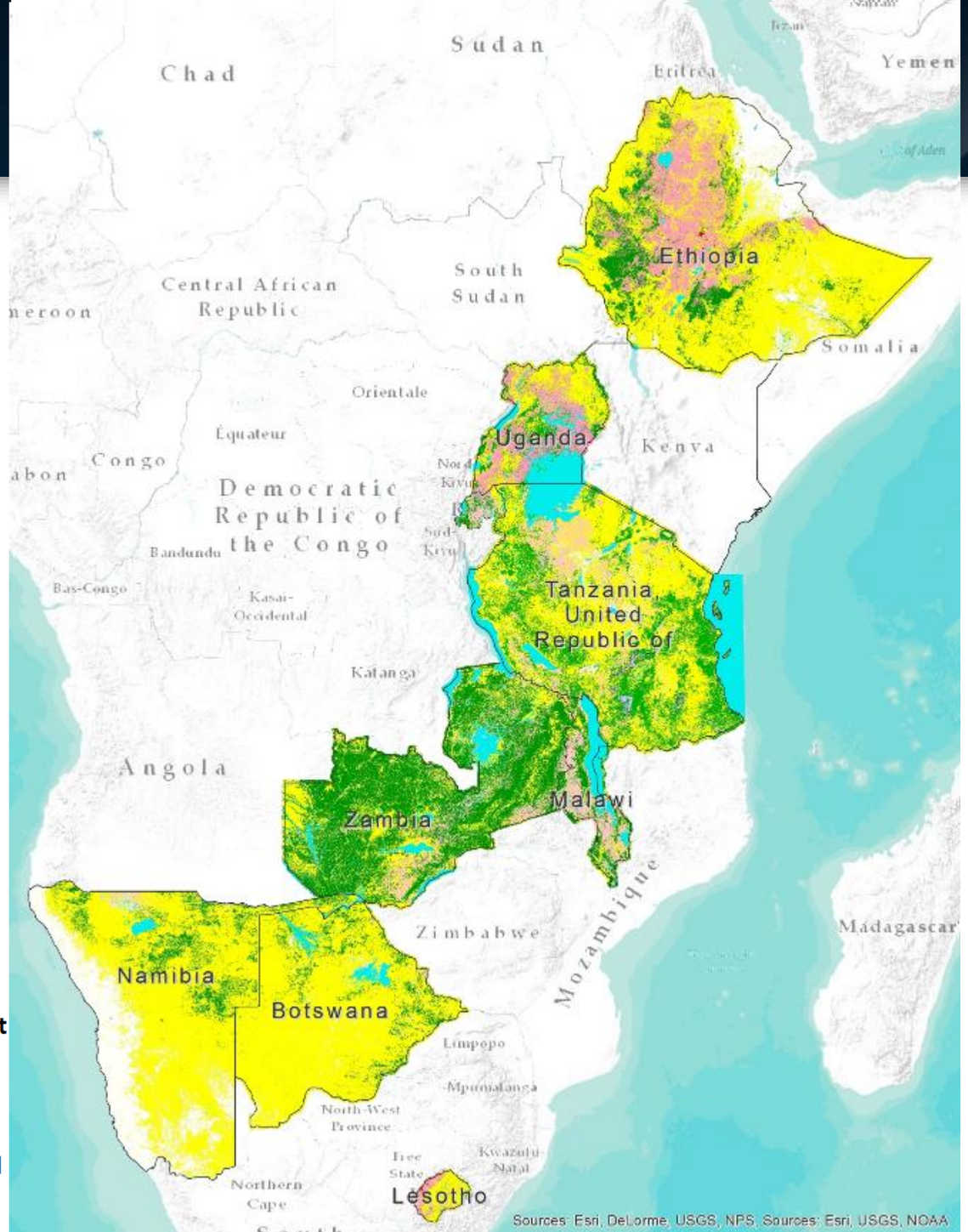



Land cover mapping for green house gas inventories development:

- Generation of land cover maps initially for six countries, extended to nine
- Close consultation with country counterparts Accuracy assessments
- 2 classification schemes: country base, and IPCC (6)
- UNFCCC-US, EPA, NASA/SERVIR, RCMRD
- Technical advisory board: formed to provide monitoring
- Landsat derived
- Field work done in collaboration with national counterparts
- Strong training component

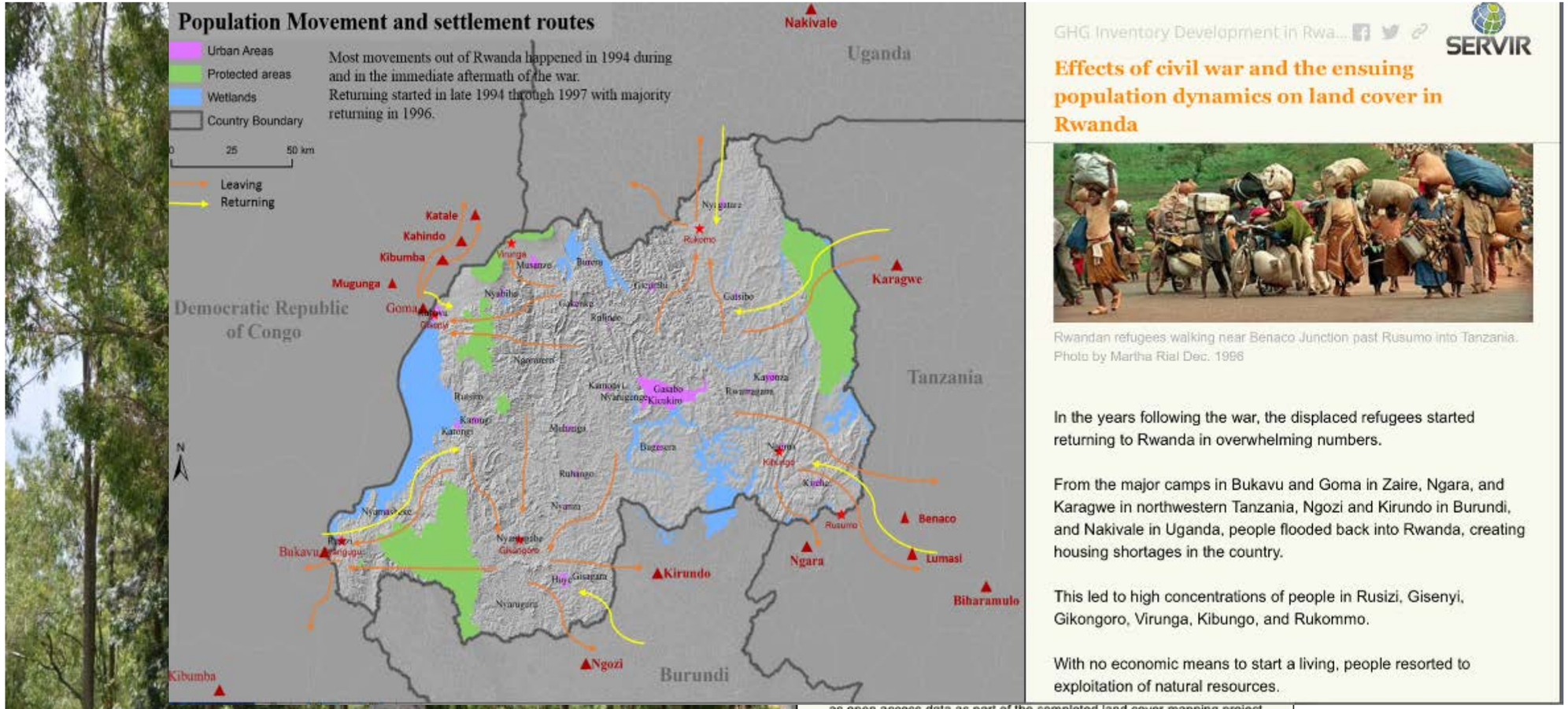
# Land cover mapping for GHG inventories development






http://apps.rcmrd.org/landcoverviewer

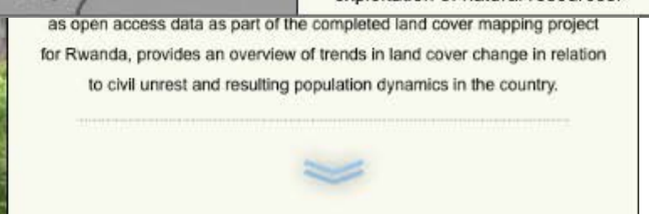
# What is this LC data telling us?







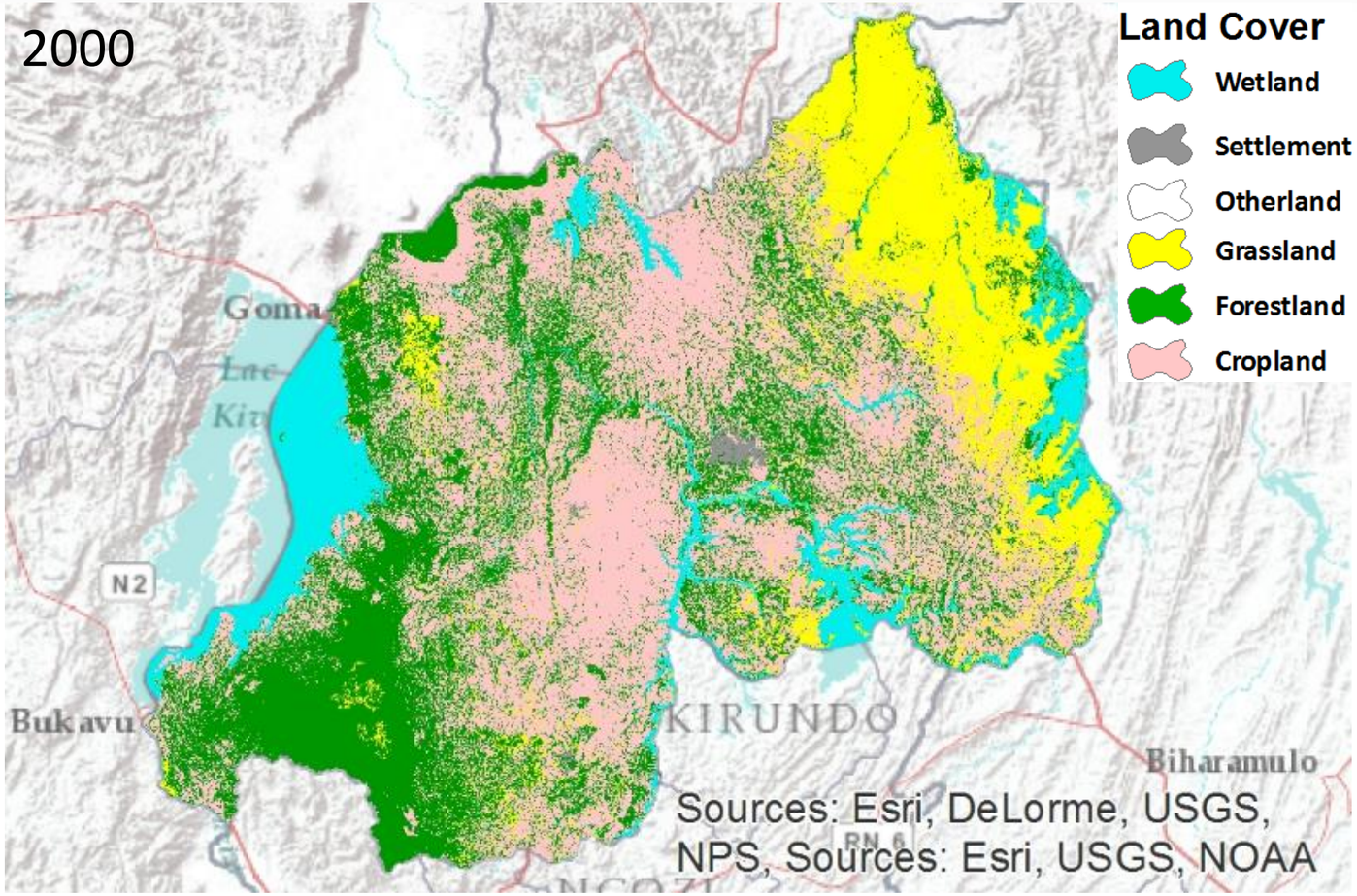


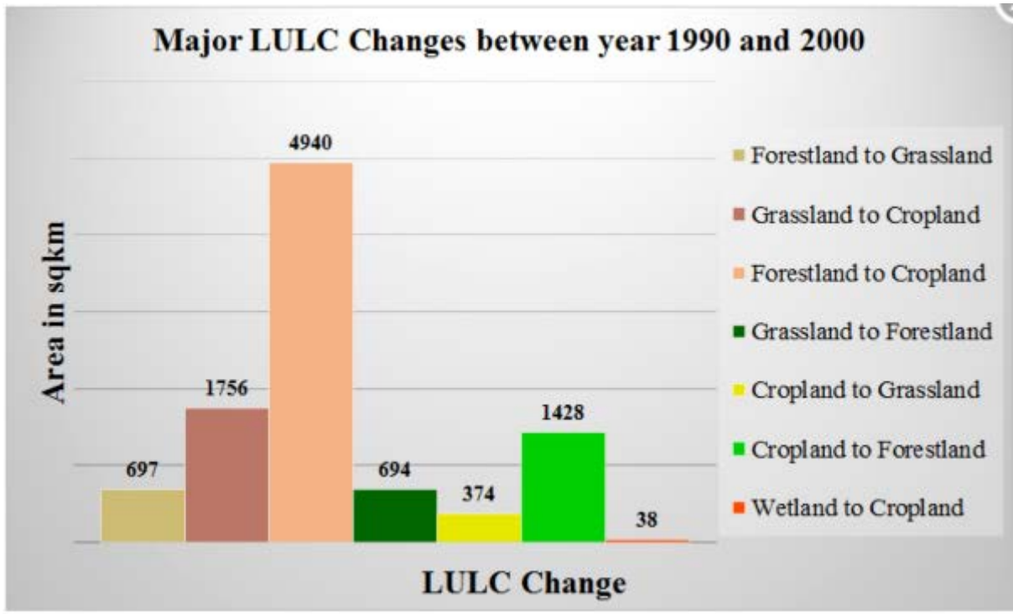



Malaso, 2016. https://servirgit.maps.arcgis.com/apps/MapJournal/index.html?appid=88ef10325efa4fe2af2d8803bff8c01d

*Al-Hamad, M., et al. 2016. Evaluating land cover changes in Eastern and Southern Africa using validated Landsat and MODIS data. International Journal of Applied Earth Observation and Geoinformation. (IN REVIEW)*

# Rwanda case



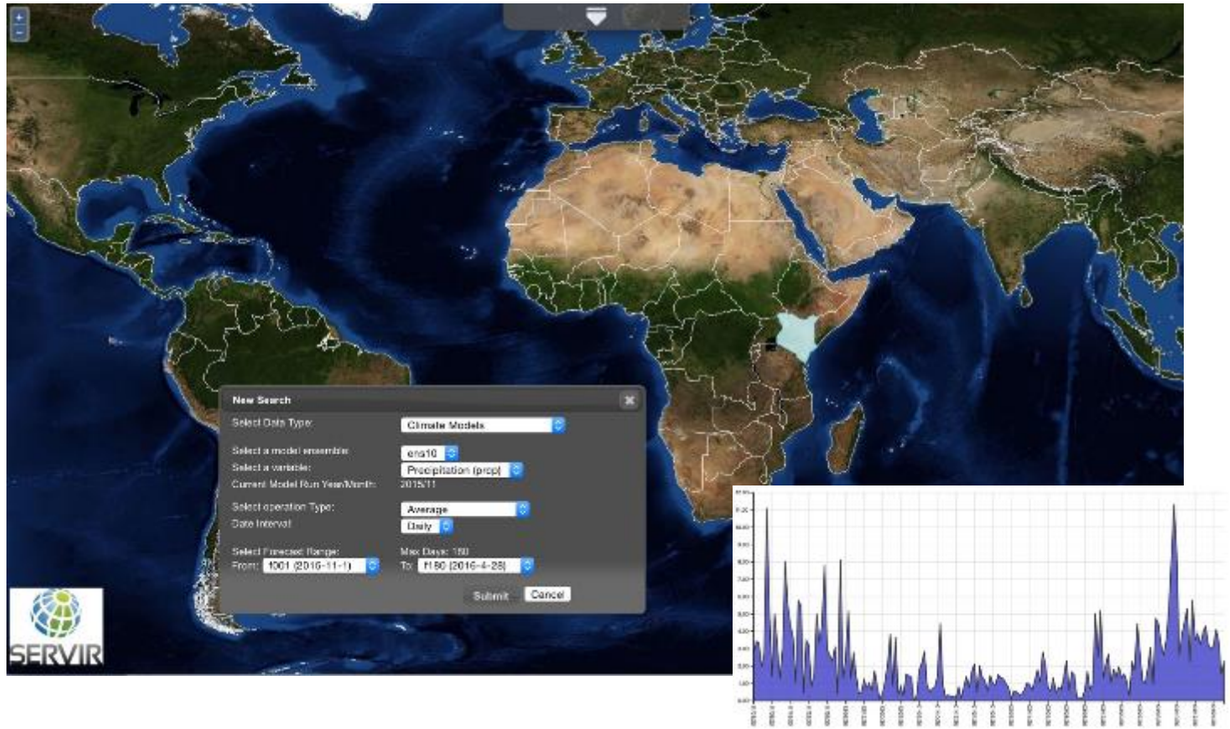




Malaso, 2016. http://arcg.is/1QUQE1y

# Lessons learned on LC project

- Capacity building is key: enable stakeholders to replicate analyses (e.g. generation of land cover datasets, **calculation of GHG emissions**) to be able to submit forest reference levels and forest reference emission levels to REDD+
- Transition of science: Readable methods that have proven successful. Need to be aware of the state of the art methods that are ready to be used.
- Flexibility: open to change and modification, re-evaluate objectives and assess if there are still achievable and relevant.
- Strong needs assessment component. Understand requirements, key end users capacities and needs. What type of decisions are going to be made with this information?
- Stronger coordination with multiple NASA programs and US Government agencies.

# ClimateSERV




Many users do not need global data for each day, instead need only information for their <u>geographic area of interest</u> and for their <u>time period of interest</u>.

SERVIR has built the ClimateSERV data processing system to analyze and deliver global or regional data for the time period and area of interest.

- *Built on the following free and open datasets:*
  - CHIRPS global rainfall data (FEWS NET)
    - 0.05° spatial resolution (~5 km)
    - Consistent, daily rainfall records since 1981
  - NMME Seasonal climate forecasts (NASA/SERVIR)
    - 0.5° spatial resolution (~50 km).
    - Daily rainfall and temperature for 180 days in advance, updated monthly
  - eMODIS vegetation index (NDVI, for West Africa, USGS)
    - 250 m spatial resolution. Pentadal, available since 2001

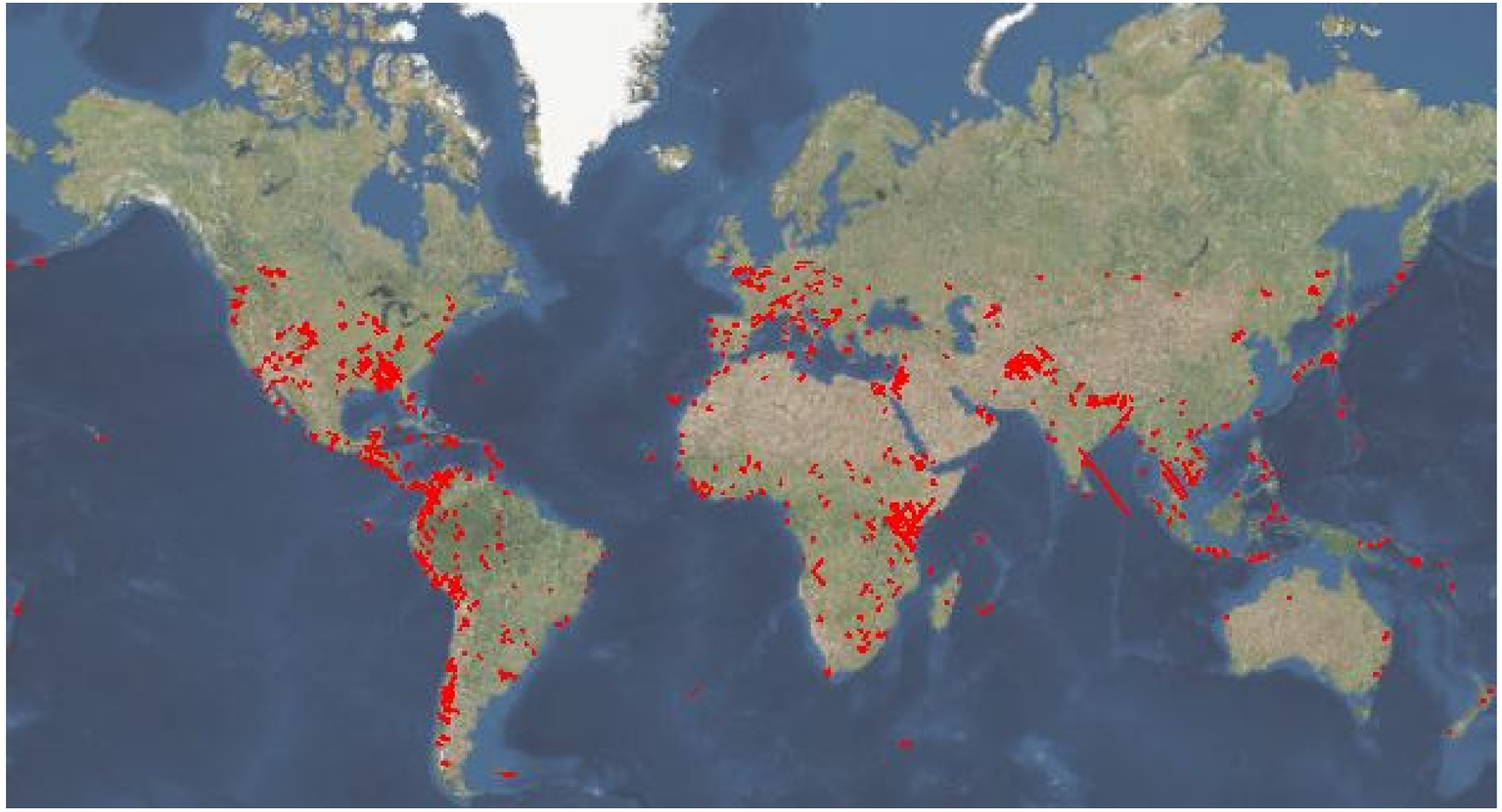
**http://climateserv.nsstc.nasa.gov**

# ISERV Viewer


**http://www.servirglobal.net/mapresources/iserv/**

# ISERV data

http://earthexplorer.usgs.gov

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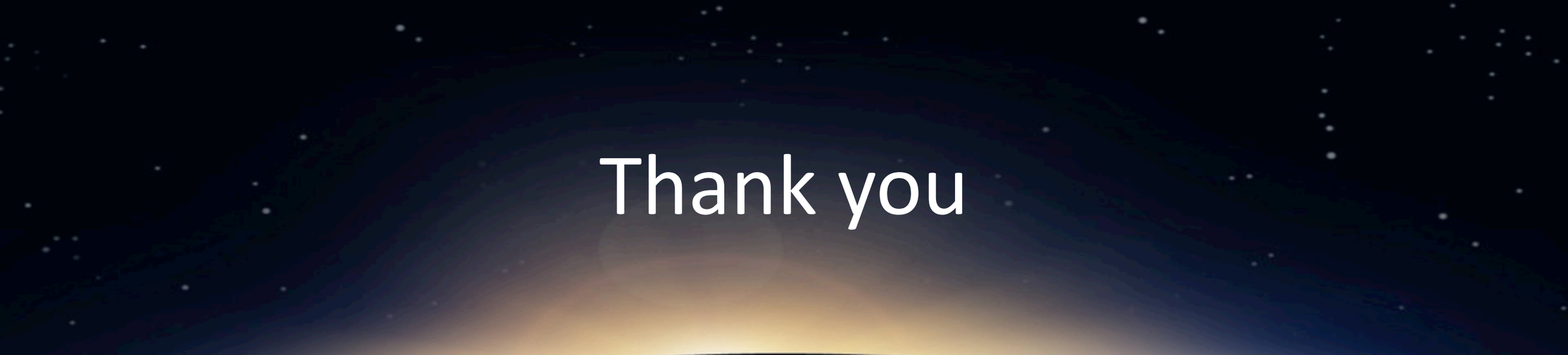
Connecting space to village
www.servirglobal.net

# Thank you



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