Bringing Climate Data to East Africa and Beyond

The SERVIR Regional Visualization and Monitoring System

Daniel Irwin
NASA

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ICIMOD

GROUP ON
EARTH OBSERVATIONS

When People Think of NASA…

Goal 3A: Study Earth from space to advance scientific understanding and meet societal needs

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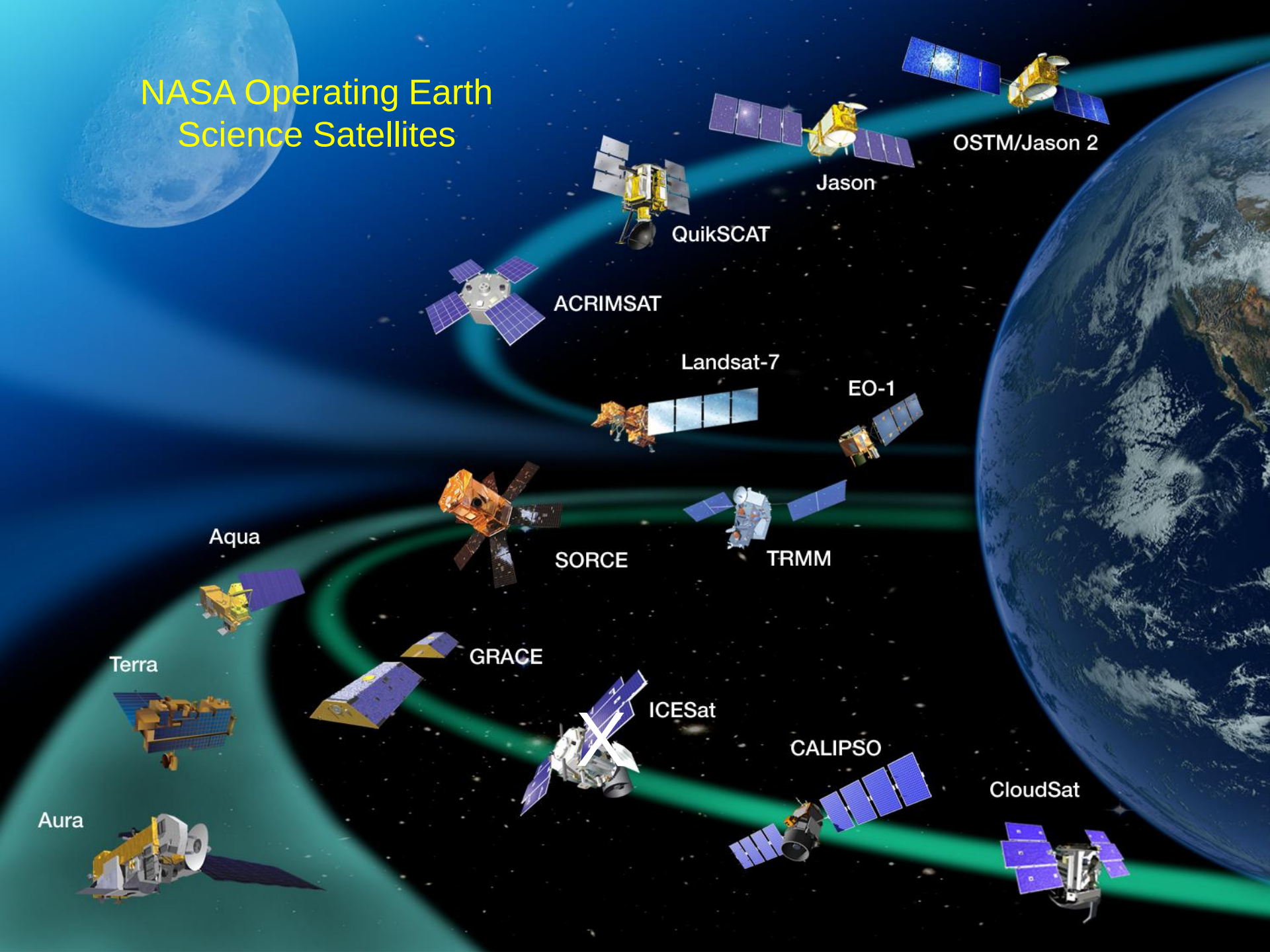
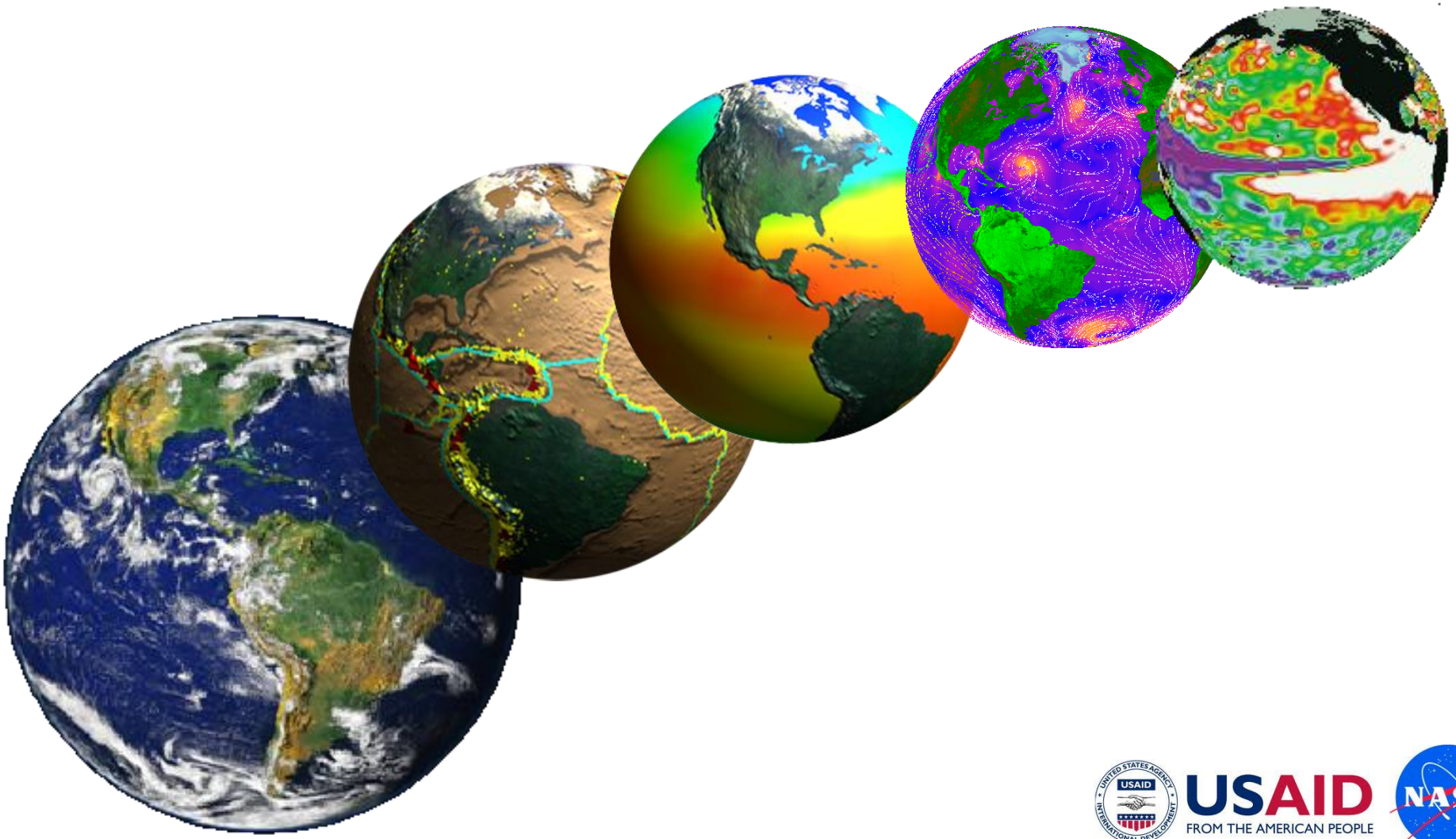

NASA Operating Earth
Science Satellites
OSTM/Jason 2
Jason
QuikSCAT
ACRIMSAT
Landsat-7
EO-1
SORCE
TRMM
Aqua
GRACE
Terra
ICESat
CALIPSO
CloudSat
Aura


NASA Operating Earth Science Satellites – with International Partners
OSTM/Jason 2
Jason
QuikSCAT
ACRIMSAT
Landsat-7
EO-1
Aqua
SORCE
TRMM
Terra
GRACE
ICESat
CALIPSO
CloudSat
Aura

Pioneering Observations of the Earth



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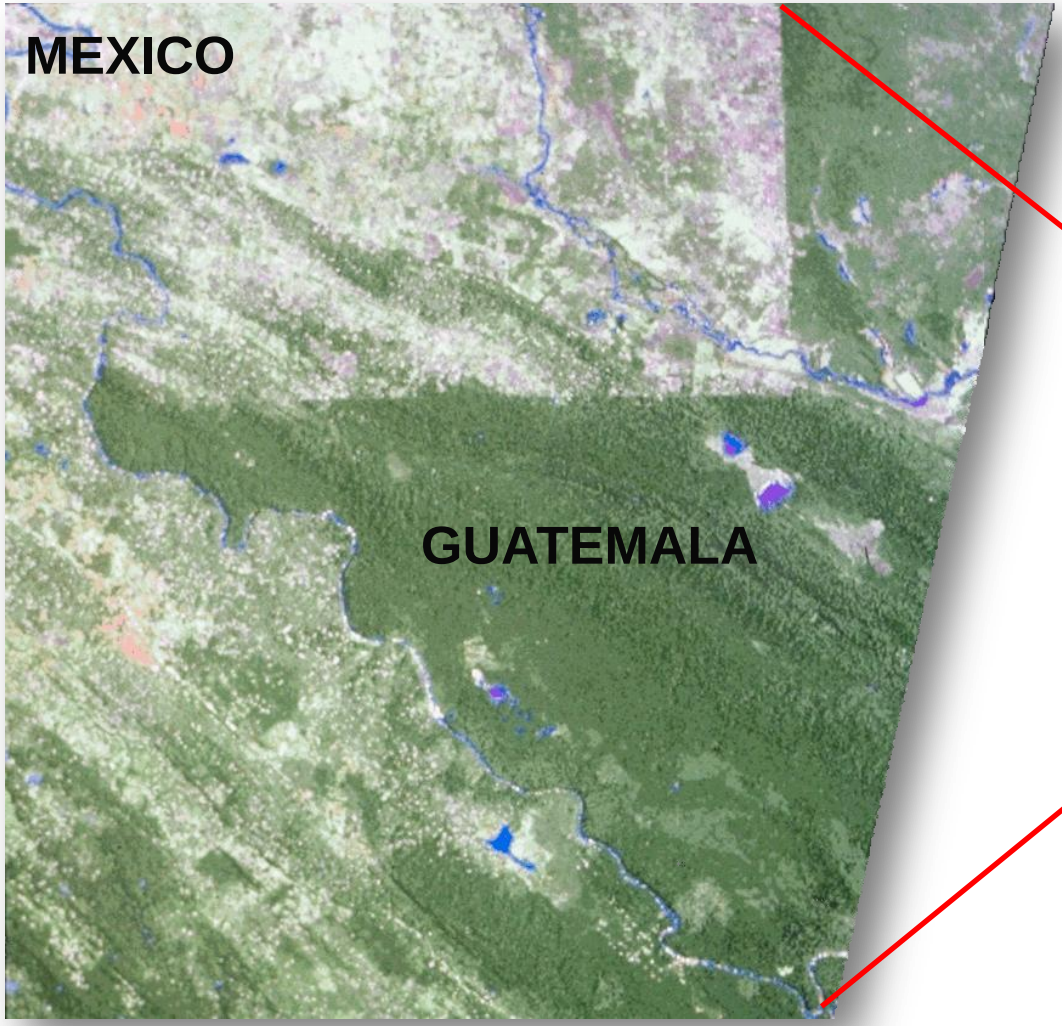
International Boundary From Space



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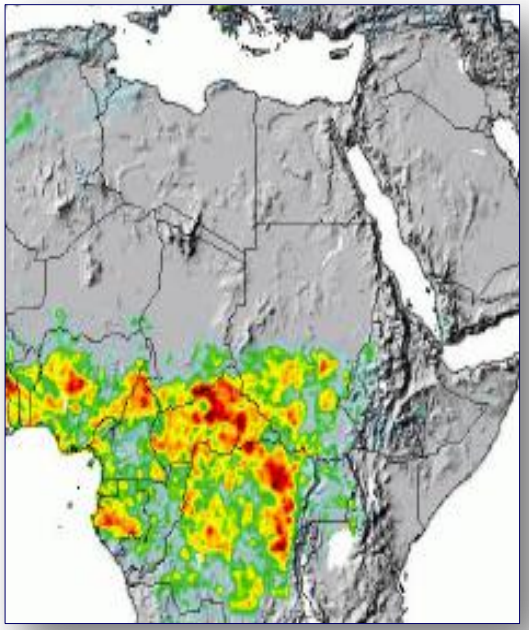
Strengthen capacity of governments and other key stakeholders to integrate earth observation information and geospatial technologies into development decision-making



Flood Forecasting in Africa

Training and Capacity Building

Mapping Fires in Guatemala Mexico

- Data and Models
- Online Maps
- Visualizations
- Decision Support
- Training
- Partnerships

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US Agency for International Development

Science and Technology – renewed focus on integrating science, technology, and innovation in the practice of development to solve today's most pressing development challenges around the globe.

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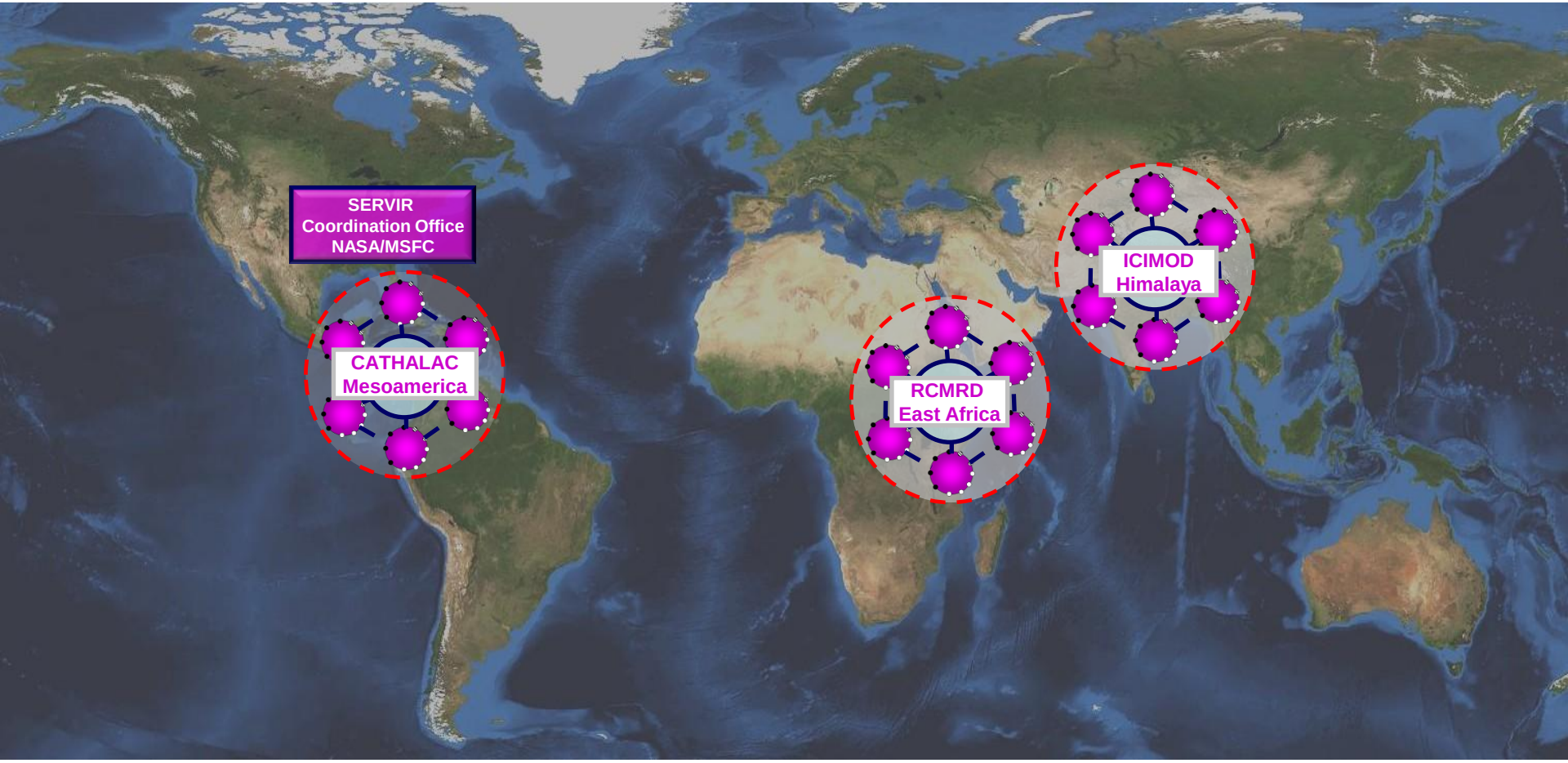
SERVIR Network



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SERVIR-Mesoamerica @ CATHALAC

City of Knowledge, Panama

Dedicated on February 3, 2005

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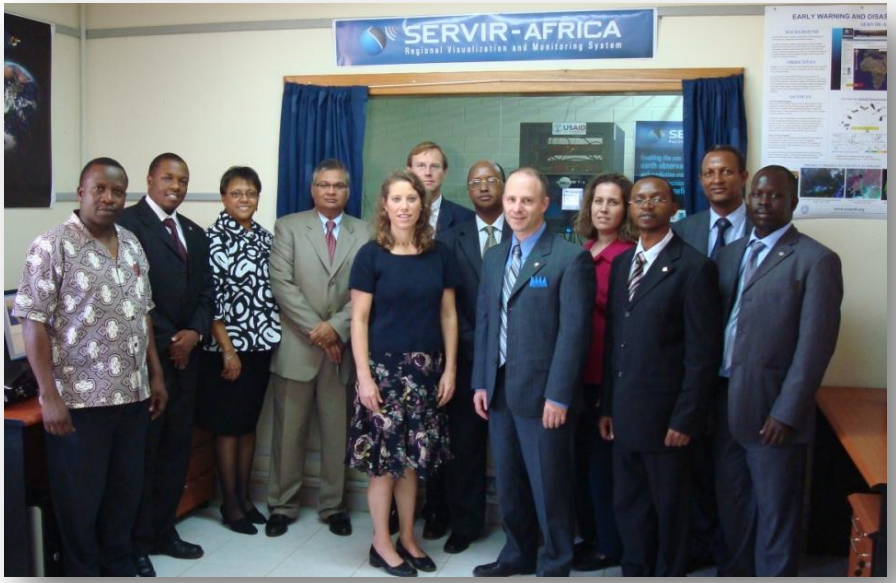
SERVIR-Africa @ RCMRD

Nairobi, Kenya

Dedicated on
November 21, 2008



SERVIR-Himalaya @ ICIMOD

Kathmandu, Nepal

Dedicated on October 5, 2010

ICIMOD

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‘South-South’ Collaboration

Centers are exchanging ideas and sharing experiences

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SERVIR Products and Services

- SERVIR Geospatial “One Stop”
- Capacity Building
- Regular Environmental Information
- Post-Disaster Earth Observations Analyses
- Land Management & REDD+

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SERVIR “One-Stop”

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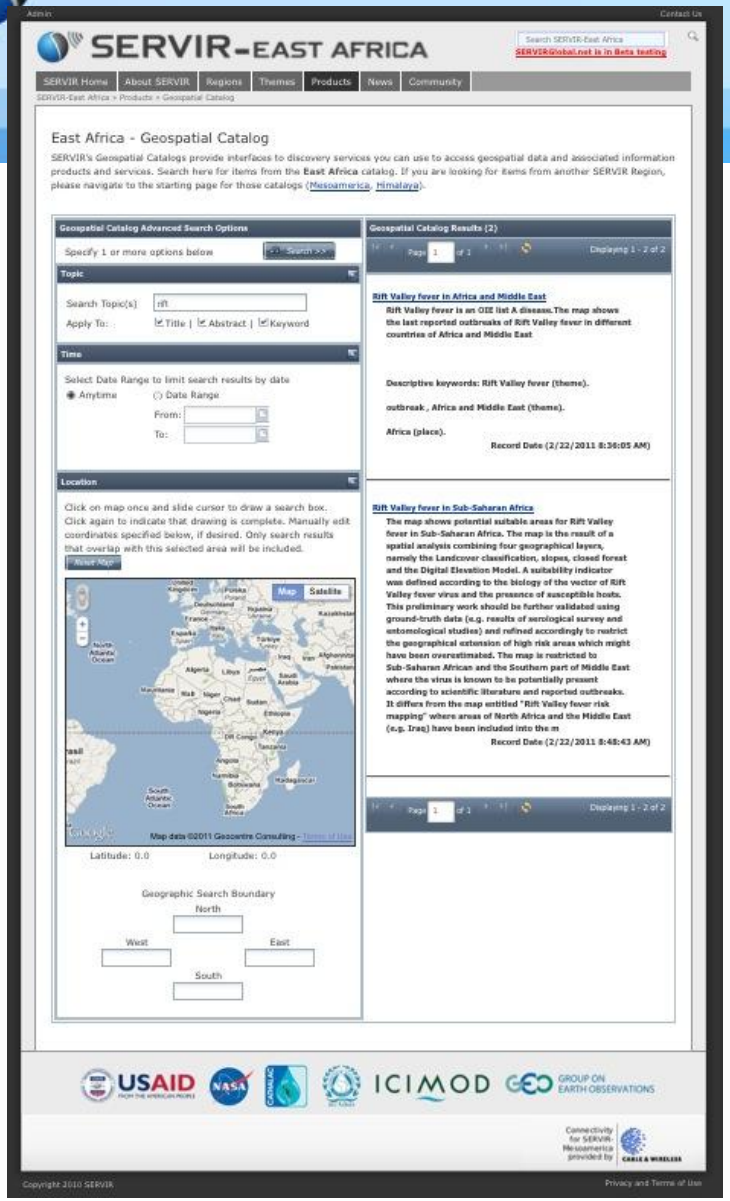
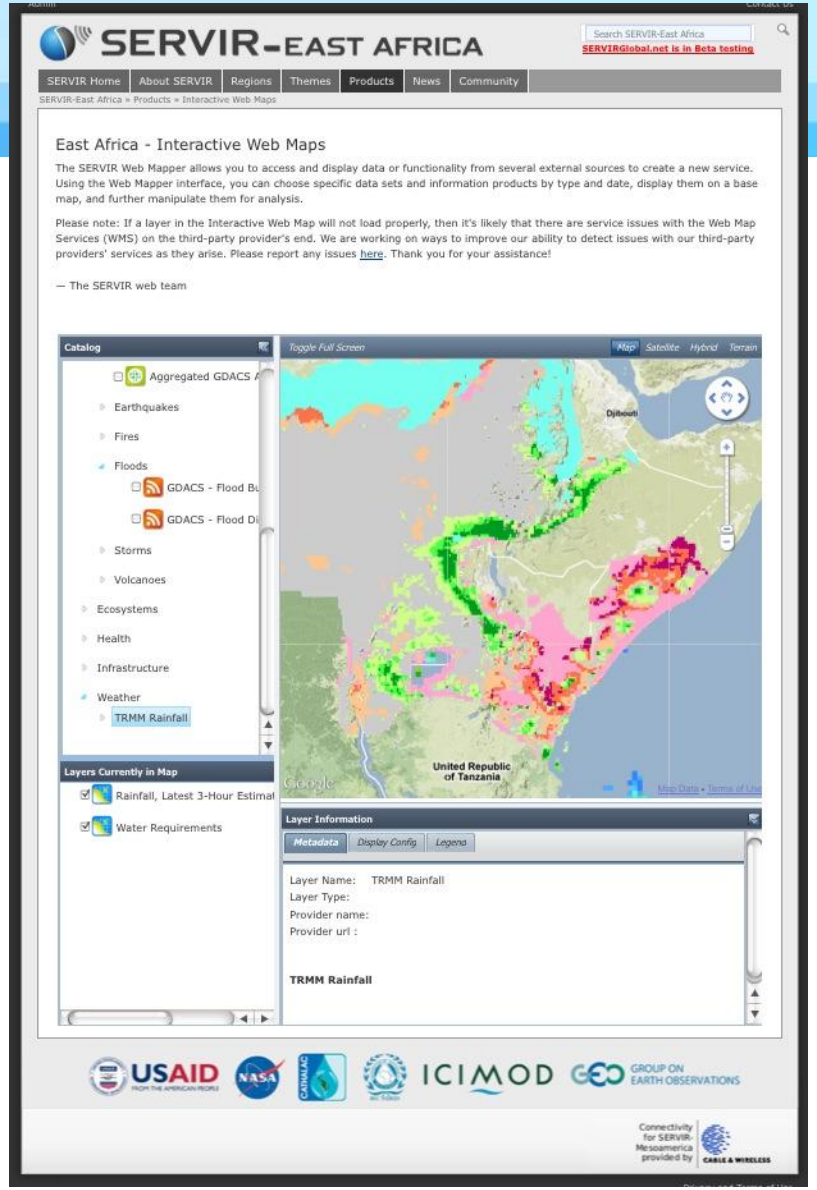
SERVIR “One-Stop”

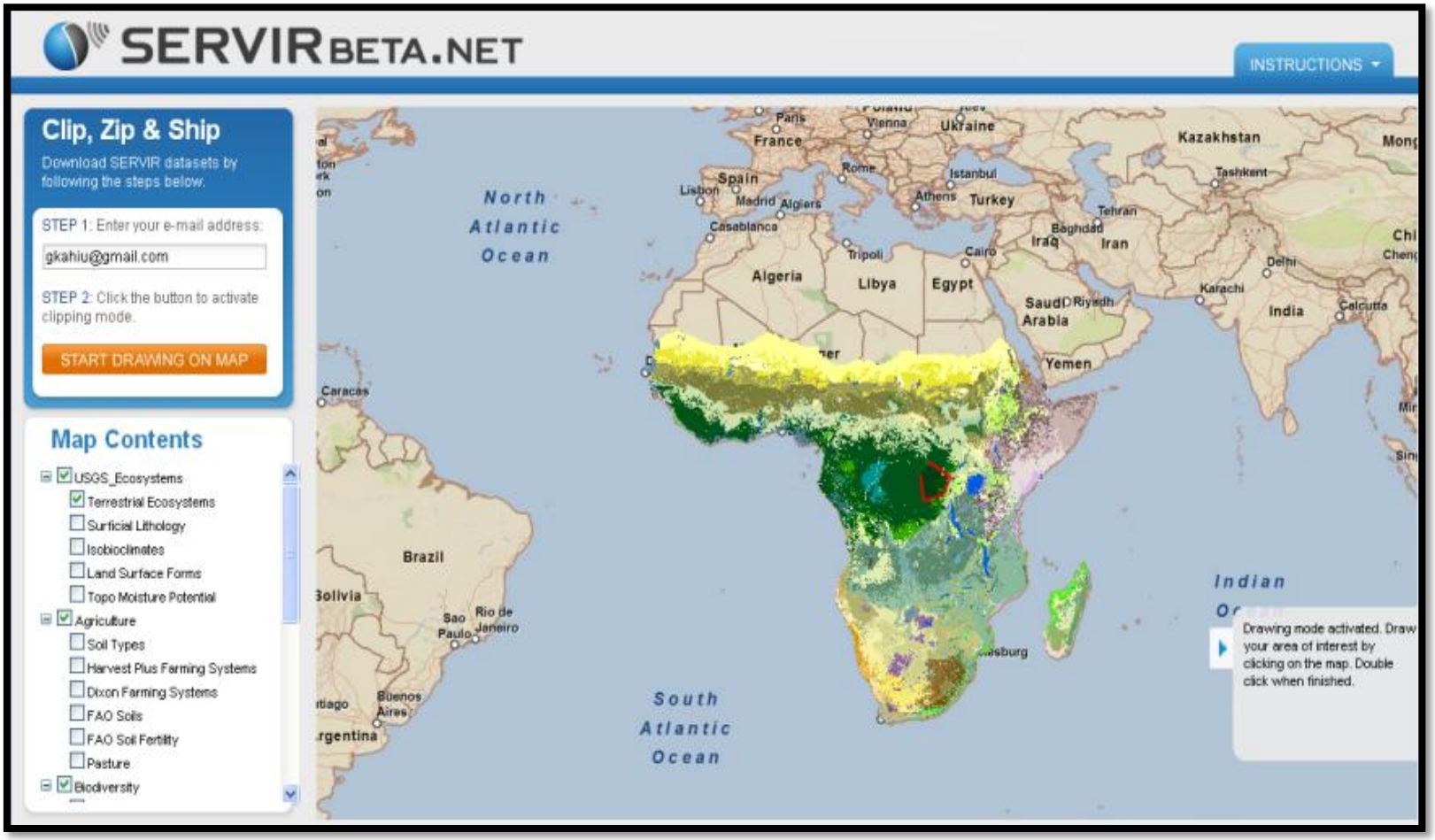


Geospatial Catalog



Interactive Web Maps

“One Stop” Clip and Ship Tool



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Earth Observation and Geospatial Capacity Building

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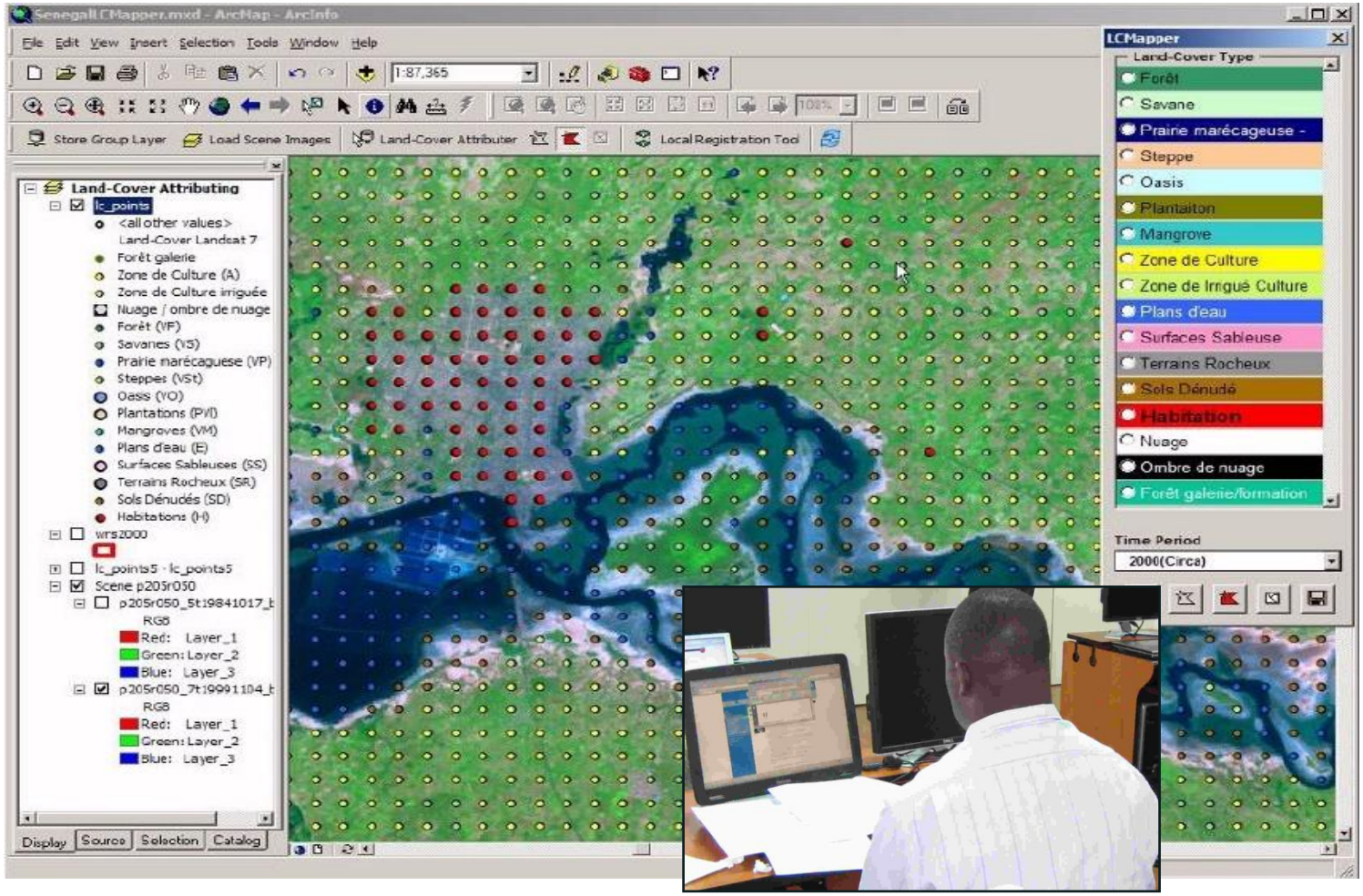
Rapid Land Cover Mapping Training



USGS science for a changing world

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MyCOE-SERVIR Initiative

- Building capacity to protect biodiversity using GIS, RS, and geospatial analytical techniques.
- Strengthening collaboration amongst universities, government environmental authorities, and NGOs.
- Students & mentors competitively selected; both receive modest stipends to conduct 6-month long projects and travel support .

my community, our earth

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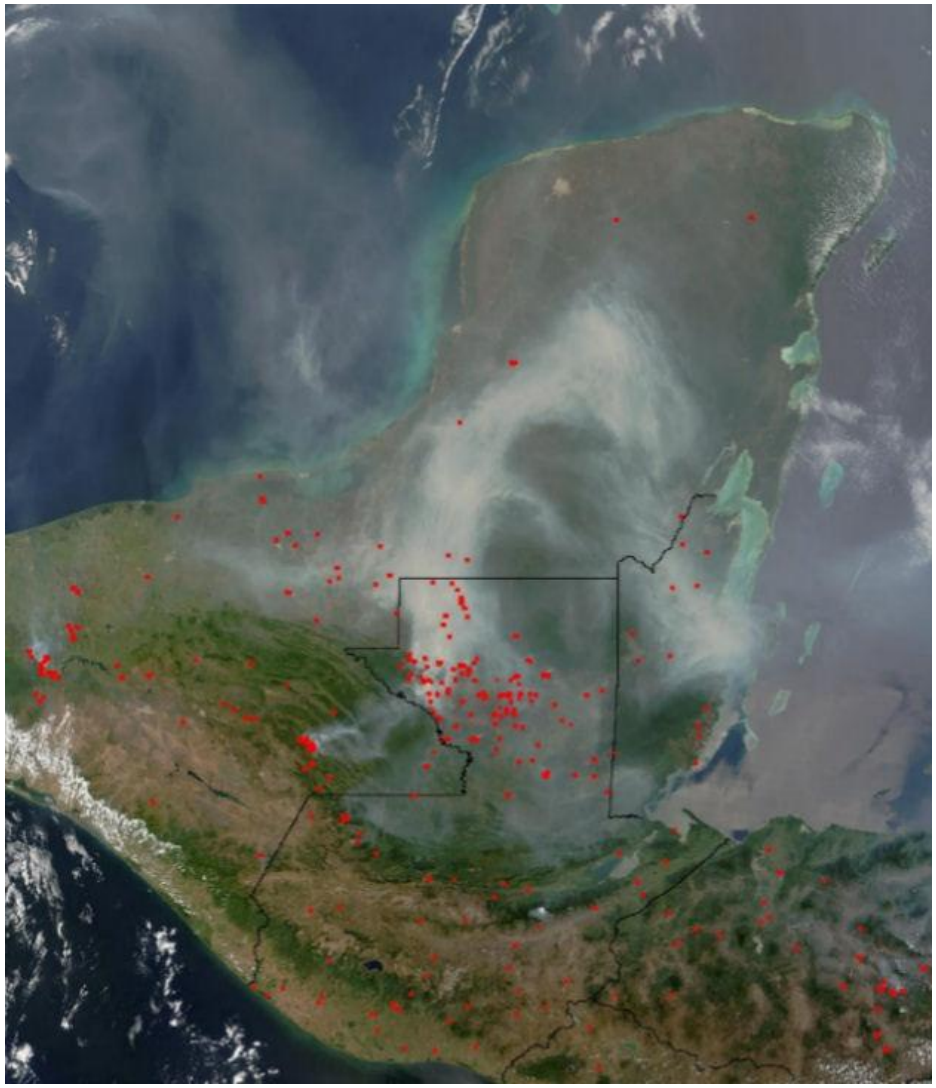
Detecting Fires from Space



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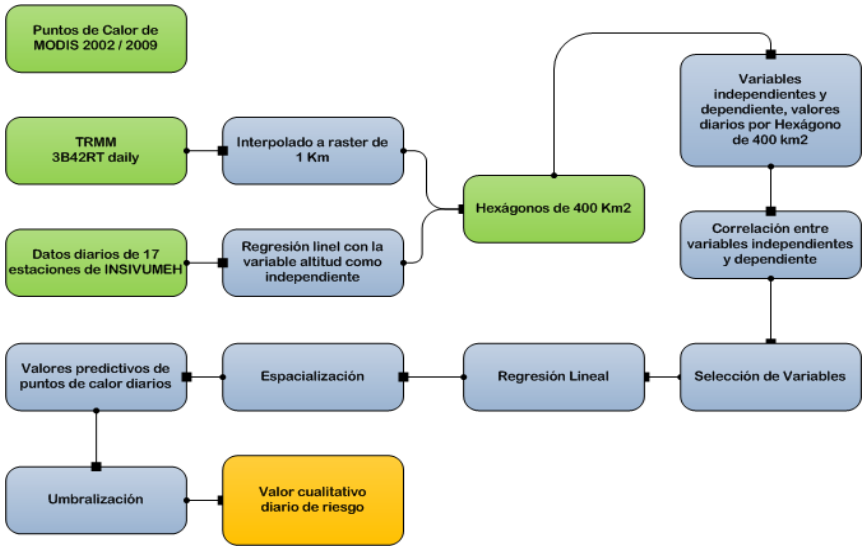
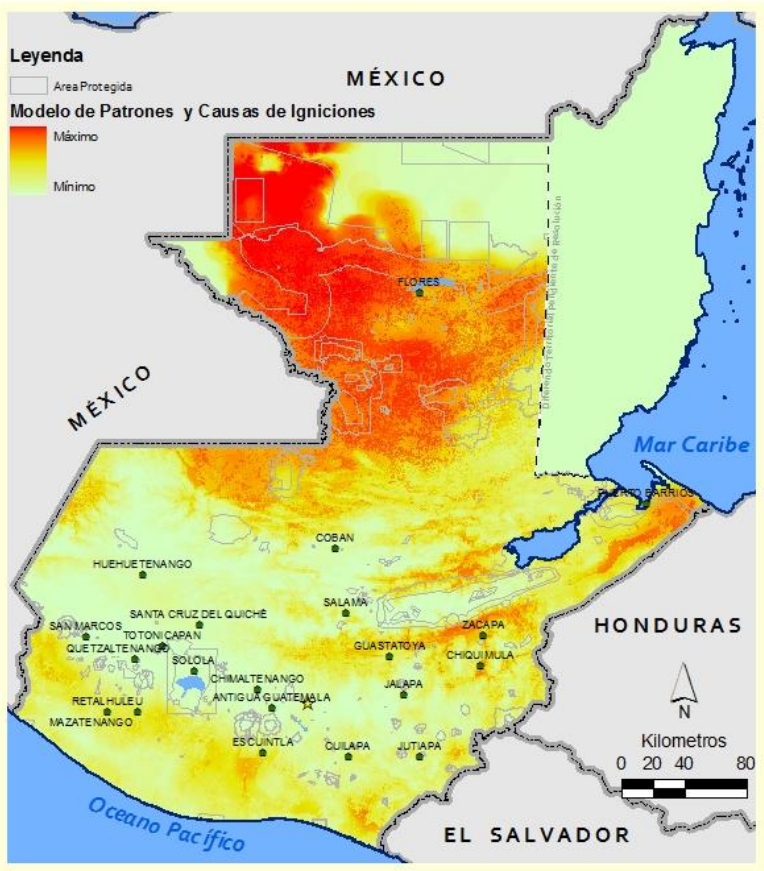
Guatemala Fire Forecast System

Fire forecasting uses MODIS Rapid Response System, a collaborative effort between GSFC and University of Maryland





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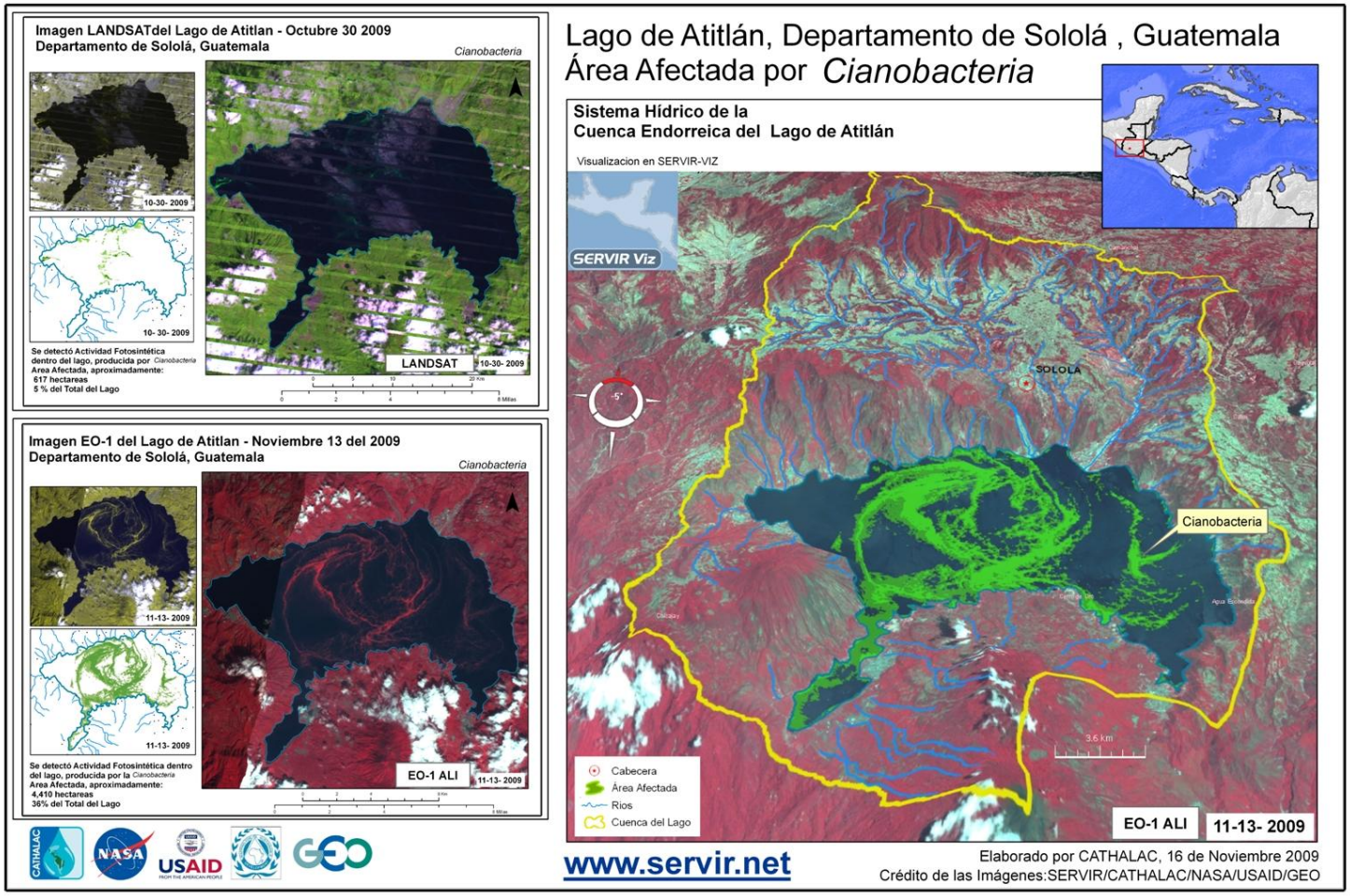
Cyanobacteria Outbreaks



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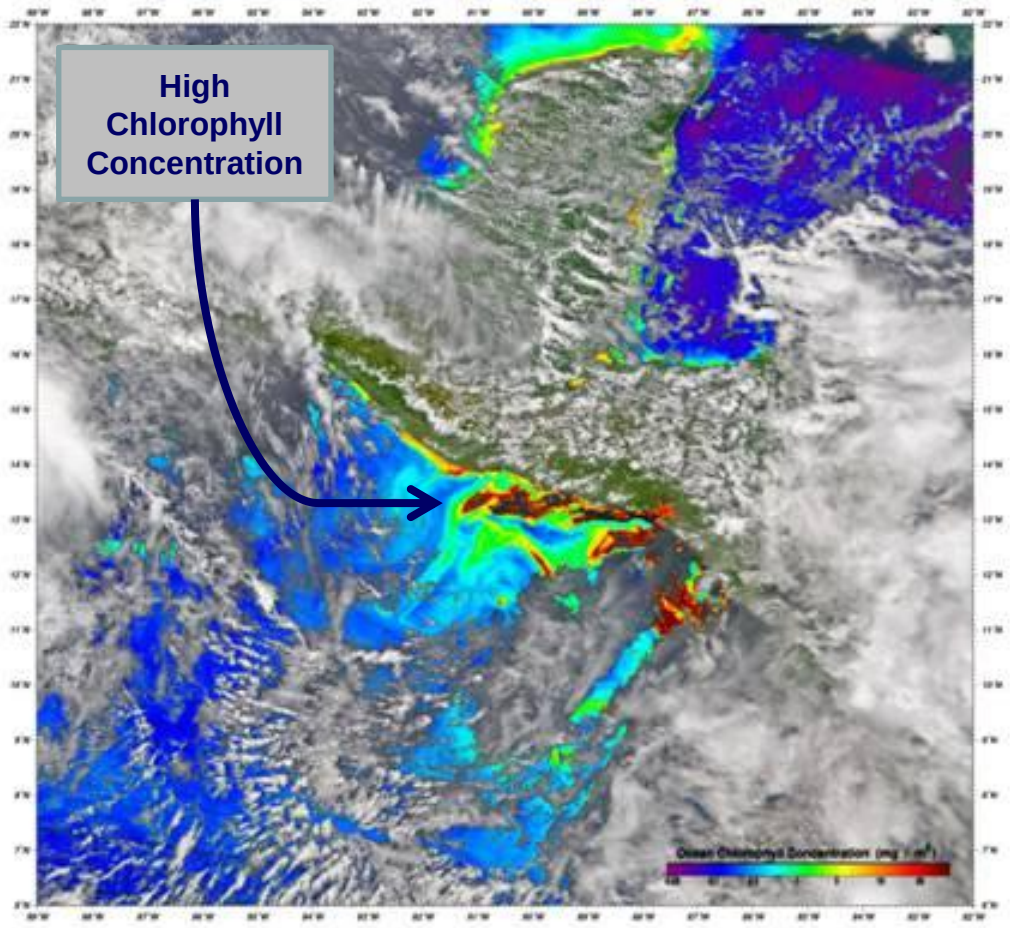
Harmful Algal Blooms

Real time monitoring of Harmful Algal Blooms (HAB) using remotely sensed data products



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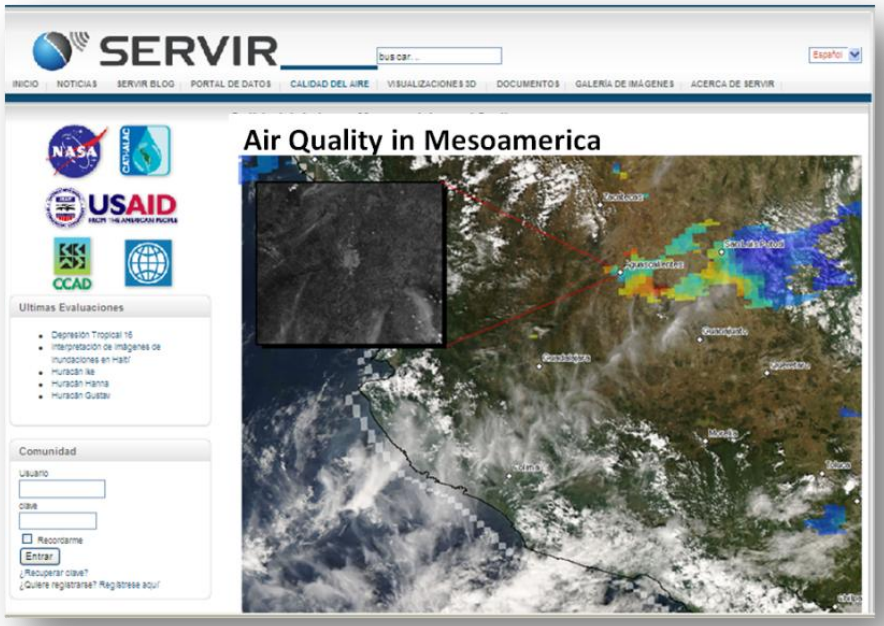
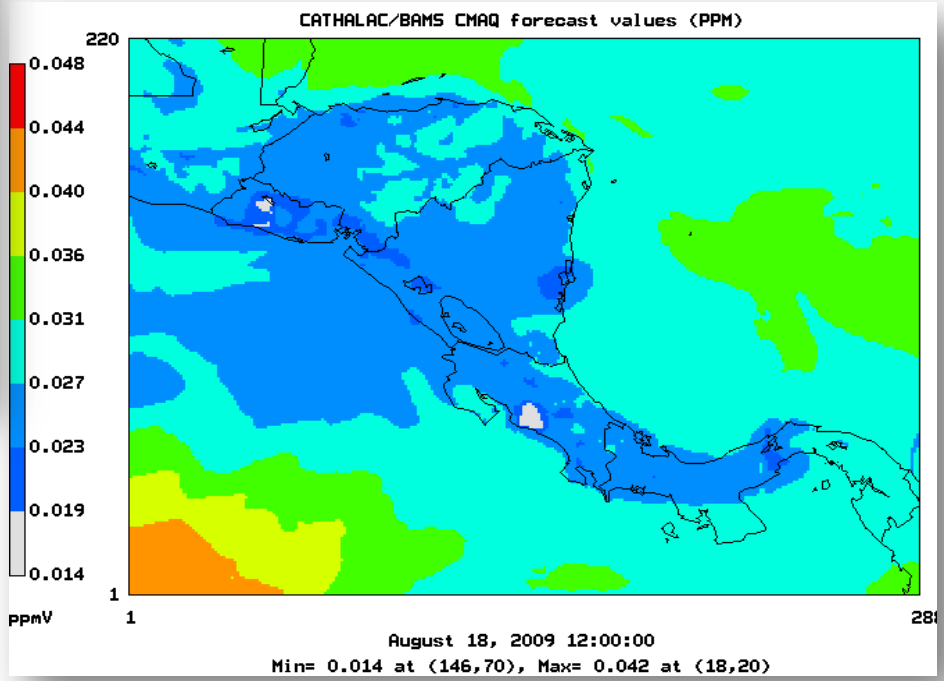
Air Quality





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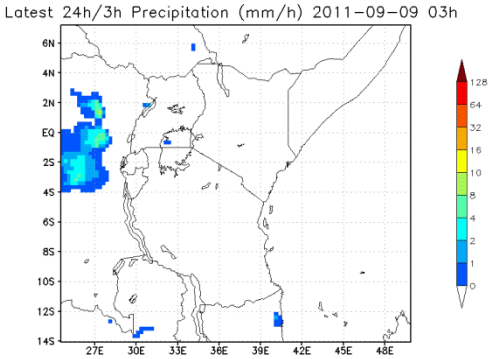
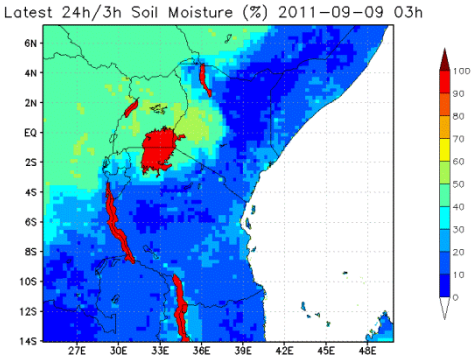
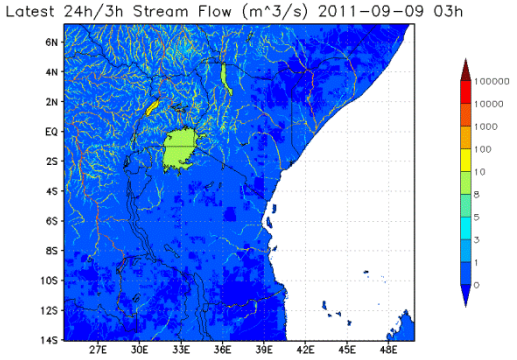
SERVIR Hydrologic Modeling

- Spatially distributed hydrologic model CREST, developed under ROSES-funded NASA/GSFC effort by University of Oklahoma (based on the state of the science Variable Infiltration Capacity (VIC) model).
- Model being run operationally at a spatial resolution of 1km at 3-hr frequency. Output products from CREST are streamflow, soil moisture, actual evapotranspiration.
- Working closely with Kenya Meteorological Department (KMD). We incorporate their near real-time rainfall and temperature forecasts to streamflow and other products. KMD intends to use CREST model products in their simulations.







KMD East African Domain

SERVIR Hydrologic Model

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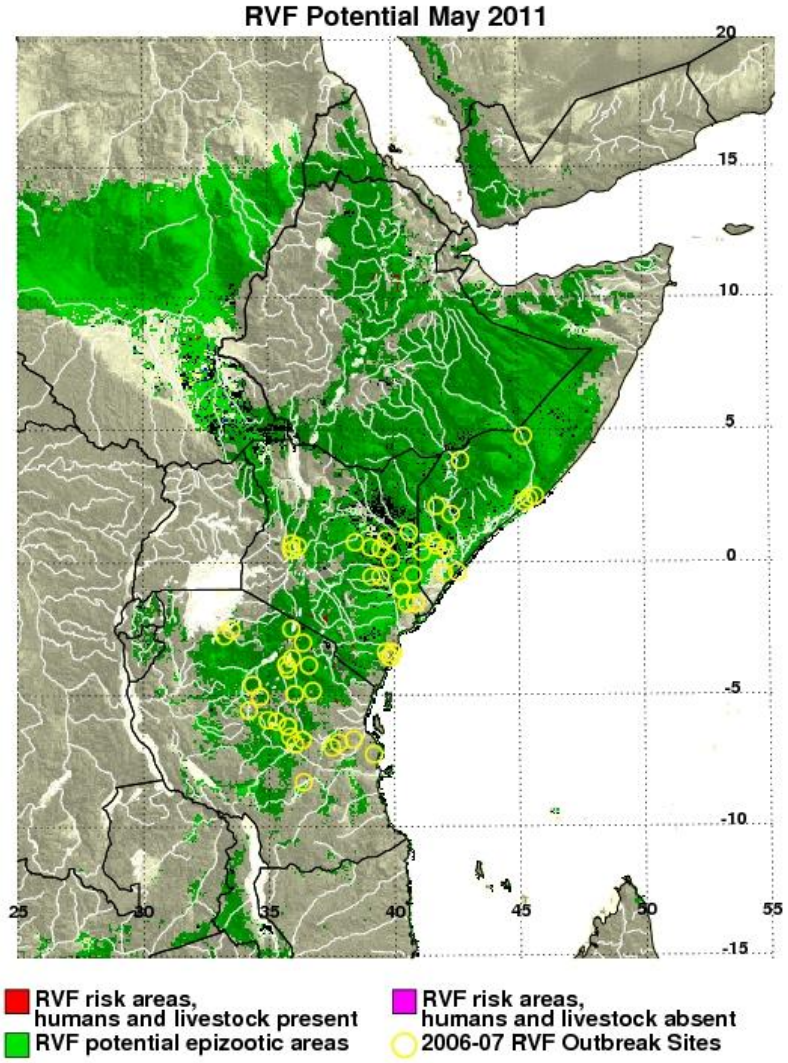
Rift Valley Fever in Africa



Rift Valley Fever Risk Map (Livestock and human disease transmitted by mosquito)

Uses NDVI, Precipitation and Temperature information

Sensors: MODIS and AVHRR

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Coral Reef Bleaching Monitoring Tool

Objectives:

- Global database on coral reefs and their status with visualization interface
- Coral reef bleaching monitoring tool and user manual, integrated into SERVIR-Africa portal

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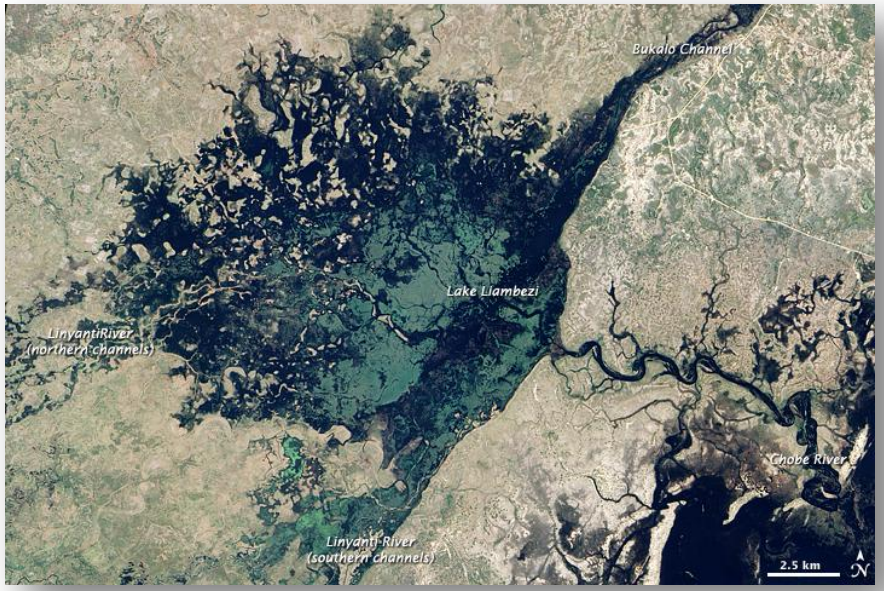
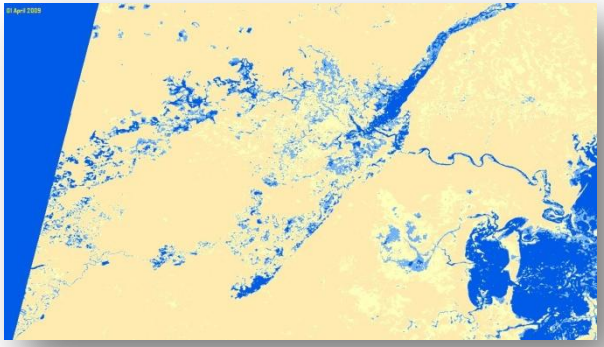
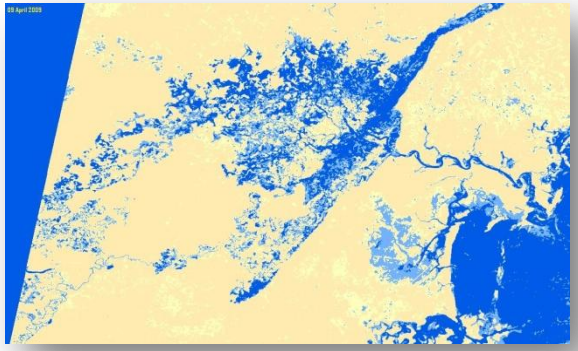
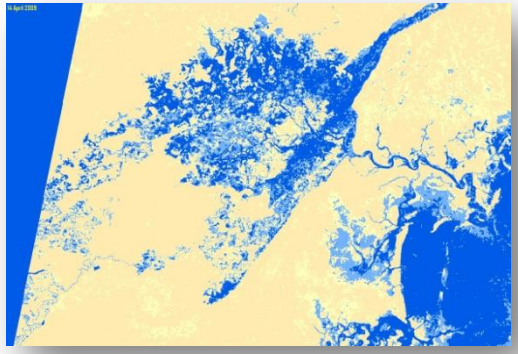
Mapping Floods in Africa

Lake Liambezi Area





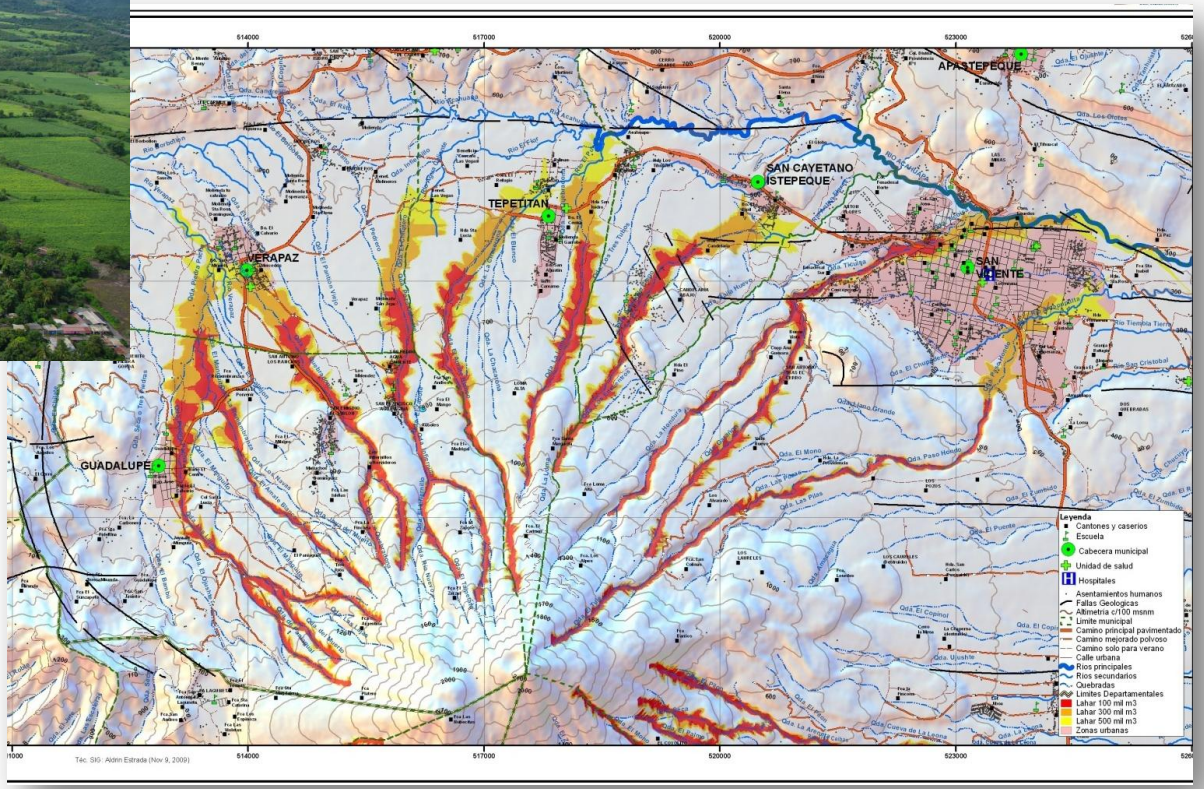




LAKE LIAMBEZI AREA – NASA EO1 BAND 6 SCENES FOR 01, 09 and 14 APRIL 2009

(false colours based on preliminary classification without ground verification)

El Salvador Flooding and Debris Flow November 2009



FORMOSAT
E0-1
ASTER
IKONOS

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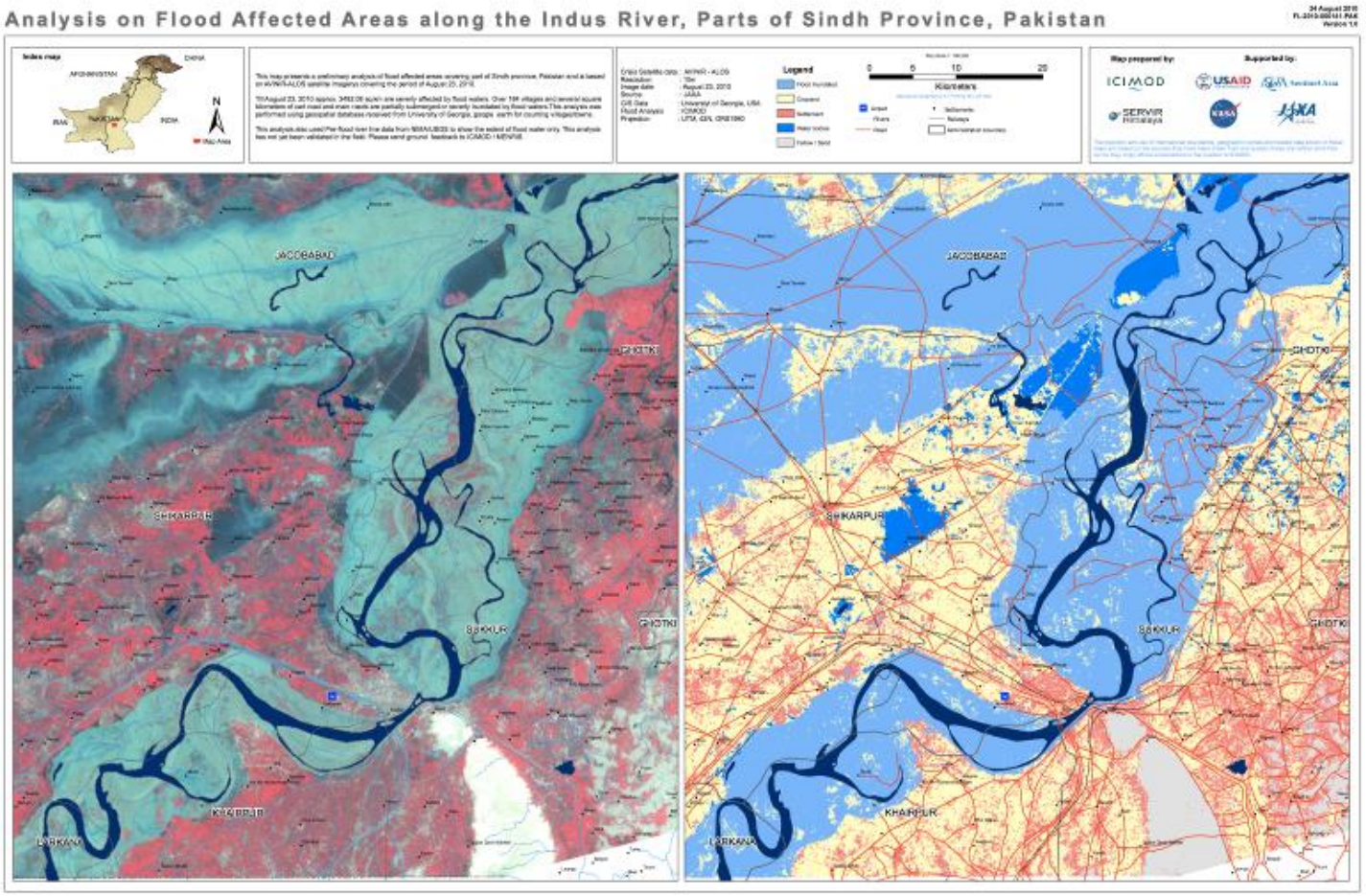
Flooding in Pakistan



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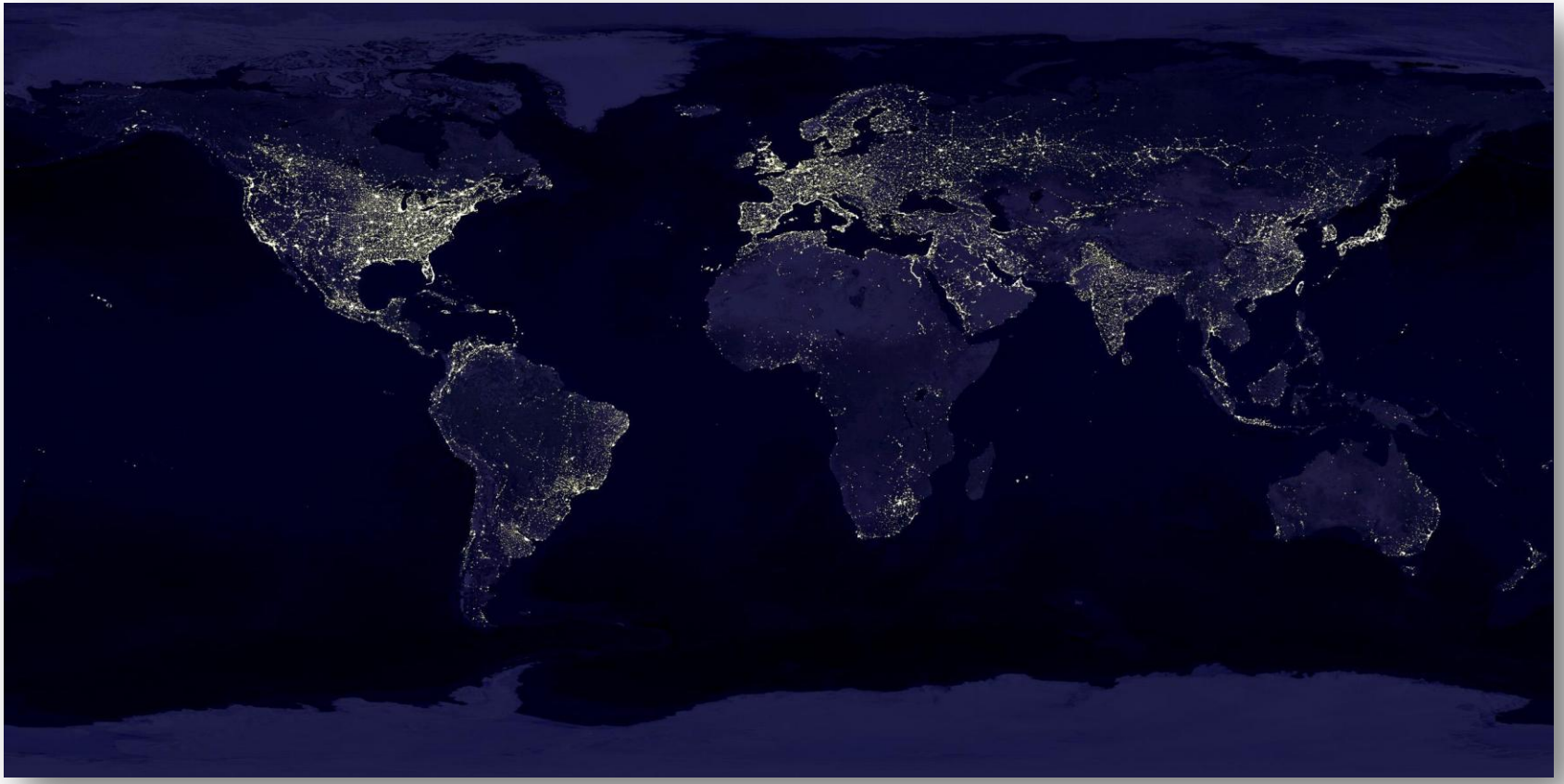
Lights at Night



Defense Meteorological Satellite Program (DMSP)
Operational Linescan System

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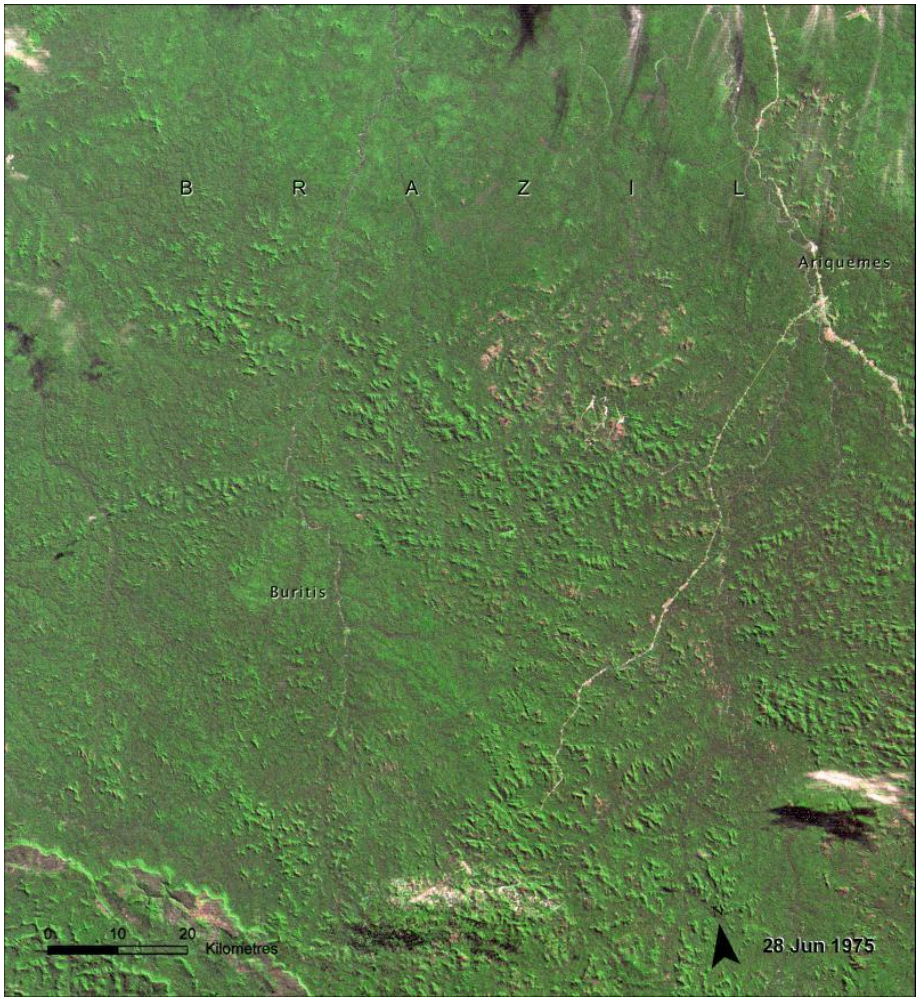
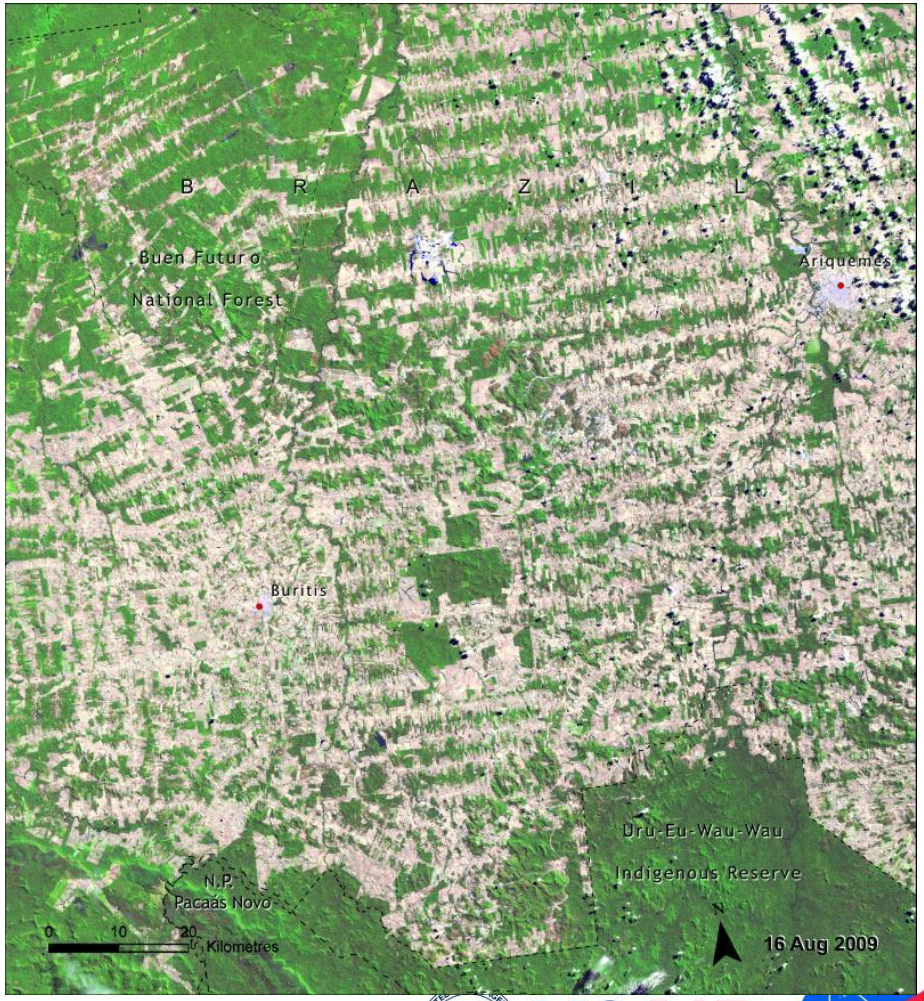
Rondônia, Brazil (1975 to 2009)





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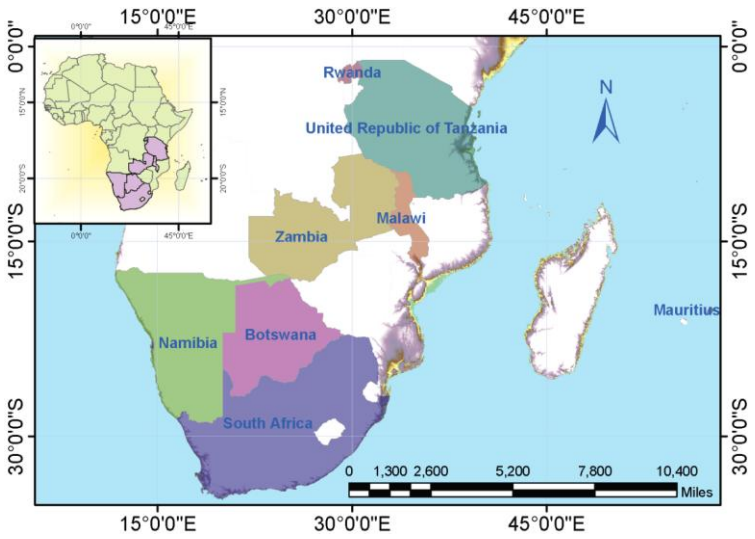
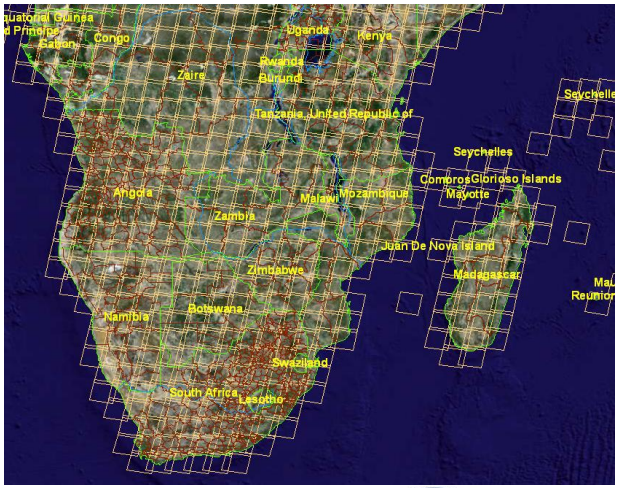
Land Cover and Land Cover Change for Greenhouse Gas Inventory

- SERVIR is working on providing consistent, reliable, relevant Land Use Land Use change and Forestry (LULUCF) information by harmonizing data compilation at national and regional levels.
- Participating Countries: Botswana, Malawi, Mauritius, Namibia, Rwanda, South Africa, Tanzania, and Zambia
- We are using 30m satellite data for assessing the land cover change maps in 1995, 2000, 2005 and 2010. The land cover change statistics will enable us to quantify the changes in greenhouse gas inventory.





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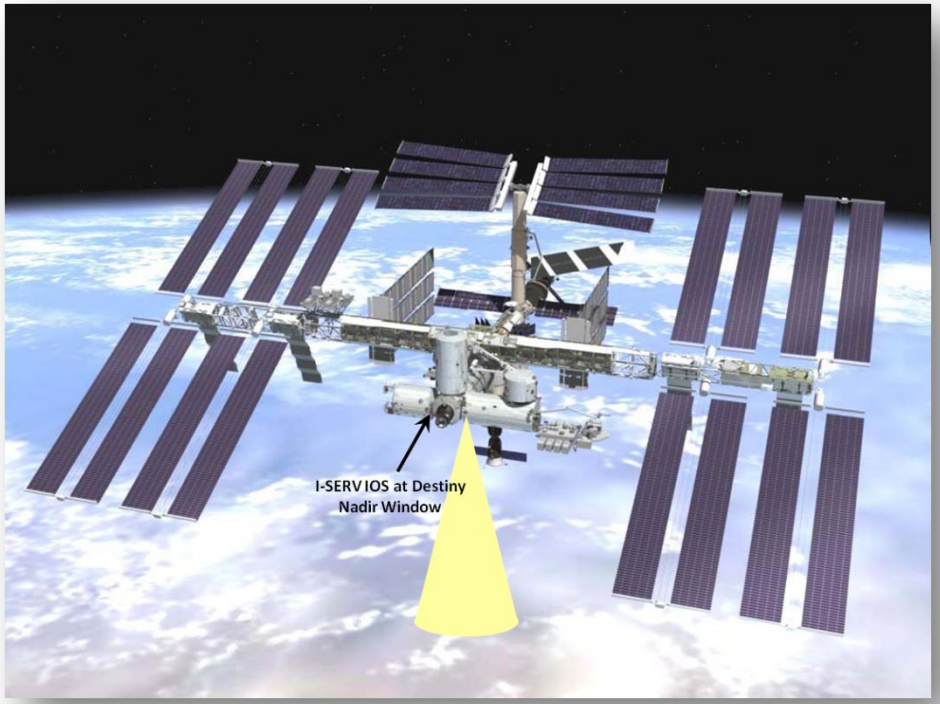
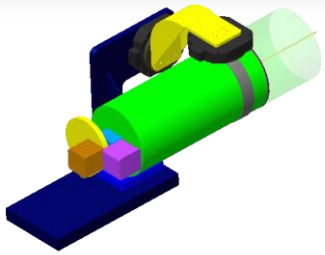
Space Station Utilization





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