SERVIR
The Regional Visualization and Monitoring System

Daniel Irwin
NASA/ Marshall Space Flight Center
Enabling the use of earth observations and models for timely decision making to benefit society

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

Flood Forecasting in Africa

Mapping Fires in Guatemala Mexico

Training and Capacity Building
NASA - Pioneering Observations of the Earth
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.
SERVIR-Mesoamerica at CATHALAC
City of Knowledge, Panama

Dedicated on February 3, 2005
SERVIR-Africa @ RCMRD
Nairobi, Kenya

Dedicated on
November 21, 2008
SERVIR Focus Areas

- Building EO & Geospatial Capacity
- Daily Environmental Information
- Extreme Events
- Land Cover Change
EO & Geospatial Capacity
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.
Daily Environmental Information
SERVIR Air Quality Modeling

Yesterday

Today

Tomorrow
Fire forecasting uses MODIS Rapid Response System, a collaborative effort between GSFC and University of Maryland.
Daily Broadcast: Panama

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Pronóstico del Tiempo
Extreme Events
Earthquake in Haiti

Possible landslides detected through EO-1 image interpretation, and erosion risk

Prepared by CATHALAC, 15 January 2010

Note: These possible landslides have been obtained through visual interpretation of NASA EO-1 images, but have not been verified in the field.

Visit www.servir.net

Source: GeoEye, NASA
Extreme Events
Rainfall Forecasts for Mesoamerica

Pronóstico de precipitacion de 7 días en Mesoamérica y el Caribe para el periodo del 24 de septiembre al 30 de septiembre de 2010

Generado por CATHALAC
24 Septiembre 2010, 1200 (UTC -5)

www.servir.net
Real time monitoring of Harmful Algal Blooms (HAB) using remotely sensed data products.
Lake Water Quality
Cyanobacteria Growth
Mapping Flood Potential in Africa

- Using a regional version of the hydrologic model with near-real time precipitation from the 3B42 TRMM rainfall to derive flood potential over a much larger area
- Provides an estimate of expected depth of flood inundation at a 0.25 degree resolution
- Precipitation forecast data can be used with the model to provide longer lead time forecasts

![TRMM 3B42 Precipitation](image1.png)

![Flood Potential](image2.png)
Spatially distributed hydrologic model CREST is developed by University of Oklahoma
Based on Variable Infiltration Capacity (VIC)
Spatial resolution ~1km
Uses near real-time 3B42 TRMM rainfall estimates to produce soil moisture, evapotranspiration and streamflow

Nzoia River in the Lake Victoria Basin

Modeled Evapotranspiration
Rift Valley Fever in Africa

Rift Valley Fever Risk Mapping using AVHRR data and flooding potential maps
Flooding in Pakistan

Analysis on Flood Affected Areas along the Indus River, Parts of Sindh Province, Pakistan
Land Cover Change
**Areas of High Carbon Stocks & Deforestation**

**FOREST COVER AND DEFORESTATION IN BELIZE: 1985-2010**


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**Abstract:** Making use of a forty-year archive of satellite imagery available through the Regional Visualization & Monitoring System (SERVIR, see www.servir.net) was formally launched in February 2005 at the Water Center for the humid tropics of Latin America and the Caribbean (CATHALAC) in Panama, in direct response to the expanded COCINSA agreement between the Governments of Central America and the USA. The system is jointly implemented by CATHALAC, NASA, the U.S. Agency for International Development (USAID), and various other partner institutions (Harrington et al. 2007). As a platform for monitoring and forecasting the Mesoamerican region's land-base, surface, and atmosphere, the system has provided the region with free and open access to a large archive of satellite imagery permitting measurable conservation of cost. In producing products and datasets on the region's changing landscape, SERVIR has also supported modeling of the land cover at the regional, national, and sub-national scale since its inception. This study is in supporting Belize's Ministry of Natural Resources and the Environment (MNR) — estimations national forest cover dynamics for the years 1985-1989, 1994, 2000, 2004, and 2010, and the periods in between.

**1. BACKGROUND**

Various documents, ranging from the 1954 Belize Country Environmental Profile to the more recent 2010 United Nations Environment Programme (UNEP)-funded GEF-Belize national...
Space Station Utilization

- Disaster
- Rainforest Destruction
- Air Pollution
- Agriculture
- Biomass Estimate

Agriculture
Air Pollution
Rainforest Destruction
Disaster
Biomass Estimate
“We have not inherited the earth from our fathers, we are borrowing it from our children.”