SERVIR
Brief Perspective & Future Directions
Public Health Program Review
San Antonio, Sept 29, 2010

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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
SERVIR @ CATHALAC
City of Knowledge, Panama

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

Dedicated on November 21, 2008
Coming…
October 2010
Applications are the mechanisms by which remotely sensed and in-situ observations are translated into useful information for societal benefit.

- **Applied Science Program**
  - agriculture, air quality, climate, natural disasters, ecological forecasting, public health, water resources, and weather

- **GEO**
  - agriculture, biodiversity, climate, disaster, ecosystems, and human health

- **USAID**
  - Climate change adaptation, carbon tracking and GEO focus areas

- **Regional Needs Assessment**
SERVIR Air Quality Modeling

Mesoscale atmospheric model WRF coupled to EPA’s CMAQ Air Quality model generates operational model runs and model forecasts

Forecasting Air Quality in Central America
Fire forecasting uses MODIS Rapid Response System, a collaborative effort between GSFC and University of Maryland.
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
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
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

Fuentes de información: NOAA (GFS, NHC); ESR, NASA
Earthquake in Haiti

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

Prepared by CATHALAC, 15 January 2010

Relation between landslides and erosion risk

Dégâts causés par le tremblement de terre - Port-au-Prince, Haiti

Étudié par CATHALAC, 15 janvier 2010

Visit www.servir.net
Real time monitoring of Harmful Algal Blooms (HAB) using remotely sensed data products
Lago de Atitlán, Departamento de Sololá, Guatemala
Área Afectada por Cyanobacteria

Sistema Hídrico de la Cuenca Endorreica del Lago de Atitlán

Visualización en SERVIR-Viz

www.servir.net

Elaborado por CATHALAC, 16 de Noviembre 2009
Crédito de las Imágenes: SERVIR/CATHALAC/NASA/USAID/GEO
Rift Valley Fever in Africa

Rift Valley Fever Risk Mapping using AVHRR data and flooding potential maps
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.
SERVIR Users

Decision makers, media, educators, students, private industry, community groups.
Each SERVIR node has unique challenges

- Natural disasters are more prominent in Mesoamerica
- Droughts and water shortages are critical in Africa
- Mountain challenges are unique to Himalayas

However, there are some key similarities across nodes

- Climate change
- Urbanization and land cover change
- Impacts on public health, water resources, agriculture
Historical Analysis

• Typically, we rely on past observations to “benchmark” the analysis of remotely sensed data and products.

• However, recorded observations are hard to come by in developing countries.

• Hindcasting of key products provide a historic perspective, which can be inferred on such data sparse regions.

• For example, NASA GSFC’s Global Land Data Assimilation System (GLDAS), based on Land Information System (LIS) employs historic re-analysis datasets and are available for over 30-years.
Near Real-time Analysis

- These long term historic datasets give much needed perspective for the analysis of real time products.

- Anticipate expansion of SERVIR application portfolio in public health, agriculture and water resources

- Analysis grounded in historic perspective, and using near-real time observations and data products enables improved decision making
Climate Change and Impacts

- Analysis based on long term reanalysis datasets can also give us a perspective for the analysis of climate change scenarios.

- Changes in probabilities of atmospheric variables can be implemented in an ensemble sense as perturbations on the reanalysis datasets.

- Climate change adaptation is a very important topic for USAID. Providing policy relevant information to nodes and their partners will be critical.
In a Nutshell......

- SERVIR is eager to collaborate with other Applied Science projects, the synergy is critical for the program
- Agriculture, Water Resources and Public Health continue to be key issues for SERVIR
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