SERVIR: Connecting Space to Village

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Communities Around the World Need Satellite Data

**CHALLENGE:**

- Many countries face climate change and depleting resources
- Local Earth data is often hard to find and difficult to use
- Satellite data is available, but countries often need training or software to help them use it
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Who Is SERVIR?

- Poverty reduction & resilience
- Data-dependent issues in data-scarce places
- International field presence
- 30+ Earth observing satellite missions, free & open data
- Major research portfolio
- Societal benefit from space

Private sector collaborators:
- Google
- mapbox
- developmentSEED
- planet
- esri
- aws
- MAXAR Technologies

USG collaborators:
- Food and Agriculture Organization of the United Nations
- WFP World Food Programme
- IFRC
- MERCY CORPS

Intergovernmental, NGO collaborators:
- ITC
- in-region university networks

Research collaborators: 20+ US universities & research centers through the SERVIR Applied Sciences Team; ITC, in-region university networks

Regional Hub Host Institutions:
- CIAT
- ILSA
- RCMRD
- ICIEX
- adpc

Hub Consortium Members:
- ICRISAT
- AFRIGIST
- CERSGIS
- ACMAD
- SEI
- Stockholm Environment Institute
- Spatial Informatics Group
- ACCA
- imafloia
- Centre de Santé Ecologique
Who Is SERVIR?

2020 SERVIR Annual Global Exchange
Siem Reap, Cambodia
SERVIR Himalaya Launch

Concept Note: SERVIR Platform Expansion: Regional Monitoring and Visualization in the Hindu Kush-Himalayan (HKH) Region

With the unprecedented advancements of information and communication technology combined with earth observation and geographic information system (GIS) provide a framework for realistic assessment of natural resources and socio-economic conditions through the systematic generation of data and information indicating the present situation and changing status through space and time. These tools provide unprecedented opportunities for us to be able to organize manage and disseminate information and knowledge resources of mountain ecosystem in an intuitive manner with natural 3-D interface that can be easily understood by policy decision makers and by the common people. For mountain areas, these tools hold even bigger significance due to remoteness, inaccessible region and often with difficult terrain and harsh climatic conditions.

The SERVIR platform is already established as a regional visualization tool for decision support and monitoring system for Mesoamerica and now in east Africa, ICIMOD would like to exploit such initiative for the Himalayan region as a source of innovation and as an opportunity to scale down and customize international knowledge to tailor it to the needs to the mountain specific situation. Furthermore, adopting and implementing such system in the Himalayan region will immensely benefit ICIMOD as it is striving itself as a regional resource center for EO application and thematic decision support tools.

ICIMOD has built a Mountain geoPortal (http://geoservicelm.icimod.net) as a virtual platform to share geo-information and knowledge resources of the HKH region. The Mountain geoPortal is seen as a collaborative effort to build, share and disseminate GI resources through decentralised and distributed network of users and providers of information. The geoPortal also employs ISO standard spatial metadata for data exchange and sharing among users. ICIMOD in its new strategy emphasized the use of remote sensing data, techniques and applications to support informed decision making in critical areas of mountain ecosystem, namely:

- Cryosphere monitoring and mapping – Climate change assessment
- Regional Land cover mapping and change analysis
- Biodiversity characterization and assessment
- Hazard and vulnerability mapping and assessment
- Transboundary air pollution - aerosol impact health and environment

There is ever increasing demands of EO derived information and products at real/rear-real time basis on above key issues of the Himalayan region.

To this effect within the context of Mountain geoPortal, ICIMOD would like to build and expand SERVIR technology platform for regional monitoring and visualization of key environment and natural resources processes under the GEOSS umbrella of capacity building to the developing countries.

ICIMOD would like to seek cooperation and funding opportunities with GEOSS and collaborative partners.

Further Contact and Details:
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**Thematic Areas 1**

**AGRICULTURE & FOOD SECURITY**

Dissemination, outreach & capacity building of current services:

- Drought Monitoring and Outlook (AF, BD, NP, PK)
- In season crop monitoring for food security; wheat (AF), rice (BD, NP)
- Afghanistan Agriculture Information Portal

New areas:

- In-season crop monitoring for food security; major crops (AF, BD, NP, PK)
- Crop yield forecasting

**PARTNERS:**

MoALD/NP, BARC/BD, MAIL/AF, NARC/PK

**WATER & DISASTERS**

Dissemination, outreach & capacity building:

- Enhancing Flood EWS: Stream flow forecasting (BD, BT, NP); Flash flood early warning (NP)
- Watershed Characterization (AF)
- Glacier/ glacial lake monitoring and change analysis (AF)

New areas:

- Flood impact monitoring and warning (inundation mapping and forecasting, damage and impact assessment)

**PARTNERS:**

DHM/NP, FFWC/BD, PA/NP
### LAND COVER & ECOSYSTEMS

**Dissemination, outreach and capacity building:**
- Regional Land Cover Monitoring System
- National Land cover monitoring system (AF, BD, MM, NP)
- Climate Resilient Forest Management System (NP)
- Rangeland monitoring (AF)

**New areas:**
- Regional land use monitoring: cropland, urban area, water bodies
- Out-scaling CRFMS
- Ecosystem mapping
- Climate change impacts on ecosystems

**PARTNERS:**
- FRTC/NP
- BFD/BD
- MOONREC/MY
- DoF/NP

### WEATHER & CLIMATE

**Dissemination, outreach and capacity building:**
- Extreme weather assessment for HKH (BD, BT, NP)

**New areas:**
- HIWAT system operationalization by partner (BD)

**Air Quality:**
- Innovative products using models, satellite data, & monitoring stations (including high temporal and spatial resolution products for dust, AOD and trace gases)

**PARTNERS:**
- BMD/BD
- DHM/NP
- potentially DoE/BD, DoE/NP
SERVIR-HKH Applied Sciences Team (AST-3)

PRINCIPAL INVESTIGATORS:

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Products and services for supporting agricultural & food security decision making

A cloud computing toolbox for SAR-based monitoring of the hydrologic cycle

Supporting operational regional land cover monitoring at high spatial and temporal resolutions

Advancing air quality monitoring and prediction capabilities
Power & Depth of the SERVIR Network

SERVIR’s global network enables:
- Sharing and adaptation across multiple regions
- “Scaling up” to entire countries or continents

Streamflow Prediction Tool
The system supports official flood bulletins in Nepal, and was adapted for other regions through GEOGLOWS.

Regional Land Cover Monitoring System
RLCMS supports forest and agricultural mapping at country-level, but has scaled up to entire regions.

HydraFloods
Country-to-country replication from Myanmar to Cambodia to prioritize food assistance in the face of floods via WFP.
What Makes SERVIR Unique?

SERVIR services are...

- **Demand-driven** to ensure each community’s needs and values are prioritized throughout the process.

- **Co-developed** with regional experts to bring together NASA science and in-depth local knowledge.

- **Inclusive**, emphasizing that services must be accessible and represent the needs of women and indigenous communities.

- **Built to last**, prioritizing trainings and resources to strengthen capacity and foster sustained capabilities.
**SERVIR** works to make geospatial technologies and professions more **gender responsive** and inclusive by:

1. **Supporting women leaders & gender champions** in SERVIR, creating an equal opportunity work environment

2. **Empowering women and girls to explore STEM fields** in countries and regions where we operate

3. **Integrating gender considerations in service planning** through gender analyses and participatory review

4. **Using remote sensing and GIS to address issues disproportionately impacting groups** characterized by gender, ethnicity, age, and/or social status
Why We’re Here Today