Jointly launched by NASA and JAXA, the Global Precipitation Measurement Mission Core Observatory satellite and partner satellites provide estimates of rain and snowfall worldwide every three hours. Image source: NASA

SERVIR-Mekong
Products & Services Summary

January 2016

servir.adpc.net

SERVIR-Mekong is a USAID-NASA partnership program designed to improve environmental management and resilience to climate change in the Lower Mekong Region through the increased application of geospatial data and technologies to policy formulation, planning, and other decision making processes.

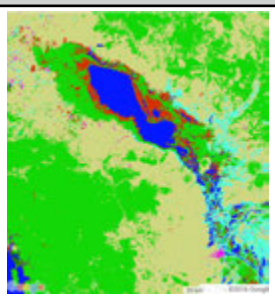
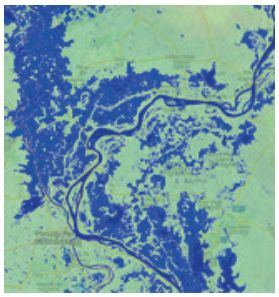
SERVIR-Mekong is one of four SERVIR hubs in operation across the developing world. Each hub strengthens a locally-based and regionally-focused institution to serve as a sustainable regional service provider of data, analytics, training and best practices for improved decision-making.

SERVIR-Mekong is implemented by the Asian Disaster Preparedness Center (ADPC), a regional non-governmental organization working closely with governments in Asia to build resilience against natural hazards. The initial five year phase of SERVIR-Mekong is supported by consortium partners Spatial Informatics Group (SIG), Stockholm Environment Institute (SEI), and Deltares.

SERVIR products and services include the following:

- Decision support tools (such as online mapping portals)
- Custom data products.
- Information services (such as automatically updated precipitation data)
- Knowledge products.
- Capacity building (such as training events, knowledge exchanges, and technical work in co-developing products).

Decision Support Tools

Product name	Details	Themes
Regional Land Cover Monitoring System 	This system will produce high - quality regional land cover maps and identify land cover changes in the Lower Mekong, leveraging the power of Google Earth Engine plus field research by stakeholders throughout the region. **Key data / technologies:** Landsat data,WorldView/other high-resolution satellite imagery, Google Earth Engine. **Production partners:** ADB-Environmental Operations Center, Centre for Development and Environment (University of Bern), US Forest Service. **Anticipated completion date:** Early 2017.	
Regional Drought & Crop Yield Information System 	This information system will provide drought indices and crop forecast information to facilitate better decision making, given anticipated scenarios of the availability of water in streams and soils. The forecasts will be publicly available via a web portal. **Key data / technologies:** TRMM and GPM precipitation data, SMAP passive radar data, VIC hydrology model , DSSAT crop productivity models. **Production partners:** Mekong River Commission-Drought Management Program, International Rice Research Institute. **Anticipated completion date:** Late 2016.	
Flood Extent Mapping Tool 	This tool will identify how floods pread within the Lower Mekong Basin by using publicly available satellite imagery and radar data to support agencies concerned with flood disaster risk management and water management. Hosted on Google Earth Engine, users will be able to specify elements of the analysis and download from several ready-made maps and animations. **Key data / technologies:** Landsat data , Google Earth Engine , SRTM topographic data, hydrosheds hydrological data, flood-extent algorithm. **Production partners:** USAID Climate Resilient Mekong activity. **Anticipated completion date:** Late 2016.	
Water Accounting Plus Tool 	Water accounting is a critical element of better water governance and decision making. The water accounting tool being developed by SERVIR-Mekong and partners will use remote sensing technologies, field based calibrations, and social contexts to provide operational water budgets at monthly intervals. The system is being designed to be easily implemented in any basin in the Mekong Region given a rapid local calibration effort. A dashboard format user interface (likely online) will provide end users with tabular and map format data relevant for water management and policy formulation. **Key data / technologies:** GPM precipitation data, SERVIR-Mekong Land cover data. **Production Partners:** USAID - Vietnam Forest and Deltas. **Anticipated Completion Date:** Late 2017.	

Key working principles of SERVIR-Mekong include:

- engaging potential end users and other production partners in prioritizing, defining and designing all of its products and services and
- designing all tools and products to be open source and freely available to the public.

The following themes provide structure to all of the work of the global SERVIR network:

- **Land cover / land use & e cosystems -** Including land cover / land use change monitoring and support for ecosystem management, land use, REDD+ accounting and decision making, and low emission development planning.
- **Water resources & disasters -** Including water resources monitoring and forecasting, flood management, hazard monitoring and forecasting, fire monitoring and water quality monitoring.
- **Food security -** Including agricultural monitoring, drought management, crop productivity, rangeland decision support, and aquaculture decision support.
- **Weather & climate -** Including weather monitoring and forecasting,climate modeling and adaptation planning, and air quality monitoring.
- **Understanding & sharing geospatial data -** Including data discovery and acquisition, metadata standards and tools, and data sharing policies and mechanisms.

Key to Themes:

Land Cover / Land Use & Ecosystems

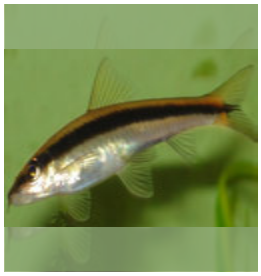
Water Resources & Disasters

Food Security

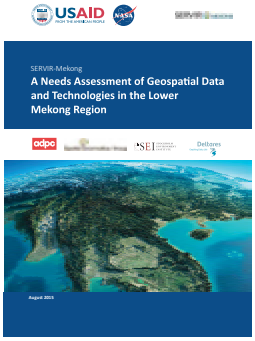
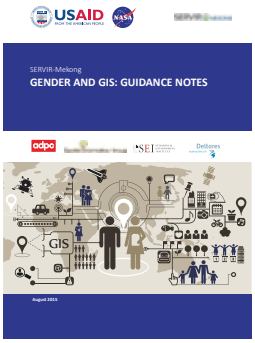
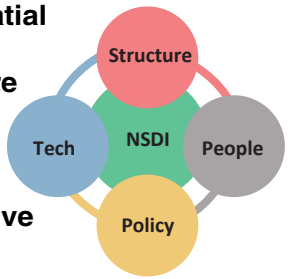
Weather & Climate

Understanding and sharing geospatial data

Data Products and Services

Product name	Details	Themes
Virtual Rain and Stream Gauge Information Service 	This service will provide near real-time rainfall and stream flow data from publicly available satellite measurements. This approach will set up a " virtual " network of rain gauges and stream gauges at points widely distributed over the entire Lower Mekong Region. A web portal provides free access to the data streams, detailed guidance on using these for a variety of applications including flood forecasting, water resource management, and landslide risk assessment. **Key data / technologies:** TRMM and GPM precipitation data, Envisat and Jason - 2 RADAR altimetry data, ground measurements, data calibration and validation. **Production partners:** Lower Mekong Region hydro-meteorological agencies. **Anticipated completion date:** Late 2016.	
Xe Kong River System Fish Barriers Dataset 	This dataset is being developed to assist planners in identifying potential barriers to fish movement that may result from modifications to the placement, design and operation of dams on the Xe Kong River. The final information product will be made publicly available as "open" data. **Key data / technologies:** Quickbird and WorldView - 2 high resolution satellite imagery , Google Earth. **Anticipated completion date:** Early 2016.	
Lower Mekong Region River Impoundments Dataset 	This dataset builds on an extensive database of dams on the Irrawaddy, Salween, Chao Phraya, Mekong and Red River systems. The dataset will provide the extent of inundation resulting from all existing, under construction and planned dams. The final information product will be made publicly available as open data. **Key data / technologies:** Mekong Hydropower Map and Portal datasets, SERVIR-Mekong flood extent mapping tool, digital elevation models. **Production partners:** Research Program on Water, Land and Ecosystems (WLE) - Greater Mekong. **Anticipated completion date:** Early 2016.	

Knowledge Products

Product name	Details	Themes
Regional Geospatial Needs Assessment Report 	During late 2014 and early 2015, SERVIR-Mekong conducted an assessment of geospatial data and technology needs in t he Lower Mekong Region countries to inform efforts to improve the effective application of geospatial data and technologies in the region. Specifically, the assessment identified geospatial data and technology needs in the following thematic areas: (a) key themes about which geospatial information is considered important for decision making, (b) geospatial data, (c) data sharing, (d) capacity building, (e) tools and applications. This report describes the assessment's methods and findings and provides recommendations for relevant stakeholders. **Released on:** 31 August 2015.	
Gender and GIS: Guidance Notes 	These guidance notes provide geospatial application developers and potential application users with guidance for integrating gender concerns into the production geospatial applications relating to environmental/natural resource management , disaster risk management , and climate change adaptation. Specifically, the document describes how to undertake gender analysis , suggests parameters and indicators for gender - related data disaggregation and offers practical advice with examples of gender-sensitive geospatial information and applications. **Released on:** 31 August 2015.	
Creating, Managing, and sharing Geospatial Metadata: Guidance for Practitioners in the Lower Mekong Region 	This guide will provide creators and users of geospatial data with practical guidance on how best to generate , edit , update and otherwise manage and share metadata that relates to geospatial data. Tools, standards, and protocols will be accompanied by case studies illustrating why metadata is a crucial element of geospatial data that adds value for both direct and indirect users of these data. **Production partners:** Open Development Mekong. **Anticipated completion date:** Late 2016.	
National Spatial Data Infrastructure in the Lower Mekong Region: A Comparative Assessment 	This report will review the status of National Spatial Data Infrastructure in the five Lower Mekong Region countries against national objectives and ambitions. It is envisioned that a comparative assessment will be of value to countries in terms of reviewing their goals and roadmaps and identifying approaches for engaging stakeholders and designing systems that deliver benefits to a wide range of users and beneficiaries. **Production partners:** Centre for Development and Environment (University of Bern), US Forest Service. **Anticipated completion date:** Late 2016.	
Searchable Satellite/ Mission / Data product Directory 	This is a curated directory of satellites, satellite missions, satellite data, and derived data products that are relevant to the Lower Mekong Region . The directory offers a simple way to discover the available satellite data and their potential uses for environmental management, disaster risk reduction, and responding to climate change. **Launched on:** 31 August 2015.	