

## An International Regional Science Training On

### Remote Sensing of Land-Use/Cover Change and Climate Impacts In Coastal Zone, 17-19th December, Phuket, Thailand

#### (NASA LCLUC Coordinated CEOS WGCapD Training Activity)

#### Training Summary

Several countries in South and Southeast Asia are undergoing rapid land-use/cover changes driven by humans: mostly urbanization and industrial development. The population growth together with rapid economic development is causing immense pressure to convert land from forest to agriculture and from agricultural areas to residential and urban uses with significant impact on ecosystem services. Increased Land-Cover/Land-Use Change (LCLUC) in the region is affects atmosphere, e.g. biomass burning, and perturbing forest and water resources, biodiversity and ecosystems, as well

as biogeochemical cycles. Regional climate change, in turn, is a major natural factor impacting the LCLUC. Specific to some coastal regions, LCLUC have been impacting the mangrove ecosystems which serve as the barrier between the land and ocean. Mangroves are also highly productive



ecosystems, thus, loss of mangroves is a significant concern in several regions of South/Southeast Asia. The main goal of this training is to address the above issues and showcase the potential of remote sensing and geospatial technologies. The training will also review the availability, and potential and limitations of different data sources and methodologies for monitoring LCLUC as well as quantification of the impacts on the environment. The training lectures will focus on synergies among various approaches linking remote sensing data with the field data to quantify LCLUC and coastal zone impact studies.

#### Training Venue

Prince of Songkla University, Phuket Campus, Faculty of Technology and Environment, 80 Moo 1 Vichitsongkram Road. Kathu, Phuket 83120, Thailand

## **NASA LCLUC Support to CEOS WGCAPD activity**

NASA LCLUC program through the South/Southeast Asia Research Initiative (SARI) has been organizing multiple meetings and training activities in the South/Southeast Asia to build collaborative research, and to promote NASA products in the region. NASA LCLUC program is also supporting the Committee for Earth Observations (CEOS) capacity building activities titled “Working Group on Capacity Building and Data Democracy (WGCAPD) through SARI”. Currently, Dr. Nancy Searby – Program Manager at NASA HQ for SERVIR, is Chair for the WGCAPD, which was formed at the 25th CEOS Plenary in 2011. This Working Group undertakes a variety of activities based on the four pillars of the Data Democracy Initiative Mission and aims to unify CEOS efforts toward:

- Providing wider and easier access to Earth Observation data;
- Increasing the sharing of software tools such as the use of open source software and open systems interface;
- Increasing data dissemination capabilities and transferring relevant technologies to end users;
- Providing intensive capacity building, education, and training (including awareness and outreach) for enabling end users to gather the information they need and for increasing communication on achieved results.

The current training is one of the WGCAPD training events within the LCLUC SARI framework. We coordinated with 4 space agencies (NASA, JAXA, GISTDA and ISRO) to deliver the training to regional scientists – mostly earlier career researchers. NASA SERVIR also contributed to the program. Dr. Krishna Vadrevu, NASA MSFC and Dr. Gutman, NASA HQ, facilitated the coordination, opened the training workshop and oversaw its implementation. Ninety participants from 9 South/Southeast Asian countries and from outside of the SARI domain are attending the training event. Discussions with three Space Agency representatives are ongoing to leverage multiple training activities in different countries.

### **Trainers from Space Agencies**

**NASA LCLUC representative:** Dr. Krishna Vadrevu, NASA Marshall Space Flight Center, Huntsville, Alabama; and Dr. Charles Marshak, postdoctoral researcher, JPL, NASA, California

**NASA SERVIR:** Dr. Ate Poortinga, NASA SERVIR Mekong, ADPC, Thailand

**ISRO:** Dr. Yogesh Kant, Indian Institute of Remote Sensing, Dehradun, India

**JAXA:** Prof. Wataru Takeuchi, University of Tokyo, Japan

**GISTDA:** Dr. Khruewan Champangern, GISTDA, Thailand

### **Other Trainers**

**Thailand University Trainers:** Dr. Werapong Geodsin, and Dr. Ponlachart Chotikarn, Prince of Songkla University Phuket Campus, Thailand

**Malaysia:** Dr. Kasturi Kanniah, University of Technology, Malaysia

## **Total Participants**

Total = 90; Thailand 60; International 24 (6=Philippines; Laos=2; Malaysia=4; Cambodia=2; Myanmar=3; Vietnam=3; Indonesia=3; India=1), (outside SARI domain) Japan 3, USA 3

## **Training Topics**

During the training, hands-on training on the following themes are provided:

- Advanced Methods in Optical Remote Sensing of Land
- Land-Use/Cover Changes in Coastal Zone: Mapping and Monitoring using Remote Sensing Techniques
- Mangrove Forest Assessment Using Optical Remote Sensing
- Advanced Methods in RADAR Remote Sensing
- Mangrove Forest Assessment Using RADAR Remote Sensing
- Climate Change Impacts and Coastal Erosion
- Cloud Computing using Google Earth Engine

## **Open Sharing of Training Materials**

All presentations, data and training lecture materials are shared to the participants as well as public through the SARI website. Also, all hands-on trainings are conducted using Open-Source Software.

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