



Remote Sensing for Forest Cover Change Detection is a hands-on training course that will guide you through the process of using freely available, open source software and data to map and measure changes occurring on the landscape over time. We focus the training on detecting and monitoring forest cover changes because of the relevance of monitoring forest cover change for addressing global climate change challenges. The course follows the [IPCC Good Practice Guidance principles](#) and is consistent with the methodological advice by the [Global Forest Observation Initiative](#) for forest monitoring in the context of REDD+ (Reducing Emissions from Deforestation and Forest Degradation).

In addition to meeting international reporting requirements, following consistent and transparent methodology for generating activity data is important for informing policy decisions and measures. The methods presented can be generalized to track any land cover transition of interest, thus making it applicable for a wide-range of users.

At the completion of this course, you will have been exposed to and practiced implementing a full workflow to detect forest cover change over time using a robust methodology. The training materials cover the basic principles of how to plan and implement a forest cover change detection analysis, including hands-on exercises that guide the learner through the complete change detection and accuracy assessment analysis workflow. The material consists of four core modules: project planning and documentation, acquiring and processing data for two dates in time using Google Earth Engine, land cover mapping, and mapping and classifying areas of change. Each module includes a presentation of the theory and introduction to the workflow, followed by hands-on exercises. There are also two supplemental modules which provide instruction on completing a hybrid mapping and sample based inventory change assessment and demonstrate how to use Collect Earth Online to collect reference data (coming soon...).

The online training materials allow anyone interested in learning more about the use of remote sensing tools to map and measure land cover change. The content is best suited for participants that have a basic understanding of GIS, while a general awareness of remote sensing technology and theory would also be beneficial. The material was developed in partnership with United States Forest Service International Programs and Geospatial Technology and Applications Center, SilvaCarbon, US Agency for International Development, Boston Education in Earth Observation Data Analysis at Boston University Department of Earth and Environment, SERVIR Global, and Google Earth Engine Team.

## Course History and Acknowledgements

In November of 2015, the Remote Sensing Applications Center (RSAC) developed and delivered a two-week remote sensing and change detection workshop using free and open source software. The workshop objective was to build capacity for participating countries to develop significant geospatial skills, particularly remote sensing and image processing skills, to prepare for Reducing Emissions from Deforestation and forest Degradation (REDD+). The core change detection training materials were leveraged from a workshop led by Dr. Pontus Olofsson with the Boston Education in Earth Observation Data Analysis, Boston University.

The subsequent development of these materials into an online training was sponsored by the US Forest Service Remote Sensing Steering Committee (RSSC). Every year, the RSSC sponsors investigations and development of geospatial technologies to understand potential benefits and promote their appropriate use. One of the projects funded by RSSC in 2016 was to convert the Forest Cover Change Detection



using free and open source software training material from the workshop into an online training. The purpose of this project is to continue to increase efficiency of IP training delivery and reduce future training development costs to the agency and efficiently distribute the remote sensing knowledge to diverse audiences around the globe. The project involves two steps: the adaption of the training materials for an on-line audience that caters to self-guided learning, and collaboration with NASA SERVIR and the Global Forest Observations Initiative (GFOI) Methods and Guidance Documentation (MGD) online data portal to host and promote these materials online.

Modules 3 and 4 were developed with generous contribution from Boston University, adapted from Exercises and material developed by Dr. Pontus Olofsson, Christopher E. Holden, and Eric L. Bullock at the Boston Education in Earth Observation Data Analysis in the Department of Earth & Environment, Boston University. To learn more about their materials and their work, visit their github site at <https://github.com/beeoda>.