**Suggested topics** :

Remote Sensing Applications – Ecology and Environmental change or Forestry/Ecosystem Destruction

**Paper title** :

Monitoring of Forest Cover Changes in Myanmar at Near Real-time Using Multi-Temporal and Multi-Spatial Resolution Satellite Imageries

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**presenters Preference between oral and poster presentation** :

prefer to present orally.

**Objectives**

To develop a methodology for monitoring of forest cover status in Myanmar using free multi-temporal moderate resolution and multi-spatial resolution imageries

**Methods**

In the study, the multi-temporal 250 m MODIS surface reflectance was used for construction of the algorithm and for building the forest cover change databases and the 30 m Landsat imageries was used for validation and verification of the algorithm.

An image fusion of Terra and Aqua images is also used to remove the clouds and to get the maximum observation window. A time-series of NDVI change is built from the historical NDVI datasets.

The image differencing algorithm is used to detect the changes between the near real-time NDVI and the correspondent NDVI of from the last year image. The net change threshold is used to monitor the forest cover changes. The removal of false anomaly was also done to remove the noises coming from clouds.

The whole methodology is nearly fully-automated starting from searching and downloading the Satellite imageries, processing, and finally delivering the result images showing the forest cover changes locations in KML format for overlaying in Google Earth.

**Results**

The develop algorithm can demonstrate the detection of forest cover changes both in positive changes where forest are increasing and in negative changes where forests are decreasing. The comparison of forest cover changes observed in 250m MODIS images and 30m Landsat images shows a good match.

The final output shows the quality of forest for the whole Myanmar. Annual change images constructed from the time-series datasets shows the major hot spot area of a year. It gives a quick overview of the forest cover status in Myanmar in a near real-time manner. The animations created from the temporal database and change database makes people observed the changes easily and understand forest cover status very easily.

**Conclusions**

The developed methodology is using free Satellite imageries and the algorithm is semi-automated. This methodology is a very useful and essential tool for environmental monitoring and conservation partners. The method uses free Satellite imageries (MODIS, Landsat) which have long future plan for continuation, so the community could benefit from it without expenses to buy expensive Satellite images. While high spatial resolution images have some limitations on the data acquisition, small area coverage, forest cutting date and costly data distribution policy, MODIS can give a precise degradation date by its advantage of high temporal resolution capability in global scale with no cost. MODIS is a de facto Satellite for monitoring the status which provides wide area coverage for the whole country with capability of high temporal repetition (every 8-day).

The algorithm uses free and open source softwares and programs, it is nearly fully-automated, so the community could benefit from it easily without having any technical difficulity/barriers in their actual deployment. Since the developed method is capable of giving the final hotspot result in KML format which can be easily redistributed, it could help the community to use it immediately and for monitoring their area in a quick manner.

This methodology can provide valuable information on the forest cover status from time to time to update the existing map and can monitor and help conserve the valuable forest resources. Not only in the extent and intensity of change but also in the high temporal information is a crucial point that enables people to monitor the forest cover very closely.

The developed methodology can informed the decision makers and forest managers with better, up to date information and in a quick manner for a sustainable management. It is to urge the organizations and stake holder to implement the methodology in conserving our forest resources.