Measuring Forest Degradation by Radar with FoRAsT
(Forest Radar Assessment Tool)

LTS International and the University of Edinburgh have developed an innovative new tool for detecting and measuring forest degradation using radar technology.

**WHY USE FoRAsT?**
Forest degradation is the major cause of loss of biomass (and carbon) stores

In many countries, forest degradation is a more significant cause of loss of biomass and carbon stores than deforestation. Forest degradation is often under-reported because forest cover statistics may hide localised or sub-canopy forest loss. Measurement of degradation is therefore critical to understanding the economic, social and environmental value of forests.

**WHAT FoRAsT IS USED FOR**
- Measurement and mapping of forest biomass and carbon storage at a specific time and location;
- Monitoring of spatial changes in above ground forest biomass arising from degradation and deforestation;
- Identification of forest change hotspots and priority areas for action;
- Inputs to studies on drivers of forest change.

**HOW FoRAsT WORKS**

Outputs from the tool are fed into a regression model that is calibrated using field data from forest inventories, sample plots or other sources of field data from within the target area. Model outputs are used in a geographical information system to generate biomass (and carbon) maps to compare changes over time. The process is shown in the flow diagram below.

**FoRAsT PROCESSING CHAIN**

**UNIQUE ADVANTAGE**

Unlike optical remote sensing systems, radar systems can detect forest degradation because they penetrate the forest canopy and interact with aboveground biomass.

Forest degradation is an important source of greenhouse gas emissions, particularly carbon dioxide, but cannot be accurately measured using optical remote sensed data from sources such as Landsat. Radar systems are particularly well suited for assessing above ground biomass because they are sensitive to woody biomass (tree trunks and branches) but not to canopy foliage. This makes it possible to quantify degradation-related changes in forest biomass over time. Radar can also be used day or night, under any weather conditions.
Case study of how FoRAsT has been used: Above ground biomass change assessment in Sierra Leone and Guinea

In 2014, LTS International assessed biomass and biomass change in 15 community/village sites in the Sierra Leone / Guinea border region, as part of the USAID and USFS/IP funded Sustainable and Thriving Environments for West African Regional Development (STEWARD) project.

Results And Outputs

Key Conclusions

>90% of the overall forest biomass loss was a result of degradation. This demonstrates the importance of identifying and monitoring forest degradation in addition to deforestation, and the ability of the FoRAsT for this application.

These data are now being used by the STEWARD project to inform land use decisions, develop project interventions, and contribute to on-going monitoring of above ground biomass change.

We are keen to use our new and innovative technology on your projects, to register an interest and talk further about this opportunity please contact Simone Vaccari using the details below:

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