Land Health Data Analysis Workshop in the Western Amazon Sentinel Landscape

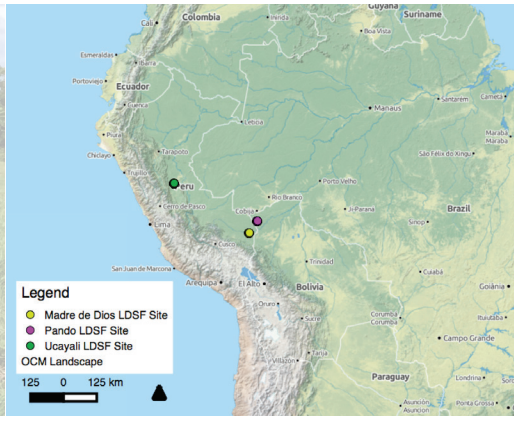
RESEARCH PROGRAM ON Forests, Trees and Agroforestry

Leigh Winowiecki (CIAT), Valentina Robiglio, Martin Reyes and Tor-Gunnar Vågen (ICRAF), August 2015

Three LDSF Sites Sampled in the Western Amazon Sentinel Landscape: Peru and Bolivia

Three 100 km^2 Land Degradation Surveillance Framework (LDSF) sites were selected and sampled by local partners within the Western Amazon Sentinel Landscape, based on an initial set of ~15 sites representing areas with varying land cover trend trajectories. The sites were selected to represent forested and forest-transition landscapes and currently include protected forest reserves, indigenous communities, forest-pasture mosaics and smallholder mosaics. Two sites are located in Peru and one site is located in Bolivia (see map on right).

The LDSF is a spatially stratified, randomized sampling design, developed to provide a biophysical baseline at landscape level and a monitoring and evaluation framework for assessing processes of land degradation and effectiveness of rehabilitation measures, over time. The LDSF data from the three sites were cleaned, compiled and uploaded to the ICRAF GeoScience Lab Land and Soil Health Global Database in preparation for the workshop.

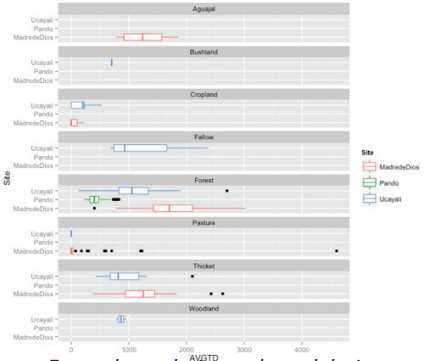


Exploring Data Analytics with National Partners: LDSF Datasets, June 30- July 2, 2015

Organized by Valentina Robiglio and Martin Reyes of the World Agroforestry Centre (ICRAF) regional office in Lima, Peru, a data analysis workshop was convened in Puerto Maldonado, Peru, near the Madre de Dios LDSF site (photo on right). Partners who lead each LDSF survey were represented: Instituto de Investigaciones de la Amazonía Peruana (IIAP) (http://www.iiap.org.pe), CESVI FONDAZIONE , Universidad Nacional de Ucayali, and Universidad Nacional Amazonica de Madre de Dios (UNDMAD).

Data analysis workshop in Puerto Maldonado, Peru.

Scientists, Tor Vågen of ICRAF and Leigh Winowiecki of CIAT led the three-day workshop, which focused on analyzing LDSF data using R statistics. Biophysical variables such as tree and shrub densities, land cover, topographic position and soil erosion, were analyzed. Participants were introduced to several different R packages including ggplot2, lme4 and raster. Participants conducted cross-site analysis, for example calculations of tree densities (graphic on the left). Further analysis of various spectral indices were explored for detecting and mapping forests in the western amazon sentinel landscape. Soil erosion maps of the Madre de Dios landscape were developed using Landsat 8 imagery.



Example analysis conducted during the training: tree densities.

A pre-workshop field trip was organized by Edgar Cusi Auca of IIAP to the Madre de Dios landscape as well as to the IIAP offices (photo on the right). This site is highly fragmented and includes secondary forests mixed with low-density silvopastoral systems.

Edgar Cusi Auca and Frank Valero leading us into the Madre de Dios LDSF site.

Next Steps: Linking Social-ecological Metrics Across Landscapes

Soil samples from each site were processed by the local teams according to the Sentinel Landscape Soil Processing Standard Operating Procedure (photo left). These samples will be analyzed at the ICRAF Plant and Soil Spectroscopy Laboratory. Once soil analyses are complete, linkages between aboveground land health metrics and soil properties will be assessed. Furthermore, soil maps will be produced for each landscape.

Processed soil samples ready for shipment.

These data will be analyzed along with the socio-economic data from the household surveys to better understand and address the drivers of land and soil health and the connection with tree biodiversity and forest fragmentation. This work is part of the Sentinel Landscapes theme of the Forest, Trees and Agroforestry CGIAR Research Program.