Mapping forests as renewable chemicals for biorefineries. Lestander, T., Athanassiadis, D., Nilsson, M. (*Swedish University of Agricultural Sciences, Sweden; torbjorn.lestander@slu.se; dimitris.athanassiadis@slu.se; mats.nilsson@slu.se*).

The Swedish National Forest Inventory (NFI) collects data describing the current state and changes in Sweden's forests, e.g., volume of standing trees in cubic meter above bark. Reliable forest statistics are presented on a national and regional level. As the demand for more local forest information has increased over the years, wall-to-wall raster maps with estimates of forest variables such as stand volume and tree species composition has been produced using a combination of Landsat or SPOT imagery and field plot data from the NFI. However, these forest data maps are difficult to interpret for chemists, engineers, material scientists etc. The need to break away from dependency of fossil carbon sources has increased the demand for sustainable biorefining of biomass. In this work we show and discuss new approaches in mapping renewable forests resources that can be used for producing chemicals, biofuels, biomolecules etc. We will especially target the need for biorefineries to map the amount of forest-based chemicals on a landscape level and the ecosystem services required for sustainable production and development.

A new soil erosion survey method in the national forest inventory of Japan. Miura, S. (*Forestry and Forest Products Research Institute, Japan; miura@ffpri.affrc.go.jp*), Kanamori, M., Ogaya, N. (*Japan Forest Technology Association, Japan; m_kanamori@jafta.or.jp; naoka_ogaya@jafta.or.jp*), Nanko, K. (*Forestry and Forest Products Research Institute, Japan; knanko@affrc.go.jp*), Nagame, I. (*Forestry Agency, Japan; ichiro_nagame@nm.maff.go.jp*), Suzuki, M. (*University of Tokyo, Japan; suzuki@fr.a.u-tokyo.ac.jp*).

Criteria and indicators developed by regional initiatives such as the Montreal Process have played an important role as a propulsion engine for achieving sustainable forest management in the last two decades. However, many variables utilized for indicators have been derived from administrative statistical data. There is a need for new variables to be measured in the field to better indicate ecological trends. This paper reports the analysis of a new variable implemented into the national forest inventory system in Japan. We focused on soil erosion and monitored floor cover percentage by understory or litter, which is related to soil and water protective functions. We scaled evidence of erosion from soil pillar, then rill, up to gully along with increases. Four-year observations using the new erosion survey method all over Japan showed that occurrence of soil erosion increased as floor cover percentage decreased. Forest floor cover influenced soil erosion as much as slope inclination. Floor cover percentage of *Chamaecyparis obtusa* forest known as susceptible to soil erosion was low. Protecting forest floor cover as well as forest canopy cover prevents forest degradation. Introducing these kinds of measurable variables into national forest inventory systems must enhance the value of forest monitoring towards sustainable forest management.

Brazilian national forest inventory: remote sensing and landscape analysis approaches for nationwide forest monitoring and assessment. Oliveira, Y.M., Rosot, M., Garrastazu, M. (*EMBRAPA, Brazil; yeda.oliveira@embrapa.br; augusta.rosot@embrapa.com; marilice.garrastazu@embrapa.br*), Luz, N. (*Fundação de Amparo à Pesquisa do Estado de Goiás (FAPEG), Brazil; naissa@gmail.com*), Mattos, P. (*EMBRAPA, Brazil; patricia.mattos@embrapa.br*), Franciscon, L., Freitas, J., Piotto, D., Gomide, G.

National Forest Inventory (NFI-BR) is under development in Brazil, aiming at generating information on forest resources, both natural and plantations, based on a 5-year measurement cycle, to support the formulation of public policies. One component of this initiative comprises remote sensing and landscape scale spatial analysis, which includes aspects such as land use/land cover (LULC), trees outside forests (TOF), permanent preservation areas (PPA), and forest fragmentation. A 20 km × 20 km grid defines the center of a field registry sample unit (RSU) from which landscape sample units (LSU) are established at each 40 km × 40 km. The LSUs are 100 km^2 wide areas with RapidEye satellite imagery coverage. Methodology development for image classification and landscape analysis are currently underway, based on 20 LSU pilot sample units. While object-based image analysis is the main approach regarding LULC and TOF mapping, GIS-based spatial analysis and landscape ecology metrics are the means to assess forest fragmentation and identify actual PPA readiness to current environmental laws. The developed methodology will be applied to the remaining NFI–BR LSUs distributed countrywide. This information will be used to quantify and qualify forest resources under mentioned perspectives and extrapolate field data using phytoecological regions as well as political divisions.

Going beyond national-level statistics: a new data infrastructure for ecoregion-level forest resource assessment. Smith, B. (*U.S. Forest Service, USA; bsmith12@fs.fed.us*), Stinson, G., Song, A. (*Canadian Forest Service, Canada; gstinson@nrcan.gc.ca; Alex.Song@NRCan-RNCan.gc.ca*), Miles, P., Oswalt, S. (*U.S. Forest Service, USA; pmiles@fs.fed.us*); *soswalt@fs.fed.us*), Rodriguez Franco, R., Leyva, J., Richardson, K., Jafry, Z, Kapron, J.

The United States, Mexico and Canada maintain National Forest Inventories for strategic monitoring of forests at national and sub-national levels. All three countries use their NFI programs to provide statistics aggregated at national levels into the FAO`s Forest Resources Information Management System (FRIMS). While the FRIMS data are of great value for global forest resource assessment purposes, aggregation at scale of ecological strata provides the possibility for more in-depth assessment of regional sustainable forest management successes and challenges. Such aggregation requires a deeper level of data harmonization. The North American Forest Commission's Inventory and Monitoring Working Group (IMWG) piloted this approach by developed an infrastructure for data harmonization and analysis with three basic elements: (i) a harmonized North American ecoregion map, (ii) North American NFI data harmonization rules, and (iii) a relational database for managing integrated North American forest inventory data. These three elements work together, but can also be used individually for other applications. We describe progress to date and discuss lessons learned to stimulate and inform further advances in streamlined forest reporting and improvements to global forest assessment data beyond those already achieved by collaborating international organizations for FRA2015.

Posters

Russian Federation forest resources assessment based on free medium resolution remote sensing data. Lopatin, E. (*University of Eastern Finland, Finland; eugene.lopatin@uef.fi*), Alexeyev, A. (*St. Petersburg State Forest University, Finland; A_S_alekseev@mail.ru*).