NASA Ames Research Center

CASA SilvaCarbon Newsletter and Science Report

Issue: July, 2013

Objectives

This Newsletter and Applied Science Report is issued quarterly from the NASA-CASA Forest Carbon team at Ames Research Center.

It is intended to update interested program officials in the areas of applied Earth sciences, tropical forest carbon, land cover and land use change, and partnerships with other agency partners in the U.S. Federal Silvacarbon program.

SilvaCarbon, named after the Latin word for forest, is the United States Government contribution to the GEO Forest Carbon Tracking task, a component of the Global Earth Observation System of Systems (GEOSS), which provides data and information about a variety of Earth observations to users around the world.

For more background information, go to: http://swp.gmu.edu/silvacarbon/

Berau Indonesia Climate Action Project (Source: The Nature Conservancy, http://www.nature.org, 2013)

In this issue

Report from SilvaCarbon Technical Team

A SilvaCarbon Technical Team telecon was held in May, 2013. Christopher Potter represented the NASA-CASA team.

The following highlight can be noted:

The U. S. Agency for International Development is supporting a Forest Carbon, Markets and Communities (FCMC) program whose core mission is to build technical capacity by developing tools and training that support USAID and SilvaCarbon contributions to the international architecture for Reducing Emissions from Deforestation and Forest Degradation (REDD+). At the mission level, FCMC contributes to REDD+ readiness by enabling countries to access "pay-for-performance" finance and by identifying sustainable development options that represent "no-regrets" investments in climate change mitigation and adaption.

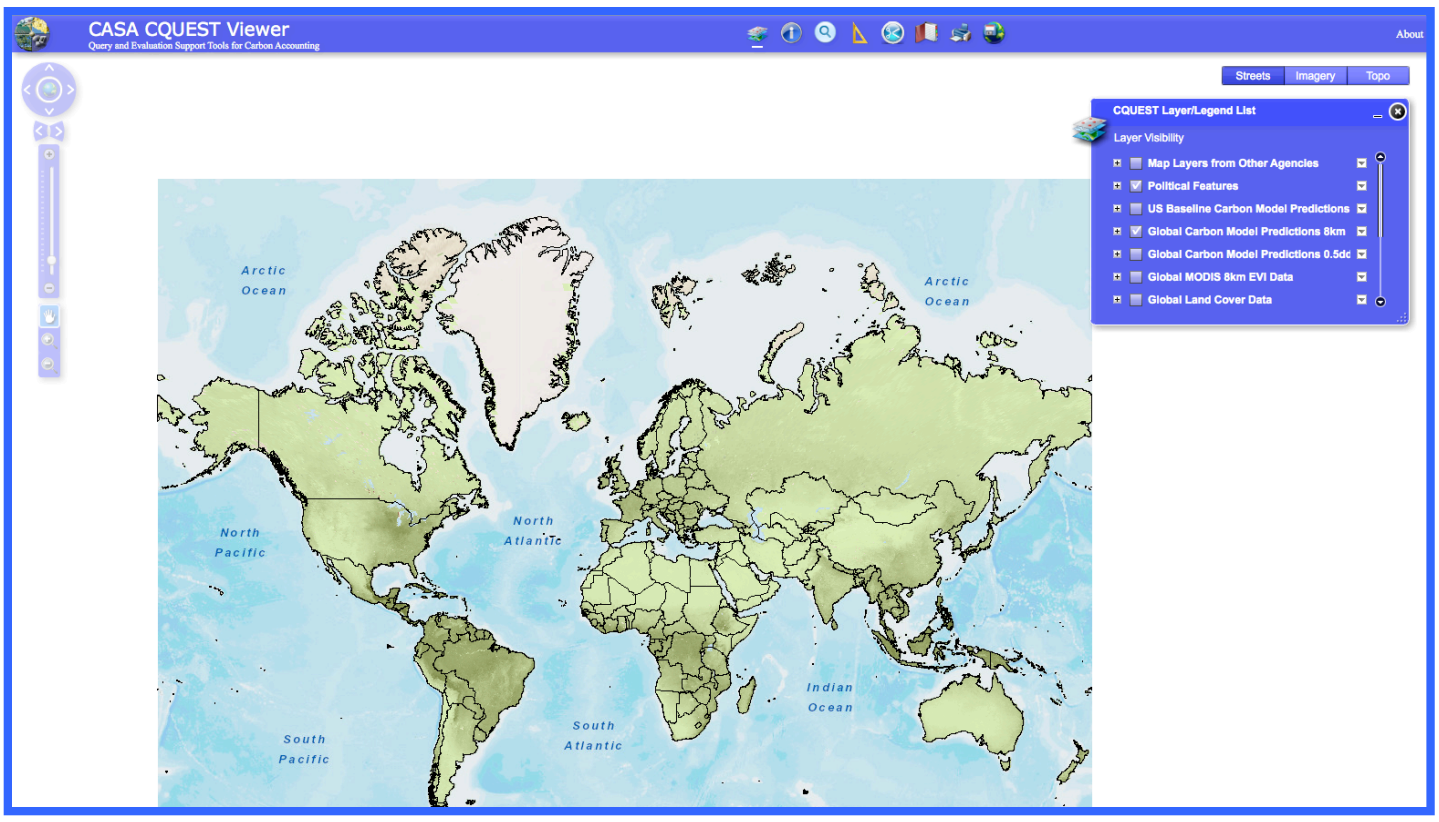
As part of NASA's contribution to SilvaCarbon, Christopher Potter reviewed and provided comments on the FCMC's latest "Measurement, Reporting and Verification (MRV) Manual", Version 1.1 drafted by Conservation International and the World Resoucres Institute.

Other notes from the telecon include:

- Forest inventory work at several sites in Gabon, West Africa is underway with technical support from SilvaCarbon partners.
- Planning work is underway in Vietnam by LEAF (Lowering Emissions in Asia's Forests) Program partners to map historical forest cover changes in Lam Dong province from 1990 to 2010. Satellite images being used are Landsat TM and ETM+, and Spot5 at a spatial resolution ranging from 30m x 30m to 2.5m x 2.5m.
- SilvaCarbon Research topics on Lidar and Degradation are getting organized. The NASA-CASA team will mainly contribute to the Degradation topic with Landdat 8 imagery inputs to the CASA model in the countries of Vietnam, Indonesia, Peru, and Gabon.

http://geo.arc.nasa.gov/sge/casa/

Latest NASA-CASA Applied Science Results



CASA-CQUEST Goes Global for SilvaCarbon

The CASA Global CQUEST Viewer now provides access to geographic data from NASA Ames Research Center for carbon sequestration predictions throughout the world. This Viewer application allows users to display CASA forest production data interactively as a map, customize the view, query data values, extract areas of interest and print and download image files. The spatial resolution of the CQUEST carbon flux and stock data is upgraded in 2013 to match a MODIS 8-km grid, worldwide, and spans the period of 2000 to 2011. User guides are being posted (in English and Spanish) with methods for using the CASA-CQUEST model's annual change in forest carbon to conservatively define the upper limit for the amount of harvested wood products that can be removed and still avoid degradation (net loss) of the total wood carbon stock over that same time period. The global map viewer is publicly available at: **http://geo.arc.nasa.gov/sge/casa/cquestwebsite/**

New and pending publications from the NASA CASA team

Potter, C., S. Klooster, V. Genovese, C. Hiatt, 2013, Forest production predicted from satellite image analysis for the Southeast Asia region, *Carbon Balance and Management* (In Press).

Potter, C., S. Klooster, V. Genovese, C. Hiatt, S. Boriah, V. Kumar, V. Mithal, and A. Garg, 2012, Terrestrial ecosystem carbon fluxes predicted from MODIS satellite data and large-scale disturbance modeling, *International Journal of Geosciences*, doi:10.4236/ijg.2012.

Potter, C., S. Klooster, and V. Genovese, 2012, Net primary production of terrestrial ecosystems from 2000 to 2009, *Climatic Change*, doi:10.1007/s10584-012-0460-2.

Potter, C., S. Klooster, C. Hiatt, V. Genovese, and J. C. Castilla-Rubio, 2011, Changes in the carbon cycle of Amazon ecosystems during the 2010 drought, *Environmental Research Letters*, 6, doi:10.1088/1748-9326/6/3/034024.

SilvaCarbon

http://geo.arc.nasa.gov/sge/casa/

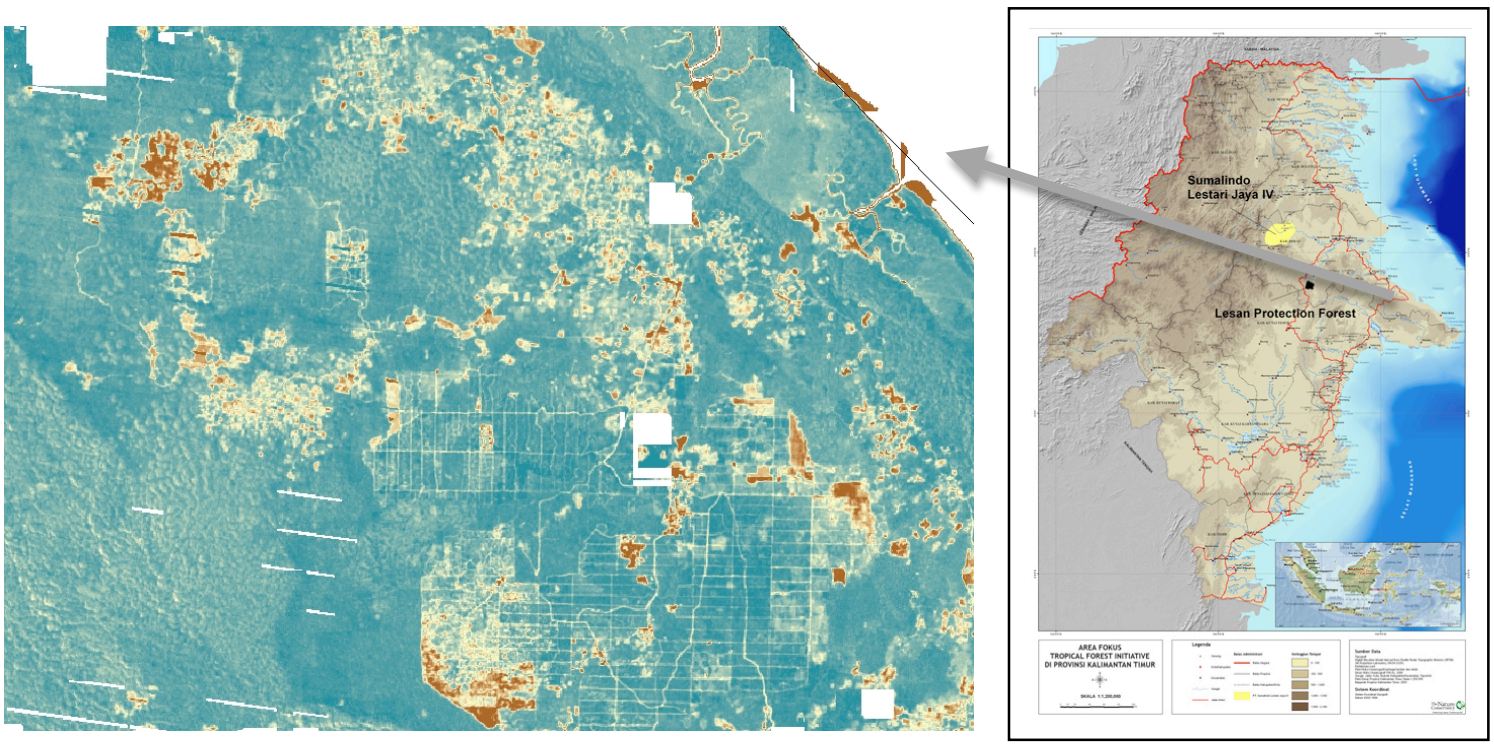
Innovations from the NASA-CASA Forest Carbon Team

- The CASA-CQUEST global map viewer is has been translated into Spanish for our partners in Latin America. Spanish speakers from the Earth Systems Science and Policy Department at California State University Montery Bay are assisting the NASA-CASA team with translation of background material, user guides, and map legends.
- Landsat 8 images are beginning to become available to the SilvaCarbon project. These new NASA products will greatly aid in overcoming the shortgage of TM images in the Asia region and the scan-line interference problems experienced in ETM+ images for forest carbon change.
- The 2013 pending publication from Potter et al. (first in list at left) will explain and provide examples from the Southeast Asia region for using the CASA model's annual change in forest carbon to conservatively define the upper limit for the amount of harvested wood products that can be removed and still avoid degradation.

CASA Outreach & Partnerships

- Lowering Emissions in Asia's Forests (LEAF) program
- USDA Forest Service, National Inventory and Monitoring Applications Center
- The Nature Conservancy, Climate Change Team
- Conservation International, Center for Applied Biodiversity Science
- World Resources Institute, Global Forest Watch
- Ministry of the Environment of Peru (MINAM)
- SNV – Netherlands Development Organisation
- PanEco/YEL, Indonesia
- Mongabay.com

Latest NASA-CASA Applied Science Results (continued)



CASA-CQUEST Landsat Focus on Borneo, Indonesia

On Indonesia's island of Borneo, the District of Berau spans 5.4 million acres, 75 percent of which is covered by forest. These forests face serious threats from logging — both legal and illegal — as well as from mining operations and the spread of palm oil plantations, which have rapidly overtaken much of Indonesia's lands as demand for biofuels and consumer products. Berau is working to become the first municipality under the national program to implement new conservation strategies and measurably reduce the amount of carbon it emits into the atmosphere. In response, the CASA SilvaCarbon team has processed Landsat ETM+ images for 2012 and 2013 to generate region-wide estimates of forest net primary production (NPP) at 30 meters spatial resolution (example shown above, Brown: Lowest NPP to Dark Green: Highest NPP at > 10 ton C per hectare per year). The CASA team is working closely with the Nature Conservancy's Climate Change technical team on a scientific survey of Berau's forests, to identify areas most at risk, and to develop a baseline for measuring degradation in the inventory of stored forest carbon. New Landsat 8 imagery will be processed later in 2013 for carbon change estimates from the NASA-CASA model.

Upcoming Events

Workshop in Forest Data Analysis, Quito, Ecuador,
1-5 July 2013

GEOCARBON Conference: Towards a Global Carbon Observing System, Geneva,
1-2 October, 2013

MGD presentation to GEO Plenary
January 2014

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