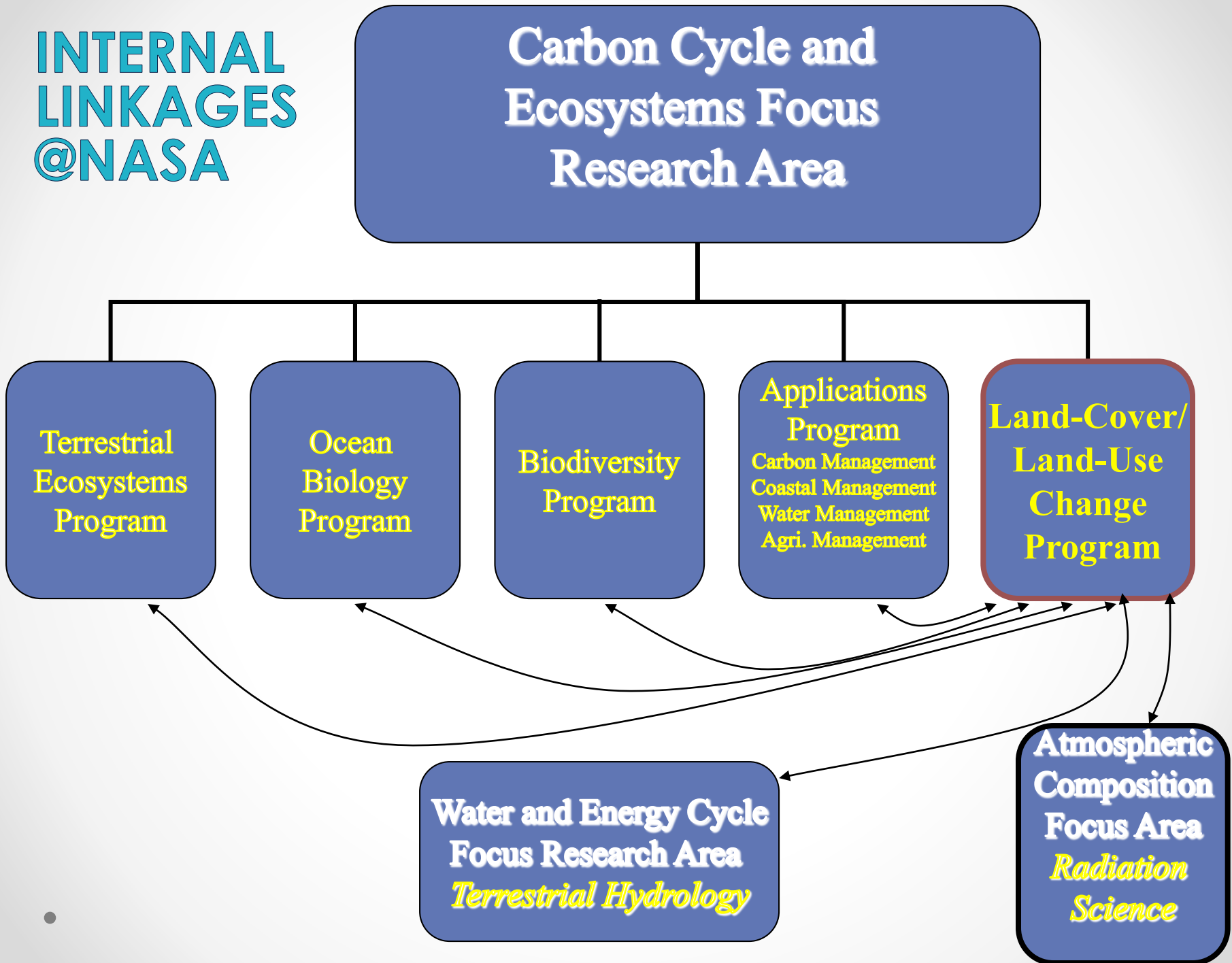


NASA's Land-Cover/Land Use Change Program: An Update

Garik Gutman,
NASA Headquarters
Manager, LCLUC Program





International Activities

- Northern Eurasia Earth Science Partnership Initiative (NEESPI) - support of Project Scientist, meetings and research projects
- Monsoon Asia Integrated Regional Study (MAIRS) - support of Project Scientist, meetings and research projects
- Both moving to Future Earth...
- South Asia Regional Initiative (SARI) is getting momentum – support of Project Scientist, meetings and research projects (LCLUC-2015)
- GOFC-GOLD
- ESA Sentinel-2 Program
 - NASA-ESA international Multi-Source Land Imaging Science Team is being formed based on recent selections



Project Scientist
NASA-NEESPI
Pasha Groisman



Project Scientist
NASA-MAIRS
Jiaguo Qi, MSU



Project Scientist
SARI
Krishna Vadrevu,
UMD

Program Components



Total ~40 projects : Forests, Ag,
Urban, Wetlands

- Detection/Monitoring/Observations
- LCLUC Predictive Modeling
- LCLUC impacts on
 - Carbon and Water Cycles
 - Climate and Environment
- Drivers of Change
- Climate impact on LCLUC
- Vulnerability, Impacts and Adaptation
- Synthesis studies



LCLUC ST Meeting Apr 2014,
Rockville, MD

LCLUC Scenarios

- NRC review of Land-Use Models, co-sponsored by NASA LCLUC and USGS has been published
- National Climate Assessment (land use scenarios)
 - Workshop on scenarios – last year, report is out
 - <http://www.globalchange.gov/news/land-use-and-land-cover-toward-scenarios-change>

(Richard Moss, Joint Global Change Research Institute)



(Dan Brown, U. Michigan)

The Early Career Scientists Round

Yuyu Zhou, Joint Global Change Research Institute

Mapping and Monitoring of Wetland Dynamics for Improved Resilience and Delivery of Ecosystem Services in the Mid-Atlantic Region

Stephen Leisz, Colorado State U.

Increased accessibility, landscape changes, rural transformations, and urbanization: impacts in the east-west economic corridor from Da Nang, Vietnam to Khon Kaen, Thailand

Jason Julian, Texas State U.

Land Management Impacts on Water Quality in New Zealand across Political Boundaries

Jessica McCarty, Michigan Technological U.

The role of environmental, socioeconomic, institutional, and land-cover/land-use change factors to explain the pattern and causal drivers of anthropogenic fires in post-Soviet Eastern Europe

Kelly Cobourn, Virginia Tech.

Water Institutions and Agricultural Land-Use Change across the Western U.S.

The Early Career Scientists (cont.)

Kelly Wendland, U. Idaho

Land tenure, property rights, and land cover and land use change at transboundary sites in the Mesoamerican Biological Corridor

Kathryn Grace, U. Utah

Examining the links between agriculture and human health in a context of climate change: A case study of three West African countries - Niger, Burkina Faso and Mali

Gillian Galford, U. Vermont

Environmental and socioeconomic outcomes of the new African Green Revolution

Tatiana Loboda, U. Maryland

Social drivers of land cover change around African transboundary Peace Parks

Inbal Becker-Reshef, U. Maryland

Food, Price and Conflict: Earth Observations-based Agricultural Production forecasting to assess potential impacts on grain markets and civil unrest

Reporting and Communication



- Web site: <http://lcluc.hq.nasa.gov>
 - Abstracts, progress reports, presentations
 - Lists of publications and references
 - Announcements, events, job ops, news
 - Outreach (journal covers, media coverage, books)
 - Metadata page – please help populate with project metadata and data set links
- To our website support team
 - all of the above on an ongoing basis
- To me: sensitive info, project updates
 - 1 slide in bullets + visual
 - PI's are encouraged to host their own websites to showcase their results in more detail and to make their data sets available - provide links (and faces!)



Sumalika Biswas



Catherine Nakalembe



Katie Holland



Antonio Sanchez Galvez

Data Aspects



- NASA Earth Exchange (NEX) portal
 - NEX is a virtual collaborative that provides resources (core data sets, software/workflows, and computing) for data- and compute-intensive, NASA-supported Earth science grand challenges
 - Vision: To engage and enable the Earth science community to address global environmental challenges
 - Goal: To improve efficiency and expand the scope of NASA Earth science technology, research and applications programs
- All LCLUC projects are listed on the NEX site -- PI's are encouraged to register
- NASA LCLUC program expects its PI's to make their data and products available to the community for free and open access
- LCLUC metadata page
- High resolution data for NASA-affiliated scientists



<https://nex.nasa.gov>

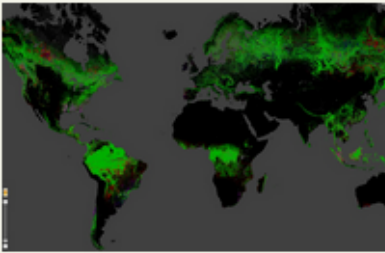
Metadata Page on LCLUC website

Products

Image

Title

Description



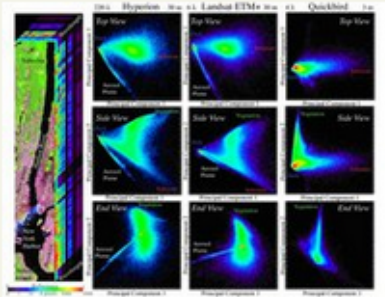
Global Forest Change
Project Details

Results from time-series analysis of 654,178 Landsat images in characterizing forest extent and change, 2000–2012. Trees are defined as all vegetation taller than 5m in height and are expressed as a percentage per output grid cell as "2000 Percent Tree Cover". "Forest Loss" is defined as a stand-replacement disturbance, or a change from a forest to non-forest state. 'Forest Gain' is defined as the inverse of loss, or a non-forest to forest change entirely within the study period. "Forest Loss Year" is a disaggregation of total "Forest Loss" to annual time scales. Reference 2000 and 2012 imagery are median observations from a set of quality assessment-passed growing season observations.

Image

Title

Description



Mapping of Urban Expansion Using Multi-Decadal Landsat and Nightlights Data Over North America
Project Details

Accurate representations of urban expansion are of interest to a large scientific, socio- economic and policy-making community. The increasing aggregation of population and concomitant modification of land cover has both socio-economic and micro and meso-climatic, hydrologic, biophysical and ecologic impacts on the ambient environment. In order to quantify, monitor and model these impacts it is necessary to have accurate depictions of the spatial extent and physical properties of the urban area – however defined. Characterizing large-scale historical changes in urban spatial extent, however, remains a challenge due to the inherent complexity and variability of the urban environment. Even in data-rich countries there is little spatially explicit, land-cover specific, information on how much land is being converted for urban land use over time, how this expansion compares to increases in urban density and relates to a whole host of drivers and environmental changes. The problem is compounded by the lack of a single unambiguous definition of what distinguishes urban from non-urban. The broad diversity of urban forms compounds the problem of classification because the physical properties of urban environments are more diverse than most indigenous land cover classes.

Solicitations

◎ROSES-2014

- ◎ *Amendment to LCLUC call (originally no call - FY15 special funds)*
- ◎ *41 proposals submitted; 7 selected to build a Multi-Source Land Imaging (MSLI) Science Team to prototype algorithms for higher-level LCLUC products from mid-resolution optical sensors and radars – PI, Co-Is and international collaborators total ~40 MSLI members*

◎ROSES-2015

- ◎ LCLUC in South Asia (Step 1 due Dec 1, step 2 Jun 1)
- ◎ South Asia Regional Initiative Science Team will be formed
- ◎ Synthesis

Outreach

- LCLUC site and Facebook page
 - Over 700 “likes”, let’s hit 1000 during this year!
- Quarterly Newsletter
 - Yet to be developed – need PI’s input
- LCLUC Webinars series
 - Last year: 3 sessions (6 IDS Urban studies)
 - Will continue in May with more urban studies



Enjoy Washington in Bloom

Special thanks to the organizers of this meeting