

LCLUC Science Team Meeting and GOFC-GOLD/MAIRS Workshop

Garik Gutman
Land-Cover/Land-Use Change Program, Manager
NASA Headquarters



Land-Cover/Land-Use Change Program



- LCLUC is an interdisciplinary scientific theme within NASA's Earth Science program. The ultimate vision of this program is *to develop the capability for periodic global inventories of land use and land cover from space, to develop the scientific understanding and models necessary to simulate the processes taking place, and to evaluate the consequences of observed and predicted changes*
- Drivers of Disturbances
 - Natural Drivers
 - Anthropogenic Drivers
 - Socio-Economic Drivers
- Consequences/Impacts
 - Carbon Cycle
 - Surface Hydrology
 - Atmosphere
- <http://lcluc.hq.nasa.gov/>

Support of Regional Initiatives

- LBA: Regional Field Campaign in Amazon
- CARPE: Central African Regional Project on the Environment in Congo Basin (with US AID)
- NEESPI: Northern Eurasia program
- MAIRS: Monsoon Area program

Monsoon Asia Integrated Regional Study (MAIRS)

OBJECTIVES

- To better understand how human activities in regions are interacting with and altering natural regional variability of the atmospheric, terrestrial, and marine components of the environment
- To contribute to the provision of a sound scientific basis for sustainable regional development
- To develop a predictive capability of estimating changes in global-regional linkages in the Earth System and to recognize on a sound scientific basis the future consequences of such changes





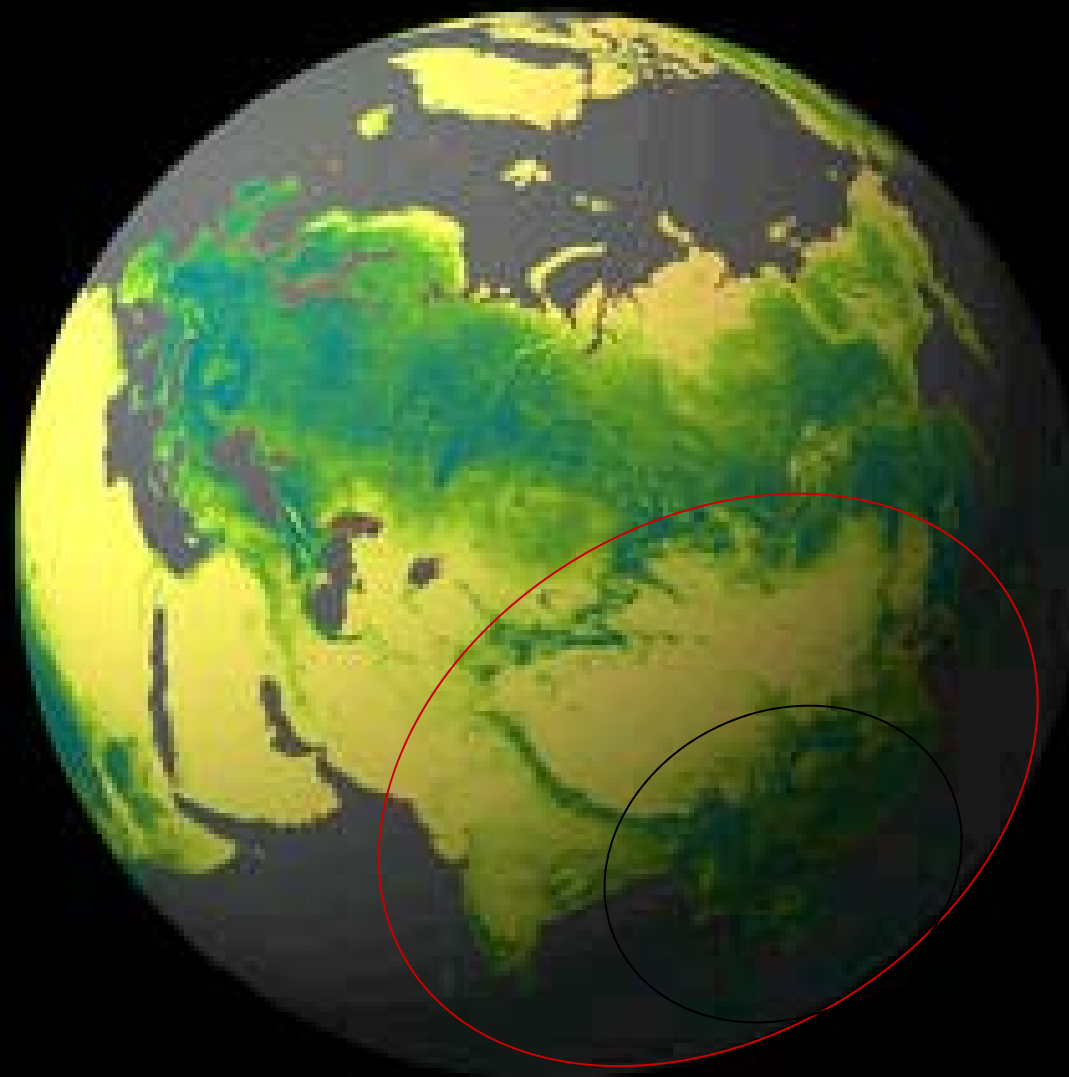
Six cross-cutting issues
of environmental change:

- Water
- Energy
- Food Security
- Air quality and Health
- Natural Disasters
- Biodiversity

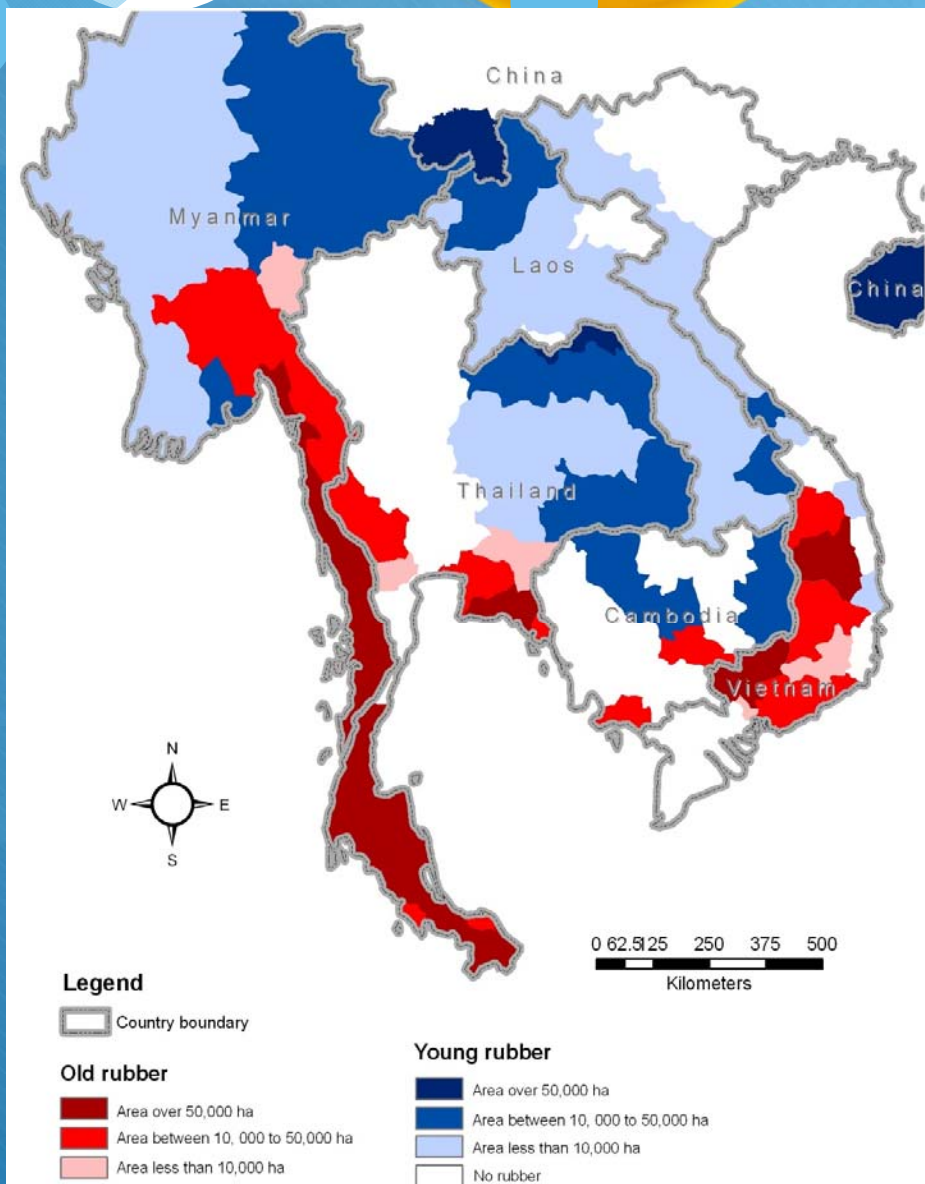
MAIRS Science Themes

- Rapid transformation of land and marine resources in coastal Zones
- Multiple stresses on ecosystems and biophysical resources in high Mountain Zones
- Changes in resource use and emissions due to rapid urbanization in Urban Zones
- Vulnerability of ecosystems in Semi-arid Zones due to changing climate and land use

MAIRS: Focus on SE Asia



Traditional and non-traditional rubber-growing regions





Completed NASA MAIRS Projects

- Annemarie Schneider/University of Wisconsin: Monitoring And Modeling Urbanization In China: A Mixed Methods And Multi-Scale Approach
- Xiangming Xiao/University of New Hampshire: Developing Land Cover Classification Products In Monsoon Asia Over The Period Of 2004-2007 Through Integration Of Landsat and ALOS/PALSAR Images
- David Skole/Michigan State University: Enhancing Global Observations And Information On Tropical Forest Change Using Landsat Global Data

Completed NASA MAIRS Projects

- Jefferson Fox/East-West Center: The Expansion Of Rubber And Its Implications For Water And Carbon Dynamics In Montane Mainland Southeast Asia
- Atul Jain/University of Illinois: Land Cover And Land Use Change And Its Effects On Carbon Dynamics In Monsoon Asian Region
- Hanqin Tian/Auburn University: Land Use-Ecosystem-Climate Interactions In Monsoon Asia
- Chandra Giri/ SAIC/USGS EROS Center: Tropical Mangrove Forests: Global Distributions And Dynamics (1990-2005)

Ongoing NASA MAIRS Projects

- Lisa Curran/Stanford University: Socio-economic and political drivers of oil palm expansion in Indonesia: Effects on rural livelihoods, carbon emissions and REDD
- Karen Seto/Yale University: Multi-Scale and Multi-Sensor Analysis of Urban Cluster Development and Agricultural Land Loss in China and India
- Ruth DeFries/Columbia University: Multi-sensor Fusion to Determine Climate Sensitivity of Agricultural Intensification in South Asia
- Xiangming Xiao/ University of Oklahoma: Quantifying changes in agricultural intensification and expansion in monsoon Asia during 2000-201
- Plus – three global projects: on Ag, Urban and Deltas

NASA Contributions to MAIRS

- 5 new research projects (2011 selections) (total ~\$1.5M)
- More new selections expected next year
- NASA-MAIRS Project Scientist
- Coordination and support of meetings
- Data
 - Landsat-based data products
 - EOS (MODIS, ASTER) products
 - EO-1 (ALI, Hyperion)
 - Fine resolution (<1m)

LCLUC Science Team Meetings

International: Fall-
Winter

2007: Drylands
(NEESPI/MAIRS)

Urumqi, China

2009/1: Tropics (MAIRS)

Kohn Kaen, Thailand

2009/9: Drylands
(NEESPI/MAIRS)

Almaty, Kazakhstan

2010: Boreal/Temperate
(NEESPI)

Tartu, Estonia

2011: *Tropics (MAIRS)*

Hanoi, Vietnam

2012: *TBD*

2013: *TBD*





Programmatic Objectives

- Promote use of satellite observations from NASA and other agencies (observations, data availability and access) for the region
- Identify contributions to international programs (MAIRS, NASA Seven Seas +, IGBP/IHDP and GEOSS)
- The meeting is a follow up of the Khon Khaen meeting (Thailand, January 2009), which was also held jointly with MAIRS and GOFC-GOLD
- Four major themes
 - regional trends in LCLUC (forests, agriculture, urban)
 - the patterns and process of peri-urban development
 - carbon monitoring, reporting and verification
 - land-atmosphere interactions
- Opportunity for the regional network SEARIN
- Training for early career scientists

谢谢

ขอบคุณ
๑

Thanks go to

Hanoi University of Agriculture !

cảm ơn bạn

