

NASA'S LAND-COVER/LAND USE CHANGE PROGRAM

Wrap-up, Future Plans,
Final Remarks

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ST MEETINGS

- ◉ Feedback from the PI's
 - Format
 - Continue with the Early Career Scientists sessions
- ◉ Data, metadata, NEX
 - Building the database - PLEASE, be responsive
- ◉ Identifying programmatic gaps, discussing new directions
 - Helps us develop ideas for future solicitations
 - Panels, breakout session - useful?
- ◉ Each ST meeting has a special focus
 - Invite international partners to attend
- ◉ International: enhancing linkages with international programs and regional networks
 - International programs (e.g. NEESPI, MAIRS), new?
 - MEGAPOLI “descendant”
 - GOFC-GOLD

EDUCATION AND OUTREACH

- **New: Trans-Atlantic Students Initiative**
 - US-Russia-EU
- **New Facebook LCLUC page: PR and interactions with a wider community**
 - <http://www.facebook.com/pages/NASA-Land-CoverLand-Use-Change-Program/189617794413974>
- **Statistics on LCLUC educational “products” are being collected - please be responsive**
- **Each PI is expected to provide**
 - information on MS and Ph.D. students graduating during and after the project; Thesis title; dates
 - students achievements (awards, discoveries)
 - Awards by PI’s

Dear Dr. Soja,
Congratulations! As the Publishing Team at Elsevier responsible for Global and Planetary Change, we are delighted to advise that your article: “Climate-induced boreal forest change: Predictions versus current observations”, Global and Planetary Change, Volume 56, Issue 3-4 (2007), Pages 274-296, is one of the "Top-50 most cited articles" published in Global & Planetary Change January 2006 - February 2011.



Global Change Science Prize”

LCLUC PORTFOLIO: ONGOING PROJECTS

ROSES-2007

- USPI/SALMON 5-year: China data project (mid-term)
 - Liang (UMD)
- MEASURES 5-year: Global forest cover/change (mid-term)
 - Townshend, Huang (UMD)

ROSES-2008

- Climate impact on land use, adaptation (final year)
- Small contributions to non-NASA ongoing international projects programs (final year)

ROSES-2009 recent selections

- LCLUC: Agriculture (7), Urbanization (2), and 4 pending
- Carbon Cycle (2 in the LCLUC portfolio)

ROSES-2010

- US Participating Investigator (USPI)
 - Sentinel-2 collaboration (C. Woodcock, BU)
 - Sentinel-3 collaboration (C. Justice, UMD)
- Carbon Cycle
 - Synthesis/integration for Northern Eurasia (Rawlins, U.Mass)
 - Synthesis of forest processes for Russia (Shugart, UVA)

ROSES-2009 LCLUC SELECTIONS: AGRICULTURE AND URBANIZATION

Brown de Coulston	NASA GSFC (with UMD)	Using Landsat Global Land Survey Data to Measure and Monitor <u>Worldwide</u> Urbanization
Seto	Yale University (+ U. Wisconsin and Arizona State U.)	Multi-Scale and Multi-Sensor Analysis of Urban Cluster Development and Agricultural Land Loss in <u>China and India</u>
Curran	Standford U. (+ U. Arizona and U. Texas Austin)	Socio-economic and political drivers of oil palm expansion in <u>Indonesia</u>
Mustard	Brown University	Rates and Drivers of Land Use Land Cover Change in the Agricultural Frontier of Mato Grosso, <u>Brazil</u>
Coe	The Woods Hole Research Center	Linking Historical and Future Land-Use Change to the Economic Drivers and Biophysical Limitation of Agricultural Expansion in the <u>Brazilian</u> Cerrado
Roy	South Dakota State U. (+ USGS)	Changing Field Sizes of the <u>Conterminous United States</u>, a Decennial Landsat Assessment
Radeloff	U. Wisconsin	200 years of land use and land cover changes and their driving forces in the Carpathian basin in <u>Central Europe</u>
Xiao	U. Oklahoma	Quantifying changes in agricultural intensification and expansion in <u>monsoon Asia</u> during 2000-2010
Hansen (with Applications)	South Dakota State U.	Advancing methods for global crop area estimation

ONGOING AND FUTURE SOLICITATIONS

- ROSES-2010 LCLUC round: 29 Step-2 (full) proposals invited
 - Synthesis and Vulnerability/Impacts/Adaptation in Wetlands
 - Due Jun 1
- ROSES-2011: LCLUC Step-1 (short) proposals (similar to NIP; requirements differ)
 - Due Dec 1
- ROSES-2011 IDS: Impacts of Urbanization on the Environment
 - Due Jan 19, 2012 (LOI Oct 18, 2011)

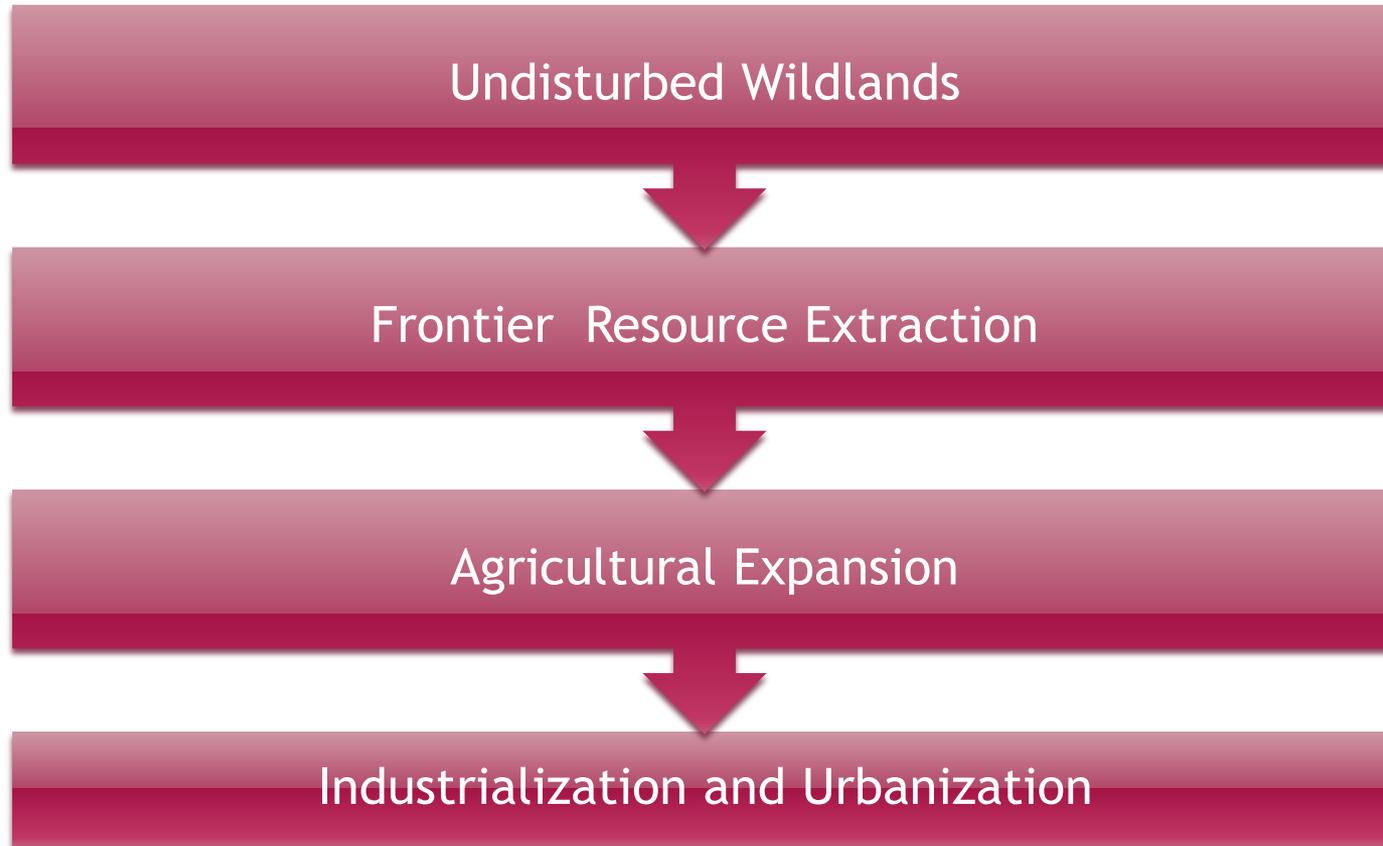
SYNTHESIS

◎ Conceptual Underpinning of LCLUC Science

- Summarizes state-of-the-art knowledge
- Compiles available relevant datasets and research studies
- Advances our understanding of the processes, drivers and impacts of LCLUC
- Develops new understanding and conceptual framework

An Example of Synthesis: Four Phases of Land Use (Mustard et al. 2004, p.418)

Trajectory of Economic Development



PUTTING A “BIG PICTURE” TOGETHER

◎ Possible Components

- Theory and Hypothesis testing
- Compilation and comparative analyses
- Data integration and model development
- Identification of data and research gaps and proposed ways to fill these gaps
- Articulating/publishing refined or new conceptual framework for an aspect of LCLUC



FUTURE STEPS

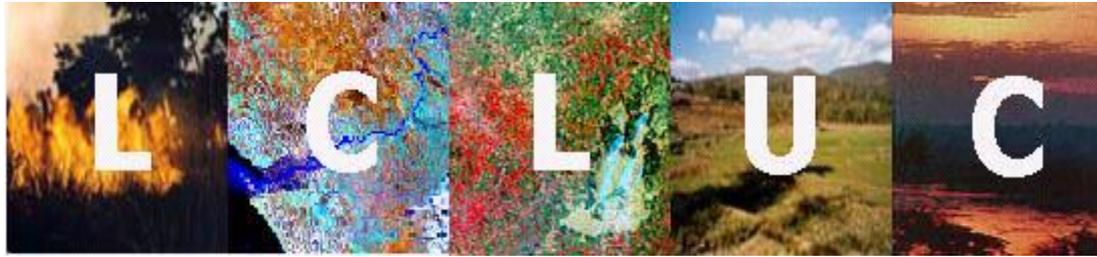
- ◉ Continue international efforts (under CEOS)
 - VIRTUAL constellation of ESA, INPE, ISRO, China data sources and work on compatibility of production
 - REAL constellation concept of compatible sensors launched in coordinated fashion to achieve global, quasi-daily coverage for producing MODIS-like suit of land products
- ◉ Keep social science component in LCLUC projects an integral part of the LCLUC proposals
- ◉ Balance the program thematically and geographically
- ◉ Foster global products generation
 - Develop synthesis of global forest products from GLS projects
 - Develop global land-use products: Urban, Ag
- ◉ Promote our products internally and externally (FB page, brochure)
- ◉ Develop LCLUC calls on a regular, annual basis
 - Step-1 Dec 1, Step-2 June 1
- ◉ Continue the twice-a-year ST meetings structure

FOOD FOR THOUGHT...

- ◉ Change vs Variability
- ◉ Competition vs Cooperation
- ◉ Large Team (Project) vs Small
- ◉ Format
 - Reviews vs Reports
 - Oral vs Poster



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***
- <http://lcluc.hq.nasa.gov/>

THE FUTURE OF LAND REMOTE SENSING AT MODERATE RESOLUTION

- ◉ Landsat-8 (aka LDCM) planned for Dec 2012
 - ◉ The next two years: on a “shoe string”
 - ◉ No backup for L-8 -> dependence on non-US sources
- ◉ Landsat-9 - 2018?
- ◉ Landsat-10 ??
- ◉ Is this an operational program?
 - ◉ National Land Imaging Program (NLIP)
- ◉ Relying on international cooperation?
- ◉ Alternatives?

WHAT IF...

GARIK'S DREAMING



- Imagine the CEOS getting its act together
- Moderate resolution (Landsat-like) systems are developed in coordination
- All future launches are scheduled in concert so that each target on earth is revisited daily
- Sampling through the day?
- Dozens of cheaper moderate-res satellites in space
- What would it take?



Thanks to Chris, Lydia and LeeAnn !!