

## *What is LUCC?*

- A core project of the IGBP and IHDP
- Integrates the physical sciences and the social sciences
- Focus on land-use, land cover and integrative modeling
- A network of scientists
- Facilitate syntheses through workshops

## *LUCC Objectives:*



- Understand global land-use and land cover
- Investigate temporal and geographical dynamics
- Link sustainability and land uses
- Understand interactions between land-use/cover, biogeochemistry, and climate

# *LUCC's Three Focus Areas*



- FOCUS 1: Land Use Dynamics:  
Comparative Case Studies
- FOCUS 2: Land Cover Dynamics:  
Observations and Diagnostic Models
- FOCUS 3: Regional and Global Integrated Models



# *Focus 1*

## *Land-Use Dynamics*


*Case Studies to Analyse and Model the  
Processes of Land-Use Change and Land  
Management in a Range of Generalised  
Situations Globally*

# *Activity 1: Understand How People Make Land-Use Decisions*



- Develop standardisation of methodologies and experimental protocols for effective evaluation of how people make decisions.
- Develop a strategic framework for achieving a globally distributed network of case studies.
- Identify gaps in knowledge and encourage new studies
- Comparative examination of cases.

## *Activity 2: From Process to Pattern: Linking Local Land-Use Decisions to Regional and Global Processes*



- Develop linked activities to Focus 2 to achieve a meso-level integration of upscaling processes by Focus 1 and downscaling by Focus 2.
- Characterise agents and land users appropriate for regional modelling.
- Examine international agreements and national environmental policies, and how they have affected land use (or not) how, why , where, when, how long?)

## *Activity 3: The Future: Sustainability and Vulnerability Scenarios*

- Identify key biogeochemical and climate variables associated with changes in land cover over long time periods (hundreds and thousands of years).
- The transition to sustainability: Simulation modelling of LUCC to identify sustainable future scenarios.
- Growing vulnerabilities, simulation models that identify key interactions associated with degradation and vulnerability.
- Validate and inter-calibrate global data sets.



## *Focus 2*

### *Land-Cover Changes*

*Direct Observations and Diagnostic  
Models of Land-Use/Land-Cover Changes*



# *Activity 1: Land-Cover Change “Hot Spots” and Critical Regions*



- Monitoring biophysical and socio-economic variables
- Definition of land-cover change indicators
- “Hot-spot” detection and alarm system

## *Activity 2: “Socialising the Pixel”*

- Transition probability models
- Spatially-explicit models
- Linking patterns of land-cover to household-level data (link to Focus 1).

## *Activity 3: From Patterns to Processes*



- Dynamic, causal models and short-range projections.
- Definition of risk zones and potential impacts.



# *Focus 3*

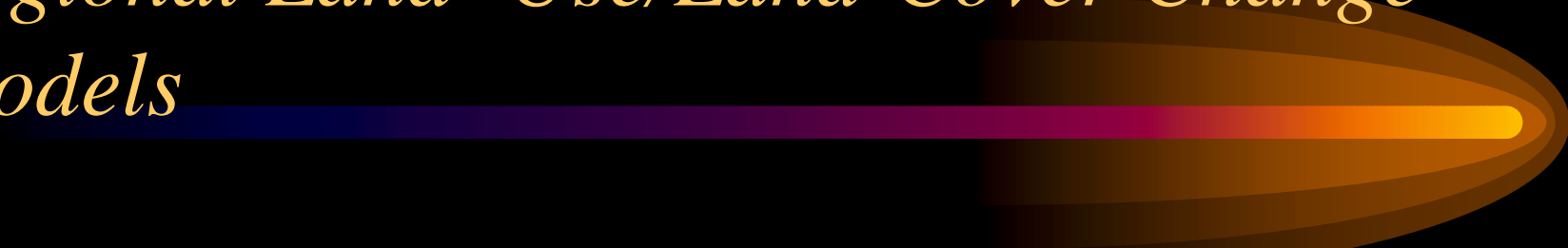
## *Regional and Global Models*

*Development of a Framework and Tools  
for Integrative Assessments*

# *Activity 1: Review and Comparison of Past and Current Regional Modelling Studies*

- Inventory and review of regional and global models used for projections of land use/cover.
- Review and report on state-of-the-art of regional modelling of land-use/land-cover changes.
- Model comparison workshops

## *Activity 2: “Big Issues” in Methodologies of Regional Land- Use/Land-Cover Change Models*



- Coping with heterogeneity and scales in regional models.
- Improving the environment-economy linkage.
- Dealing with technological change.
- Policies and institutions - representing the regulatory context in regional models of land-use/land-cover change.

## *Activity 3: Land-Use/Land-Cover Change and the Dynamics of Interrelated Systems*



- Rural-urban dynamics (“land-use synergies and tensions”).
- Water issues in regional land-use/land-cover change (“integrating land and water”).

## *Activity 4: Scenario Development and Assessments of Critical Environmental Themes*



- Scenario development in the context of a growing world population.
- Land-use/land-cover change in global environmental assessments.



# *LUCC Focus 1 at Indiana University*

**Leader:** Dr. Emilio F. Moran

**Officer:** Carlos A. de Mattos Scaramuzza

**Office Manager:** Patricia Strickland

**Phone:** 812-856-5721      **Fax:** 812-855-3000

**Email:** focus1@indiana.edu

**Internet:** <http://www.indiana.edu/~act/focus1>

**Student Building 331, 701 E. Kirkwood Ave.**

**Indiana University, Bloomington IN 47405-7100**

# *LUCC International Project Office*



**Executive Officer:** Xavier Baulies

**Office Manager:** Caroline Nunes

**Phone:** 34-93-425-2900    **Fax:** 34-93-426-7442

**Email:** [lucc@icc.es](mailto:lucc@icc.es)

**Internet:** <http://www.icc.es/lucc>

Barcelona, Spain