

Land Cover-Land Use Change Scenarios

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Topics

- ▶ Need for LCLUC Scenarios
 - Agency mandates, assessments, and planning
 - National Climate Assessment
- ▶ Workshop recommendations
 - Overall ideas
 - Short-term (within 2 years)
 - Beyond (3-5 years)

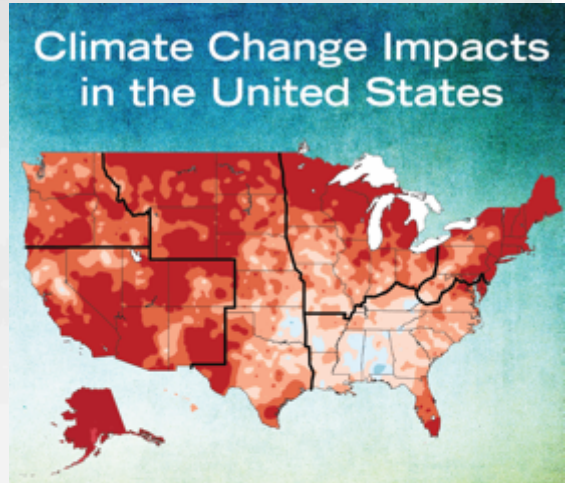
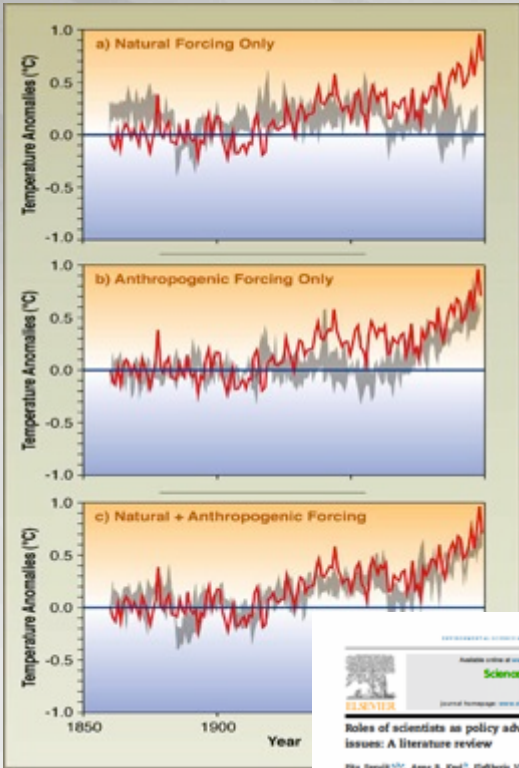
(LCLUC) Scenarios

- ▶ Plausible descriptions of how the future differs from the present, and why (they do not convey probability)
- ▶ Narrative and quantitative
- ▶ Used in research and decision support
 - Nationally-comprehensive
 - Regionally-differentiated
 - Spatially-explicit
- ▶ Different situations and needs for land cover and land use

Increasing Interest of US Agencies in National and Subnational Scale LCLUC Scenarios

- ▶ Numerous federal agencies are interested in using global change scenarios to support their research and management missions, e.g.,
 - Fire/fuels management, resource assessments, water resources planning, flood control, economic development, conservation, environmental impact assessments, GHG reporting, ...
- ▶ Users want to both:
 - Customize scenarios to meet their specific needs and support their external stakeholders
 - Improve coordination across agencies (facilitate comparison, integration, assessment synthesis)
- ▶ They also need higher resolution information that addresses specific drivers and outcomes than is available through global scenarios

LCLUC Scenarios Needed for Traditional Scientific Assessments



Roles of scientists as policy advisers on complex issues: A literature review

Flax (Spradl), Anne S. Ebel, Elzbieta Vasickova, James Dooler, Erik Lubert, Arthur C. Swanson

ABSTRACT

Background and aims: Researchers increasingly recognize science, and the role of scientists as policy advisers on these issues is not always clearly defined. We present an overview of the scientific advice literature on complex issues, and in particular on the factors that influence the role of scientists as policy advisers. We review the literature on the role of scientists as policy advisers on complex issues, and in particular on the factors that influence the role of scientists as policy advisers. We review the literature on the role of scientists as policy advisers on complex issues, and in particular on the factors that influence the role of scientists as policy advisers.



Sustained Assessment: Co-Production to Support More Diverse Decisions

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What is “Sustained Assessment”

- “A sustained assessment is an evolving framework for connecting *scientists* and *practitioners* from government, civil society, the private sector, tribal communities, ...”
- **NOT** continuous production of big IPCC-like reports
- Decentralized
- Roles of key participants
 - Federal agencies provide basic and decision support science
 - Intermediaries (including the private sector) serve as ‘science translators’
 - Citizens, planners, managers, decision makers, ..., engage and are actively involved in evaluating the suitability of information for application
- Products include data, methods, decision support tools, and other inputs for those interested to use
 - LCLUC scenarios are one of these products

Interagency Workshops on Subnational Population and Land Use/Cover Scenarios



- ▶ Convened by the Scenarios and Interpretive Science Coordinating Group of USGCRP
- ▶ June 25-27, 2014
- ▶ Focus: subnational LCLUC scenarios (population scenarios addressed in related workshop)
- ▶ Topics:
 - Survey existing data and scenarios
 - Review state of science of projection methods
 - Scope narratives or logical structure
 - Attributes of interest
 - Spatial scales
 - Time scales
 - What uncertainties are most important?
 - Identify programmatic needs/ issues



Gaps and Challenges

▶ Data issues

- Inconsistent data ontologies
- Missing land-use data
- Inconsistent land cover and land use data sets

▶ Modeling and scenario development issues

- This scale too detailed for many global models and too large (and heterogeneous) for most process models
- Understanding relationships across socio-economic drivers, land use, and land cover
- Working across scales from global processes (e.g., trade), to national/regional context (e.g., policy), to local (e.g., agent decision making)
- Integrating across model types a challenge (economic, agriculture, ecosystem, hydrology, ...)
- Questions about nesting US scenarios in global RCP/SSP process (e.g., ICLUS)



Ideas for Future US-Oriented LCLUC Scenarios

- ▶ Develop a 'light touch' or flexible national framework for LULC modeling and scenario development
 - Describe general national context in which regional, state, and local processes would evolve
 - Meets user needs for customized yet coordinated products
- ▶ Improve dialogue between users and producers
- ▶ Innovate types of data available and work to better integrate and share existing data
 - Develop a nationally-coordinated observational strategy
 - Use new data sources (especially about land use), e.g., mobile devices, social media
- ▶ Expand collaboration with Integrated Assessment Modeling community

Suggestions for 'Near Term' (Next 2 Years)

- ▶ Continue exploring options for development of an interagency scenario process
 - What characteristics of LCLUC?
 - Which drivers and uncertainties? (Workshop tested process for framing scenarios for specific uses)
 - Which components (narrative, quantitative, both?)
 - What information/data outputs (including specifying time and space resolution)?
- ▶ Develop a nationally comprehensive inventory of existing LULC resources
- ▶ Encourage pilot studies, create test-beds, and provide real world examples for sub-regional LULC scenarios that are embedded in larger frameworks

Suggestions for Long Term (3-5 Years)

- ▶ Explicit effort focused on flexible national framework for LULC modeling and scenarios
 - Requires explicit programmatic focus/resources
 - Connect scenario user and developer groups
- ▶ Advance efforts to link models
 - E.g., forestry to urban models, or global continental models to LULCC
- ▶ Conduct research to improve representation of multi-scale processes that account for tele-connections and complex networks
 - Consider varied scales at which nested variables drive land-use change
- ▶ Develop and implement a protocol for mapping land use in a nationally consistent manner at comparable spatial and temporal resolutions to NLCD
- ▶ Make this an ongoing process and encourage diverse methods



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Thank you

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