ASU Workshop ideas *LARGE-SCALE BEHAVIORAL MODELS OF LAND USE CHANGE*

Workshop format

- Mix of short talks, e.g. 10 mins (for context on expertise) and round-table discussions (perhaps in small groups)
- We could ask each person to present 10 mins on one off the themes (below). Cluster these talks by theme (most of first day)
- Second day more discussion of ways forward
- Need to define concrete outcomes for each session/day
- Need a session on ways forward and planning

Suggestions for topics/themes/questions by the organizsers

As our workshop needs a definite focus, we have decided to elevate the following three themes to the principal topics of the workshop.

- **Big data theme.** How to use big data in a modelling context (process-based modelling)? Going beyond machine learning. Explore big data over time. Take modelling into the big science world. Use of social media data. Social survey meta-analysis based on disparate case studies. How do we put these data together?
- **Scaling-up theme**. How can we scale-up (human dimensions models) from landscapes to the Earth System? Cross-scale modelling (at multiple scales), e.g. connectivity across markets and global trade (global teleconnections), and people and knowledge flows. How do new knowledge sources affect socio-ecological systems. Thinking about processes that are not place-based.
- **Model integration theme**. How can we emphasise the importance of doing model coupling for integrated human-biophysical systems? How to couple (how to do it)? Few people have done it because it's hard. How to convince the scientific worls that it's worth the effort?

Suggestions by others

The following topics will, no doubt, also be part of the discussion, but we are asking the participants to really focus in their presentations, and the discussions, on the above themes, and only touch upon those below where this is an essential conbtribution to the debate

- **Decision-making approaches**
- **Science for transformative worlds**
- **Futures, scenarios and models**
- **Hierarchical modelling tools and approaches**
- **Validation issues in multilevel models.**

Workshop outcomes

- Jointly authored paper – needs a champion: MB or MR?
- Formalised network structure – piggyback on existing groups e.g Michael's network of networks, GLP/AIMES working group, …
- Series of workshops
- Ways forwards through AIMES
- Roadmap or strategic plan to take the field forward – possible perspective paper
- Proof of concepts

Participants and Talk Titles:

M. Alberti
Coupling high resolution agent-based urban models with large-scale land use models.

Michael Barton (tbd)

Sean Bergin
Agropastoral Land Use Modeling in the West Mediterranean

Kyle Boczinsky
"Coupled agent-based models of social and environmental systems: Notes and aspirations from the Village Ecodynamics Project"

Gilberto Gallopin
"General properties of hierarchical systems and uni- and bidirectional influences across levels"

Zhangang Han
Agent based modeling and complex networks approaches in human - nature coupling systems studies

Jed Kaplan
"Past land use systems from local to global: How do we do model integration, and what are the challenges for upscaling"

Peter Lawrence
Developing Global Reforestation and Afforestation Scenarios for Land Carbon Mitigation in the Community Earth System Model

Sander van der Leeuw
"Rescaling social science for integrated dynamic societal-environmental models"

Carsten Lemmen
"Land use change from harvesting fields to harvesting energy".

Hannah Liddy
Analysis, Integration, and Modeling of the Earth System (AIMES) Project: Advancing the Understanding of Coupled Human–Environment Dynamics in the Anthropocene

Gerald Nelson
"What have we learned about combining global socioeconomic models with crop and hydrology models?"

Derek RobinsonTheme Scaling-up
"A discussion of conceptual approaches to scaling up",

Mark Rounsevell
"The Land System Modular model (LandSyM): coupled, process-based modelling of the land system, the biosphere and the climate system at the global scale"

Peter Schlosser (tbd)

Isaac Ullah
"Conceptualizing a framework for inter-scale connections in coupled human-earth systems models."

Peter Verburg
Generalizing and scaling of land use decisions'

Moira Zellner (via ZOOM)
"Integrated socio-ecological models for decision-making"