Predicting Landscape Change

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1. What is the importance of predicting landscape change? Some reasons might be for risk assessment, natural resources management and planning. Landscape modeling enables hypotheses regarding how to get from processes (the things you model) to landscape pattern (the end result) to be tested.

2. Landscape models (Chapter 3 in Turner et al. (2001)) can be classified as: (1) deterministic or stochastic, (2) analytical or simulation, (3) dynamic or static, (4) continuous or discrete time, (5) mechanistic, process-based, empirical models OR more usually a combination of these. When would a deterministic model be more appropriate than a stochastic model?

3. Uncertainty of predictions increases at broad spatial scales and long time periods. Data used to build models is typically very detailed for a few sites or very coarse at a regional scale, and extrapolation across time and space is problematic. This suggests the need to compare results at different scales (e.g. changing extent), to see how results compare.

4. When reading Eva & Lambin (2000), and Rupp et al. (2000), focus on the introduction and methods sections. Be prepared to discuss the two different approaches to modeling change.

5. Compare and contrast what Eva & Lambin (2000) found for the effects of fire in the tropical forest and savannas, and what we know about fire in the temperate west of the US. Do you think it is harder to model one type vs. the other? In addition Eva & Lambin (2000) present a conceptual model for tropical forest-savanna dynamics in relationship to fire. This is useful in that it enables them to better communicate their results.

6. What are the problems with using ‘inscrutable’ or black-box models? For example these would be models in which the user is expected to accept outputs on faith not knowing the inner workings of the model.

Recommended Readings:


http://landscape.forest.wisc.edu/landscapeecology/Articles/v2i2p111.pdf


http://www.kluweronline.com/issn/0921-2973/contents


Additional Readings:


http://link.springer.de/link/service/journals/10021/papers/2005004/20050376.pdf


(This paper analyses how landscape pattern detection changes when different spatial and temporal scales and several levels of detail of the cartography are used to describe a landscape affected by land abandonment in northern Spain.)

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