

Winter 2001  
Couclelis

Monday 5:00-7:45  
EH 2620

Geography 220  
**Seminar in Regional Analysis**

**Modeling Land Use Change**

**Description and objectives**

The main objective of this seminar is to familiarize participants with the wide range of models of land use change that have been developed and applied in the environmental disciplines, with the practical, methodological, and theoretical issues surrounding such models, and with the strengths and weaknesses of each kind. Land-use change-models are directly relevant to much of the research in this department on both the physical and the human side.

The seminar will be built around a very recent report published jointly by the US Forest Service and the Center for the Study of Institutions, Population and Environmental Change (CIPEC) of Indiana University. The 78-page report is entitled "A Review and Assessment of Land-Use Change Models: Dynamics of Space, Time, and Human Choice" and undertakes a systematic review and comparison of 18 different models of land use change. Beyond learning about the models themselves, there are a host of broader questions to discuss: the representation of space, time, complexity, and human decision in models; how to classify and compare models (leading to the issue of meta-data for models); data integration issues; the role of GIS and geocomputation in process-oriented modeling; and issues of combining physical and human geography perspectives. The seminar should be of interest to anyone studying phenomena at the human-environmental interface, since land use change is the geographical trace of all kinds of physical and social processes at a variety of scales.

**Main reading**

***A Review and Assessment of Land-Use Change Models: Dynamics of Space, Time, and Human Choice***  
by C. Agarwal, G.L. Green, M. Grove, T. Evans, and C. Schweik. Published jointly by the US Forest Service and the Center for the Study of Institutions, Population, and Environmental Change (CIPEC), Indiana University.

Over the course of the quarter we will read several other papers and book chapters, explore materials available over the Internet, and build up an extensive annotated bibliography. I encourage (nay – urge!) students to bring to the attention of the class relevant materials from their own areas of interest.

**Course requirements**

Participants will be expected to read a variety of materials. Before each class each participant will circulate brief comments based on at least one reading dealing with that week's topic. In addition, each participant will be responsible for the presentation in class of one land use change model OR one 'FOCUS' theme (see course outline). Final projects will consist of a further elaboration of these class presentations, aimed at linking more explicitly the chosen model or 'focus' topic with the student's research interests. Grades will be determined by class participation, weekly notes, and the model or theme presentation in class (80%), and the written submission and presentation of a final project (20%).

## Preliminary Course outline

		<i>Report Chapter #</i>
<b>1/8</b>	<b>1. Introduction</b>	<b>1</b>
	Land use change, land use models, and the need for integrated human-environmental modeling. Overview of the Report. <i>FOCUS: The Banff Conference on GIS and Environmental Modeling</i> . Objectives and overview of the course. Housekeeping and course requirements.	
<b>1/?</b>	<b>2. Classifying and comparing models of land use change</b>	<b>2</b>
	The Report's framework: space, time, human decision. Other dimensions for classifying and comparing models. <i>FOCUS: The ADEPT model metadata study: describing, searching for, and finding appropriate models over the Internet</i> .	
<b>1/22</b>	<b>3. Overview and comparison of 19 land-use-change models</b>	<b>3</b>
	Observations from the Report's comparisons. How useful is the Report's framework? <i>FOCUS: statistical, Markov, and process-oriented models of land use change</i> .	
<b>1/29</b>	<b>4. In-depth discussion of selected land use change models (1)</b>	<b>-</b>
	Applications; functionality; domains covered; theory, methodology, data; strengths and weaknesses. <i>FOCUS: (sub)models of human decision</i> .	
<b>2/5</b>	<b>5. In-depth discussion of selected land use change models (2)</b>	<b>-</b>
	Applications; functionality; domains covered; theory, methodology, data; strengths and weaknesses.	
<b>2/12</b>	<b>6. In-depth discussion of selected land use change models (3)</b>	<b>-</b>
	Applications; functionality; domains covered; theory, methodology, data; strengths and weaknesses.	
<b>2/19</b>	<b>Holiday</b>	
<b>2/26</b>	<b>7. Methodological, theoretical, and technical trends in land use modeling</b>	<b>4</b>
	Modeling frameworks, paradigms, and approaches. <i>FOCUS: Complex systems and the systems approach</i> .	
<b>3/5</b>	<b>8. The future of land use change models</b>	<b>5</b>
	Discussion of the finding of the Report. Bridging the human-physical gap in research and modeling. Role of GIS and advanced computing. <i>FOCUS: Geocomputation</i> .	
<b>3/12</b>	<b>9. Presentation and discussion of participants' projects</b>	<b>-</b>
	Linking models and themes covered in this seminar with participants' individual research interests.	