

Part III

Landscape Change and Disturbance

This module provides a compelling sequence of activities designed to solidify your basic knowledge of landscape change by providing exposure to landscape models and advanced methods for analyzing disturbance mosaics. Chapter 8 presents a simple approach for Markov landscape change modeling with a well-loved “favorite” from the first edition. Use of the Markov.exe program (a stand-alone DOS window executable) still works well, and many students find it a quaint throwback; however, we now include additional (optional) capability using R software. Chapter 9 presents Harvest Lite, a fun simulation model allowing the user to explore the fundamentals of spatial modeling and sensitivity analysis with a forest harvest model that incorporates edge effects and forest recovery. Two new advanced labs explore new modes of examining landscape disturbance. Chapter 10 guides students through analyses of replicated landscapes across continental scales, which can improve comparative studies of landscape dynamics, with a crafty web interface for the METALAND tool. Lastly, Chapter 11 explores the rich mosaic of landscape patterns created by three different types of disturbance and contrasts categorical and continuous measures of disturbance (i.e., landscape metrics and spatial statistics). Patterns produced by fire, insect outbreaks, and forest harvest are explored with the user-friendly software package GS+, building on knowledge from prior chapters on spatial statistics and landscape metrics, but with the complexity and subtleties of realistic landscape data.