probable differences in spatial support between the datasets. When used together, this proposed suite of assessments provides essential information on the type, magnitude, frequency and location of errors in each dataset, substantially improving a user's ability to apply modeled geospatial datasets effectively and to assess the relative strengths and weaknesses of multiple datasets depicting the same forest characteristic. We illustrate the application of this suite of assessments to the modeled biomass and species distribution datasets recently completed for the coterminous United States.
Keywords: Accuracy, Geospatial datasets, Comparative assessment, Uncertainty, FIA

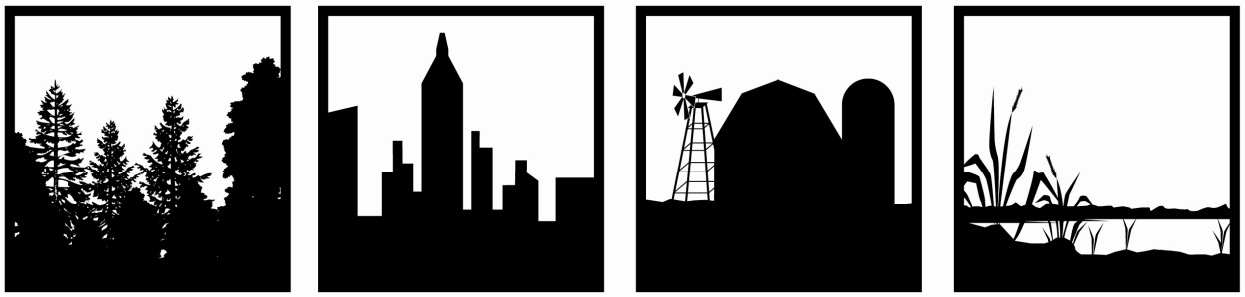
148. Landscape Builder: software for the creation of initial landscapes for LANDIS from FIA data
Authors: Dijak, William Dijak, US Forest Service
Offered Presentations: Forest Landscape Modeling - Monday (2011-04-04): 13:00 - 13:20 - Council Suite
Abstract: Development of spatially explicit landscapes representing tree species composition and tree age that are realistically complex and spatially representative of forest lands is difficult. I developed software, Landscape Builder, which uses Forest Inventory and Analysis (FIA) data collected over multiple years to create spatially explicit landscapes as starting conditions for Landis Pro 7.0 and Landis II. Landis Pro and Landis II are landscape forest simulation models that project future landscapes resulting from growth, forest and fire disturbance and management. The software uses inventory year, FIA unit code, county code, plot number, subplot number, tree status code, tree species code, tree species group code, tree diameter, stand age and tree expansion factor from the FIA database and FIA unit map, National Forest type map, National Forest size class map, land cover map and landform map to assign FIA plots to raster pixels representing the landscape. In addition to the initial starting condition map, the software produces the species map attribute file in Landis Pro or Landis II format. Resulting landscapes are spatially representative but not spatially exact. For US National Forest lands which have forest type stand maps and size class maps, FIA plots matching forest type and size class are assigned. Currently, the software supports national forests lands found in the eastern half of the United States (US National Forest regions 8 & 9). Forest maps produced from Landscape Builder can also be used in the wildlife habitat suitability modeling software Landscape HSImodels. The software is Windows based and has been tested on Windows XP and Windows 7, producing landscapes that have 7500 rows and 6500 columns.
Keywords: Landscape builder, Forest Inventory and Analysis, Landis Pro, LANDIS-II

149. Effectiveness of forest management strategies to mitigate effects of global change in Siberia
Authors: Sturtevant, Eric Gustafson, Institute for Applied Ecosystem Studies; Anatoly Shvidenko, International Institute for Applied Systems Analysis; Robert Scheller, Portland State University; Brian Sturtevant, Institute for Applied Ecosystem Studies
Offered Presentations: Forest Landscape Modeling - Monday (2011-04-04): 13:20 - 13:40 - Council Suite
Abstract: Siberian forest ecosystems are experiencing multiple global changes. Climate change produces direct (temperature and precipitation) and indirect (altered fire regimes and increase in cold-limited insect outbreaks) effects. Although much of Siberia has not yet been subject to timber harvest, the frontier of timber cutting is advancing steadily across the region. We investigated questions about the ability of broad silvicultural strategies to reduce losses to disturbance, maintain the abundance of preferred species, mitigate fragmentation and loss of age class diversity, and sequester above-ground carbon under future climate conditions in Siberia. We conducted a 2x2x2 factorial experiment using the LANDIS-II landscape disturbance and succession model. Treatments were cutblock size, cutting rate and cutting method. Simultaneously, the model simulated natural disturbances (fire, wind, insect outbreaks) and forest succession under projected future climate conditions as predicted by an ensemble of global circulation models. The cutting method and cutting rate treatments generally had a large effect on species and age class composition, residual living

biomass and susceptibility to disturbance, while cutblock size had no effect. Cutblock size affected only measures of fragmentation, but cutting method and cutting rate often had an even greater effect. Based on the results, we simulated a â€œrecommendedâ€ strategy and compared it to the current forest management practice (â€œbusiness as usualâ€). The recommended strategy resulted in higher forest productivity, increased abundance of favored species and reduced fragmentation, but it did not significantly reduce losses to disturbance. No single strategy appears able to achieve all possible forest management objectives.
Keywords: Climate change, Timber harvest, Forest management, Sustainability, Silviculture

150. Modeling above and below ground forest carbon in response to future climate projections and wildfire activity in the Lake Tahoe
Authors: Loudermilk, Louise Loudermilk, Portland State Univ.; Robert Scheller, Portland State Univ.; Peter Weisberg, Univ. Reno-Nevada; Jian Yang, Univ. Revo-Nevada; Alison Stanton, .; Tom Dilts, University of Nevada-Reno; Carl Skinner, US Forest Service
Offered Presentations: Forest Landscape Modeling - Monday (2011-04-04): 13:40 - 14:00 - Council Suite
Abstract: Forests in the U.S. are an important carbon sink that currently offsets ~20% of the nation's fossil fuel emissions. However, the strength of this carbon offset is unknown at the regional scale and will most likely weaken as forests age, climate warms, and natural disturbances increase due to climate change. Wildfire regimes in the western U.S. are expected to worsen with projected decreases in snowfall, longer growing seasons, and increases in fuel loads. For this study, we modeled the compounding effects of climate change and wildfire activity on above and below ground forest carbon dynamics across the Lake Tahoe Basin (LTB, located in CA and NV). The entire forested area of the LTB was modeled using a spatially explicit landscape simulation model, LANDIS-II, which includes the direct and indirect effects of climate on succession and disturbance. Two climate scenarios (high and low greenhouse gas emissions) were used as model inputs, influencing vegetative growth, wildfire activity, and soil decomposition. We addressed the immediate impacts of fire on forest carbon loss as well as forest resiliency, forest recovery, and changes in species composition over multiple decades. Our preliminary results indicate that, although growth rates will increase, climate change will result in a net reduction of forest carbon in the LTB. We also discuss the next steps in our project, including the implementation of fuel treatment scenarios for mitigating wildfires and sequestering carbon. This work will provide managers of the LTB with quantifiable carbon estimates as well as carbon fluxes across the landscape.
Keywords: Carbon, Climate change, Forest succession, LANDIS-II, Lake Tahoe

151. Modeling the impacts of communication among nonindustrial private forest owners on forested landscapes
Authors: Mayer, Audrey Mayer, Michigan Technological University; Mark Rouleau, Michigan Technological University; Mackenzie Roeser, Michigan Technological University; Jillian Schubert, Michigan Technological University
Offered Presentations: Forest Landscape Modeling - Monday (2011-04-04): 14:00 - 14:20 - Council Suite
Abstract: Forest management policies governing timber harvesting that target nonindustrial private forest (NIPF) owners can have a considerable impact on landscapes dominated by these owners. This impact is rarely understood or measured when communication about the policies among NIPF owners is a factor. We developed a cellular automata model for Houghton and Keweenaw Counties in the Upper Peninsula of Michigan. These counties are 80% forested and thousands of small NIPF owners control the harvesting decisions of about 30% of the area. Using a GIS base layer of parcel boundaries, we assigned each NIPF parcel a probability of owner characteristics (e.g., age, education, absenteeism) based on US Census data. These characterisics have been shown in the



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