Public Abstract
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Title:DEVELOPMENT OF AN INTEGRATED FOREST MANAGEMENT DECISION SUPPORT SYSTEM: INTEGRATING THE LANDIS MODEL AND ARCGIS

Forest management is an important field for Decision Support System (DSS) application, but most of the current DSSs for forest management are not fully successful because: 1) the user interface is not friendly, or 2) GIS functions are not fully integrated into the system. These limitations unnecessarily reduce the use of DSS planning tools by forest managers, and decrease practical feedback from managers that could aid in further development of the landscape models.
This research presents a universal method to develop a Forest Management Decision Support System (FMDSS) by integrating the LANDIS 4.0 model with the ESRI ArcGIS platform. FMDSS was developed with Visual Basic, ESRI ArcObjects libraries and Microsoft Access database. Not only does FMDSS make the preparation of simulation parameters easy for forest managers with friendly graphic interfaces, it also makes available the powerful GIS functions and spatial data processing capabilities of the ESRI ArcGIS platform. FMDSS eliminates the time-consuming parameter editing work necessary for the LANDIS model, simplifies the technical operations of running the model, and allows managers to focus on evaluating their management plans, rather than on the LANDIS program. A case study is presented, applying FMDSS to data from the Mark Twain National Forest. This demonstration illustrates how the analysis process is both simplified and made more powerful with FMDSS. The example modifies the spatial units employed in forest fuel management, producing significantly different fire behavior outcomes than were modeled in LANDIS without the spatial capabilities of FMDSS.