

Digital Elevation Mapping with the Spatially Explicit Landscape Event Simulator

Travis McDonnell

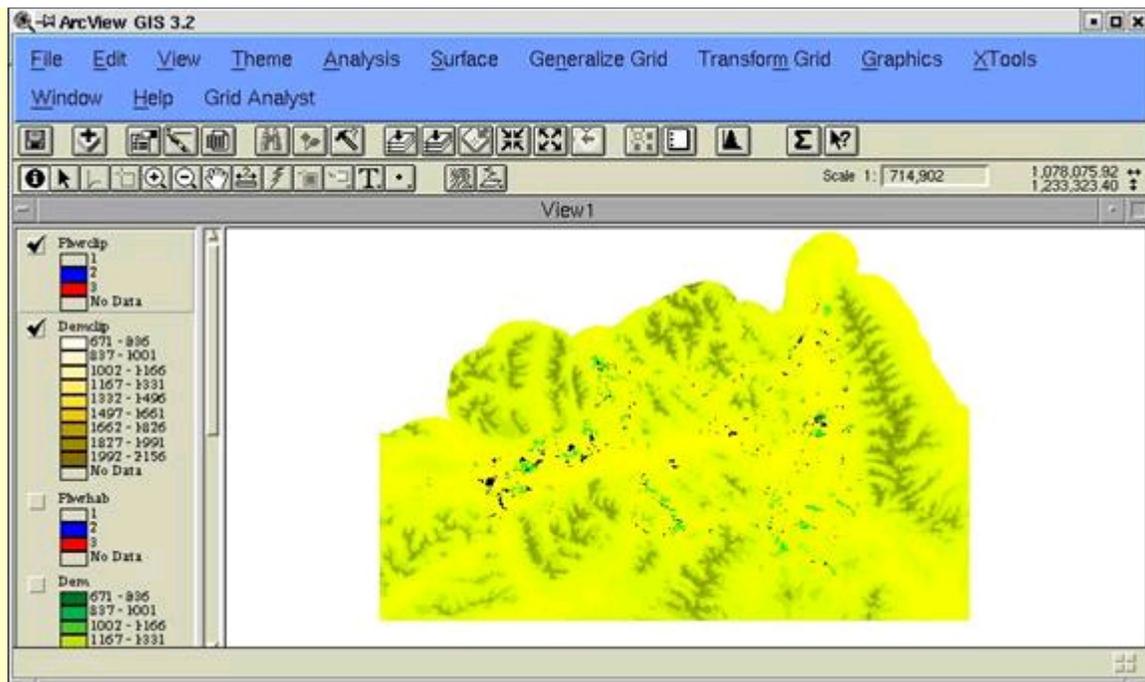
December, 2002

This project looks at developing a communication tool involving geo-referenced landscape simulation output and a three-dimensional terrain model. The landscape simulation output is taken from the Spatially Explicit Landscape Event Simulator (SELES) designed by Andrew Fall at Simon Fraser University (SFU).



SELES program interface

With the help of Wildlife Infometrics, the SELES program was run and simulation output data of winter range habitat for caribou were collected for multiple time-line representations. These data were reformatted and manipulated in order to be brought into ArcView 3.2. They were then draped over a digital elevation model (DEM) of the area.



DEM before 3D Viewer

A DEM was generated in ArcView and was modeled in the 3D Viewer. Hypsometric tinting was applied to the model for visual effect. Prior knowledge of the approximate tree line bordering the Alpine Tundra biogeoclimatic zone influenced the setting of a grey tint above 1650 metres in elevation. A dark green below 1649 metres and a lighter green below 1199 metres were chosen to represent vegetation cover.

Final output was brought into CorelDraw for processing. Legends were copied as well and reformatted to represent the features of importance and areas in the view. The perspective was kept at a North-Eastern direction for maximum visibility, avoiding obstruction by the mountains, and at an elevated vantage point for a laid-out representation of the landscape

The output of this project is to be an example of the integration of the SELES program and Geographical Information Systems (GIS) producing a communication tool for demonstrating concepts of landscape change and manipulation in a three-dimensional environment.

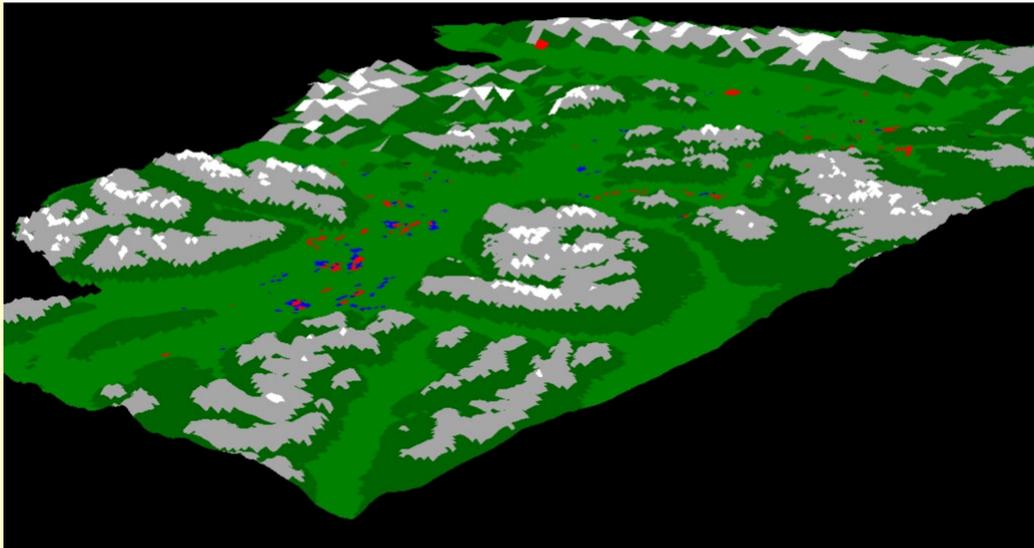
(File: Samson:/home/mcdonnej/geog413/selesdata/SELESOutput2.cdr)

Final output processed in CorelDraw

This project focused on the Wolverine operating area of the MacKenzie District TSA. Caribou winter range was assessed in the area based on biotic and abiotic factors affecting pine lichen growth. This model assumes that pine lichen, as a food source, is an important component of the suitability of caribou winter habitat.

Click the image to enlarge.

Caribou - Pine Lichen Winter Range in the Wolverine 2000-2200



Elevation (m)

| | |
|-------------|-------------|
| Dark Green | 671 - 1199 |
| Light Green | 1200 - 1649 |
| Grey | 1650 - 1899 |
| White | 1900 - 2156 |

Habitat Zones

| | |
|------|-------------------|
| Blue | Equivocal Habitat |
| Red | Preferred Habitat |

November 29, 2002
J. Travis McDonnell
UNBC GIS

Description:
N-E direction view of equivocal and preferred habitat for caribou based on predicted availability of pine lichen as a food source over 200 years from year 2000. Data supplied by Wildlife Infometrics, Mackenzie, BC. Output taken from SEED - Spatially Explicit Landscape Event Simulator progressive simulation. Processed in Arcview 3.2 - 3D Analyst. Design output processed in CorelDRAW 10.

[Geog413 Project Home](#)