Title: Development of the Rangeland Vegetation Simulator

Citation: Reeves, M.C. 2016. Development of the Rangeland Vegetation Simulator: a module of the Forest Vegetation Simulator.

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Application Location: 46,55,23.84N 114,05,35.63W

Objectives
Develop a rangeland simulation program with emphasis on biomass and fuels

Project description

The Rangeland Vegetation Simulator (RVS) was developed for two overarching benefits:
- A research tool enabling projections of future vegetation conditions improving our ability to estimate the effects of management actions on future vegetative states.
- A decision support tool enabling land management agencies to more accurately describe post-disturbance successional dynamics, and most importantly, estimate wildland fire behavior and effects from a rich suite of fuelbed characteristics that the RVS offers.

To create this tool, we used LANDFIRE's Biophysical Settings (BpS) data to help derive growth rates and successional trajectories for 112 different western rangeland sites. In addition, using the BpS data, relationships between remote sensing data and biomass were explored so that, for a given climate regime, herbaceous biomass and therefore fuels can be estimated. In addition, the BpS models enable estimates of post-disturbance growth rates and relative abundance of different lifeforms.

We chose the LANDFIRE BpS system for developing vegetation specific growth coefficients and successional trajectories because it is spatially comprehensive, easy to use, and very transparent.

LANDFIRE products used

Biophysical settings models

Value of the work to the natural resource management/conservation community

The RVS enables estimates of post disturbance biomass and fuels. In addition, it includes an innovative tool for estimating the response of fuels to herbivory and fire. With this tool, users can supply plot level information of vegetation composition and structure and estimate post treatment/disturbance vegetation response.

Online resources
- **Report**: http://www.firescience.gov/projects/12-1-02-15/project/12-1-02-15_final_report.pdf

- **Webinar**: http://www.apexrms.com/webinar-state-transition-simulation-modelling-for-quantifying-rangeland-composition-structure-and-fuelbed-components/

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