

Prognosis^{BC} – Modeling climate change effects in forest ecosystems

October 19th, 2011 – 11:00 AM

Victoria participants meet in Room 201; 2nd. Floor 727 Fisgard Street, Victoria BC.

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ABSTRACT

To simulate the stand-level impacts of climate change on growth, predictors in the Prognosis^{BC} model were adjusted to account for expected climate effects. This was accomplished by: (1) adding functions that link mortality and regeneration of species to climate variables expressing climatic suitability; (2) constructing a function linking site index to climate and using it to modify growth rates; and (3) adding functions that account for changing growth rates due to climate-induced genetic responses. Prognosis^{BC} is a distance-independent individual tree model known as the Forest Vegetation Simulator or FVS in the United States.

Simulations explore the change in species composition and tree growth that should accompany climate change during the 21st century and illustrate the changes in forest composition that could accompany climate change. Projections were the most sensitive to mortality, as the loss of trees of a dominant species heavily influences subsequent stand dynamics. While additional work is needed on fundamental plant–climate relationships, this work incorporates climatic effects into FVS/Prognosis to produce a new model called Climate–FVS and provides managers with a tool that allows climate change impacts to be incorporated in forest plans.

BIOGRAPHY

Don Robinson is a Systems Ecologist with ESSA Technologies. Over the last twenty years he has devoted much of his time to the development and application of forest growth models at the stand and landscape scale, with an emphasis on the role of disturbance. He has helped to create geographic variants of the Prognosis/FVS model for BC and Ontario and has contributed to FVS extensions that support strategic planning for root disease, mistletoe and mountain pine beetle; as well as the development of the FVS Fire & Fuel Effects model. Recently he has helped to develop the framework for Climate-FVS and is currently heavily engaged in modeling water management issues in the Sacramento River basin for The Nature Conservancy.