



## FIA–FSP Forest Science Corner

# Modelling the effects of climate change on forest growth and development

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Researchers at the University of British Columbia are working on a research project that will provide insight into how different forest types and regions will respond to climate change projections. Funded by the Forest Investment Account–Forest Science Program, **Brad Seely** (University of British Columbia) and his team are working to refine the model FORECAST to allow users to model the potential impacts of different climate change scenarios on multiple forest values, including forest growth and development.

“This is important to practitioners as they presently have very few options for dealing with climate change in their planning efforts,” says Brad Seely. “I’ve been working on developing forest ecosystem management models for nearly 15 years now and still very much enjoy the challenge of trying to capture our current understanding of ecosystem processes in the form of modelling tools that can help to advance our efforts towards sustainable ecosystem management.”

FORECAST is an ecosystem-based, stand-level, forest growth simulator. With the model, users can compare and contrast the effects of various harvesting and silviculture systems on forest productivity, stand dynamics, and a series of biophysical indicators of non-timber values. According to the

FORECAST website ([www.forestry.ubc.ca/ecomod-els/moddev/forecast/summary/links\\_description.htm](http://www.forestry.ubc.ca/ecomod-els/moddev/forecast/summary/links_description.htm)), the model combines local growth and yield data from other models such as TASS/TIPSY with measures of decomposition, nutrient cycling, light competition, and other ecosystem properties to simulate forest growth and ecosystem dynamics under changing management conditions.

Researchers anticipate that the majority of these measures will be affected by climate change to some degree. In this project, researchers are simulating the effects of changing temperatures on growing-season length and forest growth rates as well as integrating the forest hydrology model ForWaDy, which evaluates the effects of climate change on tree water stress, into FORECAST. This will provide additional feedback on tree growth rates while allowing a climate-based representation of organic matter decomposition and associated nutrient mineralization rates within the model. The completed model is expected to be available as a working beta version early in 2010.

Seely says that he is “confident that the addition of climate change capability in FORECAST will provide a useful tool that can help forest managers address this issue in a meaningful way.” For more information on this FORECAST model research, contact [Brad.Seely@ubc.ca](mailto:Brad.Seely@ubc.ca) 