



Better Land Management Through Pan-Canadian Forest Maps

In Canada, each province and territory is responsible for its own forest management. However, issues such as forest insect outbreaks and climate change extend beyond provincial and territorial boundaries. The study of such phenomena is therefore hampered by the difficulty of gathering inventory data collected by the provinces and territories and aggregating this data for Canada as a whole. An immutable state of affairs? Not so, thanks to the work of researchers from the Canadian Forest Service (CFS).

Canada's National Forest Inventory (NFI) responds only partially to this problem by using a systematic sampling method covering 1% of Canada's landmass. The NFI monitors this network of sampling points to provide accurate and consistent information on the state and sustainable development of Canada's forests. However, more detailed mapping is required to analyze forest issues that overlap across several provinces or territories (e.g. spruce budworm outbreaks).

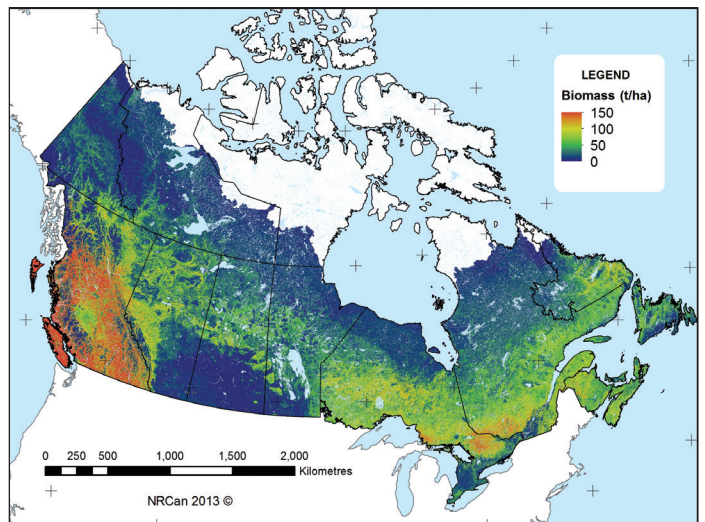
Using NFI sampling as a starting point, CFS researchers have developed pan-Canadian forest maps. To accomplish this, they applied a statistical technique (k-nearest-neighbours or kNN) to NASA MODIS satellite images and to climate data layers and topographic data layers.

This work has made it possible to estimate several forest attributes for all of Canada's managed forests, at a resolution of 250 m x 250 m¹. Height, age, volume, forest composition and biomass quantities are among the 127 attributes that have thus been mapped.

Harmonized mapping of forest attributes across all of Canada's forests is a major technical and operational breakthrough that enhances our ability to analyze

the impacts of human activities or natural disturbances on our forests. This tool also facilitates the analysis

of many forest, environmental and economic issues, particularly those related to climate change.



To access the maps: nfi.nfis.org

To download the open access article: Beaudoin, A.; Bernier, P.Y.; Guindon, L.; Villemaire, P.; Guo, X.J.; Stinson, G.; Bergeron, T.; Magnussen, S.; Hall, R.J. 2014. Mapping attributes of Canada's forests at moderate resolution through kNN and MODIS imagery. *Can. J. For. Res.* 44:521-532. <http://www.nrcresearchpress.com/doi/abs/10.1139/cjfr-2013-0401>

1. This means that each pixel that makes up the image represents an area of 250 m x 250 m on the ground.

For more information, please contact:

André Beaudoin or Pierre Bernier

Natural Resources Canada

Canadian Forest Service

Laurentian Forestry Centre

1055 du P.E.P.S., P.O. Box 10380, Stn. Sainte-Foy

Québec, QC G1V 4C7

418-648-3440 • 418-648-4524

andre.beaudoin@nrcan-rncan.gc.ca

pierre.bernier@nrcan-rncan.gc.ca

Branching Out
from the Canadian Forest Service - Laurentian Forestry Centre