

With this sophisticated but user-friendly software tool, users apply their own stand- or landscape-level forest management information to calculate carbon stocks and stock changes for the past (monitoring) or into the future (projection). Users can also create, simulate and compare various forest management scenarios in order to assess impacts on carbon.



Tools in the model assist users with importing required data from common timber supply models such as Spatial Woodstock™ and the Strategic Forest Management Model® (SFMM) or from user-developed data files.

The model contains graphic user interfaces to help prepare data, define scenarios, perform analyses, and examine results.

Results of analyses can be used for various types of forest ecosystem carbon reporting requirements. In Canada, many jurisdictions require that forest management plans report

on criteria and indicators in order to comply with sustainable forest management guidelines. CBM-CFS3 results can also be used to report on carbon in a similar way in order to acquire forest certification (for example, certification under the Canadian Standards Association Sustainable Forest Management Program).

The CBM-CFS3 is also the central model of Canada's National Forest Carbon Monitoring, Accounting and Reporting System that is used for international reporting of the carbon balance of Canada's managed forest.

A user's guide, several tutorials, and technical support are available to assist forest analysts with the model. A scientific description of the model and a French-language version of the model are planned for 2006.

Although the model currently contains a set of default ecological parameters appropriate for Canada, these parameters can be modified by the user, allowing for the potential application of the model in other countries. Other languages could be added to the user interface in the future.

Model Availability

The CBM-CFS3 and user's guide are publicly available, free of charge. To obtain the latest version of the CBM-CFS3 or for more information about the project, training workshops and publications, visit:

<http://carbon.cfs.nrcan.gc.ca>

or contact Stephen Kull, Carbon Accounting Liaison Officer at:

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The Operational-Scale Carbon Budget Model of the Canadian Forest Sector



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Forestry and Climate Change

Forests play an important role in the global atmospheric carbon cycle by storing and releasing carbon. Forest management actions influence the net carbon balance of Canada's forests, and forest managers need a scientifically credible tool to assess the potential impacts of alternate management strategies on the carbon stocks and stock changes on their land base. Such a tool would enable forest managers and analysts to report



the carbon implications of proposed management plans and to devise strategies to reduce carbon sources and increase sinks.

A Model Solution

In the late 1980s, researchers at Natural Resources Canada's Canadian Forest Service began developing computer models for forest carbon accounting. The Carbon Budget Model of the Canadian Forest Sector (CBM-CFS2), a research tool designed to account for carbon

stocks and stock changes in forest ecosystems, was used throughout the 1990s to assess the role of Canada's forests in the global carbon cycle. It also helped researchers quantify how natural disturbances, forest management, and growth and decomposition rates affect forest carbon stocks at the stand and landscape levels.

In 2002, the Carbon Accounting Team of the Canadian Forest Service (CFS-CAT) and the Canadian Model Forest Network (CMFN) responded to the forest industry's need for an operational carbon accounting tool. The tool was needed to meet criteria and indicator reporting requirements of sustainable forest management, for forest certification, and to help managers understand how their actions affect the net carbon balance of their forest estate.



The goal of the partnership between the CFS-CAT and the CMFN was to develop a user-friendly operational-scale carbon accounting tool that would build on the science of the CBM-CFS2.



The Operational-Scale Carbon Budget Model of the Canadian Forest Sector

The CBM-CFS3 is a stand- and landscape-level modeling framework to simulate the dynamics of all forest carbon stocks required under the Kyoto Protocol. It is compliant with the carbon estimation methods outlined in the guidelines of the United Nations Intergovernmental Panel on Climate Change.

The model uses much of the same information that is required for forest management planning activities (e.g., forest inventory, tree species, growth and yield curves, natural and human-induced disturbance information, forest harvest schedule and land-use change information), supplemented with information from national ecological parameter set databases (see Figure 1).

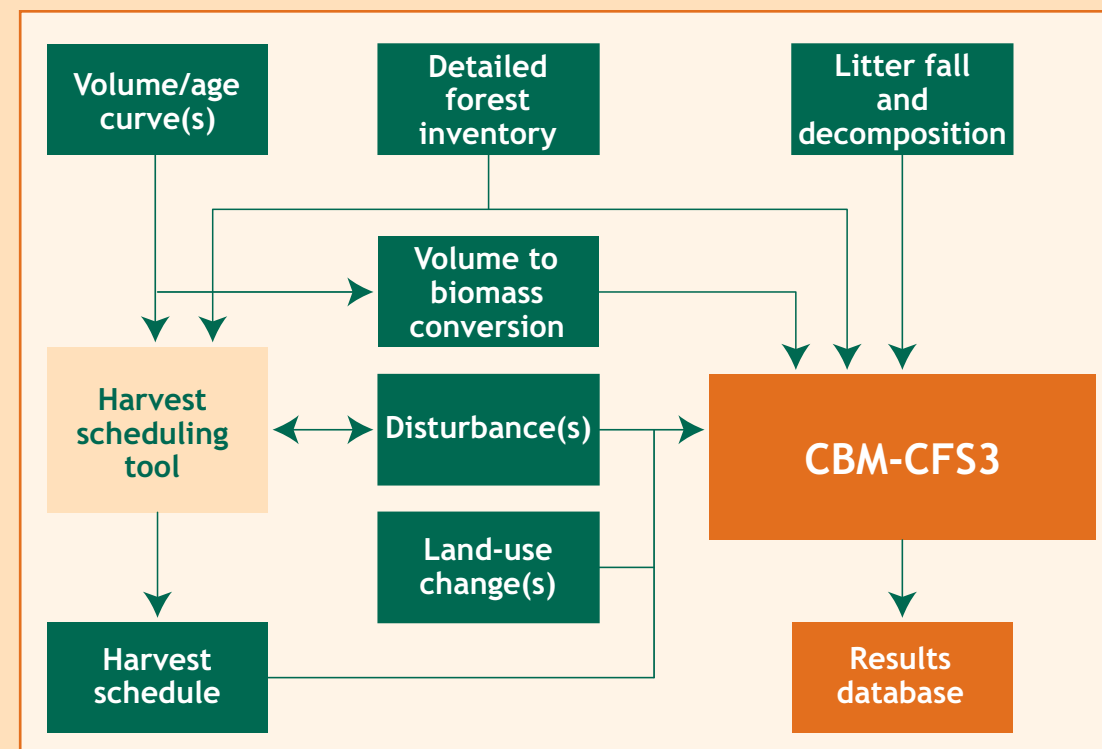


Figure 1. Data inputs (green boxes) required by the CBM-CFS3.