

## A Canadian upland forest soil profile and carbon stocks database

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**Abstract.** “A Canadian upland forest soil profile and carbon stocks database” was compiled in phases over a period of 10 years to address various questions related to modeling upland forest soil carbon in a national forest carbon accounting model. For 3,253 pedons, the SITES table contains estimates for soil organic carbon stocks (Mg/ha) in organic horizons and mineral horizons to a 100-cm depth, soil taxonomy, leading tree species, mean annual temperature, annual precipitation, province or territory, terrestrial ecozone, and latitude and longitude, with an assessment of the quality of information about location. The PROFILES table contains profile data (16,167 records by horizon) used to estimate the carbon stocks that appear in the SITES table, plus additional soil chemical and physical data, where provided by the data source. The exceptions to this are estimates for soil carbon stocks based on Canadian National Forest Inventory data (NFI [2006] in REFERENCES table), where data were collected by depth increment rather than horizon and, therefore, total soil carbon stocks were calculated separately before being entered into the SITES table. Data in the PROFILES table include the carbon stock estimate for each horizon (corrected for coarse fragment content), and the data used to calculate the carbon stock estimate, such as horizon thickness, bulk density, and percent organic carbon. The PROFILES table also contains data, when reported by the source, for percent carbonate carbon, pH, percent total nitrogen, particle size distribution (percent sand, silt, clay), texture class, exchangeable cations, cation and total exchange capacity, and percent Fe and Al. An additional table provides references (REFERENCES table) for the source data. Earlier versions of the database were used to develop national soil carbon modeling categories based on differences in carbon stocks linked to soil taxonomy and to examine the potential of using soil taxonomy and leading tree species to improve accuracy in modeled predictions. The current database is being used to develop soil carbon model parameters linked to soil taxonomy and leading tree species and, by various governmental and nongovernmental organizations, to improve digital mapping of ecosite types and soil properties regionally, nationally, and internationally. © Her Majesty the Queen in Right of Canada, 2018. Information contained in this publication or product may be reproduced, in part or in whole, and by any means, for personal or public non-commercial purposes, without charge or further permission, unless otherwise specified. You are asked to: exercise due diligence in ensuring the accuracy of the materials reproduced; indicate the complete title of the materials reproduced, and the name of the author organization; indicate that the reproduction is a copy of an official work that is published by Natural Resources Canada (NRCan) and that the reproduction has not been produced in affiliation with, or with the endorsement of, NRCan. Commercial reproduction and distribution is prohibited except with written permission from NRCan. For more information, contact NRCan at [copyright.droitdauteur@nrcan-rncan.gc.ca](mailto:copyright.droitdauteur@nrcan-rncan.gc.ca).

**Key words:** Canada; carbon stocks; soil chemistry; soil taxonomy; soil texture; tree species; upland forest soil.

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