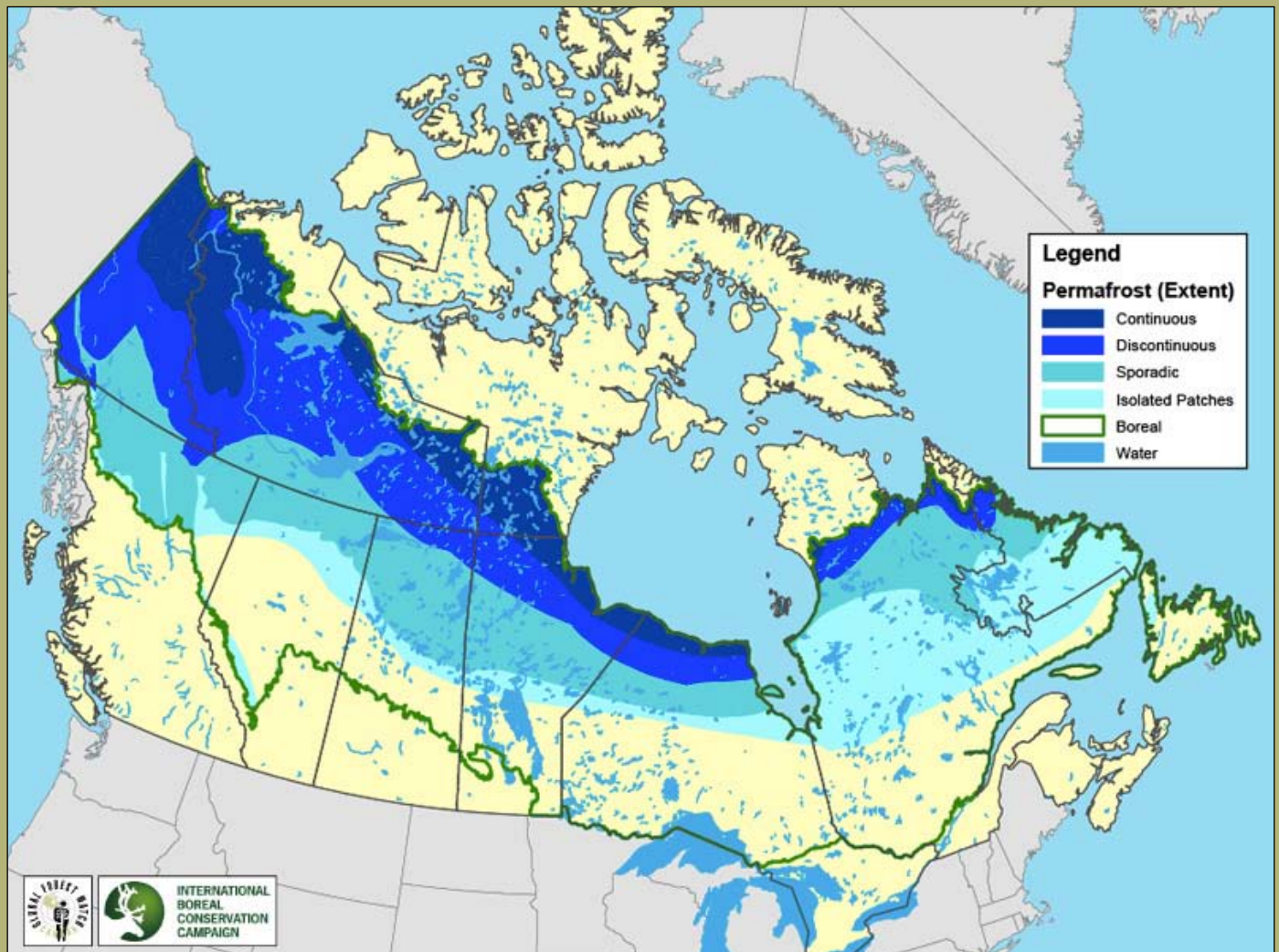


# Carbon Storage in Canada's Boreal Forest



Map prepared by Global Forest Watch Canada for the International Boreal Conservation Campaign and Natural Resource Defense Council  
Data Source: Atlas of the Cryosphere Data Sources, The National Snow and Ice Data Center, University of Colorado, Boulder, CO  
(Available at: [http://nsidc.org/data/atlas/cryosphere\\_atlas\\_north\\_info.html](http://nsidc.org/data/atlas/cryosphere_atlas_north_info.html))

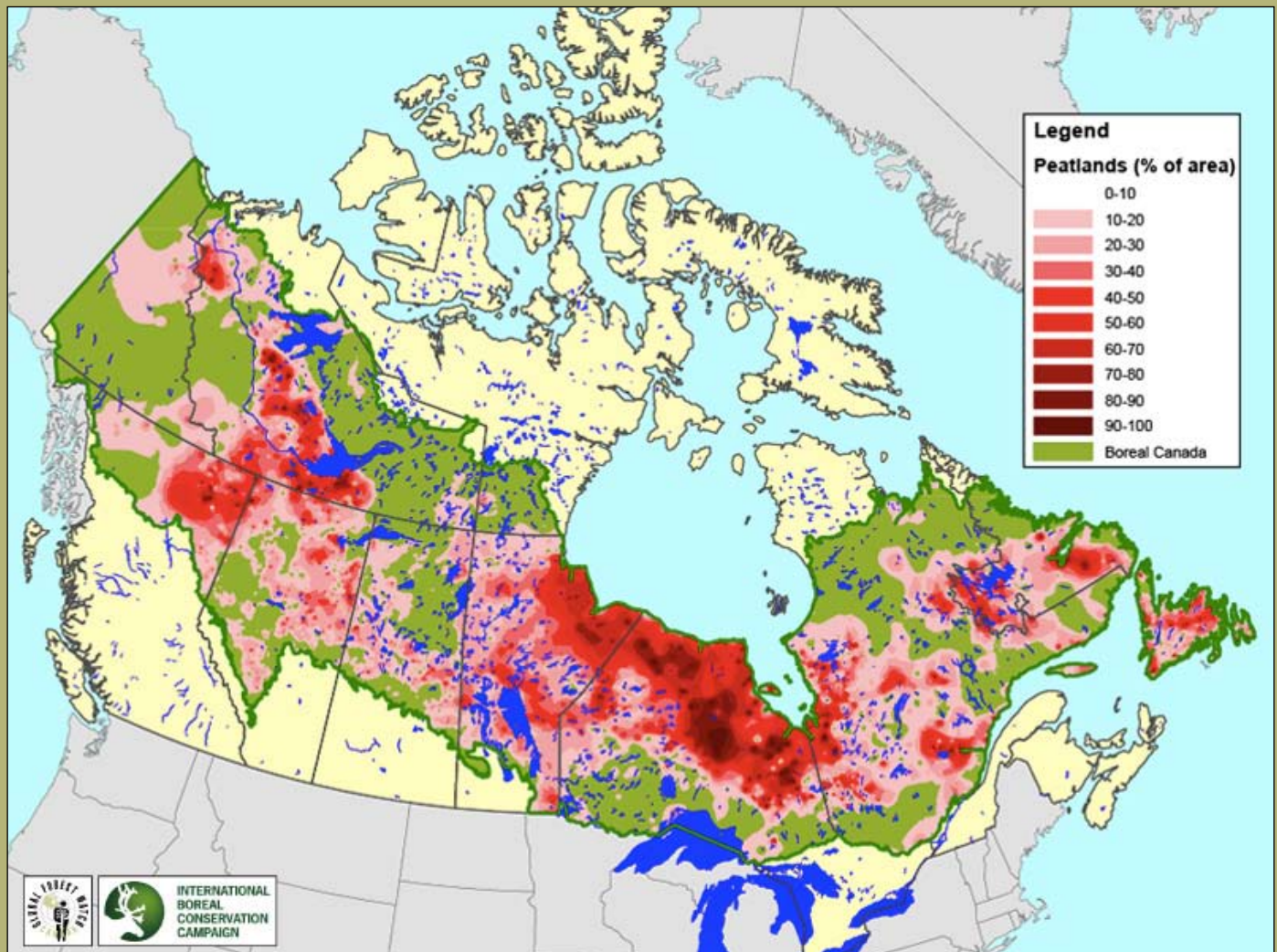
## Permafrost Extent in Boreal Canada

Permafrost is permanently frozen soil, sediment, or rock that remains at or below zero degrees Celsius (32 degrees Fahrenheit) for at least two years. Nearly 25% of the earth's land surface is covered by permafrost, including about 50% of Canada's land area. Carbon is stored under the frozen ground through a slow freeze-thaw process that progressively moves organic matter deeper into the ground where it is sealed off from decomposition by the cold temperature.

As indicated by the map, northern portions of Canada's Boreal Forest, particularly the western Boreal region, are occupied by vast areas of carbon-rich permafrost. Although often overlooked in global carbon accounting, permafrost regions worldwide store an estimated 400 billion metric tons of carbon. The thawing of permafrost dramatically increases the decomposition of organic matter contained in it, with a resultant release of carbon into the atmosphere.

*For more information on the creation of the original map, and citing these data, see: Brown, J, O.J. Ferrians, Jr, JA Heiginbottom, and ES Melkinov. 1998, revised February 2001. Circum-arctic map of permafrost and ground ice conditions. Boulder, CO: National Snow and Ice Data Center/World Data Center for Glaciology. Digital Media.*

# Carbon Storage in Canada's Boreal Forest



Map prepared by Global Forest Watch Canada for the International Boreal Conservation Campaign and Natural Resources Defense Council. Data Source: Tarnocai, C., I.M. Kettles and B. Lacelle. 2002. Peatlands of Canada Database. Geological Survey of Canada, Open File 4002

## Peatlands Extent in Boreal Canada

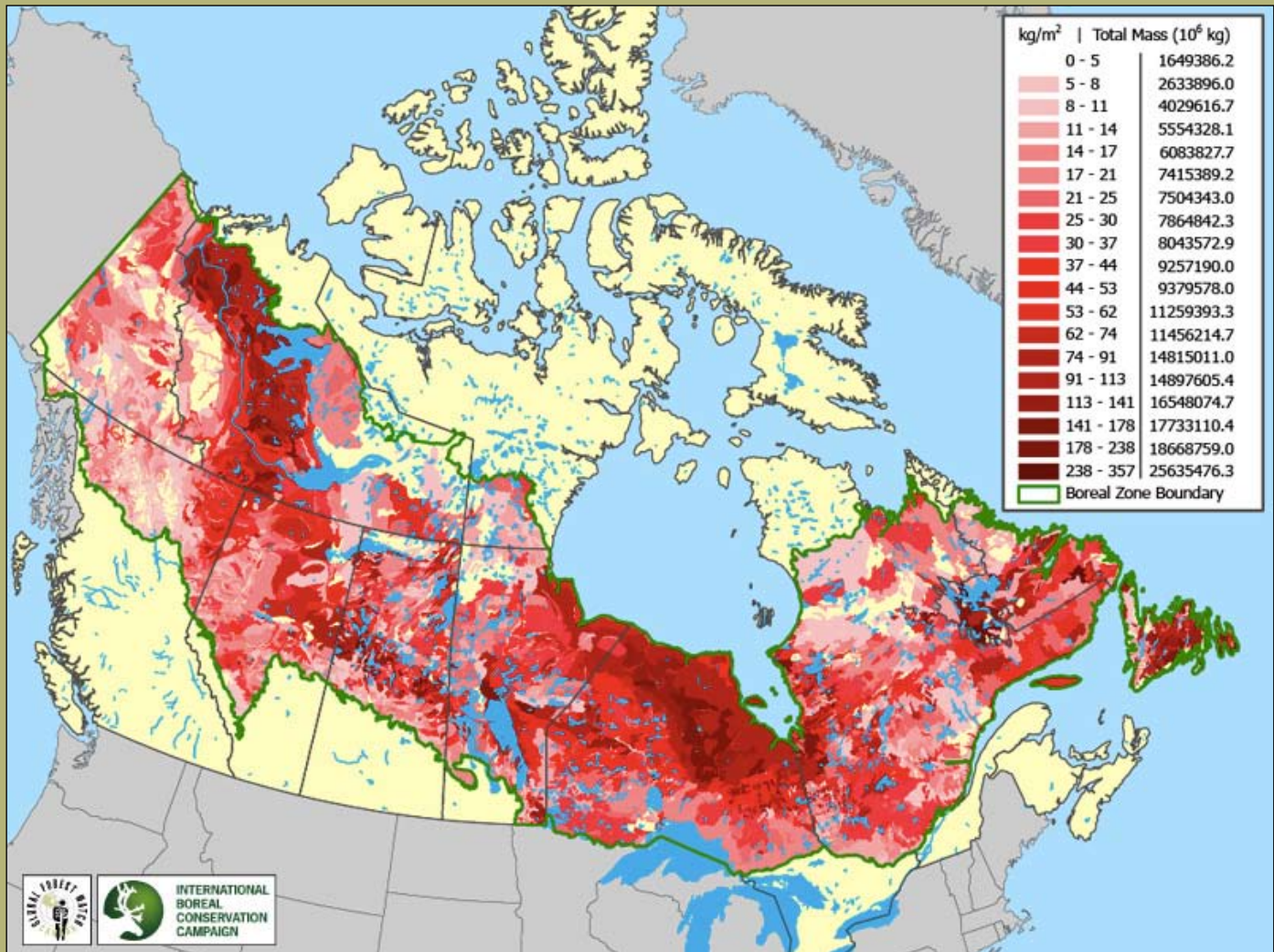
Peatlands are recognized worldwide as highly important for carbon storage. Although they cover only 3% of the world's land area, peatlands contain almost 30% of all carbon stored on land. Peat is formed when decaying plant matter from mosses, sedges, grasses, shrubs, or trees accumulates in permanently waterlogged conditions. When left undisturbed, peatlands can effectively store the carbon sequestered in these plants for thousands of years.

Canada has the largest area of peatlands in the world, encompassing 12 percent of the nation's land area. Canada's peatlands stretch from Newfoundland to the Northwest Territories, with especially high concentrations found in northern Ontario and Manitoba. These peatlands are essential to the global environment because they retain, purify, and deliver fresh water; store carbon; absorb pollutants; and support numerous species of unique plants and wildlife.

*Interpolation of data: Percentage of peatlands in Canada is presented as a smooth contour interpolation for cartographic reasons only. Peatlands of Canada map shapefile (of4002.shp) was converted from soil landscape polygon units into a point file by polygon centroids. The points were then interpolated into a grid by Natural Neighbor (NN). The grid files were reclassified into 10 equal interval classes (0-100%) and then converted into a shape file.*



# Carbon Storage in Canada's Boreal Forest



Map prepared by Global Forest Watch Canada for the International Boreal Conservation Campaign and the Natural Resources Defense Council  
Data Source: Charles Tarnocai and Barbara Lacelle, Eastern Cereal and Oilseed Research Centre, Agriculture and Agri-Food Canada

## Soil Organic Carbon Extent in Boreal Canada

Much organic carbon is found within soils, especially from the decay and break up of trees, mosses, and other plants. Globally, nearly 30% of this soil organic carbon is locked in boreal and tundra ecosystems, while in Canada, almost 90% of this carbon is estimated to occur in such ecosystems. This map of the organic carbon found in soils within a meter of the surface highlights the carbon-rich soils found throughout the Canadian Boreal.