

Impacts and Adaptation

Adaptation involves making socioeconomic adjustments to deal with the impacts of current climate variability and with those expected as a result of future climate change. To be effective, adaptation strategies must be based on accurate assessments of the sensitivity and vulnerability of Canada's various regions and economic sectors to climate-induced impacts. Changing climate conditions must be considered when planning infrastructure and long-term natural resource use.

Part of the Government of Canada's Climate Change Action Fund is allocated to research on climate change impacts and adaptation. More information is available at <http://s-601-tdsweb.gsc.nrcan.gc.ca:80/adaptation/main.htm>.

Examples of research in support of adaptation include the following.

Slope stability. Geomorphic processes, including slope processes, are climate dependent. Indeed, some forms of slope movement, ranging from soil creep to slope failure, are climate driven. Effective adaptation strategies to avoid potential climate change impacts linked to slope stability must be based on an understanding of spatial variability, dynamics, and relation to climate.

Storms, sea-level rise, and coastal erosion. Canada is studying rapidly changing coastal systems in Atlantic Canada, where rising sea levels contribute to widespread shoreline erosion and landward coastal retreat. Seabed mapping has revealed former lakes and rivers in the Northumberland Strait, drowned shorelines off Newfoundland, and submerged estuaries off Nova Scotia. Recent studies provide clear evidence of episodic sea-level rise and coastal change.

As part of Canada's efforts to assess the potential of various environments to capture and sequester carbon dioxide, geoscientists are developing a model for estimating the amount of carbon stored in Canadian peatlands and forests.

Canada is also conducting research in support of adaptation to climate change, including decisions about land use. For example, geoscientists are studying slope stability in order to delineate high hazard areas so that they can be avoided or so that structures (e.g., pipelines and railways) can be designed to address the hazard. Severe storm impacts are being documented along the Nova Scotia coast to improve hazard assessment and mapping. Scientists are working with local governments and industry to assess the potential sensitivity of buildings in the town of Norman Wells, Northwest Territories, to permafrost thaw due to future climate change. With this information, municipal planners will be better able to plan changes to their infrastructure replacement and building guidelines in order to adapt to climate change.

Biodiversity

The earth sciences contribute to the conservation and sustainable use of biological resources by providing knowledge and technologies that