**Land Surface and Vegetation**

Canada’s northern land surface is under transformation, much of it driven by changing climate conditions and an increased interest in this region’s natural resources.  Understanding this change in a historical context and projecting it into the future is central to the proper stewardship of this unique environment and the responsible development of its vast resources.

Previous land cover maps covering northern Canada have been of insufficient spatial or thematic detail to address emerging northern issues such as wildlife habitat, land use planning, and fine-scale land cover dynamics.  Satellite remote sensing is the only method capable of systematically monitoring Canada’s northern landscape to provide information with the appropriate level of detail at the frequency required.

Canada’s north presents some significant challenges to satellite observation – cloud-cover, polar darkness, large sun angles.  Canada Centre for Mapping and Earth Observation research has focused on developing and validating satellite-based techniques capable of reliably mapping northern:

* [Land cover](https://natural-resources.canada.ca/the-north/science/land-surface-vegetation/land-cover/10835) – the location, distribution and volume/density of land cover (vegetation, urban, water)
* [Biophysical Parameters](https://natural-resources.canada.ca/node/10722) – the quantitative, spatially and temporally explicit, descriptions of land surface conditions