



## Climate Change in the North

### Learning Outcomes

February, 2018

Code	Outcome
CC-1	Identify the 5 inter-dependent components which interact to make up planet Earth's climate system.
CC-2	Identify 3 key heat-trapping gasses according to the Intergovernmental Panel on Climate Change (IPCC).
CC-3	Explain the 7 guiding principles for informed climate decisions.
CC-4	Describe 5 specific ways that solar energy drives Earth's climate system.
CC-5	Draw and explain a schematic diagram representing the greenhouse effect.
CC-6	Explain in detail 2 complex climate interactions.
CC-7	Analyze Figure 2: Interactions and Feedbacks to the Global Climate to formulate both positive and negative feedback loops in the global climate system.
CC-8	Describe Canada's North in terms of climate, permafrost, water, marine environment, and the Arctic's role in the global climate system.
CC-9	Describe Canada's North in terms of demographics, health status, and socioeconomic status.
CC-10	Infer the following inter-relationships within Canada's north: Marine & Socioeconomic Status Water & Health Permafrost & Water Climate & Socioeconomic Status
CC-11	Describe the Tiaga Shield ecoregion in terms of landforms, climate, vegetation and wildlife.
CC-12	Recall specific data which supports observed trends in precipitation and temperature in the Arctic from 1948 - 2005.
CC-13	Describe in detail climate variability in the Arctic.
CC-14	Explain how changes to the cryosphere impact the Arctic.
CC-15	Analyze the implications of climate change to the Arctic environment. Include information about temperature and weather, sea ice, snow cover, glaciers and ice sheets, permafrost, and river and lake ice.

CC-16	Describe cryosolic soils including cryoturbation, northern peatlands, thawing permafrost, and permafrost carbon feedback.
CC-17	Explain climate impacts on Arctic lake ecosystems including physical impacts, biogeochemical impacts, biological impacts, and human impacts.
CC-18	Identify direct and indirect impacts of climate change on fish species and aquatic ecosystems including freshwater discharge, sea level rise, coastal stability, biodiversity, freshwater ecosystems, relationships between cryosphere and hydrosphere, and feedbacks.
CC-19	Provide specific examples of how our understanding of the climate system is improved through observations, theoretical studies, and modeling.
CC-20	Discuss climate change implications for economic development including hydroelectric development, oil and gas, mining, infrastructure, marine transportation, winter roads, forestry, fisheries, wildlife, and biotic communities.
CC-21	Describe how climate change is impacting wildlife in direct and indirect ways. Include details about amphibians, terrestrial birds, mammals, and non-avian reptiles.
CC-22	Describe how anthropogenic activities are impacting the climate system.
CC-23	Identify direct and indirect climate change consequences for the earth system and human lives. Include references to health and well-being, ice conditions, food security, water quality, and infrastructure.
CC-24	Examine how multiple stressors impact northern residents.
CC-25	Identify three major global implications that are related to climate changes in the Arctic.
CC-26	Develop a personal relationship and understanding of your role with climate science literacy.
CC-27	Identify the qualities of a climate-literate person.
CC-28	Demonstrate the ability to read, understand, infer meaning and infer relationships with climate change models and map data.