Project name: Climate - terrestrial biodiversity investigation in tundra vegetation along an Arctic longitudinal gradient

Who: Masaki UCHIDA(Principal Investigator), Associate Professor,
National Institute of Polar Research, Japan
Dr. Ryo Kaneko, Researcher, National Institute of Polar Research, Japan
Dr. Ryo Kitagawa, Researcher, Yokohama National University

What: We would like to conduct a biodiversity study next summer.
As for investigation of the plant and soil biodiversity in a small specific area, we plan to use non-destructive and non-disruptive methods. The vegetation survey will be undertaken for 50-70 quadrants (1m x 1m). A small (about 20 cm or 8 inches by 20 cm or 8 inches sample size) amount of vegetation will be cropped in each quadrat to quantify the living plants per area.
As for the investigation of soil microorganisms, we plan to collect small amount of soil sample using a metal cylinder (5 cm or 2 inches in diameter by 5 cm or 2 inches in depth) from the plant cropped area, in addition, we plan to collect about two spoonfuls soil using a clean plastic spoon and putting into a clean plastic tube in each quadrat (The volume is about 2 -3 ml per quadrat). A non-destructive and non-disruptive equipment will be used to measure the carbon dioxide fluxes from the soil surface. We will place a plastic chamber (20 cm or 8 inches in diameter and 15 cm or 6 inches in height) with a carbon dioxide sensor on a soil surface for ten or so minutes to determine carbon dioxide flux from soil surface.
We plan to two or three scientists will visit to the Canadian High Arctic Research Station(CHARS) and will conduct day trip field survey about one week. We will use a car or ATV to go to a field.

Why: Our main objective is to clarify plant biodiversity and microorganism biodiversity living in the tundra ecosystem. In addition, we also would like to clarify relationships between plant biodiversity, diversity of soil microorganisms and environmental factors such as carbon dioxide flux from soil surface, soil carbon and nitrogen content.

As a result, we would like to clarify how many plant and soil microorganisms are living in the area and to clarify relationships between plant species, the total weight of plants in a particular area, the carbon dioxide fluxes from the soil surface and diversity of soil microorganisms.

Where: We plan to conduct our field survey near Cambridge Bay. We would like to collaborate CHARS Arctic monitoring site. Then our main study site will be north side of the Greiner Lake. The distance between the Cambridge Bay community and the study site is about 13 km (8 miles).

When: We would like to visit Cambridge Bay in early September and to carry out our survey about one week.

We are setting the research points along a north to south latitudinal gradient in the eastern Canadian Arctic (which include Salluit (62°N) and Kuujjuarapik (55°N)). Pond Inlet (72°N) will be additional research place next summer. Cambridge Bay is the most suitable place along a west to east longitudinal gradient investigation, because of its geographical location and scientific logistical support.

Our Canadian collaborator Dr. Johann Wagner of Polar Knowledge Canada has worked in this region and has maintained a good relationship with the community of Cambridge Bay. We have been discussing with him our intention of a very low impact on the soil and vegetation.

We would like to report to the community and other Nunavut organizations about our scientific surveys and findings by e-mail after the expedition. In addition, if we have a chance, we would like to visit Cambridge Bay in 2019 and be available to the community to share our findings.