Climate

GEOGRAPHICALLY, most of the Yukon is part of a much larger area known as the Subarctic. The Subarctic is usually defined as the region where the average temperature is above 10°C for only four months of the year and there are fewer than 120 frost-free days per year. Because of the range of climates within the Yukon, these general averages do not tell us a great deal about climatic variations found here.

The part of the Territory north of 66°32′ falls within the *Arctic,* where frost-free days are still fewer and average temperatures are always below 10°C.

When subarctic areas are near the ocean, the average temperatures are warmer than those in the Yukon. For example, Leningrad (USSR), Helsinki (Finland) and Anchorage (USA) are at approximately the same latitude as the southern Yukon, but nearby ocean currents make their winters warmer than Whitehorse winters. The Yukon Plateau is at a higher altitude than coastal communities, and it is separated from the moderating ocean currents by the barrier of the St Elias Mountains. The result is a dry climate with relatively little precipitation annually. For these reasons, the Yukon's climate is called subarctic *continental.*

Factors of altitude and latitude work together to create a range of climatic differences within the Yukon. For example, Dawson City is at a higher latitude than Whitehorse, so we might predict that summers would be cooler. But anyone who has lived in Dawson and Whitehorse knows that Dawson summers are usually warmer than Whitehorse summers. Altitude also influences summer temperatures.

In winter we sometimes get a situation called an *inversion,* when very cold air sinks into valleys and warmer air rises. Yukon elders explain that in the old days, people living near what is now Whitehorse would usually move up high, to places like Fish Lake, during the coldest part of the winter, to avoid spending time in the valleys during the mid-winter months.

ORAL TRADITIONS ABOUT CLIMATE

Elders from the central and southern Yukon tell of a terrible year sometime during the last century when "two winters joined together" and there was no real summer. Tutchone elder Mrs Rachel Dawson described it this way in 1974:

I told you about that year summer never came? Two winters joined together. No snow, but there was ice all over, and the winters were joined together. Just about a little better than a hundred years now. Young moose born in springtime just froze to the ground. I guess they were wet – people looked all over in the woods, they say, for that kind. When they found a young moose frozen, they cut it up to eat. . . .

My grandfather's father dug up a lake . . . it was so cold that the lake was just frozen right to the bottom. Ice right through, no water. So my grandfather's father took a chisel – tandal *they call it, Indian way. He dug the whole lake up – how big that lake! Sometimes he got two fish. He'd take that home and they'd make soup out of it for the kids. They had lots of kids, like me – I've got lots of grandchildren down there. . . . He'd eat a little bit of soup with his kids.*

He told his wife, "I'm going to go look out, just to see if any moose are coming around."

He had no gun. They've just got bow and arrow.

He sat down under a tree. He got his packsack he sat on and rested. I guess he's tired and weak without eating. Starvation! A lot of people starved in the Yukon that time. He sat there and he heard something running . . . you could hear it run on the ice, ice breaking

under it. . . . So he opened his eyes and looked. He kept still. He got his bow and arrow ready . . . just held it. . . . Here that cow had come down to have her baby. He shot it. Just one shot and he got it. . . . He went home to tell his wife.

"We have to move," he said. "I can't pack all that meat. I've got a moose down there."

So they moved down and made camp right there. She cut the meat. She dried it. She cooked for the kids. Everything like that.

It is difficult to locate this year in chronological time, because oral traditions sometimes telescope events, or collapse the chronology. Many versions of this story have been recorded during the last forty years and no matter when the narrator tells it, it always seems to have occurred just about a hundred years earlier. One possibility is that it occurred around 1816, just after a major volcanic eruption of Tamboro, in Indonesia. Records from the eastern United States, England and Switzerland show that 1816 was the coldest year for which records exist. Scientists working with tree rings suggest that the years 1845, 1849, and 1850 were also exceptionally cold. The Hudson's Bay trader Robert Campbell reported extreme cold and scarcity in the central Yukon during those same years. Again, oral traditions may not actually make it easier to *date* events, but they deepen our understanding of what these events must have meant in peoples' lives.

Plants and Animals

WHAT LIVES on the land? The answers to this question depend to some extent on factors already discussed – geology, geography, water and climate. All of these factors affect soils, critical to growth of vegetation.

Yukon land is predominantly rock. While there are areas where soils have built up, permitting small-scale agriculture, Yukon soils are generally thin and support only limited vegetation.

Large areas of the Yukon soil are permafrost; that is, they are frozen throughout the year. Most of the Yukon is in an area of *discontinuous* permafrost, meaning that the soil thaws in some places and not in others. In the extreme northern Yukon, the ground is always frozen; in other words, the permafrost is *continuous.*

Permafrost still affects major decisions we make about human activity in the North. During the Mackenzie Valley Pipeline Inquiry in 1975 and the Alaska Valley Pipeline Inquiry in 1976 a number of scientists expressed concerns about building pipelines across permafrost – both discontinuous (along the Alaska Highway) and continuous (along the Arctic coast).

If we look at a map of vegetation in the Yukon, we find that, in a very general way, regions of vegetation parallel the geological divisions we discussed above. The extreme southwest is covered by glaciers and mountain outcrop and very little vegetation. Most of the southern Yukon supports *boreal forest.* This includes trees that can survive in thin soil which does not retain water – white spruce, black spruce, larch, subalpine fir, lodgepole pine, aspen, poplar, birch. Trees with deeper root systems need soil that retains water. Further north, as the zone of continuous permafrost begins to dominate, the trees get smaller and *shrubs* begin to take over. In the extreme north, trees disappear and *grasses* and *sedges* become the most common vegetation.

Climate is important in maintaining the boundary between boreal