

7. Polar (Arctic or Antarctic) climate

Distribution

North part of Alaska, Canada (Victoria Island, Queen Elisabeth Island), Greenland, Svalbard, and north Siberia (Novaya Zemlya, Severnaya zemlya). From N+S *polar circle* to the poles. *Polar timberlines* = the northern or southern latitude beyond which trees do not grow.

Climate

Coldest areas on the Earth \Leftrightarrow small amount of insolation (solar radiation) \Rightarrow *tundra* = very windy and frosty weather, snowstorms in Arctic and Antarctica

- *Temperature:*
 - long winters (10 months) reaches -50°C , very short summer $6^{\circ}\text{-}10^{\circ}\text{C}$ (approx. 80 days)
- *Precipitation:*
 - humid areas, but no liquid water because of very low temps. \Rightarrow *ice and snow*

Soils

Permafrost = permanently frozen, impermeable (sub)surface. *Pingoes* (landforms) created by ice-up of a groundwater, inside pingo is *ice lens*. Similar are *polygonal soils*.

Gleys = waterlogged soils on flatter and *podzols* on steeper slopes. Both with poor fertility.

Hydrology

Snow, snow, snowy land... No rivers, just river estuaries often frozen.

Fauna and Flora

Poor diversity. Migration of animals (e.g. bucks caribou = 1000 km or migrant birds).

- *Fauna:*
 - falcon, polar rabbit (changing its fur, brown in summer, white in winter), very similar masking/camouflage to polar fox, buck caribou, lot of mosquitoes during summer
 - in the coldest areas = seal (seadog), morse (sea-cow), jig, polar bear (Arctic), penguin (Antarctic)
- *Flora:*
 - mainly grass in summer and few species in winter (dwarfed willow/salix)
 - in Arctic and Antarctica = eternal (never-ending) ice, mainly moss.

Population and settlements

None or very small/thin population density. Mostly Eskimos. Siberian nations and languages.

Agriculture and Industry

No agro. Exploitation of raw materials, e.g. crude oil, natural gas (Alaska, Siberia).

Environmental problems

thinning of ozone layer (Antarctica), global warming \Rightarrow ice/iceberg/glacier melting

Keywords:

polar timberlines, insolation, tundra, snowstorm, permafrost, impermeable layer, waterlogged soil, pingo, polygonal soils, global warming, iceberg/glacier melting, ozone layer, animal migration, falcon, polar fox/rabbit, Eskimo, moss.