

SNOW AND ICE IN CARIBOU-POKER CREEKS RESEARCH WATERSHED, CENTRAL ALASKA

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Seasonal snow and ice study has been conducted in the 104 km² Caribou-Poker Creeks Research Watershed (Latitude 64°30' N) since 1969. Snow accumulation was measured annually on 1000 M "transects" at four locations on north- and south-facing slopes from 1970-1975. Three standard snow courses and one snow pillow installed in 1969 are operated by the Institute of Northern Forestry, USDA Forest Service (in cooperation with Soil Conservation Service). A special study of snowpack drifting at Caribou Peak (773 M elevation) was conducted in 1975-76, concentrating on snow drifting. The research basin provides good examples of both "taiga" snow (extensive depth hoar development, density < 0.20 g cm⁻³) and of "tundra" snow (extensive drifting, reworking, and wind-packing, density up to 0.45 g cm⁻³).

Extensive seasonal ice (aufeis) forms in the valleys of this research basin during most winters. Aufeis can impound up to 10% of total winter streamflow as solid-state storage, with local accumulations up to 3 + m thick and occupying an entire valley floodplain. This aufeis is hydrologically significant: water is stored as ice, for release by melt following the major snowmelt season; aufeis obstructs streamflow, after re-directing flow out of normal channels; aufeis causes severe problems for streamflow measurement programs; aufeis markedly modifies local microclimate and aquatic habitats.

The Caribou-Poker Creeks Research Watershed, which has been designated as one component of the national network of Experimental Ecological Reserves, provides an "outdoor laboratory" suitable for long-term observation and research on seasonal snow and ice in the subarctic.