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TITLE: Stream Icings in Alaska

ABSTRACT

Stream icings, also known as aufeis or naleds, are seasonal flood phenomena found in high latitudes and alpine regions. Icings occur during subfreezing temperatures when water, forced by hydrostatic pressure, repeatedly overflows its ice cover and floods stream channels and adjacent low-lying areas. The flooding can extend several miles beyond the stream channel. Because the ground is frozen, floodwaters cannot drain but freeze in place. This process repeats itself many times during a winter, often accumulating extremely thick sheets of ice.

Icings constitute hazards that can disrupt transportation and communication, hinder field exploration programs, and present difficult engineering problems for pipelines, roadways, buildings and other structures in the Arctic and subarctic. Icings also signal groundwater seeps or springs and perennially flowing water, which are potentially valuable resources.

In Alaska the distribution of large icings have been mapped, based on the analysis of satellite imagery. Most icings occur in or near upland or mountainous terrains. The Brooks Range and northeastern Alaska have the largest and greatest number of occurrences. The number and size of icings generally decrease to the south except in the vicinity of the Alaska Range. In northern Alaska many icings develop east of the Colville River but few to the west. This difference appears to be related to the availability of freshwater. In interior Alaska occurrences are numerous but small and are restricted to tributary stream channels.

