Caribou Poker Creeks Research Watershed
Research Status and Development Progress

Caribou-Poker Creek Research Watershed (CPCRW) is a unique facility about 35 miles north of Fairbanks, Alaska. CPCRW was established in 1969 when State and Federal agencies decided they needed a basic understanding of Alaskan hydrology following the disastrous 1967 flood in Fairbanks. Data-collection programs have been in place for more than 30 years, and many multi-disciplinary research programs have added to the overall understanding of watershed-scale processes in discontinuous permafrost. CPCRW is the only watershed in interior Alaska that is relatively pristine, totally accessible through a series of well-maintained trails adjoining the highway system and zoned for research by the State of Alaska Land Use Plan. On-going studies include investigations to quantify the impact of discontinuous permafrost on hydrologic and biological processes, investigations to quantify the impacts of wildfire (following the Frostfire experiment) on carbon flux, nutrient leeching, and vegetation recovery, and studies of surface energy balance on permafrost dynamics and distribution.

Presently, CPCRW is open for mining exploration. Surface exploration of the stream beds and hillsides could cause serious interruptions to a long historical record of undisturbed monitoring of stream flows, stream chemistry, atmospheric deposition studies, permafrost investigations and other ecological analyses. We are hopeful that such exploration could be regulated or restricted.

Radio telemetry equipment has been operational at three meteorological stations at CPCRW for almost one year. Data from these three sites can now be remotely downloaded and monitored. Software has also been developed to take the data from these sites and post it directly on to the Internet. The current conditions (including a photograph collected once each hour) may be accessed at the following web site: http://www.uaf.edu/water/projects/cpcrw/metdata/cpcrwmetsitemap.htm. The telemetry system will also be used to monitor the equipment and power supplies of the various sites. If a problem were to arise at one of the sites it is detected quicker with this telemetry system than with regular field visits. The system has been designed to alert us by e-mail according to some specified criteria (such as low batteries or high water).

Two new projects, funded by the National Science Foundation, will include CPCRW as part of the study area. "Detection and attribution of changes in the hydrologic regimes of the Mackenzie, the Kuparuk and the Lena River Basins" is a five-year project designed to compare linkages and feedbacks among hydrologic and atmospheric regimes in watersheds in Canada, Alaska and Siberia (Hinzman is PI). CPCRW will be the southern end of the Alaskan transect. Doug Kane is leading a project to conduct a water balance inter-comparison among research watersheds operated throughout the circumpolar north. The number of watersheds where snowpack, snowmelt, runoff, rainfall and soil moisture dynamics are actually measured is actually very few. Approximately 10 different watersheds will be included in this analysis.

The current improvements we are pursuing include:

Removing many of the very old structures that are no longer useful
Improving the trail network throughout the watershed
Installing electrical power to the primary meteorological station and camp
Upgrading all discharge and meteorological monitoring stations to telemetry