

**Richard K. Haugen**

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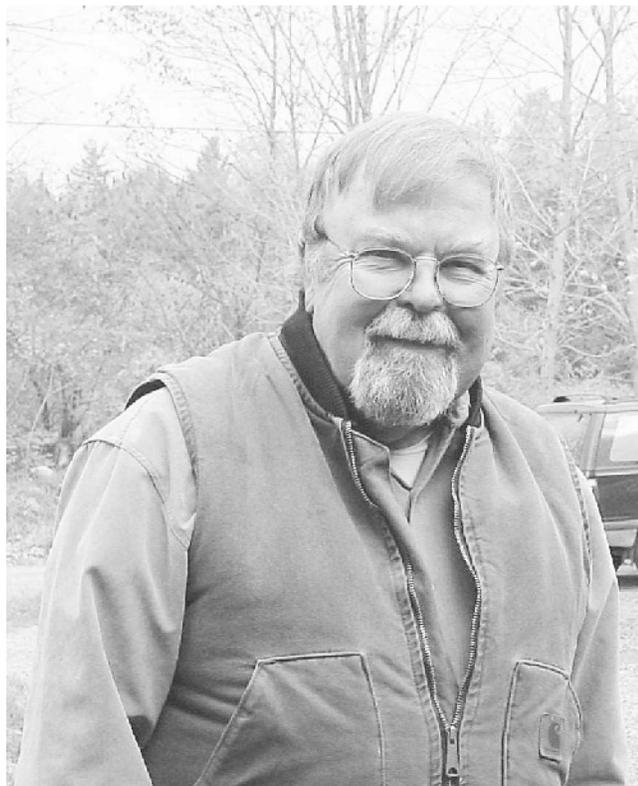
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## Richard K. Haugen

1933–2006

### *In Memoriam*



*Richard K. Haugen*

Richard K. Haugen, a friend and respected colleague of many in the Arctic research community, died 23 December 2006, after a courageous battle with complications from prostate cancer. Dick's Arctic career started in 1962 when he joined the Cold Regions Research and Engineering Laboratory (CRREL) in Hanover, New Hampshire, U.S.A. During the following 32 years, Dick was involved in a wide variety of Aaskan environmental research.

Born 15 September 1933, in Eau Claire, Wisconsin, he attended elementary and high school in Eau Claire, followed by entry into Wisconsin State College (WSC) (now University of Wisconsin—Eau Claire). His college studies were interrupted by a voluntary, two-year tour of military service in Korea, where Dick served as a photojournalist. Upon return to WSC, he completed his undergraduate degree in 1957. He then enrolled under the GI bill at Michigan State University (MSU) and earned a masters degree in 1959. His thesis, a comparative study of three cranberry-producing regions in Wisconsin, was written under the direction of C. W. Boas. Many of the hallmarks of Dick's later work are apparent in this document: careful and innovative research design, thorough analysis of

environmental data, regional focus, clear verbal exposition, and high-quality graphics. The thesis also stands the test of time—the checkout sheet in the MSU library's original copy shows that it has been consulted consistently over nearly half a century!

Dick acquired his long-standing interests in cold-regions climate, periglacial geomorphology, and permafrost from another of his advisors at Michigan State, Dieter Brunnschweiler. When Dick's employment began at CRREL, the Army Corps of Engineers was considering building a dam at Rampart on the Yukon River that would have created a water body extending over 10,000 mi<sup>2</sup> (25,900 km<sup>2</sup>), an area larger than Lake Erie. Dick was part of a team of CRREL environmental scientists engaged to investigate the effects of the proposed impoundment on the surrounding permafrost-dominated ecosystems. Trained as a geographer with interests focused on climatology, Dick responded to the Rampart project by initiating research on the alpine tree line to decipher, from tree rings, variations in regional climate over the past several hundred years (Haugen, 1967). This interest in regional-scale climatic gradients soon thereafter led to investigations at Barrow, Atkasuk, Prudhoe Bay, and elsewhere in northern Alaska.

Dick's papers represent an exemplary approach to science. He lamented the spottiness of Arctic climate data sets and the different standards of measurement employed in the region's sparse instrumental network. His attempts to alleviate these problems became his life's work. He was always cautious and never stretched his interpretation of available data sets. Two papers come to mind that, decades later, are useful and relevant to the understanding of Arctic climate and vegetation change. The first (Haugen, 1967) was a circumpolar comparison of tree-ring indices representing nearly three centuries of tree growth and, by inference, summer climate. By reviewing several data sets, Dick found a significant 50-year, pan-Arctic cycle of tree growth that appeared to be correlated with summer temperature. Although he was cautious in his interpretations, this paper spawned a letter that was highly critical of his analytical methods. Dick more than adequately defended his work in a published rebuttal. We recommend this study as a model of reporting and as reading for all interested in recent and projected climate change. It is well written, the methods are explained and discussed with great care, and the findings are still of interest 40 years later.

A second landmark paper (Haugen and Brown, 1980) reported Dick's measurements of temperature and precipitation across Alaska's North Slope. In this paper, he addressed the then imprecisely known north-south temperature gradient across the region from Barrow to Atkasuk. Dick's analysis provided quantitative confirmation of the biogeographic Littoral zone, discussed previously in general terms by another MSU researcher, John Cantlon, in an early 1960s Navy report. Dick's early investigations of the North Slope climate gradient provide an important baseline for studies of climate change, biodiversity, and ecology in the region. The temperature differences between Barrow and Atkasuk demon-

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strated in the 1980 study match the increase widely suggested by climate models for greenhouse warming. Dick's early work on climate gradients in northern Alaska also forms a critical backdrop for the satellite-based work on greening of the Arctic being performed by our colleague Skip Walker.

In 1975, as the Trans-Alaska Pipeline System was taking shape, Dick created an innovative network of climate recording stations along its route north of the Yukon River (Haugen, 1982). Dick continued to operate this network for more than 20 years, upgrading the technology gradually from strip-chart thermographs to electronic data loggers. This work, along with similar studies in the Yukon-Tanana Upland (Haugen and Brown, 1978; Haugen et al., 1983), the Barrow-Atkasuk transect, and in New England (Haugen and Fulk, 1988), anticipated the way in which a new generation of miniature data loggers would eventually be deployed in Alaska and elsewhere to create broad-scale climatic surveys of remote regions. The CRREL "Haul Road" projects led to close collaboration with colleagues from INSTAAR, Ohio State University, and Rutgers University, all of whom recognized Dick's innovative geographical approaches to field research. Dick and other colleagues at CRREL also utilized the early ERTS satellite for regional analyses in both Alaska and the contiguous states.

Dick served on the Editorial Advisory Board of *Arctic and Alpine Research* from 1983 to 1994. After retiring from CRREL in 1994, he and a former CRREL colleague, meteorologist Roy E. Bates, formed a small company to conduct studies of local and regional weather and climate, consult, and serve as expert witnesses in court cases.

Dick and his family resided in rural Vermont, where he spent his leisure time renovating old houses, collecting cars and other used vehicles, woodworking, cutting trees and splitting wood, and tapping maples for his own syrup each spring. Dick is survived by his wife of 47 years, Fran, and their two daughters, Sally and Kathy. We and many other colleagues enjoyed working and visiting with Dick over the years. His unassuming and generous manner was appreciated by all.

### Selected Publications

Haugen, R. K., 1967: Tree-ring indices: a circumpolar comparison. *Science*, 158: 773–775.

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- Haugen, R. K., and Brown, J., 1980: Coastal-inland distributions of summer air temperature and precipitation in northern Alaska. *Arctic and Alpine Research*, 12(4): 403–412.
- Haugen, R. K., 1982: Climate of remote areas in North-Central Alaska: 1975–1979 summary. *U.S. Army Cold Regions Research and Engineering Laboratory CR 82-35*, 110 pp.
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- Haugen, R. K., Greeley, N. H., Collins, C. M., et al., 1993: Permafrost mapping using GRASS. *In Proceedings of the Sixth International Conference on Permafrost*, Beijing: Guangzhou, South China University of Technology Press. CRREL Report No: MP 3460, 2: 1128–1131.

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