PERMAFROST SCIENCE AND SECONDARY EDUCATION: DIRECT INVOLVEMENT OF TEACHERS AND STUDENTS IN FIELD RESEARCH

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A review of recent literature indicates that the subject of permafrost is virtually absent from secondary education curricula in North America and elsewhere. This situation is particularly distressing in the context of the large population increases and accompanying development that have occurred in the northern sections of North America and other high-latitude regions in recent decades. Because permafrost has a profound influence on the lives and finances of northern residents, inclusion of this subject in school curricula could advance the ideals of sound land-use planning, good engineering practice, and an informed citizenry, as well as providing some inoculation against ill-informed public and private expenditures.

This poster details the planning, execution, and synthesis of an educational program focused on providing field and laboratory experience in permafrost science for secondary-school teachers and students. The program was funded by the U.S. National Science Foundation's (NSF) Teachers in the Arctic/Antarctic Program (TEA). TEA is sponsored jointly by NSF's Office of Polar Programs and Directorate for Education and Human Resources. The Antarctic portion has been conducted for several years, but 1997 was the first year that the Arctic was included.

The University of Delaware research group received supplementary funding from NSF in 1997 to enable participation by a science teacher and a high-school student in a permafrost-related project in northern Alaska. The subproject involved three distinct phases: (a) an introductory week prior to the field season; (b) four weeks of field research; and (c) laboratory analysis of field data and creation of map products. During the introductory week at the university, our experimental design, goals, and equipment were discussed, and basic thermal and physical processes were reviewed. Both university and high-school personnel contributed to the field work, which included active-layer probing, data entry, operation of data loggers, and soils analysis. The analytic phase included processing of climatic and active-layer data, construction and interpretation of graphs and maps, and development of a web-page to describe the project and its results on the Internet.

Permafrost is a fundamental part of life in the north, yet little opportunity currently exists for northern residents to receive scientific instruction about its characteristics and effects. Now that it has been extended to the Arctic, the TEA program can deliver direct educational opportunities to inhabitants of the high latitudes on scientific subjects that influence their lives on a daily basis. During our field research at Barrow we visited the local high school, and found both students and faculty eager to learn more about permafrost and its influence.

The TEA program provides excellent opportunities for interactions and exchange of information between university scientists, secondary educators, and local residents. Because participants are drawn from contrasting environments, the program also functions as a type of cultural exchange fostering mutual understanding.