## FACILITIES AND LOGISTICS

Thirteen main stations and 17 lesser camps and research facilities are located on the icefield and its peripheral areas. Permanent aluminum-sheathed and well insulated buildings exist at field sites. Wooden shelters and tents are used at trail camps. A 3000-volume library containing pertinent research materials, maps, aerial photos and other basic references is maintained at the five main icefield stations, as well as in the environmental sciences research library at the Atlin base station. A wide range of field and laboratory equipment for geophysical, glaciological, surveying, photogrammetric, botanical, meteorological and geological work is available for teaching and research.

Communication between camps and with the Juneau and Atlin bases is handled by radio. Helicopters, charter aircraft, and ski-planes are used for transportation, with ground transport carried out via foot travel, oversnow vehicles, dog team and skiis.

Permanent installations are provided by the Foundation for Glacier and Environmental Research, c/o The Pacific Science Center, Seattle, Washington.

## ELIGIBILITY

Graduate and undergraduate awardees must be enrolled in, or officialy admitted for, work as candidates for a degree at their respective institutions. A high academic record or potential is expected. Considerable weight is placed on personal character, demonstrated interest and professional motivation. Several post-doctoral or senior scientist awards are also given to qualified older scientists.

In the operation of this program and in selecting individuals for participation in and for administration of the program, the Foundation for Glacier and Environmental Research will not discriminate against any person on the ground of race, creed, color, sex, or national origin.

*Oversnow vehicles on Hades Highway Névé*

*Dog team on the Taku Névé*

## APPLICATION

Application can be made as late as June 15th but earlier inquiry is urged. Applications should include information on experience and adaptability to rugged field conditions; transcripts; evidence of school or university status; and letters of recommendation from a supervisory head and two other individuals regarding scholarship and character.

Make application to:

Dr. Maynard M. Miller, Director

Juneau Icefield Research Program

3946 South Okemos Road, Okemos, Michigan 48864

or to the

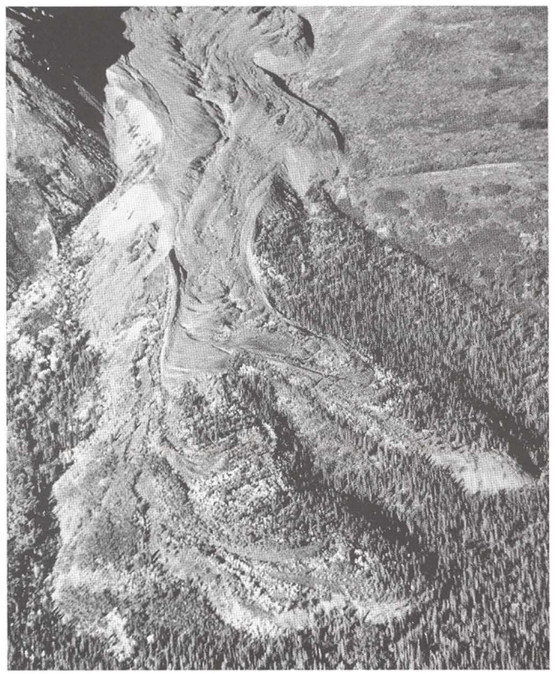
Foundation for Glacier and Environmental Research

Pacific Science Center 200-2nd Ave. North

Seattle, Washington 98109

Field Addresses: P.O. Box 775, Juneau, Alaska 99801

P.O. Box 99, Atlin, B.C., Canada



*Rock glacier in the Alaska-B.C.-Yukon border region*

## RESOURCE SCIENTISTS & DISCIPLINES

Dr. Maynard M. Miller, Dept. of Geology, Michigan State University; Director, Foundation for Glacier and Environmental Research, Seattle, WA (glaciology, Pleistocene stratigraphy, geomorphology)

Dr. James H. Anderson, Institute of Arctic Biology, University of Alaska; (arctic ecology, geobotany)

Dr. Robert Carmichael, Dept. of Geology, Michigan State University (glacier geophysics, magnetism and electrical resistivity)

Dr. Adam Chrzanowski, Dept. of Surveying Engineering, University of New Brunswick, Canada (field surveying)

Dr. Herbert Curl, Dept. of Oceanography, Oregon State University (snowfield ecology, fiord oceanography)

Dr. Edward M. Little, Research Associate, Foundation for Glacier and Environmental Research (sea-ice physics, glacio-meteorology)

Dr. Robert W. Little, Chairman, Dept. of Mechanical Engineering, Michigan State University (continuum mechanics)

Dr. Edmund F. Pawlowicz, Dept. of Geology, Bowling Green State University, Ohio (glaciology, geophysics, gravity and seismic surveys)

Dr. Alfred C. Pinchak, Dept. of Fluid Mechanics, Case Western Reserve University, Cleveland, Ohio (glacio-hydrology, analytical techniques)

Richard M. Shaw, Exploration Geophysics Division, Exxon Co., Denver, Colorado (magnetic methods, periglacial studies)

Dr. Douglas N. Swanston, U.S. Forest Service, Corvallis, Oregon (mass wastage and arctic and glacial soils)

Dr. Aylmer Thompson, Dept. of Meteorology, Texas A & M University (arctic and mountain meteorology, climatology)

Dr. Charles Waag, Dept. of Geology, Georgia State University (structural glaciology, resource geology, field methods)

Dr. Gordon Warner, General Motors Institute, Flint, Michigan (glacier mechanics, field methods)

Dr. Tien H. Wu, Dept. of Civil Engineering and Inst. of Polar Studies, Ohio State University (soil mechanics and glacio-hydrological research)

*Medical, Safety and Survival Instruction:* W. M. Smith, M.D. and T. R. Haley, M.D., Foundation for Glacier and Environmental Research (medical coordinators); D. M. Gimlet, M.D., A. Pinchak, M.D., R. McC. Miller, L. Schoen, D. Thomas

*Administration, Liaison and Logistics Staff:* J. W. Miller, K. Schoen, M. A. Parke, J. and J. Harvey, D. Williams, A. and N. Livingston, K. Loken and H. Rossiter

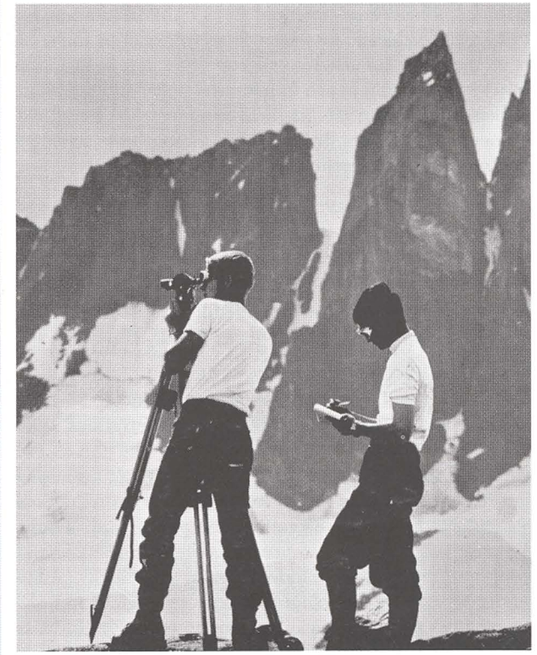
*Camp and Field Operations:* R. and J. Dilts, A. Clough, R. Flanders, E. Senear, S. Allen, J. McCracken, G. Lamorey, R. McE. Miller, L. D. Miller, C. Miller, A. Organick, H. Goodwin and G. Thoma

*Other visiting Lecturers, Research Affiliates or Scientific Advisors:* Dr. T. Abrams, Abrams Aerial Survey Corp., Lansing, MI (aerial surveys); Dr. D. Brew, Dr. A. Ford and V. Berwick, U.S. Geological Survey (regional geology); Bruce Winton, National Weather Service, Juneau, AK (meteorology and climatology); Montgomery Alford, Inland Waters Branch, Government of Canada, Whitehorse, Y. T. (hydro-metrics, water resources management); Dr. T. Holst, Earth Science Dept., University of N. Iowa (photogrammetry); V. Jones, Geology Dept., Michigan State University (water resources, glacio-climatology); R. Kotsch, R. Warren and A. Tallman, Geology Dept., Michigan State University (limnology, glaciology and periglacial research); R. Heffernan, Foundation for Glacier and Environmental Research (glacier surveys and geophysical research); M. A. See, Dept. of Botany, University of Alberta, Edmonton (arctic geobotany, lichenometry).

# ARCTIC AND MOUNTAIN ENVIRONMENTS

15th Summer Institute of Glaciological and Arctic Sciences
JULY 1 — AUGUST 30, 1974
JUNEAU ICEFIELD, ALASKA
and the Lake Atlin region
B.C., Canada

Supported by the National Science Foundation, Foundation for Glacier and Environmental Research and the Juneau Icefield Research Program.



*Surveyors at a control station on the Taku Glacier*

*Englacial structures in the Gilkey Trench near Camp 19*

## PURPOSE

The Juneau Icefield Research Program (JIRP) was organized in 1946 to pursue detailed long-term research on interrelationships of the many disciplines necessary to understand the total environment of arctic and mountain regions. As an extension of this program, the Summer Institute of Glaciological and Arctic Sciences was organized in 1959 to provide combined academic and field training, both at the graduate and undergraduate level, so essential to the solution of these multi-varied problems. The aim is to insure a total systems competence in potential polar and mountain scientists and to provide practical training with broad significance for geologists, hydrologists, atmospheric scientists and ecologists with environmental interests.

Students not only have the opportunity to observe and study subaerial processes in a dynamic region of existing glaciers, but also to gain appreciation of the inter-science investigational approach in studies of the environment which are applicable not only to pristine wilderness regions but to scientific environmental problems in rural and urban areas.

As part of their training, participants attend lectures at pertinent field sites, participate in demonstrations with instruments and materials in the field, and take and record a variety of different scientific measurements under supervision as part of a long-range research program of related investigations from high-elevation and continental periglacial areas to low-level temperate and maritime regions. Through this approach, students gain a realistic understanding of glacio-climatological, glacio-geological and glacio-ecological relationships in natural systems. In addition to selected academic offerings, the Institute gives practical field work and extensive experience in a variety of personally challenging environments.

## DATE

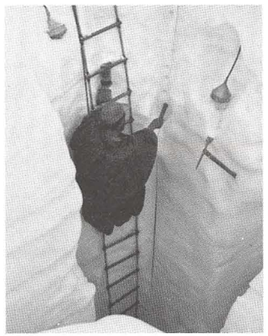
The Institute will be held for nine weeks, from July 1 to August 30, 1974. For qualified students interested in participation in the long-term Juneau Icefield Research Program and allied regional research projects, or for those who desire field work on thesis problems, up to a month of additional field work can be arranged, beginning possibly as early as June 1 and extending as late as October 1.

## THE PROGRAM

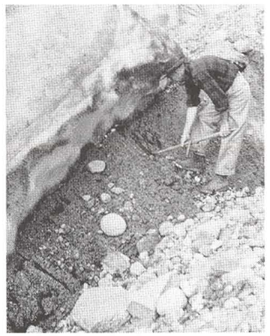
Emphasis is placed on expeditionary experience and research participation in various scientific projects developed for student involvement in the field. Problems courses are offered in field glaciology, geomorphology and selected environmental sciences. These are taught by Prof. M. M. Miller with visiting scientists assisting in these offerings and available for consultation.

Special topic seminars covered are: Arctic Environmental Sciences; Terrestrial and Glacial Photogrammetry; Glacier Surveys and Mapping; Glacio-ecology; Glacio-lichenometry; Periglacial Geomorphology and Pleistocene Environments; Glacier Mechanics; Glacio-meteorology; Glacio-hydrology; Glacier Geophysics and Arctic Basin Research.

All offerings are designed to take full advantage of a classical glacial, periglacial and mountain and arctic environment in terms of field and "laboratory" instruction.



*Density and melt-water measurements, Upper Taku Glacier*



*Debris-entrained thrust surface, Mendenhall Glacier*

Lectures, field studies and problem sessions are held on adjunct topics. All offerings are given concurrently during a concentrated four-week session on the Juneau Icefield, emphasizing Neoglacial conditions. Each participant is exposed to all offerings. An initial week is devoted to indoctrination in field methods, and safety and survival techniques. Another two weeks are used for work on a specific field problem, dependent on the participant's aim, interest and abilities. The last two weeks generally are concentrated in the Atlin area where the deglaciated terrain provides opportunity for study of Cordilleran Wisconsinan chronology and Holocene periglacial environments. For those wishing to ally the instructional program with a specific thesis project, or equivalent research, including post-doctoral research, field problems may be developed.

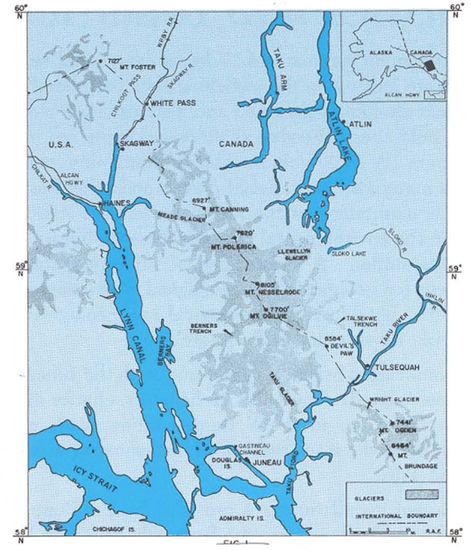
## PARTICIPANTSHIPS AND AWARDS

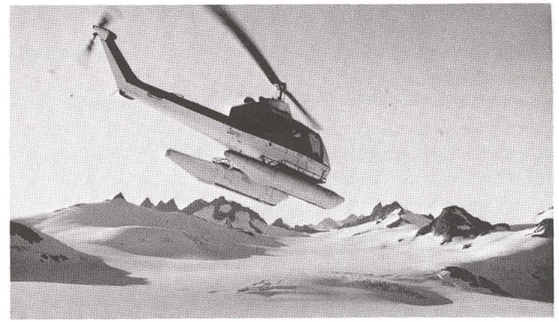
Field participantships are available at the undergraduate, graduate and post-doctoral or senior scientist level. These include eight undergraduate research participation awards and six graduate level awards supported by the Foundation for Glacier and Environmental Research (FGER). Five JIRP research assistantships in connection with on-going research programs are offered to outstanding previous participants or others having equivalent experience. Ten National Science Foundation supported participantships are also available to high-ability high school juniors and seniors with environmental and field science interests.

Places for additional participants in each category are available at the field fee of $1260 per student for the nine-week session. Participants cover their own travel expenses between their home and Juneau, Alaska, and from Whitehorse, Y. T., back home.

## LOCATION

The main glacier area lies on or near the Juneau Icefield in the Alaska-Canada Coast Range between Juneau, Alaska and Atlin, B.C. In past seasons field trips have been conducted to observe phenomena in the deglaciated coastal environs, such as Glacier Bay, the Chilkat region, the forested fiords of Lynn Canal and in the Dezadeash Lake and Atlin Lake areas on the continental side of the Boundary Range. Special emphasis this year will be given to the Atlin District, lying adjacent to the icefield on the north. Here a remarkable array of Wisconsinan deglaciation feàtures and periglacial phenomena are observed. A permanent headquarters station is maintained at Atlin, B.C., from which field trips are also made to the Yukon Territory.



*Helicopter operations on the icefield*


*Alaska Air National Guard ski-plane at Camp 10*