

## APPLICATION

To insure consideration, early application is encouraged. Applications should include information on outdoor 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, character and compatibility.

Make Application to:  
**Glaciological and Arctic Sciences Institute**  
**Dr. Maynard M. Miller, Dean**  
**College of Mines & Earth Resources**  
**University of Idaho, Moscow, Idaho 83843**

or  
**Foundation for Glacier and Environmental Research**  
**514 E. 1st St., Moscow, ID. 83843 (ph. 208-882-1237)**

## STAFF AND RESOURCE SCIENTISTS

- DR. MAYNARD M. MILLER, Dean, College of Mines and Earth Resources and Professor, Geology Dept., Director, Glaciological and Arctic Sciences Institute, University of Idaho (applied geomorphology, glaciology, Quaternary stratigraphy, mining geology).  
 DR. JAMES H. ANDERSON, Institute of Arctic Biology, University of Alaska, Fairbanks, AK (geobotany, palynology, dendroglaciology).  
 ROBERT A. ASHER, Foundation for Glacier and Environmental Research, Seattle, WA (Deputy Field Leader, glaciology, data processing, glacier surveying).  
 DR. WILLIAM BRYANT, Oceanography Dept., Texas A & M University, (sedimentology, mechanical properties of sediments, marine geology).  
 DR. RICHARD L. CARLSON, Geophysics Dept., Texas A and M University, College Station, TX (tectonophysics, glacier geophysics).  
 DR. FRANK D. EATON, Meteorology Program, Geophysical Institute, University of Alaska, Fairbanks, AK (remote sensing, meteorology, radiation research).  
 AUSTIN E. HELMERS, Foundation for Glacier and Environmental Research, Juneau, AK (glacier and forest hydrology, mass balance).  
 DR. DAVID LIETZKE, Agronomy Dept., University of Tennessee, Knoxville, TN (arctic soils, periglacial research, geomorphology).  
 DR. RICHARD A. MARSTON, Dept. of Geological Sciences, University of Texas, El Paso, TX (physical geography, glacier hydrology, water resources, remote sensing).

- DR. ALFRED PINCHAK (Ph.D. and M.D.) Dept. of Fluid Mechanics, Case Western Reserve Univ., Cleveland, OH (continuum mechanics, avalanche research, hydrology).  
 BARRY W. PRATHER, Foundation for Glacier and Environmental Research, Seattle, WA (geophysics, seismology, field methods).  
 DR. DOUGLAS N. SWANSTON, U.S. Forest Service, Forestry Sciences Lab., Juneau, AK (mass wastage, landslide mechanics, engineering geology).  
 DR. AYLMEYER H. THOMPSON, Meteorology Dept., Texas A and M University, College Station, TX (arctic climatology, synoptic meteorology, mountain wind research).  
 DR. WALTER WELSCH, and DR. AXEL GEIGER, University of the Federal Armed Forces, Munich, Germany (geodesy, surveying, field methods).  
 DR. GERD WENDLER, Geophysics Program, Geophysical Institute, University of Alaska, Fairbanks, AK (climatology, micro-meteorology, glacio-meteorology).  
 DR. GEORGE A. WILLIAMS, Professor and Head, Geology Dept., University of Idaho, Moscow, ID (economic geology, volcanics, mineral exploration).  
 DR. DAVID F. WOOLNOUGH, Head, Survey Dept., Nova Scotia Land Survey Institute, Lawrencetown, N.S., Canada (glacier surveying, photogrammetry).  
 JOAN W. MILLER, Foundation for Glacier and Environmental Research, Moscow, ID (Administrative Director, logistics, personnel and fiscal affairs).

### Medical, Safety and Terrain/Survival Instruction:

W.M. Smith, M.D., Found, for Glacier and Environmental Research, coordinator; S. Eames, M.D.; T.R. Haley, M.D.; D. Reid, M.D.; B. Reid, R.N.; A.C. Pinchak, M.D.; C. Sternhagen, M.D.; G. Mendivil, L. Miller, B. Prather, D. Thomas.

### Administration, Liaison and Logistics:

J.W. Miller, L. Marston, M.A. Parke, R.M. Miller, C. Thomas, L. Thomas, H. Swanke, D. and E. Williams, K. Loken, D. Bruns, N. Vig, W. Zeman.

### Camp and Field Operations:

R.A. Asher, Ed Chacho, C. Dillon, Sally Fagerson, Tom Ferrara, J. Hyman, G. Linder, Glen Liston, J. McConnell, Scott Odden, Brian Palmer, S. Rothstein, Mauri Pelto, Gary, John and Larry Thoma, Dr. Dee Trent.

### Other Lecturers, Advisors and Research Associates:

Dr. Talbert Abrams, Abrams Aerial Survey Corp., Lansing, MI; C.J. Anderson, National Weather Service (retired); Dr. D. Brew and Dr. A. Ford, Alaska Branch, U.S. Geological Survey, Menlo Park, CA; Dr. J. Bugh, State Univ., Cortland, New York; Ed Chacho, U.S. Army Corps of Engineers, CRREL, Fairbanks, AK; Dr. A. Chrzanowski, Div. of Survey Engineering, Univ. of New Brunswick, Fredericton, N.B., Canada; Dr. H.C. Curl, NOAA, Pacific Marine Environmental Lab., Seattle, WA; R.C. Garner, Idyllwild Center, Univ. of So. Calif.; Dr. J.H. Helle, Nat. Marine Fisheries Lab., Auke Bay, AK; Dr. L. Killewich, Seattle, WA; G. Liston, Univ. of Washington, Seattle, WA; Dr. R.W. Little, Head, Dept. of Bio-Engineering, and Dr. G. Cloud, Dept. of Mech. Engineering, Michigan State Univ., E. Lansing, MI; Dr. B. Molnia, Pacific-Arctic Branch of Marine Geology, U.S.G.S., Menlo Park, CA; Dr. C.L. Rosenfeld, Geography Dept., Oregon State Univ., Corvallis, OR; Dr. H. Slupetzky, Geographical Inst., Univ. of Salzburg, Austria; Dr. A.M. Tallman, Atomics International Div., Rockwell-Hanford Ops., Richland, WA; Dr. Colin Thorn, Geography Dept., Univ. of Illinois, Champagne-Urbana, IL; Dr. C.A. Waag, Geology Dept., Boise State Univ., Boise, ID; J. Wallis, Mining Engineer, Atlin, B.C. Canada; D. Wedlock, Survey Dept., Nova Scotia Land Survey Institute, Lawrencetown, N.S., Canada.

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EXPEDITIONARY FIELD TRAINING,  
 RESEARCH PARTICIPATION  
 AND SEMESTER CREDITS IN

## ARCTIC AND MOUNTAIN SCIENCES

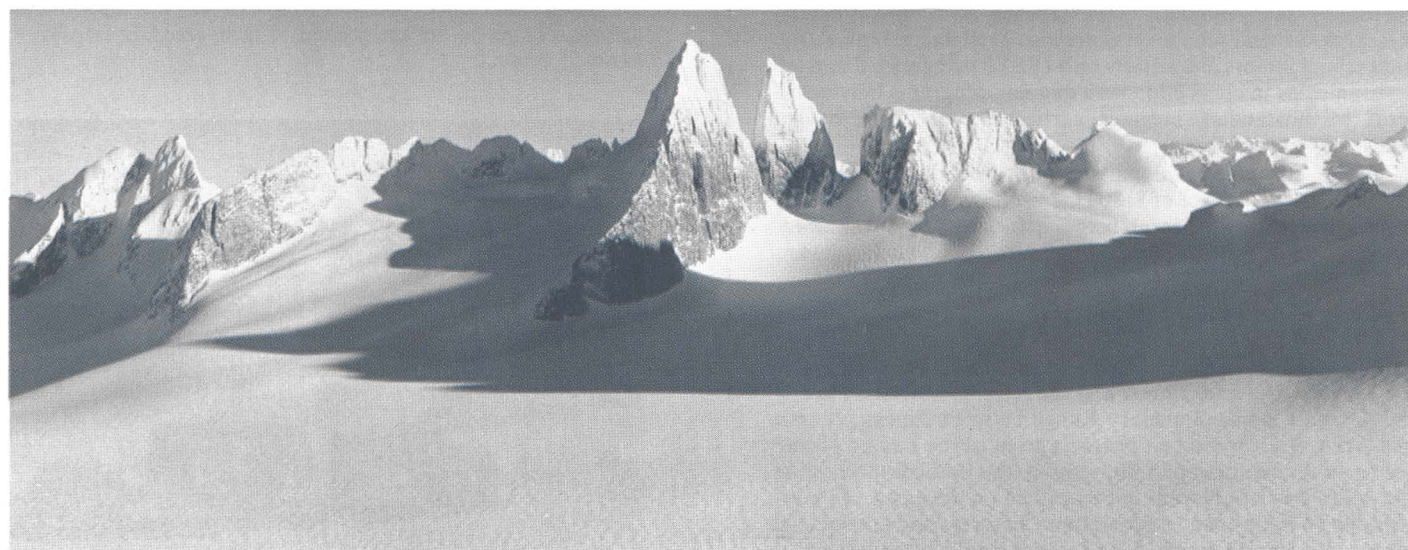
23rd Summer Institute of  
 Glaciological and Arctic Sciences

July 1 - August 24th, 1982  
 Juneau Icefield, Alaska  
 and the Atlin Lake Region B.C.,  
 Yukon, Canada

The University of Idaho, the Foundation for  
 Glacier and Environmental Research and the  
 Juneau Icefield Research Program.



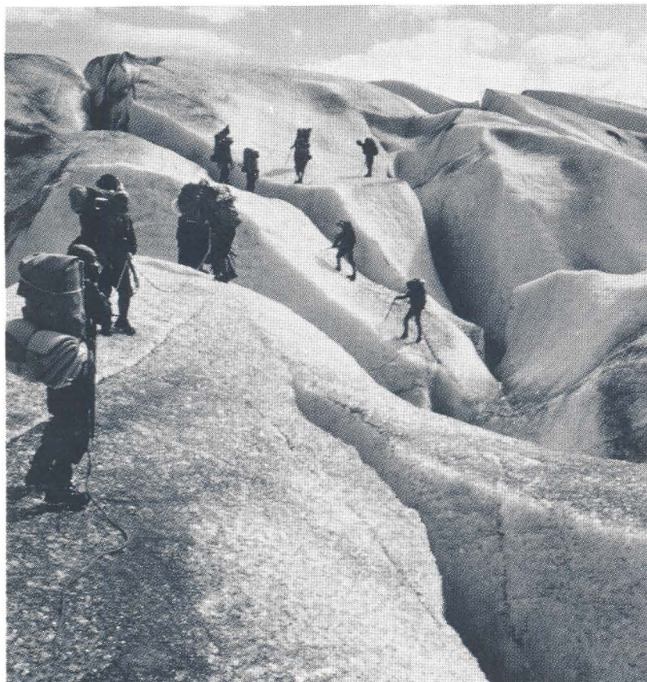
"Jokulhlaup" flood lake dammed by Talsekwe Glacier, Devil's Paw Sector, Juneau Icefield. (August 6, 1981)



Aerial view of part of Taku Range, near Camp 16, Juneau Icefield, Alaska-Canada Coast Mountains.

U.S. Forest Service Photo

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Field trip on the lower Llewellyn Glacier.

## PURPOSE

The Juneau Icefield Research Program (JIRP) was organized in 1946 to pursue long-term research on inter-relationships of scientific disciplines necessary to understand the total environment of arctic and mountain regions. 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 total systems competence in potential polar and mountain scientists and practical field training for geologists, hydrologists, geophysicists, atmospheric scientists, resource planners, ecologists and surveyors.

Students have the opportunity to observe and study sub-aerial processes in a dynamic region of existing glaciers and rugged mountain terrain, and to appreciate the inter-science investigational approach in the field studies applicable not only to pristine wilderness regions but to scientific assessments of environmental problems even in rural and urban areas.

Participants attend lectures at pertinent field sites, participate in demonstrations with instruments and materials in the field, and take and record scientific measurements under supervision or via their own scientific competence as part of long-range research from high-elevation and continental periglacial areas to low-level temperate and maritime regions. A realistic understanding is gained of glacio-climatological, glacio-geological and glacio-ecological relationships in natural systems. In addition, the Institute provides practical field experience in a variety of personally challenging projects.

## DATE

The Institute will be held from July 1 to August 24, 1982. For qualified students interested in participation in JIRP and allied regional research projects, or for those desiring field work on thesis problems, a period of additional field work may be arranged.

## THE PROGRAM

*"Nature without learning is a blind thing — and learning without Nature is an imperfect thing."*

—Plutarch

Emphasis is placed on expeditionary experience and where possible research participation in scientific projects developed for student involvement. Courses are offered in field geology, glaciology, geomorphology, surveying and selected environmental sciences. These are directed by Dr. M.M. Miller with visiting scientists assisting and available for consultation.



Student using T-2 and EDM Survey instruments in Camp 17 sector.  
R. Asher photo

Up to 12 academic credits can be arranged through the Geology and Geography Departments of the University of Idaho.

Special topics considered are: Arctic Environmental Sciences; Terrestrial and Glacial Photogrammetry; Glacier Surveys and Mapping; Glacio-ecology; Lichenometry; Periglacial Geomorphology and Pleistocene Stratigraphy; Continuum Mechanics; Glacio-meteorology; Mountain Climatology; Glacio-hydrology; Exploration and Glacier Geophysics; Mineral Resources Prospecting; and Bedrock Geological Mapping.

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.

Lectures, field studies and problem sessions are held on adjunct topics. All offerings are concurrent during a concentrated, five week session on the Juneau Icefield, emphasizing Neoglacial conditions. Participants in the general courses are exposed to all offerings. An initial week is devoted to indoctrination in field methods, and safety and survival techniques. Two to five weeks may be used for work on a field problem, dependent on participant's aim, interest and abilities. The last week can be concentrated in the Atlin area where deglaciated terrain provides opportunities 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 independent studies, including post-doctoral research, field problems may be developed.

## AWARDS

Some participantships and field scholarships are available. These include participantships for undergraduates (URP category) plus several graduate level scholarships & awards supported by the Foundation for Glacier and Environmental Research. Several scholarships are also available to high ability high school juniors and seniors only (SSTP category). Research assistantships in connection with ongoing programs may be offered to outstanding previous participants or others having equivalent experience.

Places for additional participants in each category are available at the field fee of \$1800 for the full session. All participants cover travel expenses between their home and Juneau, Alaska, and Atlin, B.C., via Whitehorse, Y.T., back home.

## LOCATION

The main glacier area lies on or near the Juneau Icefield in the Tongass National Forest and the Atlin Wilderness Park of the Alaska-Canada Boundary Range between Juneau, Alaska and Atlin, B.C. Special emphasis is given to the Lemon glacier sector on the southern periphery and to the Cathedral Massif in the Atlin District adjacent to the icefield on the north. Here arrays of Wisconsinan deglaciation features and periglacial phenomena are observed. A permanent headquarters station is maintained at Atlin, B.C., from which field trips are also made.

## FACILITIES AND LOGISTICS

Thirteen main stations and 17 lesser camp and research facilities are located in the field. Permanent aluminum-sheathed and well-insulated wooden buildings exist at some field sites. Temporary shelters and tents are used at trail camps. A 3500-volume library containing pertinent research materials, maps, aerial photos and other basic references is maintained at five main field stations, as well as in the geosciences 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, skis, oversnow vehicles and sometimes a dog team.

Permanent installations are provided by the **Foundation for Glacier and Environmental Research, Pacific Science Center, 200-2nd Ave. N., Seattle, Washington, 98109.** The summer field address is **F.G.E.R., P.O. Box 775, Juneau, AK., 99801.**

## ELIGIBILITY

Graduate and undergraduate participants must be enrolled in, or officially 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 and senior scientist participantships are available. Experience in mountain and outdoor living is given emphasis in the selection process.

In the operation of this program and in selecting individuals for participation, the University of Idaho and 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 at Camp 10 on upper Taku Glacier.