

APPLICATION

Applications should include information on outdoor experience and adaptability to rugged field conditions, transcripts, evidence of school or university status, your academic plan, 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, Director (208-885-6192 or 885-6382)

University of Idaho, Moscow, Idaho 83844

or University of Alaska Southeast, Juneau, AK 99801

also

Foundation for Glacier and Environmental Research

514 E. 1st St., Moscow, Idaho 83844 (ph. 208-882-1237)

STAFF AND ACADEMIC FACULTY

DR. MAYNARD M. MILLER, Professor of Geology; Director, Glaciological and Arctic Sciences Institute, University of Idaho (field institute director, geomorphology, glaciology, Quaternary geology, economic geology, NSF-REU projects).

DR. JAMES H. ANDERSON, Institute of Arctic Biology, University of Alaska, Fairbanks, AK (botany, palynology, dendroglaciology, lichenometry, mentor).

DR. PETER ANGUS-LEPPAN, Professor, Survey Engineering Dept., University of New South Wales, Australia (field surveys, photogrammetry).

DR. JAMES E. BUGH, Dept. of Geology, NY State University College, Cortland, NY (geomorphology, glacio-hydrology, mass balance, senior NSF-REU mentor).

DR. DONALD A. BURROWS, Dept. of Atmospheric Services, Univ. of North Dakota, Grand Forks, N.D. (glacio-meteorology, meteorological instrumentation).

ALBERT CLOUGH, State of Alaska, Dept. of Commerce & Economic Development, Juneau, AK (mineral exploration, environmental geology, project management).

DR. BRADLEY COLMAN, Research Meteorologist, NOAA, Environmental Research Laboratory, Seattle, WA (atmospheric sciences, glacio-climatology, REU mentor).

PROF. WILLIAM A. DITTRICH, Portland Community College, Portland, OR (ice physics, research mentor and YSP coordinator).

DR. ARTHUR GITTINS, Dept. of Entomology, University of Idaho (research methods, arctic entomology, environmental science, senior faculty mentor).

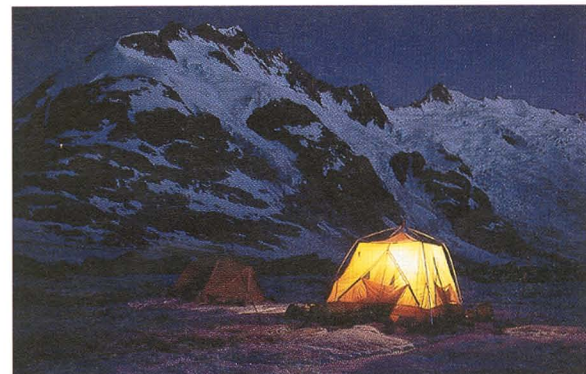
ROBERT HAMMOND, USGS Alaska Earthquake Network, Geophysical Institute, University of Alaska, Fairbanks, AK (ice radar).

PETER L. KRESAN, Dept. of Geological Sciences, University of Arizona, Tucson, AZ (field geology, environmental geology, NSF-REU & YSP programs mentor.)

DR. MELVIN G. MARCUS, Department of Geography, Arizona State University, Tempe, AZ (arctic geomorphology, glaciology, glacio-climatology, mentor).

LANCE D. MILLER, Foundation for Glacier & Environmental Research and Echo Bay Mines, Juneau, AK (metam. geology, structure, mineral deposits, field methods).

TYLOR F. KITTREDGE, Glaciological Institute, University of Idaho (geology).



A nighttime view of field camp 18B in the Gilkey Glacier trench. Heritage Range in background. (FGER - R. Benedict photo).

SCOTT MCGEE, Foundation for Glacier & Environmental Research and US Fish & Wildlife Service, Anchorage, AK (surveying and logistics).

DR. ALFRED PINCHAK (Ph.D.; M.D.), Dept. of Mechanical and Aeronautical Sciences, Case Western Reserve Univ., Cleveland, OH (glacio-hydrology, continuum mechanics, field statistics, student projects adviser).

DR. PETER SIEMS, Dept. of Geology, University of Idaho (exploration geology).

DR. KENNETH F. SPRENKE, Department of Geology and Geological Engineering, University of Idaho (geophysics, seismology, gravimetry, field methods).

GRETCHEN STAEHEL, Found. for Glacier Research, Seattle, WA (safety & terrain training; mountaineering instruction, logistics & junior staff coordinator).

DR. WALTER WELSCH, Dean, Institute of Geodesy, Federal University of the Armed Forces, Neubiberg, Germany (glacier and field surveying, EDM, GPS, mentor).

DR. GEORGE A. WILLIAMS, Professor of Geology, Research Associate, Glaciological Institute, University of Idaho (geologic mapping, senior YSP-REAP mentor).

JOAN W. MILLER, Administrative Officer, Foundation for Glacier and Environmental Research, Moscow, ID (logistics, plans, personnel and fiscal mgt.).

DONALD McCULLY, Glaciological Institute, Univ. of Idaho (facilities, speleology).

ANDREW YOUNG, Found. for Glacier & Environmental Research (mechanics).

Project Mentors and Resource Scientists:

DR. RICHARD L. CARLSON, Dept. of Geophysics, Texas A & M University, (exploration and glacier geophysics, tectonophysics). DR. PAUL KLIPFEL, Mineral Resources Services, Arvado, CO (geology, mineral economics). DR. RICHARD A. MARSTON, Dept. of Geography, University of Wyoming (glacio-hydrology, GIS and environmental geography). GREGG LAMOREY, Hydrology Center, University of Nevada, Reno, (Glacier Chemistry, NSF Young Scholars Staff Adviser). DR. BRUCE MOLNIA, Chief, International Polar Programs, U.S. Geological Survey, Washington, D.C. DR. MAURI PELTO, Research Associate, FGER, (FGER Cascades and Olympics glacier project). DR. ALAN ROHAY, Geophysicist, Battelle NW Labs, Richland, WA. DR. DOUGLAS SWANSTON, Principal Geologist, Tongass National Forest, U.S. Forest Service, Juneau, AK (engineering geology). DR. ANN TALLMAN, Research Fellow, Westinghouse, Hanford, Richland, WA. DON THOMAS, USGS Juneau (hydrology); SUSAN WOODIN, Found. for Glacier Research (YSP & Science Teachers Program).

Medical, Safety and Terrain/Survival Instruction:

Terry Carr, M.D., Bill Cox, M.D., Brian Hagerty, M.D., G. Miller, M.D., A.C. Pinchak, M.D., Gary Mendivil, Carl Byers, Gretchen Staeheli.

Administration, Liaison and Logistics:

Joan Miller, Rebecca Dayton, A. Clough, R. Kaufman, L.D. Miller, Ross Miller, N. Graham, B. Thoma, N. Vig, J. Wilson, W. Zeman.

Camp and Field Operations:

P. Bass, R. Dayton, M. Dubois, A. Friedmann, L. Hey, Chris Hewitt, Dr. Jack Helle, Scott Miller, Rick Neier, D. Potere, Natalie Silvertown, John Stevens, G. Thoma, J. Thoma, M. Wenzel, C. Wingate.

Science Teacher Component:

C. Crowson (Univ. of Idaho, College of Education); W. A. Marineau (Education Technology, Moscow, ID, school district); L. W. Volkening (Science Teacher, Moscow H.S., Moscow, ID); DR. CATHY CONNOR, Earth Science, Univ. of Alaska SE, Juneau, AK; DR. J. FLEISHER, Dept. of Geology, State Univ., Oneonta, NY; DR. BRIAN TORMEY, Dept. of Environ. Sciences, Penn State Univ., Altoona, PA.

Research Associates and Science Advisers (not in field):

Calvin E. Anderson, D. Molenaar, Dr. A.W. Thompson, Found. for Glacier and Environmental Research, Seattle, WA; Dr. David Brew, Dr. Arthur Ford, Dr. Rich Goldfarb, U.S. Geological Survey; Ed Chacho, U.S. Army Corps of Engineers, CRREL, Fairbanks, AK; Dr. Robert Forbes, former director, Alaska Div. of Geological Surveys; Dr. Harley Johansen, Univ. of Idaho; Dr. Jack Helle, Nat'l Marine Fisheries Service, NOAA, Auke Bay, AK; Austin E. Helmers, Found. for Glacier Research, Juneau, AK; Dr. Heinz Miller, and Dr. W. Jokat, Alfred Wegener Polar Inst., Germany; Dr. Bjorn Kaltenborn, Univ. of Oslo, Norway; Dr. Gottfried Konecny, Inst. of Surveying, Univ. of Hannover, Germany; Dr. David Lietzke, Univ. of Tennessee; Dr. Vernon Jones, Western Michigan Univ.; Dr. W. Mahaney, Dept. of Geog., York University, Ontario; Douglas McDonal, National Weather Service, NOAA, Seattle; Dr. Frederick Nelson, Dept. of Geog., Rutgers Univ., N.J.; Dr. Gunnar Ostrem, Norwegian Water Resources & Energy Admin.; Richard M. Shaw, Geophysics, Exxon Co., US, Denver; Dr. Heinz Slupetzky, Inst. of Geography, Univ. of Salzburg, Austria; W. Brent Liddle, Chief Interpreter, Klauene National Park, Yukon, Canada; Dr. Charles Waag, Geol. Dept., Boise State Univ.; Dr. Gordon Warner, General Motors Corp., Pontiac, MI; Jim Wallis and John Harvey, FGER, Atlin, B.C.; Dr. David F. Woolnough, Nova Scotia Land Survey College, N.S., Canada.




University of Idaho
Glaciological & Arctic Sciences Institute
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Moscow, Idaho 83844

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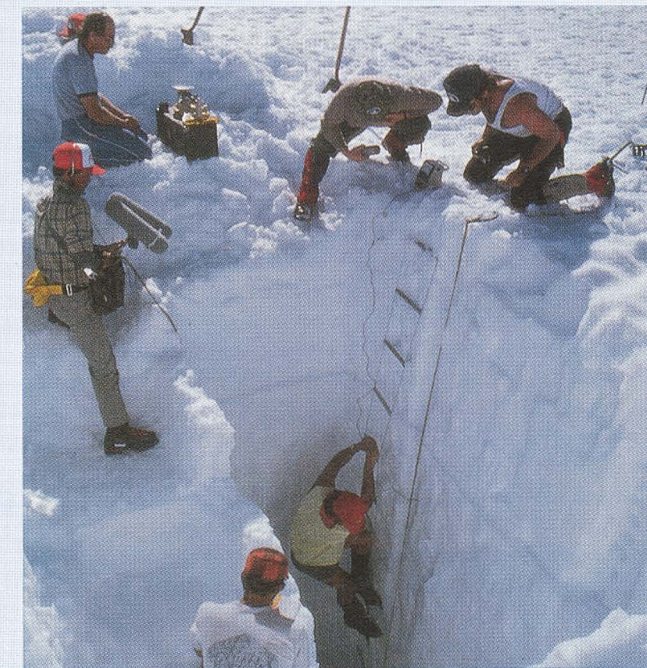
EXPEDITIONARY FIELD TRAINING,
RESEARCH PARTICIPATION
AND SEMESTER CREDITS IN

ARCTIC AND MOUNTAIN SCIENCES

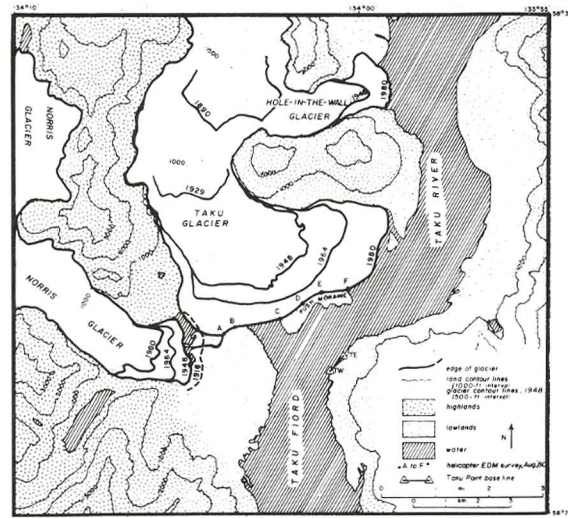
**35th Summer Institute of
Glaciological and Arctic Sciences**

**July 1 - August 23, 1994
Juneau Icefield, Alaska
and the Atlin Lake Region,
B.C.-Yukon, Canada**

University of Idaho, the University of
Alaska Southeast, the Juneau Icefield Research
Program, the National Science Foundation
and the Foundation for Glacier and
Environmental Research, Seattle, WA



Students involved in test pit stratigraphy measurements for mass balance study of the upper Taku Glacier (UI Gl. Inst.)



Advancing Taku and Hole-in-the-Wall Glaciers and receding Norris Glacier, 1890 to 1993

PURPOSE

The Juneau Icefield Research Program (JIRP) was organized in 1946 to pursue long-term research on interrelationships 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 conducted from July 1 to August 24. 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 research participation. Courses are offered in field geology, glaciology, geomorphology, surveying and selected environmental sciences, coordinated by Dr. M.M. Miller with visiting scientists assisting.

Up to 12 academic credits can be arranged through the Geology and Geography Departments, University of Idaho, and the summer school program of the University of Alaska Southeast.



View across the Twin Glaciers; source region and S.E. portion of the Juneau Icefield to Devil's Paw (8584').



Fully equipped a scientist skis to Camp 14, Juneau Icefield.



Palynology sampling in glacial bogs of the Atlin Lake sector.

Special topics considered are: 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 Geophysics; Mineral Prospecting; and Bedrock Geological Mapping.

Offerings take advantage of a classical glacial, periglacial and mountain and arctic environment in field and "laboratory" instruction.

The courses are offered under the aegis of the **University of Idaho** and the **University of Alaska Southeast**, being double listed in each institution's summer catalogue.

Lectures, field studies and problem sessions are held on adjunct topics. All offerings are concurrent during a concentrated, 8 week session on the Juneau Icefield, emphasizing Neoglacial conditions. Participants in the general courses are exposed to all offerings. The 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.

PARTICIPANTSHIPS AND AWARDS

Participationships and field scholarships are available. These include awards for undergraduates (REU program) and graduate level scholarships supported by the University of Idaho, the National Science Foundation, the Foundation for Glacier and Environmental Research, the Rotary Club of Juneau and the Explorers Club field science training fund. Scholarships and contributions are also available for high school juniors and seniors via the Foundation, the Academy of Applied Science, the U.S. Army Research Office Research in Engineering Apprenticeship Program (REAP), and the NSF Young Scholars Program. Cooperative program grants are also available via U.S. Geological Survey & FGER for selected foreign scientists. Research assistantships in ongoing programs are offered to outstanding previous participants or others with equivalent experience.

Subsidized places for additional U.S. participants are available at the field fee of \$3200 for the 8 week session. All participants cover travel expenses between their home and Juneau, Alaska, and from 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 Provincial Wilderness Park of the Alaska-Canada Boundary Range between Juneau, Alaska and Atlin, B.C. 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 and periglacial features are observed. A permanent headquarters station is maintained at Atlin, B.C., from which a variety of field trips are made.

FACILITIES AND LOGISTICS

Thirteen main stations and lesser camp and research facilities are located in the field. Permanent metal-sheathed and insulated wooden buildings exist at some field sites. Temporary shelters and tents are used at trail camps. A 5000-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.

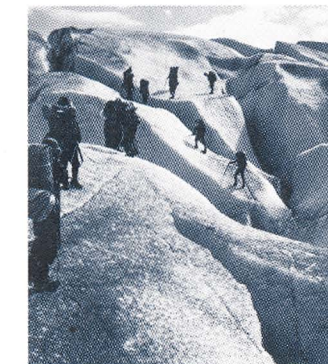
Communication between camps and with the Juneau and Atlin bases is handled by radio. Helicopters, charter aircraft, and occasionally ski-planes are used for transportation, with ground transport carried out via foot travel, skis, oversnow vehicles and occasionally a dog team.

Permanent installations are provided by the **Foundation for Glacier and Environmental Research, Pacific Science Center, 200-2nd Ave. North, Seattle, Washington, 98109**. The summer field address is **F.G.E.R., P.O. Box 20298, Juneau, Alaska, 99802-0298**. A permanent field station is maintained in the Atlin Lake region, north of the icefield. The station is 62 miles south of the Alcan Highway near the Alaska-B.C.-Yukon border. The address is **Subarctic Research Station, P.O. Box 99, Atlin, B.C. Canada V0W 1A0**.

ELIGIBILITY

Participants must be enrolled in, or officially admitted for, work as candidates for a degree at their respective institutions. Exceptions are permitted where students are between programs and institutions in a long-term academic plan. A high scholastic record or potential is expected. Weight is placed on personal character, demonstrated interest and professional motivation. High ability high school students with university plans can also be included. Experience in mountain and outdoor living is important in the selection process.

In administering this program the University of Idaho, the University of Alaska Southeast, and the Foundation for Glacier and Environmental Research will not discriminate on the grounds of race, creed, color, sex, or national origin.



On the lower Llewellyn Glacier near Camp 26.



Students using signal-stacking seismograph on Taku Glacier.