

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, a firm 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

University of Idaho, Moscow, Idaho 83843

and University of Alaska Southeast, Juneau, AK 99801

or

Foundation for Glacier and Environmental Research

514 E. 1st St., Moscow, Idaho 83843 (ph. 208-882-1237)

STAFF AND RESOURCE SCIENTISTS

- DR. MAYNARD M. MILLER, Professor of Geology; Director, Glaciological and Arctic Sciences Institute, University of Idaho (applied geomorphology, glaciology, Quaternary geology, mining geology, expedition techniques).
- CALVIN E. ANDERSON, Foundation for Glacier and Environmental Research, Seattle, WA. Formerly research meteorologist, National Weather Service (meteorology).
- 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, Chicago, IL (data acquisition and field instrumentation; surveying techniques).
- DR. JAMES E. BUGH, Dept. of Geology, NY State University College, Cortland, NY (process geomorphology, glacio-hydrology).
- DR. RICHARD L. CARLSON, Department of Geophysics, Texas A & M University, College Station, TX (exploration and glacier geophysics, tectonophysics).
- 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).
- DR. ROBERT B. FORBES, Director, Alaska Division of Geological & Geophysical Surveys, Fairbanks, AK (bedrock and metamorphic geology, mineral deposits).
- DR. ARTHUR GITTINS, Dept. of Entomology, University of Idaho (research methods, arctic entomology, environmental science).
- ROBERT HAMMOND, Research Associate, Glaciological Institute, University of Idaho, and NOAA Tsunami Warning Center, Anchorage, AK (ice radar).
- DR. HANS HEISTER & DR. MARTIN LANG, Surveying Engineering Dept., University of Federal Armed Forces, Munich, Germany (surveying, geodesy).



Research team on a high plateau of the Juneau Icefield, Alaska-Canada, during August (all photos, FGER).

- DR. MELVIN G. MARCUS, Department of Geography, Arizona State University, Tempe, AZ (arctic geomorphology, glaciology, glacio-climatology, mapping).
- GARY MENDIVIL, Foundation for Glacier and Environmental Research, Juneau, AK (survival, safety and terrain instruction).
- LANCE D. MILLER, Foundation for Glacier & Environmental Research, Juneau, AK (geology, structure, ore deposits, field methods).
- DR. BRUCE MOLNIA, Chief, International Polar Programs, U.S. Geological Survey, Wash., D.C. (Alaska marine geology, remote sensing, glacial stratigraphy).
- DR. KEITH MOUNTAIN, Climate Research Laboratory, Arizona State University, Tempe, AZ. (physical geography, radiation models).
- DR. IAN F. OWENS, Dept. of Geography, University of Canterbury, Christchurch, New Zealand (snow hydrology, applied climatology).
- DR. MAURI PELTO, Research Associate, Foundation for Glacier & Environmental Research, Seattle, WA (glaciology, mass balance research).
- DR. ALFRED PINCHAK (Ph.D.; M.D.), Dept. of Mech. and Aeronautical Sci., Case Western Reserve Univ., OH (continuum mechanics, glacio-hydrology).
- DR. HERMANN RENTSCH, Glaciology Commission, Bavarian Academy of Science, Munich, Germany (structural glaciology, photogrammetry).
- DR. ALAN ROHAY, Geophysicist, Battelle Northwest, Richland, WA (geophysical applications, expedition principles and techniques).
- DR. VIRGINIA ROHAY, Westinghouse-Hanford, Richland, WA (geology).
- DR. CHARLES ROSENFELD, Geography Department, Oregon State University, Corvallis, OR (remote sensing, arctic-alpine terrain analysis, polar geomorphology).
- DR. MARTIN SMITH, Assistant Professor, Department of Mining and Metallurgy, University of Idaho (geostatistics, operations research, computer analysis).
- DR. DAVID E. STOCK, Dept. of Mechanical Engineering, Washington State University, Pullman, WA (thermal sciences, fluid mechanics).
- DR. KENNETH F. SPRENKE, Geology Department, University of Idaho (exploration geophysics, seismology, field methods).
- DR. DOUGLAS N. SWANSTON, Principal Geologist, Tongass National Forest, Forestry Sciences Lab, U.S. Forest Service, Juneau, AK (engineering geology).
- DR. GERD WENDLER, Geophysical Institute, University of Alaska, Fairbanks, AK (micro-meteorology, radiation balance).
- DR. GEORGE A. WILLIAMS, Professor of Geology, Senior Research Associate, Glaciological Institute, University of Idaho (geologic mapping, geology).
- JOAN W. MILLER, Administrative Director, Foundation for Glacier and Environmental Research, Moscow, ID (logistics, plans, personnel and fiscal mgt.).

Medical, Safety and Terrain/Survival Instruction:

W.M. SMITH, MD., and T.R. HALEY, M.D., Medical Coordinators: Bill Cox, M.D., George Miller, M.D., A. Pinchak, M.D., Dan Reid, M.D., Herb Sigmond, M.D., Carl Byers, J. Gray, R.N., G. Mendivil, B. Reid, R.N., Don Thomas.

Administration, Liaison and Logistics:

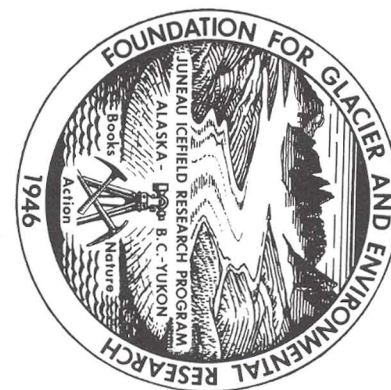
Joan W. Miller, Barbara Turner, Don McCully, Al Clough, L.D. Miller, Ross Miller, M.A. Parke, C. Thomas, D & E. Williams, N. Graham, B. Thoma, N. Vig, J. Wilson, W. Zeman.

Camp and Field Operations:

Mark Abolins, Robert Bancroft, J. Barbee, Steve Bograd, Tana Ray Dace, R. Davison, P. Davison, A. Franks, D. Hartmann, L. Hunt, Jack Lamb, Don McCully, Scott McGee, Austin Helmers, Dr. Jack Helle, Dr. Andrew Marcus, Darius Semmens, Joe Stock, Jeff Thomas, D. Thomas, G. and J. Thoma, Doug Wyatt, Susan Woodin.

Research Associates and Advisers:

Dr. David Brew, Dr. Arthur Ford, Alaska Branch, U.S. Geological Survey, Menlo Park, CA and Anchorage, AK; Ed Chacho, U.S. Army Corps of Engineers, CRREL, Fairbanks, AK; Dr. J. Bugh & Dr. J. Fleisher, SUNY at Cortland and Oneonta, NY; Dr. Terry Howard, Geological Engineering, Univ. of Idaho; Dr. Jack Helle, Nat'l Marine Fisheries Service, NOAA, Auke Bay, AK; Austin E. Helmers, Found. for Glacier Research, Juneau, AK; Scott Hulse, EIG, Inc., Boulder, CO; Dr. Heinz Miller & Dr. W. Joket, Alfred Wegener Antarctic Inst., Bremerhaven, Germany; Dr. Bjorn Kaltenborn, Dept. of Geog., Univ. of Oslo, Norway; Dr. Gottfried Konecny, Director, Inst. of Surveying & Photogrammetry, Univ. of Hannover, Germany; Jack Lamb, Boise-Cascade Co., Boise, ID; Dr. David Lietzke, Univ. of Tennessee, Soils Research, Inc., Knoxville, TN; Dr. V. Jones, Tom Brummel, Dr. Karen Carlson, Dee Molenaar, Don Olson, Found. for Glacier & Environmental Research, Seattle, WA; Dr. W. Mahaney, Dept. of Geography, York University, Ontario; Dr. Andrew Marcus, Dept. of Geography, Univ. of Maryland, College Park, MD; Dr. Frederick Nelson, Dept. of Geography, Rutgers Univ., New Brunswick, N.J.; Dr. Gunnar Ostrem, Norwegian Water Resources & Energy Admin.; Dr. Robert Schuster, Engineering Geology Branch, US Geological Survey, Denver, CO; Richard M. Shaw, Geophysics, Exxon Co., U.S. Denver; Dr. Heinz Slupetzky, Institute of Geography, Univ. of Salzburg, Austria; Dr. Ann Tallman, Westinghouse-Hanford, Richland, WA; Dr. A.H. Thompson, Research Associate, Found. for Glacier & Environmental Research, Seattle, WA; W. Brent Liddle, Chief Interpreter, Klauane National Park, Haines Junction, Yukon, Canada; Don Thomas, U.S. Geological Survey, Juneau, AK; Dr. Charles Waag, Geol. Dept., Boise State Univ.; Dr. Gordon Warner, General Motors Corp., Pontiac, MI; Dr. Ian Saunders, Dept. of Geog., Simon Fraser University, Burnaby, B.C.; Jim Wallis, Mining Engineer, Atlin, B.C.; Dr. David F. Woolnough, Head, Surveying Dept., Nova Scotia Land Survey Institute, Lawrencetown, N.S., Canada.



University of Idaho
Glaciological & Arctic Sciences Institute
College of Mines & Earth Resources
Moscow, Idaho 83843

EXPEDITIONARY FIELD TRAINING, RESEARCH PARTICIPATION AND SEMESTER CREDITS IN ARCTIC AND MOUNTAIN SCIENCES

**32nd Summer Institute of
Glaciological and Arctic Sciences**

**July 1 - August 24, 1991
Juneau Icefield, Alaska
and the Atlin Lake Region,
B.C.-Yukon, Canada**

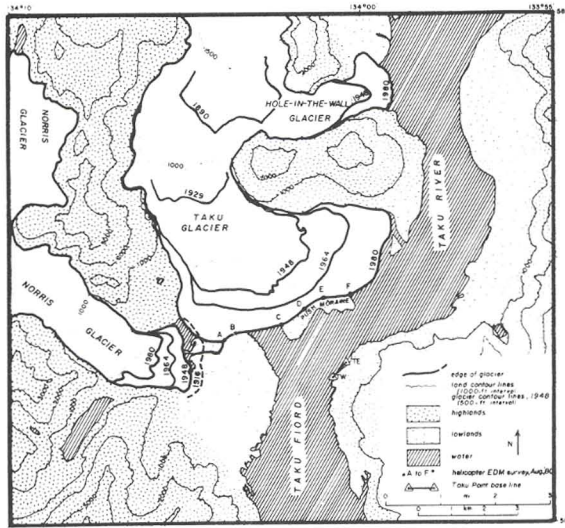
University of Idaho, the University of
Alaska Southeast, the Juneau Icefield Research
Program, and the Foundation for Glacier and
Environmental Research, Seattle, WA.



Ascending the Camp 18 cleaver from the Gilkey
Trench, Juneau Icefield. Wave bulges on Vaughan
Lewis Glacier in background.
(M.M. Miller)


University of Idaho

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Advancing Taku and Hole-in-the-Wall Glaciers and receding Norris Glacier, 1890 to 1990.

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

Participantships 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 & FGFR 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 \$2500 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 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 4000-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.

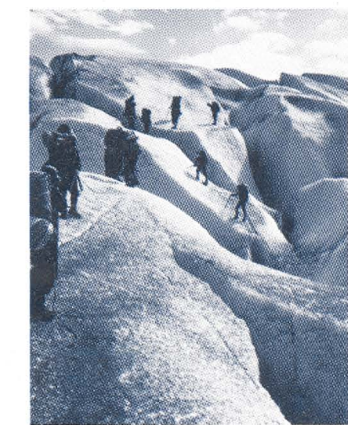
Communication between camps and with the Juneau and Atlin bases is handled by radio. Helicopters, charter aircraft, and ski-planes are used for transportation, with ground transport carried out via foot travel, skis, oversnow vehicles and sometimes a dog team.

Permanent installations are provided by the Foundation for Glacier and Environmental Research, Pacific Science Center, 200-2nd Ave. North, Seattle, Washington, 98109. The summer field address is F.G.E.R., P.O. Box 20298, Juneau, Alaska, 99802-0298; and after August 1, Subarctic Research Station, P.O. Box 99, Atlin, B.C. Canada VOW 1A0.

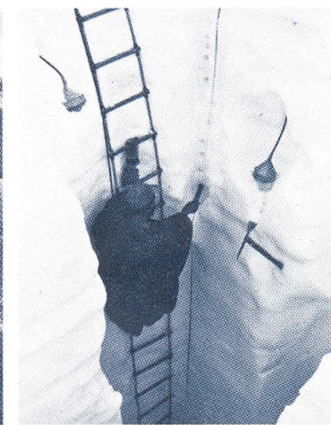
ELIGIBILITY

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. Post-doctoral and senior scientist participantships are available. High ability high school students with university plans can also be included. Experience in mountain and outdoor living is given emphasis 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.



Measuring snow & firn stratigraphy at test pit site.