

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.

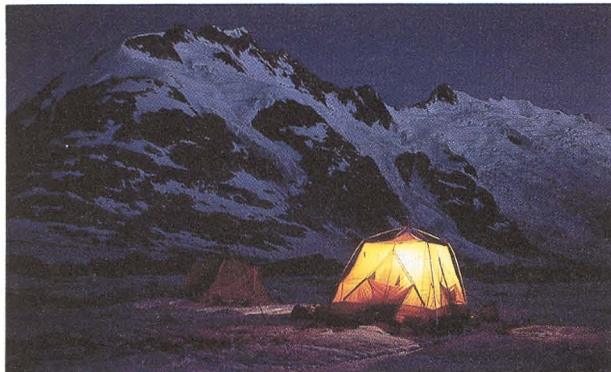
Make Application to:

Glaciological and Arctic Sciences Institute
phone: 208-885-6192 and 885-6382 or 882-1237
University of Idaho, Moscow, Idaho 83844
also

Foundation for Glacier and Environmental Research
514 E. 1st St., Moscow, Idaho 83843 (ph. 208-882-1237)
E-MAIL: jirp@uidaho.edu FAX: 208-882-6207
Internet: <http://www.mines.uidaho/glacier>

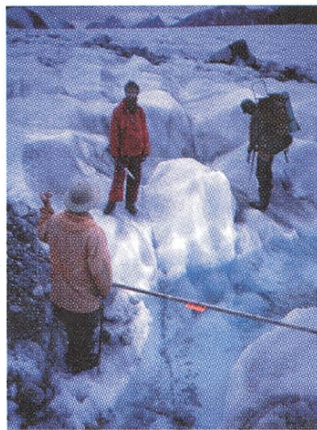
ACADEMIC AND RESOURCE SCIENTISTS

- DR. MAYNARD M. MILLER, Professor of Geology and Director, Glaciological and Arctic Sciences Institute, University of Idaho. Executive Chairman, Foundation for Glacier and Environmental Research (FGER) and Director, JIRP (earth systems science, geomorphology, glaciology, Quaternary geology, remote sensing).
- GUY W. ADEMA, M.S., Research Associate, Glaciological & Arctic Sciences Institute, University of Idaho. Assistant to the Director and Field Operations and Safety Manager (geophysics, computer geology, project facilitator).
- DR. MAURI PELTO, Foundation for Glacier & Environmental Research; Associate Professor, Environmental Science, Nichols College, Dudley, MA. Projects Adviser (glacio-hydrology, environmental geology. FGER Cascades project).
- DR. JAMES H. ANDERSON, Institute of Arctic Biology, University of Alaska, Fairbanks, AK (arctic geobotany, palynology, dendroglaciology).
- DR. MARK BRANDRISS, Geology Dept., Union College, Schenectady, NY (field mapping, metamorphic and igneous geology).
- DR. RICHARD CARLSON, Professor of Geophysics. Texas A & M University, College Station, TX. (tectono-physics, geophysics, project development).
- ALBERT CLOUGH, Kvaeber Environmental Associates, Juneau, AK, and Found. for Glacier & Environmental Research, Juneau, AK (mineral deposits, enviro. geology).
- DR. BRADLEY COLMAN, Research Meteorologist, NOAA Environmental Research Laboratory, Seattle, WA (atmospheric sciences, glacio-climatology, met. mentor).
- DR. CATHY CONNOR, Geology Asst. Professor and Coordinator, Environmental Science Program, University of Alaska SE, Juneau, AK (geology, enviro. studies).
- PROF. WILLIAM A. DITTRICH, Dept. of Physics, Portland Community College, Portland, OR (ice physics, glaciology, projects mentor).
- DR. MICKEY E. GUNTER, Assoc. Professor, Dept. of Geology, University of Idaho (field geology, mineralogy, and environmental earth science).
- KENNETH HOWARD, Project Manager, NOAA National Storm Research Laboratory, Norman, OK. (mountain meteorology, katabatic winds).
- DR. RICHARD KEEN, Meteorology Consultant, Golden, CO (micro-meteorology, radiation, synoptic climatology).



Night scene at avalanche research camp on Gilkey Glacier in the Heritage Range (R. Benedict photo)

- DR. GREGG LAMOREY, Research Associate, Found. for Glacier and Environmental Research. Research Ass. Prof., Water Resources Center, University of Nevada, Reno (1999-2000 JIRP, paleoclimatology, core drilling).
- DR. W. ANDREW MARCUS, Dept. of Earth Sciences, Montana State Univ., Bozeman, MT (geomorphology, hydrology).
- DIPLO. ING. MARTIN LANG, Dept. of Surveying, Federal University of the Armed Forces, Munich, Germany (GPS surveys).
- SCOTT MCGEE, Found. for Glacier & Environmental Research and US Fish & Wildlife Service, Anchorage, AK (GPS, surface flow surveys, mass balance).
- DR. LANCE D. MILLER, Foundation for Glacier & Environmental Research and Placer Dome Exploration, Juneau, AK (exploration geology, regional geology).
- ROSS M. MILLER, Foundation for Glacier & Environmental Research, Juneau, AK (project plans, research creativity).
- DR. ALFRED C. PINCHAK (Ph.D.; M.D.), Dept. of Mechanical Sciences, Case Western Reserve University, Cleveland, OH (fluid mechanics, glacio-hydrology, applications statistics).
- DR. ALAN ROHAY, Senior Geophysicist, Battelle NW Labs, Richland, WA (geophysics).
- DR. HEINZ SLUPETZKY, Institute of Geography, Salzburg University, Salzburg, Austria (glacier regimen and mass balance, glaciology, teleconnection).
- DR. KENNETH F. SPRENKE, Department of Geology and Geological Engineering, University of Idaho (geophysics, seismology, gravimetry, computer geology).
- DR. RANDAL STAHL, Environmental Sciences Program, University of Alaska SE, Juneau, AK (environmental hydrology, geochemistry, arctic soils).
- DR. DAVID STOCK, Professor of Mechanical Engineering, Washington State University, Pullman, WA (continuum mechanics, surface processes at the ice-atmosphere interface).
- DR. ANN M. TALLMAN, Geologist, Fluor-Hanford, Richland, WA and Foundation for Glacier & Environmental Research, Seattle, WA. (environmental geomorphology).
- DR. WALTER WELSCH, Dean & Professor, Institute of Geodesy, Federal University of the Armed Forces, Neubiberg, Germany (geodesy, field surveying, GPS).
- DR. GEORGE A. WILLIAMS, Professor of Geology, Research Associate, Glaciological Institute, University of Idaho (regional geology, geologic mapping, senior mentor).



A student project to monitor superglacial stream hydrology on Vaughan Lewis Glacier near Camp 19. (M. M. Miller photo)

LOGISTICS AND SERVICE SUPPORT

Headquarters Operations:

- REBECCA DAYTON, Foundation for Glacier and Environmental Research, Juneau, AK (operations and logistics manager in Juneau and Atlin).
- JOAN W. MILLER, FGER Liason, Consultant and Adviser, Foundation for Glacier and Environmental Research, Moscow, ID and Juneau, AK (logistics, personnel, fiscal mgt.).

Field Staff and Facilities:

- JENNIFER ERXLEBEN (Safety Instructor), GUY ADEMA (Operations & Safety Manager), MARK STINSON, M.D. (Safety Instruction), SCOTT MCGEE (Camp Management), ANDREW YOUNG (Mechanics and Projects Support), DON McCULLY and RICK NEIER (Facilities). Other Staff: Heather Coster-Johanson, Lisa Ferber, C. Garner, Dr. Jack Helle, Scott MacGowan, Lt. Stefan Pinchak, USAF, Ens., David Potere, USNR, Joan Ramage, M. Rector, Natalie Silverton, S. Tegt, G. Thoma, E. Whitney, Cicely Wingate.

Medical and Terrain/Survival Instruction:

- Bill Cox, M.D., J. Erxleben, Michael Mouri, M.D., T.R. Haley, M.D., Sheila Mackell, M.D., Sue Silverton, M.D., Quinn Smith, M.D., Mark Stinson, M.D., A.C. Pinchak, M.D., Gary Mendivil, Karl Bausler, Carl Byers.

FGER Office Administration and Liaison:

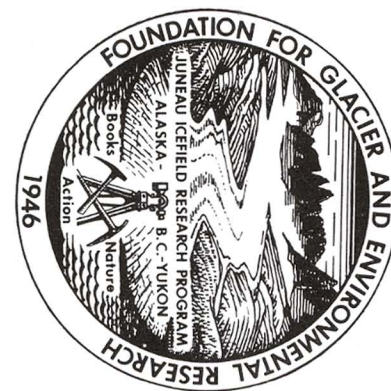
- DR. M.M. MILLER, FGER Director; J.W. MILLER, Fiscal Officer; DARLENE BATATIAN, FGER Administrative Director; GUY ADEMA, FGER Development Director; R. Dayton, A. Clough, G. Mendivil, L.D. Miller, N. Graham, J. Thoma, N. Vig, J. Wilson, W. Zeman.

Science Teacher Component:

- DR. JOHN DAVIS, Division of Science Education, Univ. of Idaho, College of Education.

Project Advisers:

- R. HAMMOND, USGS, Geophysical Institute, University of Alaska, Fairbanks; (ice radar); DR. J.E. BUGH, Geology, SUNY, Cortland, NY; DR. DAVID BREW, DR. ARTHUR FORD, USGS, Menlo Park, CA (regional geology); DR. VALERIE CHAMBERLAIN, DR. DENNIS GEIST, DR. PETER SIEMS & DR. SCOTT WOOD, Dept. of Geology, University of Idaho (accretionary terranes, isotope geology, igneous geology, geochemistry); DR. KEVIN HALL, University of Northern B.C., Canada (periglacial, geomorphology); DR. IAN KAY, Geol. Survey of Canada (geophysics); DR. BRUCE MOLNIA, Chief, International Polar Programs, USGS, Reston, VA (glaciology, remote sensing); DR. DOUGLAS SWANSTON, Principal Geologist, Tongass National Forest, USFS, Juneau, AK (engineering geology); DON THOMAS, USGS, Juneau (hydrology); DR. A.H. THOMPSON, FGER (glacio-meteorology); DR. GORDON WARNER, FGER (ice physics).




University of Idaho
Glaciological & Arctic Sciences Institute
College of Mines & Earth Resources
Moscow, Idaho 83844

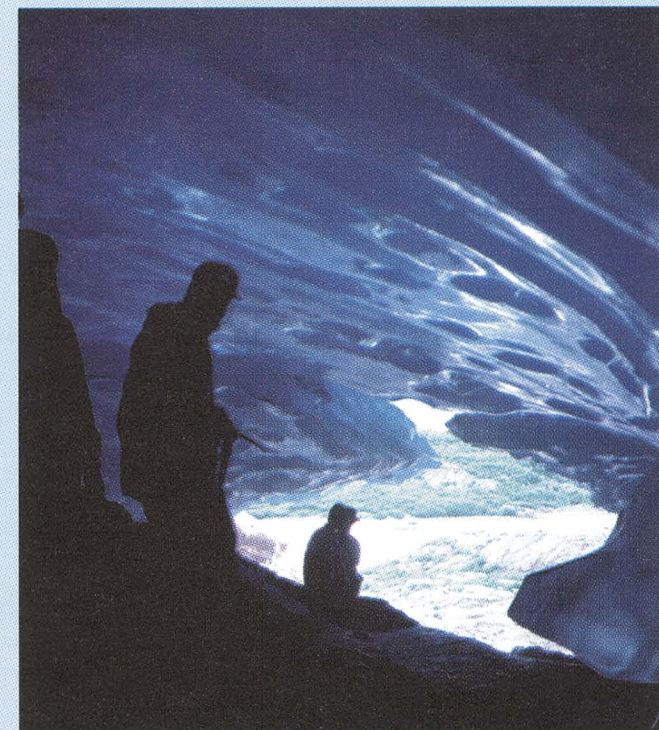
EXPEDITIONARY FIELD TRAINING,
RESEARCH PARTICIPATION
AND SEMESTER CREDITS IN

ARCTIC AND MOUNTAIN SCIENCES

39th to 41st Summer Sessions in Earth
Systems Field Science emphasizing
Glaciological, Arctic, and Alpine Environments

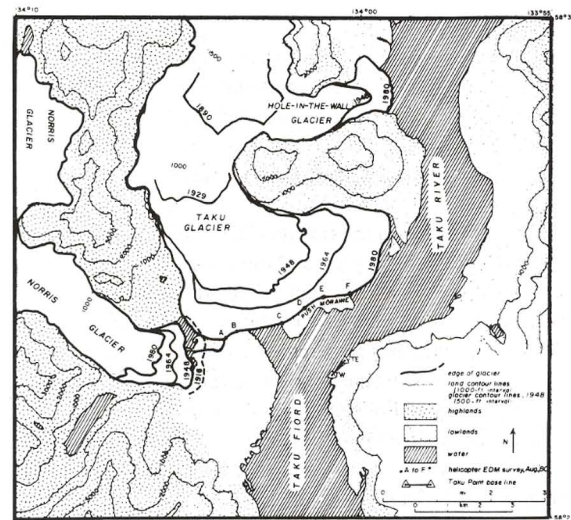
July 1 - August 24, 1998, 1999 and 2000
Juneau Icefield, Alaska
and the Atlin Lake Region,
B.C.-Yukon, Canada

This program is supported by The Glaciological and Arctic Sciences Institute, University of Idaho. The National Aeronautics & Space Administration (NASA). The U.S. Army Research Office. The M.J. Murdock Charitable Trust. The Juneau Icefield Research Program. The University of Alaska SE and The Foundation for Glacier and Environmental Research, Seattle, WA



Exploring a glacier cave at the receding terminus of Mendenhall Glacier, Juneau Icefield (FGER photo)

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Advancing Taku and Hole-in-the-Wall Glaciers and receding Norris Glacier, 1890 to 1998.

PURPOSE

“We shall not cease from exploration and the end of all our exploring will be to arrive where we started and know the place for the first time.” –T.S. Elliott

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. The aim is total systems experience for potential polar and mountain scientists and practical field training for geologists, hydrologists, geophysicists, atmospheric scientists, environmental geologists, resource planners, ecologists and surveyors.

Students observe and study sub-aerial processes in a dynamic region of existing glaciers and rugged mountain terrain, to appreciate the inter-science investigational approach applicable not only to pristine wilderness regions but to assessments of environmental problems even in rural and urban areas. The program can also enlarge the professional effectiveness of secondary school science teachers.

Participants attend lectures at field sites, participate in demonstrations with instruments, and take and record scientific measurements as part of long-range research from high-elevation and continental periglacial areas to low-level temperate maritime regions. An understanding is gained of glacio-climatological, glacio-geological and glacio-ecological relationships in natural systems. In addition, the Institute provides practical experience in 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

The program theme is earth systems science via expeditionary experience and research participation, with relevant demonstrations and lectures. Interdisciplinary emphasis is on field geology, geophysics, atmospheric sciences, arctic ecology, glaciology, applications geomorphology, surveying and environmental sciences, coordinated by the Institute with visiting faculty.

Up to 12 academic credits can be arranged through the Geology and Geography Departments, University of Idaho, or the environmental science 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, Alaska-Yukon border. (Photos by FGER)

Special topics considered as part of Earth Systems Science are: Environmental Geosciences; Terrestrial and Glacial Photogrammetry; Glacier Surveys and Mapping; Structural Glaciology; Arctic Geobotany; Lichenometry; Periglacial Geomorphology and Pleistocene Stratigraphy; Continuum Mechanics; Glacio-meteorology; Mountain Climatology; Glacio-hydrology; Exploration Geophysics; Mineral Prospecting; Remote Sensing and Geological Mapping.

Through field instruction, offerings take advantage of a classical glacial, periglacial and alpine and arctic environment.

The courses are provided under the aegis of the **University of Idaho**. Some may also be taken via the **University of Alaska Southeast**, as the courses are double listed in each institution's summer catalogue.

Lectures, field studies and problem sessions are held on adjunct topics. The 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 some coastal geology field trips, and 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 the 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 program with a specific thesis project, or equivalent independent study, including post-doctoral research, field problems may be developed.

PARTICIPANTSHIPS AND AWARDS

Participantships and field scholarships are available for undergraduate and graduate students, with a limited number for outstanding senior high school students. NASA provides up to 12 full or partial scholarships, plus travel awards on a needs basis. The M.J. Murdock Charitable Trust also provides 8 to 10 full or partial scholarships for outstanding undergraduates including some travel awards. A few awards are available for high school seniors through the DOD and U.S. Army Research Office's Research in Engineering Apprenticeship Program (REAP), as well as the Rotary Club of Juneau, Alaska. Additional awards for undergraduates, graduate students, and secondary school science teachers are supported by the Foundation for Glacier and Environmental Research and the Glaciological and Arctic Sciences Institute. It is also noted with appreciation that from 1962 to 1996 this program received 63 consecutive grants from the National Science Foundation, for the annual support of participants, including some graduate students.

Research assistantships in on-going programs are offered to outstanding previous participants or those with equivalent experience. Participation of minorities and females is actively sought and encouraged. A number of additional places are available at a fee of **\$3,900** for the 8-week session. Participants cover travel expenses between their home and Juneau, Alaska and return from Atlin, B.C., via Juneau, back home.

LOCATION

The main glacierized area lies on 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. Attention is also 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 also observed. Permanent headquarters are maintained in Juneau, AK and Atlin, B.C.

FACILITIES AND LOGISTICS

Thirteen main stations and 17 lesser camp and research facilities are located in the field. Permanent metal-sheathed and well-insulated wooden buildings exist at the main field sites. Temporary shelters and tents are used at trail camps. A 6000-volume library containing pertinent research materials, maps, satellite imagery, aerial photos and other basic references is maintained at the main base camp, with lesser libraries at other field stations, as well as in the geosciences research library at the Atlin base. A wide range of field and laboratory equipment for geophysical, glaciological, surveying, photogrammetric, botanical, meteorological, and geological work is available for teaching and research.

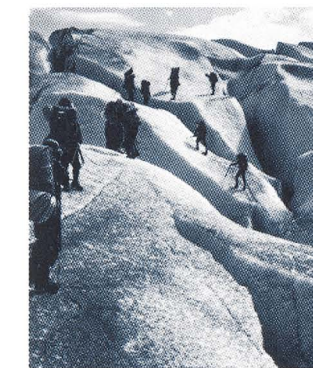
Communication between camps and with the Juneau and Atlin bases is handled by radio. Helicopters, charter aircraft, and sometimes ski-planes are used for transportation, with ground transport carried out via foot travel, skis, and oversnow vehicles.

Permanent installations are provided by the **Foundation for Glacier and Environmental Research, 4470 N. Douglas Highway, Juneau, Alaska, 99801**; liaison also with the **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 during June and September also at the **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 given emphasis in the selection.

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.



Roped up on the lower Llewellyn Glacier near Camp 26.



Seismic geophysics field work on the upper Taku Glacier.