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 compatability.

Make Application to:

Glaciological and Arctic Sciences Institute
Dr. Maynard M. Miller, Director
University of Idaho, Moscow, ID 83843
and the University of Alaska Southeast, 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).
DR. TOM AGER, Head, Climate Program, U.S. Geological Survey, Reston, VA (arctic geomorphology, global climate research).
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. RICHARD L. CARLSON, Department of Geophysics, Texas A & M University, College Station, TX (exploration and glacier geophysics, tectonophysics).
ALBERT CLOUGH, US Bureau of Mines, Juneau, AK (mineral exploration, environmental geology, project management).
DR. BRADLEY COLMAN, Research Meteorologist, NOAA, Environmental Research Laboratory, Boulder, CO; (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 (ice radar research & glacier geophysics).
GREGG LAMOREY, Foundation for Glacier & Environmental Research, Seattle, WA (geology, environmental engineering, expedition and survival techniques).

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).
DAVID VERYZER, Geography Department, University of Wyoming. Laramie, WY (geomorphology, glacier mass balance).
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. MAURI S. PELTO, Research Associate, Foundation of Glacier & Environmental Research, Seattle, WA (glaciology, mass balance research).
JACK G. PETERSON, Affiliate Professor, Glaciological Institute, University of Idaho (natural resources management, resource and mineral economics).
DR. ALFRED PINCHAK (Ph.D.; M.D.), Dept. of Mech. and Aeronautical Sci., Case Western Reserve Univ., OH (continuum mechanics, glacio-hydrology).
DR. SCI. VLADIMIR RAICKOVIC, Institute of Geodesy, University of Belgrade, Yugoslavia (geodetic engineering, survey & mapping).
DR. HERMANN RENTSCH, Glaciology Commission, Bavarian Academy of Science, Munich, F.R. 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. 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. ALYMER H. THOMPSON, Meteorology Department, Texas A & M University, College Station, TX (arctic climatology, glacio-meteorology).
DR. WALTER WELSCH & DR. HANS HEISTER, Surveying Engineering Dept., University of Federal Armed Forces, Munich, W. Germany (surveying, geodesy).
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, planning, personnel and fiscal management).

Medical, Safety and Terrain/Survival Instruction:

W.M. SMITH, M.D., and T.R. HALEY, M.D., Medical Coordinators: Walter Carr, M.D., B. Ferris, M.D., Steven Maron, M.D., George Miller, M.D., A. Pinchak, M.D., Dan Reid, M.D., Herb Sigmond, M.D., Carl Byers, Bill Davidson, J. Gray, R.N., A. Kauffman, Susan Lamorey, D. & C. Molenaar, W. Putnam, B. Reid, R.N., Don Thomas, Cathy Veryzer.

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Camp and Field Operations:

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Research Associates and Advisers:

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

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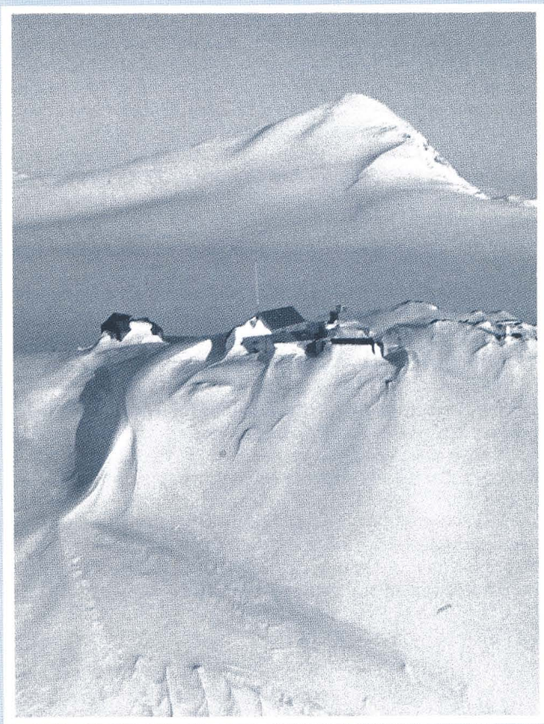
EXPEDITIONARY FIELD TRAINING,
RESEARCH PARTICIPATION
AND SEMESTER CREDITS IN

ARCTIC AND MOUNTAIN SCIENCES

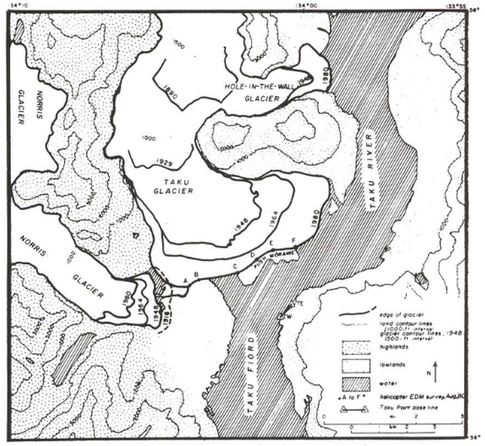
31st Summer Institute of Glaciological and Arctic Sciences

July 1 - August 24th, 1990
Juneau Icefield, Alaska
and the Atlin Lake Region,
B.C.-Yukon, Canada

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



Camp 17 on Vesper Ridge, Lemon Glacier sector, Juneau Icefield, in April, 1989. (FGER photo)



Advancing Taku and Hole-in-the-Wall Glaciers and receding Norris Glacier, 1890 to 1980.

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

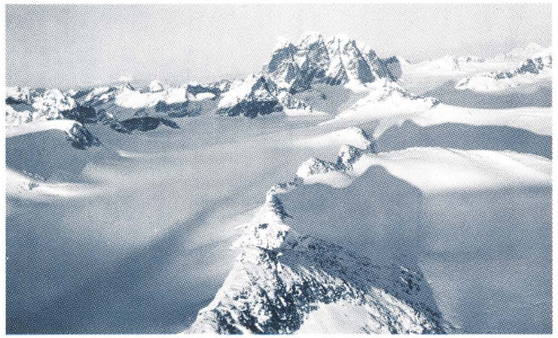
The Institute will be conducted from July 1 to August 24. For qualified students interested in participation in JIRP and allied regional research projects, or for those desiring field work on thesis problems, a period of additional field work may be arranged.

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 skiis 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 & 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 **$2200** for the 8 week 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 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.

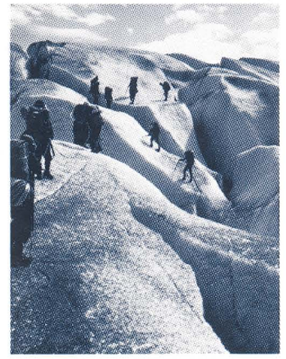
Communication between camps and with the Juneau and Atlin bases is handled by radio. Helicopters, charter aircraft, and ski-planes are used for transportation, with ground transport carried out via foot travel, skis, oversnow vehicles and sometimes a dog team.

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 1AO.**

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.