

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
or University of Alaska Southeast, Juneau, AK 99801
also

Foundation for Glacier and Environmental Research
514 E. 1st St., Moscow, Idaho 83843 (ph. 208-885-6382 or 882-1237)

ACADEMIC AND RESOURCE SCIENTISTS

- DR. MAYNARD M. MILLER, Professor of Geology and Director, Glaciological and Arctic Sciences Institute, University of Idaho (Academic and Research Adviser, geomorphology, glaciology, Quaternary geology, NSF projects).
- DR. RICHARD A. MARSTON, Director, Foundation for Glacier & Environmental Research; Juneau, AK, Affiliate Professor, University of Idaho. Professor (on leave), University of Wyoming (Field Program Director, environmental science, physical geography, glacier hydrology).
- 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, YSP mentor).
- DR. JAMES E. BUGH, Dept. of Geology, NY State University College, Cortland, NY (geomorphology, glacio-hydrology and mass balance, YSP projects mentor).
- DR. RICHARD CARLSON, Professor of Geophysics. Texas A & M University, College Station, TX. (tectono-physics, geophysics).
- 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, met. mentor).
- DR. CATHY CONNOR, Asst. Professor of Geology & Environmental Science, University of Alaska SE, Juneau, AK (YSP & MSTP geology adviser, mapping).
- DR. JOHN FODOR-DAVIS, Division of Science Education, College of Education, University of Idaho (science teacher program director, education strategies).
- DR. ARTHUR GITTINS, Dept. of Entomology, and Glaciological Institute, University of Idaho (arctic ecology, environmental science, ecology mentor).
- DR. MICKEY E. GUNTER, Assoc. Professor, Dept. of Geology, University of Idaho (field geology, mineralogy, geology and environmental earth science mentor).
- DR. KEVIN HALL, Head, Dept. of Geography, University of Northern B.C., Prince George, B.C. Canada (periglacial geomorphology, weathering, polar studies).
- DR. TATYANA G. KADOMTSEVA, Institute of Geography, Russian Academy of Sciences, Moscow, Russia (snow studies, glacio-climatology, glacier systems).



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

- DR. GREGG LAMOREY, Research Associate, Found. for Glacier and Environmental Research, Water Resources Center, University of Nevada, Reno (glaciology, paleo-climatology, assistant project coordinator).
- .SCOTT MCGEE, Foundation for Glacier & Environmental Research and US Fish & Wildlife Service, Anchorage, AK (surveying and logistics, mass balance surveys).
- DR. LANCE D. MILLER, Foundation for Glacier & Environmental Research and Echo Bay Mining Co. Juneau, AK (geology, structure, mineral deposits, field methods).
- ROSS M. MILLER, Foundation for Glacier & Environmental Research, Juneau, AK (project plans, research creativity and innovation, YSP and REAP adviser).
- DR. HAIM B. PAPPO, Dept. of Civil Engineering, Israel Institute of Technology, Haifa, Israel (geodesy and surveying).
- DR. ALFRED PINCHAK (Ph.D.; M.D.), Dept. of Mechanical Sciences, Case Western Reserve Univ., Cleveland, OH (continuum mechanics, glaciology, hydrology).
- DR. ALAN ROHAY, Senior Geophysicist, Battelle NW Labs, Richland, WA (geophysics, seismic research, projects mentor).
- DR. PETER SIEMS, Professor, Dept. of Geology, University of Idaho (exploration geology, field mapping, geochemistry).
- DR. KENNETH F. SPRENKE, Department of Geology and Geological Engineering, University of Idaho (geophysics, seismology, gravimetry, computer geology).
- DR. WALTER WELSCH and DIPL. ING. MARTIN LANG, Institute of Geodesy, Federal University of the Armed Forces, Neubiberg, Germany (field surveying, EDM, GPS).
- DR. GEORGE A. WILLIAMS, Professor of Geology, Research Associate, Glaciological Institute, University of Idaho (geologic mapping, senior YSP-REAP mentor).

LOGISTICS AND SERVICE SUPPORT

Headquarters Operations:

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

Field and Facilities Operations:

- GRETCHEN WEEKS (Safety), ANDREW YOUNG (Mechanic), Staff: Guy Adema, J. Barbee, Mark Giesbrecht, Chris Haagen, D. Hartmann, L. Hey, C. Hewitt, Dr. Jack Helle, Adam Maloof, Rick Neier, Steve Price, G. Thoma, Anne Whitehead.

Medical, Safety and Terrain/Survival Instruction:

- Bill Cox, M.D., T.R. Haley, M.D., Sue Silvertown, M.D., Quinn Smith, M.D., Alfred C. Pinchak, M.D., Gary Mendivil, Carl Byers, Gretchen Weeks.

Administration and Liaison:

- R. Dayton, A. Pinchak, A. Clough, L.D. Miller, R.M. Miller, N. Graham, J. Thoma, N. Vig, J. Wilson, W. Zeman, J.W. Miller (adviser).

Science Teacher Component:

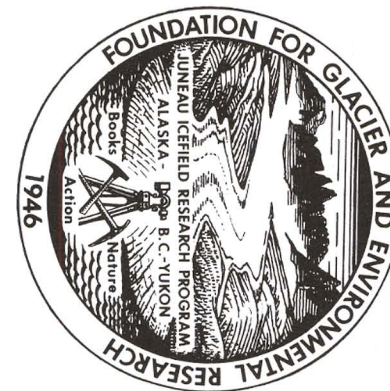
- DR. JOHN FODOR-DAVIS, Asst. Prof. of Science Educ., Univ. of Idaho, College of Education; DR. CATHY CONNOR, Coordinator, Environmental Science Program, School of Education, Univ. of Alaska SE. Associates: E. I. Cinkovich Olympia, WA; C. Garner, Bonners Ferry, ID; D.Z. Smith, Manchester, NH.

Other Project Mentors and Affiliate Scientists:

- ROBERT HAMMOND, U.S.G.S., Geophysical Institute, University of Alaska, Fairbanks; (ice radar); DR. PAUL KLIPPEL, Mineral Resources Services, Arvado, CO (geology, mineral economics); DR. MELVIN G. MARCUS, Dept. of Geography, Arizona State University (glaciology, glacio-climatology); DR. IAN MEIKLEJOHN, Dept. of Geography, Pretoria University, S.A.; DR. BRUCE MOLNIA, Chief, International Polar Programs, U.S.G.S., Washington, D.C. (glaciology, remote sensing); DR. MAURI PELTO, Research Associate, FGFR (FGFR Cascades and Olympics glacier project); DR. DAVID STOCK, Professor of Mechanical Engineering, Washington State University (continuum mechanics); DR. DOUGLAS SWANSTON, Principal Geologist, Tongass National Forest, U.S. Forest Service, Juneau, AK (engineering geology); DR. ANN TALLMAN, Research Fellow, Kaiser Hanford, Richland, WA (environmental geology); DON THOMAS, USGS Juneau (hydrology); DR. A.H. THOMPSON, Research Associate, FGFR (meteorology, climatology).

Research Associates and 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; Dr. Robert B. Forbes, former State Geologist for Alaska; 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, Toronto, Ont., Canada; Douglas McDonal, National Weather Service, NOAA, Seattle; Dr. Frederick Nelson, Dept. of Geog., SUNY, Albany, NY; 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, Klauane National Park, Yukon, Canada; Dr. Charles Waag and Dr. Monte Wilson, Geol. Dept., Boise State Univ.; Dr. Gordon Warner, General Motors Institute, Pontiac, MI; Jim Wallis and John Harvey, FGFR, Atlin, B.C.; Dr. David F. Woolnough, Nova Scotia Land Survey College, N.S., Canada.




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

37th and 38th Summer Sessions in
Glaciological and Arctic Sciences

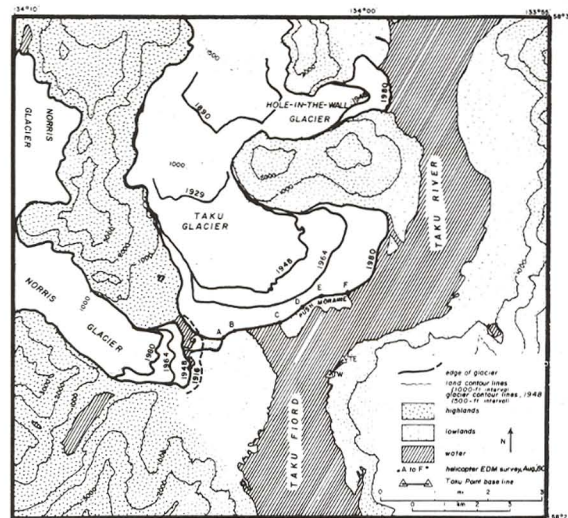
July 1 - August 24, 1996 and 1997
Juneau Icefield, Alaska
and the Atlin Lake Region,
B.C.-Yukon, Canada

The Glaciological and Arctic Sciences Institute, University of Idaho. The University of Alaska Southeast. The National Science Foundation. The Juneau Icefield Research Program. The Foundation for Glacier and Environmental Research, Seattle, WA and Juneau, AK



Alaskan Air Guard unloads oversnow vehicle from ski-cargo plane, upper Taku Glacier, Juneau Icefield. (FGFR photo)

Non-Profit
Organization
U.S. Postage
PAID
MOSCOW, IDAHO 83843
Permit No. 120



Advancing Taku and Hole-in-the-Wall Glaciers and receding Norris Glacier, 1890 to 1995.

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, with relevant lectures. Courses are offered in field geology, glaciology, geomorphology, surveying and selected 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 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, Alaska-Yukon border.

Special topics considered are: Environmental Earth Sciences; Terrestrial and Glacial Photogrammetry; Glacier Surveys and Mapping; Arctic 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 alpine and arctic environment through field 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 at the high school, undergraduate and graduate student levels. The National Science Foundation Young Scholars Program offers full and partial scholarships for outstanding high school juniors. A few scholarships are available for high school seniors through the U.S. Army Research Office's Research in Engineering Apprenticeship Program and the Rotary Club of Juneau, Alaska. There are additional awards for undergraduates and graduate students supported by the Foundation for Glacier and Environmental Research and the Glaciological Institute. 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.

A selected number of additional places are available at a subsidized field fee of **\$3,400** for the 8-week session. All 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 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 aluminum-sheathed and well-insulated wooden buildings exist at some field sites. Temporary shelters and tents are used at trail camps. A 6000-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, 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 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. 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.



Seismic geophysics on the upper Taku Glacier.