US Army Corps of Engineers®
Engineer Research and Development Center

The Army Corps of Engineers Supports the International Polar Year

US Army ERDC

The U.S. Army Corps of Engineers' Engineer Research and Development Center (ERDC) is representing the interagency and international Department of the Army for International Polar Year (IPY) activities. The ERDC Cold Regions Research and Engineering Laboratory (CRREL) serves as the Cold Regions Center of Expertise for the Army and is the major focal point of Army IPY activities. The extent of ERDC and Army involvement in IPY is still evolving. The following are just a few of the areas where ERDC and Army will contribute:

Programs

Observing Systems

- **Robotics for extreme environments**

CRREL engineers are engaged in analytic and experimental studies in scientific areas that will expand the development and capabilities of autonomous systems for making scientific measurements in the Polar Regions. A kickoff session on IPY Robotics was held at the 2006 European Geophysical Union meeting (Vienna, Austria, April 2006). The point of contact for this program is Dr. James Lever, James.H.Lever@erdc.usace.army.mil.

- **Arctic observing systems**

CRREL engineers will design and produce autonomous sea ice mass balance buoys for deployment in the Arctic Ocean. These buoys will monitor and attribute changes in sea ice thickness and transmit the data to scientists around the world, forming an important component of the Global Earth Observing System. The point of contact for this program is Ms. Jackie Richter-Menge, Jackie.A.Richter-Menge@erdc.usace.army.mil.

Education & Outreach

- **Arctic Science Summit Week (ASSW), www.assw2007.org/**

Every year decision-makers in circum-Arctic countries meet to plan and coordinate international scientific endeavors, hear about recent scientific discoveries, and share in the enjoyment of local culture. During the week of March14-20, 2007, the Arctic Science Summit Week will occur in the United States, and Dartmouth College and ERDC-CRREL will host the meeting in Hanover, N.H. The point of contact for this program is Dr. Mary Albert, Mary.R.Albert@erdc.usace.army.mil.

- **Contaminants in Freezing Ground: 6th International Conference**

Every two years, an international group meets for the purpose of sharing new methods and technologies for the responsible management, remediation, and prevention of the contamination of soil, surface water, and groundwater in regions with seasonal frost and permafrost. This international meeting will be hosted by ERDC-CRREL June 29-July 3, 2008. The point of contact for this program is Dr. Charles M. Reynolds,

Charles.M.Reynolds@erdc.usace.army.mil and the program website is at CFG6info@erdc.usace.army.mil.

- **High school, undergraduate and graduate students**

ERDC-CRREL has long been active in many programs for mentoring students of all levels. During the IPY years we will make a special effort to involve our High School Apprenticeship, Women in Science Program, and graduate students in internationally coordinated polar research projects at CRREL. The point of contact for this program is Dr. Mary Albert, Mary.R.Albert@erdc.usace.army.mil.

Applied Technology & Engineering

- **Snow hydrology for stability operations**

Climate variability and environmental change are obvious in the Arctic, but are also very evident in water supply issues in the western US as well as in locations where DoD stability operations are heavily dependent on the proper management of water resources, such as Iraq and Afghanistan. Applied Army technology will provide state-of-the-art tools and guidance for use in addressing water supply issues confounded by climate variability in national and international settings. A web site is being developed to teach children and adults around the world how to measure snow depth and water equivalent, and how to contribute their measurements to a database that will improve modeling for predicting stream flow conditions. The point of contact for this program is Dr. Steven Daly, Steven.F.Daly@usace.army.mil.

- **Water supply tools**

Climate is a key driver of water management issues that is especially significant when combined with other drivers of change in supply and demand. The Flood and Coastal Storm Damage Reduction Research Program, led by ERDC, is developing analytical and numerical methods to support reservoir reallocation agreements, environmental restoration studies, and water control projects in areas where water supply is impacted by climate variability. The point of contact for this program is Dr. Kate White, Kathleen.D.White@erdc.usace.army.mil.

- **Cold regions environmental testing and evaluation**

ERDC-CRREL will support environmental quality in cold regions through analyses and development of technologies for assessing and restoring areas that have become polluted. One such area involves use of CRREL's unique cold rooms to evaluate systems and techniques for detection of oil under ice and methodologies for cleaning up oil spills in ice infested waters. These tests would be expensive and difficult to do in the field, yet critical for quick detection and response to an oil spill, minimizing the impact of a spill on the fragile polar environment. The point of contact for this program is Mr. Thomas J. Tantillo, Thomas.J.Tantillo@erdc.usace.army.mil.

- **High latitude civil infrastructure challenges**

The warming of the Arctic is changing soil and permafrost conditions that greatly impact traditional ways of traveling and building. CRREL research efforts include investigating the impact of traffic on permafrost and the impact of changing soil conditions on trafficability. We also hope to conduct infrastructure research for roads and foundations subject to changing environmental conditions involving changing conditions of permafrost and icing. The point of contact for this program is Dr. Sally Shoop, Sally.A.Shoop@erdc.usace.army.mil.

For more information

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