MORE SCIENCE AT UTSA Seminar Series

Tuesday, April 29, 2008

1:00 – 2:00 p.m. Loeffler room BSB 3.03.02

Guest Speaker: Cathleen Geiger

University of Delaware in Newark

Dr. Cathleen Geiger received her M.S. in Polar Physical Oceanography from the University of Bergen in Norway and her Ph.D. from the Thayer School of Engineering at Dartmouth College in Hanover, NH, USA. She is currently a Research Associate Professor in the Department of Geography at the University of Delaware in Newark, DE. Through a Cooperative Research, Engineering, and Development Agreement (CRADA) she is currently working from the Cold Regions Research and Engineering Laboratory in Hanover, NH as part of International Polar Year (IPY) activities. This is the only national laboratory in the country which focuses on cold regions engineering and research. Her main area of study is sea ice with a focus on the dynamic and thermodynamic processes as part of the complex system at the air-ice-sea interface. Her research projects often focus on research and development ideas that both support the discovery elements of science but also advance the development of operational tools necessary to facilitate scientific discovery. She is collaborating with Professor Stephen Ackley at UTSA as one of the co-investigators of an IPY project which aims to examine the Sea Ice Mass Balance of the Antarctic (SIMBA) in the vicinity of the Bellingshausen, Amundsen, and Ross Seas also known as the BeAR Massif.

Near-real time support of field operations in the Polar Regions

Polar research has long been associated with remoteness, vastness, and extreme cold. Engaging in high quality research under these conditions requires lots of planning, costly logistics, and a considerable investment in safety. Most experiments in the Polar Regions are designed to be simple but extremely robust. Communication systems such as Ethernet connections, wi-fi, and cell phone towers do not exist there. The one exception is the availability of satellite phones which operate at a rate 3 times slower than telephone land lines. However, for the polar researcher this is a major breakthrough. For the first time outside of an expensive military or commercial venture, it is now conveniently possible to provide land-based logistical support during polar field programs (or other remote places on earth). An example of this capability will be presented from each pole (north and south) for a comparison of current capabilities and limitations. Experience gained from these experiments can be used to take advantage of the narrow communication bandwidth as an optimization parameter to constrain the research problem to essential elements. In a world of information overload, it is interesting to explore the potential benefits of an “information choke point” as a means of optimizing complex problem solving.