It has been a very busy summer at the Center with a full schedule of summer short course lectures for undergraduate and graduate students, field experiments in Greenland, and student recruitment. Dr. Pannir Kanagaratnam decided to permanently return to Malaysia to be with his family. He contributed to the success of Center research programs and will definitely be missed. We wish him all the best in his future endeavors. We are very pleased to have Susanne Buchardt, a visiting scholar and Ph.D. student from the University of Copenhagen, in residence at CReSIS for the fall semester. We have also had several visitors in residence at CReSIS this summer including Lora Koenig, a graduate student from the University of Washington, and Dr. Gordon Oswald, a visiting scientist from the University of Maine. Their stories are included in this newsletter. I am happy to introduce Mr. Stephen Ingalls, who joins us as the Administrative Director for the Center and Ms. Ferdouz Vuilliomenet has joined as a Program Assistant. Please join me in welcoming them to the Center.

-Prasad Gogineni

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**Director’s Message**

The Center for Remote Sensing of Ice Sheets is made possible by a five-year award from the National Science Foundation (#0424589), which began in June, 2005.

**CReSIS Welcomes New Associate Director for Administration Stephen Ingalls**

“\[quote\]
I would like to be able to tell people how climate change might affect their futures. It is something very important\[endquote\],” said Ingalls about the mission of the Center.

Some goals Ingalls hopes to accomplish include organizing the staff, sharing the research of the Center with the public, increasing diversity, and educating students of all ages about science, technology, engineering and mathematics. “I want kids to grow up thinking it’s cool to be a scientist, just like they might think it’s cool to be a professional basketball player,” said Ingalls.

Team building and maximizing each person’s potential are also very important to Ingalls. “I want us to take seriously the work we are doing here, but we should not take ourselves too seriously. It is also important to have fun.”

Ingalls credits most of his administrative abilities to his 22 year career in the United States Army, from which he retired in 2004 as a Lieutenant Colonel. He received his BA in Science with an Aerospace Engineering concentration from West Point and then went on to receive his MA in Aerospace Engineering from the Georgia Institute of Technology. He was an Assistant Professor at West Point, teaching senior-level aerospace engineering courses and he later taught military tactics at the Army’s Command and General Staff College at Fort Leavenworth, Kansas.

Ingalls spent most of his time in the military flying attack helicopters on a variety of assignments, both within the United States and internationally.

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by Beth Ruhl

In September, CReSIS appointed a new Associate Director for Administration, Stephen Ingalls, to better organize the Center and to help spread its message about climate change.
**Note: Thomas Overly, pictured above, and Chandini Veeramachaneni, are both research assistants for CReSIS who visited Greenland on a radar mission in the spring of 2006.**

by Thomas Overly

Participation in the Spring 2006 radar missions over Jakobshavn Isbrae in west Greenland exposed Chandini and me to the application of radars in the field and also afforded us the opportunity to experience the actual place that is Greenland.

The vast history of climate knowledge housed within Greenland’s continental ice sheet often defines our understanding of Greenland. The wealth of scientific data derived from the ice sheet, as well as the saying “Iceland is green and Greenland is ice,” lead us to perceive Greenland as uninhabitable.

Despite these perceptions, extreme winter temperatures, and 85% of its land being covered by ice, over 56,000 people make the country of Greenland their year-round home. Elements of nature, social relations, and meaning combine to form the complex place called Greenland.

The country’s large landmass and north-south extent allow for huge variations in both humidity and temperature. The majority of Greenland has highly varied mountain vegetation, reminiscent of northern Scandinavia.

Wildlife consists of arctic hare, arctic fox, musk ox, reindeer, caribou, polar bear, and over 50 species of birds. The hunting industry is based on seals and whaling, while the fishing industry relies on prawn and halibut.

Because it is a former territory of Denmark, Greenland’s political system, schools, and economy resemble the Danish system.
was a daunting welcome. Temperatures rocketed past the 100-degree mark for the first two weeks of Buchardt’s stay in Lawrence.

“It was overwhelming,” Buchardt said. “I won’t lie.” She eventually grew acclimated to her adopted culture and focused on something much more familiar to her – glacial research. Buchardt, in the middle of her Ph.D. thesis entitled “Mass Balance and Melt of the Greenland Ice Sheet: A Major Contributor to Sea-Level Change,” hopes to extend her knowledge of radars and remote sensing technology by working closely with CReSIS engineering students. She is also auditing a course in microwave remote sensing.

“I have a strong glaciological background because of my work done in Greenland and Denmark, but I would really like to supplement that with a better understanding of radars and signal processing,” Buchardt said. “Working with graduate students at KU will introduce me to that, which should certainly help me academically.”

Buchardt has spoken English since her days in primary school, and this is her second visit to the United States however, delving into such a foreign culture, all the while attempting to fit in and acquire a sense of normalcy, has been a trying experience for her.

“It’s starting over somewhere completely new,” Buchardt said. “But the people here are very accepting and friendly, much more so than at home. I think if there’s anything I want to take back with me, culturally speaking, it’s to let your guard down a little more easily with people.”

The University of Copenhagen is one of four international partners with CReSIS in an exchange program funded by the National Science Foundation.
by Beth Ruhl

Lora Koenig, a doctoral candidate at the University of Washington, came to CReSIS in August to learn how to use a 35-GHz Frequency-Modulated Continuous Wave (FMCW) Radar. She will use the radar to take extinction length measurements along the US ITASE traverse in Eastern Antarctica starting in November.

"Extinction length measurements are important because they determine how deeply the space-borne passive microwave sensors record information about firm properties on ice sheets," said Koenig.

"It tells us the extent to which snow properties such as temperature, density, and grain size need to be known in order to better model and understand passive microwave brightness temperature."

The 35GHz radar that Koenig is using operates at the same frequency as passive microwave satellites that are currently in orbit. It allows for a comparison between ground-based measurements and space-borne measurements from the satellites.

"I study snow and ice properties because I am interested in how changes in snow structure relate to changes in climate. Understanding how brightness temperatures change over time could produce a good climate data set over both ice sheets," said Koenig.

CReSIS was the only place Koenig knew of that had used a 35-GHz radar on ice sheets before.

"I chose to come to CReSIS because the people and the work that goes on at CReSIS are highly regarded within the ice sheet community," Koenig said of the Center.

Koenig was born in Eugene, OR, but she has recently started to call Seattle, WA, home. She received her BA in Mathematics from Linfield College. She then went on to receive her MA in Geography from the University of Utah where she wrote her thesis on "The Evaluation and Development of Passive Microwave Snow Water Equivalent Algorithms in the Kuparuk River Watershed, Arctic Alaska, USA."

Koenig is currently working on her doctoral degree at the Department of Earth and Space Science at the University of Washington. Her proposed dissertation is tentatively titled "Ice Sheet Firn Properties from Passive Microwave Remote Sensing."

She is also a Graduate Research Assistant at the University of Washington.

### June-August 2006 Talks and Events

**Conferences Held**

---06/19/06 – 06/22/06: Dan Wildcat, "Impact of Climate Change on Indigenous Peoples," Haskell Indian Nations University, Lawrence KS

---06/06/06: Peter Adany, "Matlab Tutorial: Variables and Functions," CReSIS at KU, Lawrence, KS

---06/07/06: Jilu Li, "Matlab Tutorial: Data Input and Output, Files," CReSIS at KU, Lawrence, KS

---06/09/06: Victor Jara Olivares, "Matlab Tutorial: Plots and Graphs," CReSIS at KU, Lawrence, KS

---06/12/06-06/17/06: Carol Landis, "GS 850 Course," and "Graphs," CReSIS at KU, Lawrence, KS

---06/13/06: Ellen Mosely-Thompson, "Climate Change, Past, Present and Future," and "Climate Change as Seen in the Cryosphere," Ohio State University, Columbus, OH

---06/15/06: David Braaten, "Climate and Snowfall," CReSIS at KU, Lawrence, KS

---06/19/06: David Braaten, "PRISM and CReSIS: Ice Sheet Remote Sensing from Top to Bottom," Haskell Indian Nations University, Lawrence KS

---06/21/06: David Braaten, "Fieldwork in Antarctica," Schieffelbusch Institute for Communication Camp for 4-12 year-old children, Lawrence, KS

---06/20/2006: Cornelis van der Veen, "Glacier Motion and Mass Balance," CReSIS at KU, Lawrence, KS

---06/21/06: David Braaten, "Fieldwork in Antarctica," Schieffelbusch Institute for Communication, Conference, Chicago, IL: Chenie Arthur and Bryce Carmichael


---07/11/06: Carol Landis, "Lesson Development for CReSIS Datasets," Byrd Polar Research Center at Ohio State University, Columbus, OH

---07/12/06: David Braaten, "Writing Abstracts," CReSIS at KU, Lawrence, KS

---07/18/2006: Ellen Mosely-Thompson, "Climate Change: How to Read the Evidence?" Saint John's Episcopal Church, Columbus, OH

---07/27/06: Nancy Alroya, "Robotic Formations," National Technical Association Conference, Chicago, IL

---08/01/06: Dr. Richard Colgren, "CReSIS UAV Activities," Aero Institute, Palmdale, CA

---08/25/06: Chris Gifford, "Robotic Seismic Sensors for Polar Environments," CReSIS at KU, Lawrence, KS

---08/31/06: David Braaten, "Issues and Impacts of Global Warming," KU Business School, Lawrence, KS

---09/06/06: Claude Laird, "Greenland 2006", http://cresis.ku.edu/knowledge/journals_2006/