Mathematics and the Melting Polar Ice Caps

Kenneth M. Golden, Department of Mathematics, University of Utah

In September 2012, the area of the Arctic Ocean covered by sea ice reached its lowest level ever recorded in more than three decades of satellite measurements. In fact, compared to the 1980s and 1990s, this represents a loss of more than half of the summer Arctic sea ice pack. While global climate models generally predict sea ice declines over the 21st century, the precipitous losses observed so far have significantly outpaced most projections.

During his lecture, Golden will discuss how mathematical models of composite materials and statistical physics are being used to study key sea ice processes and advance how sea ice is represented in climate models. This work is helping to improve projections of the fate of Earth's ice packs and the response of polar ecosystems. In addition, a video from a 2012 Antarctic expedition where sea ice properties were measured will be shown.

April 3, 2013 / 7:00 p.m.

175 Willey Hall • 225 19th Avenue S. • West Bank, University of Minnesota, Minneapolis

This lecture is a Math Awareness Month "Mathematics of Sustainability" activity at the IMA.

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Math 2013

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University of Utah

Kenneth M. Golden is a professor of mathematics and an adjunct professor of bioengineering at the University of Utah. His scientific interests lie in sea ice, climate change, composite materials, phase transitions, and inverse problems. He has published 56 papers in mathematics, physics, geophysics, electrical engineering, mechanical engineering, and biomechanics journals, and given more than 300 invited lectures on six continents.

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University of Minnesota
400 Lind Hall
207 Church Street, SE
Minneapolis, MN 55455

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