

Research Areas

- [Biological Sciences](#)
- [Computer & Information Science & Engineering](#)
- [Education and Human Resources](#)
- [Engineering](#)
- [Environmental Research & Education](#)
- [Geosciences](#)
- [International & Integrative Activities](#)
- [Mathematical & Physical Sciences](#)
- [Social, Behavioral & Economic Sciences](#)

Learning Resources

- [Film, TV, Exhibits & More!](#)
- [Slideshows & Photo Galleries](#)
- [Classroom Resources](#)
- [Funding for Research on Learning in Formal & Informal Settings](#)

Funding & Awards

Funding Info

- [Search Funding Opportunities](#)
- [Browse Funding Opportunities A-Z](#)
- [Recent Funding Opportunities](#)
- [How to Prepare a Funding](#)



- [Proposal](#)
- [Grant Proposal Guide](#)
- [Submit a Proposal to FastLane](#)

Award Info

- [Managing Awards](#)
- [Award & Administration Guide](#)
- [Search Awards](#)
- [Award Statistics \(Budget Internet Info System\)](#)

News & Discoveries

- [Recent News](#)
- [Recent Discoveries](#)
- [Multimedia Gallery](#)
- [Special Reports](#)

Contact Us

- [Staff Directory](#)
- [Organization List](#)
- [Visit NSF](#)
- [Work at NSF](#)
- [Do Business with NSF](#)
- [Press](#)
- [Inspector General Hotline](#)
- [How Do I ...?](#)

The National Science Foundation
4201 Wilson Boulevard, Arlington,
Virginia 22230, USA

Tel: (703) 292-5111

FIRS: (800) 877-8339

TDD: (800) 281-8749

SEARCH



- [Home](#)
- [Funding](#)
 - [Search Funding Opportunities](#)
 - [Browse Opportunities A-Z](#)
 - [Recent Opportunities](#)
 - [Due Dates](#)
 - [Preparing Proposals](#)
 - [Policies & Procedures](#)
 - [Merit Review](#)
 - [Interdisciplinary Research](#)
 - [Transformative Research](#)
 - [About Funding](#)
- [Awards](#)
 - [About Awards](#)
 - [Managing Awards](#)
 - [Policies & Procedures](#)
 - [Award Conditions](#)
 - [Search Awards](#)
 - [Presidential & Honorary Awards](#)
 - [Award Statistics \(Budget Internet Info System\)](#)
- [Discoveries](#)
 - [Discoveries Home](#)
 - [Arctic & Antarctic](#)
 - [Astronomy & Space](#)
 - [Biology](#)
 - [Chemistry & Materials](#)
 - [Computing](#)
 - [Earth & Environmental Science](#)
 - [Education](#)
 - [Engineering](#)
 - [Mathematics](#)
 - [Nanoscience](#)
 - [People & Society](#)
 - [Physics](#)
 - [Search Discoveries](#)
 - [About Discoveries](#)
- [News](#)
 - [News Home](#)
 - [For News Media](#)
 - [Multimedia Gallery](#)
 - [Special Reports](#)
 - [News from the Field](#)
 - [Research Overviews](#)
 - [Speeches & Lectures](#)

- [NSF Current Newsletter](#)
- [NSF-Wide Investments](#)
- [News Archive](#)
- [Search News](#)
- [Publications](#)
 - [Publications Home](#)
 - [Search Publications](#)
 - [Obtaining Publications](#)
- [Statistics](#)
 - [NCSES Home](#)
 - [NCSES Data](#)
 - [NCSES Publications](#)
 - [NCSES Surveys](#)
 - [NCSES Topics](#)
 - [Search NCSES](#)
 - [About NCSES](#)
- [About NSF](#)
 - [About NSF](#)
 - [History](#)
 - [Visit NSF](#)
 - [Contact NSF](#)
 - [Staff Directory](#)
 - [Organization List](#)
 - [Career Opportunities](#)
 - [Contracting Opportunities](#)
 - [NSF & Congress](#)
 - [Budget](#)
 - [Performance Assessment Info](#)
 - [Partners](#)
 - [Broadening Participation/Diversity](#)
 - [Office of Diversity & Inclusion](#)
- [Fastlane](#)



**SCIENCE
NATION**

The Online Magazine That's All About Science for the People



[About Science Nation](#)

[Get eMail Updates](#)

[Contact Us](#)

[More Special Reports](#)

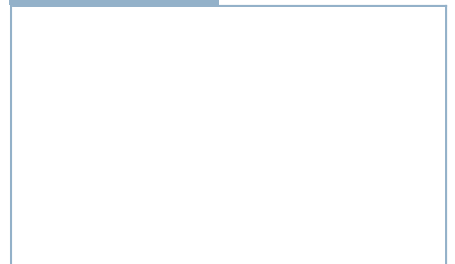
[Science360 News](#)

January 13, 2014

Mathematician combines
love for numbers and
passion for sea ice to
forecast melting

New mathematical methods can be applied

RELATED MULTIMEDIA



SCIENCE NATION TOPICS

[Archive](#)[RECON](#)[Sea Ice Math](#)[Three-D Tissue](#)[Waterfall-climbing fish](#)[Mind-controlled
Quadcopter](#)[Chronic Care](#)[Youth Radio](#)[Biofilms](#)[Chemiscope](#)[Tsunami Tests](#)

broadly to climate, medicine, aircraft design and more

People don't usually think of mathematics as an occupation that requires survival skills, but they might change their minds if they saw Kenneth Golden and his daring research team in action!

The mathematician has spent the past 40 years studying sea ice in the north and south Polar Regions. With support from the National Science Foundation (NSF), he and his team at the University of Utah are developing mathematical formulas to help scientists make more accurate predictions about how quickly sea ice will melt as our planet continues to warm. And, the mathematical methods developed from the research in these rugged places can be applied broadly, from designing stealthier planes to practicing better medicine.

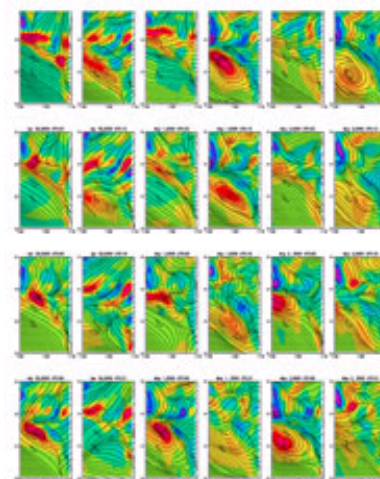
The research in this episode was supported by NSF award [#1009704](#), Phase Transitions in Composite Media; NSF award [#0940249](#), Collaborative Research: Mathematics and Climate Research Network; and NSF award [#0934721](#), COLLABORATIVE RESEARCH: Mathematics and Electromagnetics for Monitoring Transport Processes in Sea Ice and funded through the American Recovery and Reinvestment Act of 2009.

Miles O'Brien, Science Nation Correspondent
Marsha Walton, Science Nation Producer

[Enlarge image](#)

Despite the rapid retreat of Arctic sea ice in recent years, the ice may temporarily stabilize or somewhat expand at times over the next few decades, recent research indicates. A computer modeling study reinforces previous findings by other researchers that the level of Arctic sea ice loss observed in recent decades cannot be explained by natural causes alone, and that the ice will eventually melt away during summer if the climate continues to warm. Read more in this [news release](#).

Credit: NOAA

[Enlarge image](#)

Atmospheric prediction has improved immeasurably. Whether you're interested in tomorrow's high or the global heat index a decade from now, forecasters can now predict the climate with far greater accuracy. Masao Kanamitsu, a veteran of the atmospheric modeling world and a leading researcher at Scripps Institution of Oceanography, and his colleagues in the atmospheric community use a method called "downscaling" to improve regional predictions. The technique takes output from a global climate model and adds information--at scales smaller than the grid spacing--to resolve important features like clouds and mountains. Find out more in this [discovery](#).

Credit: Courtesy of Masao Kanamitsu, Scripps Institution of Oceanography

RELATED LINKS

[Mathematical Sciences \(DMS\)](#)

The Division of Mathematical Sciences (DMS) of the Directorate for Mathematical and Physical Sciences supports a wide range of projects aimed at developing and exploring the properties and applications of mathematical structures. Most of these projects are those awarded to single investigators or small groups of investigators working with graduate students and postdoctoral researchers. Programs such as Mathematical Sciences Infrastructure handle activities that fall outside this mode.

[Powerful mathematical model greatly improves predictions for](#)

[species facing climate change](#)
University of California, Los Angeles, life scientists and colleagues have produced the most comprehensive mathematical model ever devised to track the health of populations exposed to environmental change.

[About Science Nation](#) | [Contact Us](#) |  [Get Science Nation Updates by Email](#)

Any opinions, findings, conclusions or recommendations presented in this material are only those of the presenter grantee/researcher, author, or agency employee; and do not necessarily reflect the views of the National Science Foundation.

- [Funding](#)
- [Awards](#)
- [Discoveries](#)
- [News](#)
- [Publications](#)
- [Statistics](#)
- [About NSF](#)
- [Fastlane](#)

- [Research.gov](#)
- [USA.gov](#)
- [BusinessUSA](#)
- [National Science Board](#)
- [Recovery Act](#)
- [Budget and Performance](#)
- [Annual Financial Report](#)

- [Web Policies and Important Links](#)
- [Privacy](#)
- [FOIA](#)
- [NO FEAR Act](#)
- [Inspector General](#)
- [Webmaster Contact](#)
- [Site Map](#)



The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749

- [Text Only Version](#)
- [View Mobile Site](#)

