

Short Bio

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CATHLEEN A. GEIGER, PH.D.

<http://www.udel.edu/Geography/geigerindex.html>

Professional Preparation:

Southampton College of Stony Brook SUNY, Magna cum Laude, B.S., 1985

University of Bergen, Norway, Polar Oceanography, M.S., 1990

Thayer School of Engineering, Dartmouth College, Ph.D., 1996

USRA Visiting Scientist, NASA/Goddard, Post-Doc, 1997-1998

Appointments:

Research Associate Professor Feb 2007-Present, Geography, University of Delaware (UD), Newark, DE

Research Geophysicist (Term Appointment) 2003-2006, USACE Cold Regions Research and Engineering Laboratory, Snow and Ice Branch, Hanover, NH

Research Fellow (2003-2006), Associate Scientist (07/00-12/02), and Limited-Term Researcher (11/98-06/00) all at the University of Delaware, Center for Climatic Research, Newark, DE

Research Assistant (09/85-07/90), Dartmouth College, Thayer School of Engineering, NH

Scientific Assistant (08/85-07/90), Nansen Remote Sensing Center, University of Bergen, Norway

Technical Assistant (01/83-08/85), Brookhaven National Laboratory, Long Island, NY

Research Activities:

Expertise stems from a unique ability to analyze complex systems from multiple perspectives and scales. One such complex system that Geiger has studied for several years is Arctic and Antarctic sea ice which impacts the air-sea boundary interface of the polar regions. The mass balance of sea ice between these two large geophysical systems requires solutions in dynamics, thermodynamics, and heat, mass, momentum transfer. This work is orchestrated through a virtual laboratory which leverages academic, federal, and international synergies.

Field experience includes eight high-latitude experiments around the Arctic marginal seas (Bering, Chukchi, Fram Strait, Greenland, and Boreas Basin) and the APLIS 2007 ice camp (Beaufort Sea). Geiger also served as one of two land coordinators for 2007 IPY Antarctic SIMBA Project (Chief Scientist Steve Ackley). These efforts include numerous contributions to data archives at NSIDC since the MIZEX programs in the 1980s.

As an educator at the University of Delaware since 1998, Geiger continues to serve on student thesis committees to increase understanding in sea ice geophysics and climate variability. This service includes thesis advisor for four Master's students and seven Ph.D. students. For the general public and K-12, she has presented over 40 talks in the last 4 years through IPY activities. Field work opportunities include participation in the PolarTREC Care Network to host teachers in research field experiences and bring these experiences back to the classroom.

Since 1996, her expertise is sought to review research proposals for NSF and NASA and journal articles for JGR, IGS, JPO, Remote Sensing of the Environment, Cold Regions Science and Technology. She also serves as Advisory Member for Cryosphere Editor's Choice of AGU (since June 2006) and is currently guest associate editor for DSR-II (IPY SIMBA/SIPEX) and JGR (IPY SEDNA).

Recent Publications (students underlined)

Stampone, M. D., **C. A. Geiger**, T. L. DeLiberty (*next upcoming submission*), Spatial resolution errors within gridded in situ and remotely sensed Antarctic sea-ice thickness estimates, to *Polar Geography*.

Geiger, C. A., J. Richter-Menge, S. Hendricks, C. Haas, H.-R. Mueller, T. Martin, and B. Elder (*under review*), Impact of instrument footprints from electromagnetic induction sea ice thickness retrievals, under review to *Journal of Geophysical Research – SEDNA special issue*, Paper No. 2011JC007149.

Doble, M. J., H. Skourup, P. Wadhams, **C. Geiger** (*under review*), The relation between sea ice surface elevation and draft: Results from high-resolution mapping by co-incident AUV sonar and airborne scanning laser, *J. of Geophys. Res. – SEDNA special issue*.

Thomas, M. V., C. Kambhamettu, **C. Geiger** (*accepted, 2011*), Motion tracking of discontinuous sea ice, Transactions on Geoscience and Remote Sensing, Manuscript: TGRS-2010-00277.R2

Hutchings, J. K., A. Roberts, **C. A. Geiger**, J. Richter-Menge (*accepted, 2011*), Spatial and temporal characterisation of sea ice deformation, *accepted to Annals of Glaciology special issue on sea ice processing and biogeophysical connections*.

DeLiberty, T. D., **C. A. Geiger**, S. F. Ackley, A. P. Worby, M. VanWoert (2011), Estimating the annual cycle of sea ice thickness and volume in the Ross Sea, Deep Sea Research II: Topical Studies in Oceanography, Antarctic Sea Ice Research during the International Polar Year 2007-2009, vol 58, Issue 9-10, May 2011, Pages 1250-1260
[doi:10.1016/j.dsr2.2010.12.005](https://doi.org/10.1016/j.dsr2.2010.12.005).

Geiger, C. A. (2011), Book Review of “On Sea Ice” by W. F. Weeks, International Glaciological Society, 57(201), 193-194.

Geiger, C. A. (2010), Coincident Airborne-Ground EM and Drill Hole Data from 1-km-scale SEDNA survey lines, <http://dw.sfos.uaf.edu/sedna/>, digital media.

Hutchings, J. K., **C. A. Geiger**, A. Roberts, J. Richter-Menge and B. Elder (2010), On the spatial and temporal characterization of motion induced sea ice internal stress, proceedings from ICETECH10, International Conference and Exhibition on Performance of Ships and Structures in Ice by SNAME, 20-23 Sep, Anchorage, AK, paper no. 166, 8 pages.

Geiger, C. A., J. Richter-Menge, T. DeLiberty, B. Elder, J. Hutchings, A. Lawson, J. Rodrigues, N. Toberg, and P. Wadhams (2010), A case study testing the impact of scale on arctic sea ice thickness distribution, proceedings of 20th IAHR International Symposium on Ice held in Lahti, Finland, June 14 to 18, 2010, 15 pages.

Huffman, L., J. Baeseman, K. Timm, J. Warburton, with contributions from M. Albert, M. H. Almeida, P. Azinhaga, R. Bindschadler, P. Dionísio, R. Frisch-Gleason, **C. Geiger**, C. Hamilton, T. Haste, J. Hubbard, M. Jeffries, L. Murphy, M. M. Passas, M. Prevenas, M. Raymond, R. Salmon, F. Silva, C. Teixeira, K. Tolstein, B. Trummel, J. Xavier, S. Zicus (2010), Chapter 2: Tips and Tricks in the Classroom, in: Polar Science and Global Climate - An International Resource for Education and Outreach. B. Kaiser (ed), Pearson, London, 129-141.

Geiger, C. A. (2010), Satellite derived motion analysis using Argos ice buoys, in Arctic Forum , Volume 69, pages 6-7.

Rohith MV, Gowri Somanath, Chandra Kambhamettu, **Cathleen Geiger**, Dave Finnegan (2010). Modified region growing for stereo of slant and textureless surfaces. International Symposium on Visual Computing (ISVC), G. Bebis et al. (Eds.): ISVC 2010, Part I, LNCS 6453, pp. 666-677, Springer-Verlag Berlin Heidelberg.