

# GINNY CATANIA

*University of Texas, Jackson School of Geosciences*  
10100 Burnet Rd., Bldg. 196, Austin TX, 78751, USA.

(512) 471-0403

gcatania@ig.utexas.edu

www.ig.utexas.edu/people/staff/gcatania

---

## PROFESSIONAL POSITIONS HELD

**2009-present** Assistant Professor, Dept. of Geosciences, University of Texas  
**2005-present** Research Associate, Institute for Geophysics, University of Texas  
**2004-2005** Postdoctoral Scholar, Earth Sciences, Univ. of California (Santa Cruz)  
**1999-2004** Teaching and Research Assistant, Geophysics, University of Washington  
**1995-1997** Teaching Assistant, Geology, University of Minnesota

## EDUCATION

**1999-2004** Ph.D. *Geophysics* University of Washington, Seattle WA  
**1995-1998** M.Sc. *Geology* University of Minnesota, Minneapolis, MN  
**1990-1994** B.Sc. *Geography* University of Western Ontario, London, ON

## RESEARCH STATEMENT

My research program focuses on understanding the physics of glacier motion in order to improve our understanding of ice sheet mass loss. I am particularly interested elucidating the ice sheet/glacier changes that arise from either natural or forced variability. In addition, I also examine the basic physical processes that control ice motion and determine the history of ice flow to put into context recent changes occurring in the polar regions. My group employs a suite of techniques to pursue these research interests including ground-based geophysics (GPS, radar, borehole techniques), remote-sensing analysis and laboratory experiments.

## HONORS & AWARDS

**2012** UTIG Director's Circle of Excellence Award  
**2011** John E. "Brick" Elliot Centennial Endowed Professorship (\$1,500)  
**2011** Rosamond Allen Haertlein and Jeanne Allen Faculty Fund (\$950)  
**2009** UTIG Outstanding Research Scientist  
**2007** Jackson School of Geosciences Research Excellence Fellowship (\$20,000)  
**2002** University of Washington Johnston Research Fellowship (\$4,000)  
**1997** Outstanding Teaching Award, University of Minnesota  
**1996** Gibson Hydrogeology Endowment, University of Minnesota (\$2,000)

## PUBLISHED ARTICLES:

**Researcher ID:** B-9787-2008; **H-index:** 11; **Total citations:** 264

\* indicates UT graduate student advisee

o indicates UT post-doc advisee

† indicates UT undergrad advisee

1. P.T. Fretwell and 54 others, *in review*, BEDMAP2: Improved bed, surface and thickness datasets for Antarctica, *The Cryosphere*.
2. B. Wagman\*, **G. Catania**, *in review*, Impact of subglacial hydrology on force balance for a physically-modeled ice stream, *Annals of Glaciology*.
3. J.D. Gulley<sup>o</sup>, M. Grabiec, J.B. Martin, J. Jania, **G. Catania**, P. Glowacki, 2012, The effect of discrete recharge by moulins and heterogeneity in flow-path efficiency at glacier beds on subglacial hydrology, *Journal of Glaciology*, **58**(211), 926-940.

4. J.D. Gulley<sup>o</sup>, P. Walthard, J. Martin, A. Banwell, D. Benn, **G. Catania**, 2012, Conduit roughness and dye-trace breakthrough curves: why slow velocity and high dispersivity may not reflect flow in distributed systems, *Journal of Glaciology*, **58**(211), 915-925.
5. **G. Catania**, C. Hulbe, H. Conway, T.A. Scambos, C.F. Raymond, 2012, Variability in the mass flux of the Ross Sea ice streams, Antarctica, over the last millennium, *Journal of Glaciology*, **58**(210), 741-752.
6. J.A. MacGregor<sup>o</sup>, **G. Catania**, M.S. Markowski<sup>†</sup> and A.G. Andrews<sup>†</sup>, 2012, Widespread rifting and retreat of ice-shelf margins in the eastern Amundsen Sea Embayment between 1972 and 2011, *Journal of Glaciology, profiled paper*, **58**(209), 458-466.
7. M.J. Hoffman, **G. Catania**, T.A. Neumann, L. Andrews\*, J.A. Rumrill, 2011, Links between acceleration, melting, and supraglacial lake drainage of the Western Greenland Ice Sheet, *Journal of Geophysical Research*, **116**(F04035), 10.1029/2010JF001934.
8. R.W. Obbard, K.E. Sieg, I. Baker, D. Meese and **G.A. Catania**, 2011, Microstructural evolution in the fine-grained region of the Siple Dome ice core, *Journal of Glaciology*, **57**(206), 1046-1056.
9. J.A. MacGregor<sup>o</sup>, S. Anandakrishnan, **G. Catania**, D.P. Winebrenner, 2011, The grounding zone of the Ross Ice Shelf, West Antarctica, from ice-penetrating radar, *Journal of Glaciology*, **57**(205), 917-928.
10. **G. Catania**, C. Hulbe and H. Conway, 2010, Grounding line basal melt rates from radar-derived internal stratigraphy, *Journal of Glaciology*, **56**(197), p. 545-554.
11. **G. Catania**, T. Neumann, 2010, Persistent englacial drainage features in the Greenland Ice Sheet, *Geophysical Research Letters*, **37**(L02501), doi:10.1029/2009GL041108.
12. K. Matsuoka, A. Gades, H. Conway and **G. Catania**, 2009, Radar signatures beneath a surface topographic lineation near the outlet of Kamb Ice Stream and Engelhart Ridge, West Antarctica, *Annals of Glaciology*, **50**, P. 98-104.
13. T. Neumann, H. Conway, S. Price, E. Waddington, **G. Catania** and D. Morse, 2008, Holocene accumulation and ice sheet dynamics in central West Antarctica, *Journal of Geophysical Research*, **113**(F02018), doi:10.1029/2007JF000764.
14. **G. Catania**, T. Neumann and S. Price, 2008, Characterizing englacial drainage in the ablation zone of the Greenland Ice Sheet, *Journal of Glaciology*, **54**(187), p.567-578, (profiled paper).
15. S. Price, A. Payne, **G. Catania**, T. Neumann, 2008, Seasonal Acceleration of inland ice via along-flow coupling to marginal ice, *Journal of Glaciology*, **54**(185), p. 213-219, (profiled paper).
16. S. Anandakrishnan, **G. Catania**, R. Alley and H. Horgan, 2007, Discovery of till deposition at the grounding line of Whillans Ice Stream, *Science*, 315, doi:10.1126/science.1138393, 1835-1838.
17. **G. Catania**, T. Scambos, H. Conway and C. Raymond, 2006, The sequential stagnation of Kamb Ice Stream, West Antarctica, *Geophysical Research Letters*, **22** (L14502), doi:10.1029/2006GL026430.
18. **G. Catania**, H. Conway, C. Raymond and T. Scambos, 2006, Evidence for floatation or near-floatation in the mouth of Kamb Ice Stream, West Antarctica, *Journal of Geophysical Research: Earth Surface*, **111**, doi:10.1029/2005JF000355
19. C. Raymond, **G. Catania**, N. Nereson and C.J. Van der Veen, 2006, Bed radar reflectivity across the north margin of Whillans Ice Stream and implications for margin processes, *Journal of Glaciology*, **52**(176), p. 3-10.
20. I. Joughin, R. Bindschadler, M. King, D. Voight, R. Alley, S. Anandakrishnan, H. Horgan, L. Peters, P. Winberry, S. Das and **G. Catania**, 2005, Continued deceleration of Whillans Ice Stream, West Antarctica, *Geophysical Research Letters*, **32** (L22501), doi:10.1029/2005GL024319.
21. **G. Catania**, H. Conway, C. Raymond and T. Scambos, 2005, Surface morphology and internal layer stratigraphy in the downstream end of Kamb Ice Stream, West Antarctica, *Journal of Glaciology*, **51**(174), p. 423-431.

22. **G. Catania**, H. Conway, A. Gades, C. Raymond and H. Engelhardt, 2003, Bed reflectivity beneath inactive ice streams in West Antarctica, *Annals of Glaciology*, **36**, 287-291.
23. D. Winebrenner, B. Smith, **G. Catania**, H. Conway and C. Raymond, 2003, Radio-frequency attenuation beneath Siple Dome, West Antarctica, from wide-angle and profiling radar observations, *Annals of Glaciology*, **37**, 226-232.
24. H. Conway, **G. Catania**, C. Raymond, A. Gades, T. Scambos, H. Engelhardt, 2002, Switch of flow direction of an Antarctic ice stream, *Nature*, **419**, p. 465-467.
25. **G. Catania** and C. Paola, 2001, Braiding under glass, *Geology* (cover story), **29**(3), 259-262.

### INVITED TALKS

*Mass flux variability of the Ross Sea ice streams over the last millennium*, 18th WAIS Workshop, Loveland, CO, Sept. 2011.

*The impact of surface melt on ice sheet change in Greenland*, Stanford Geophysics, CA, Jan 2011.

*Understanding ice sheet change in Greenland*, UT-Dallas, TX, Sept. 2010.

*Towards a Geodetic Understanding of Ice Sheet Change in Greenland*, Center for Space Research, UT-Austin, Oct. 2010.

*Understanding ice sheet change in Greenland*, UT-San Antonio, TX, Oct. 2010.

*Understanding the influence of supraglacial lakes in Greenland using surface-based geophysics and a physical model*, AGU Fall Meeting 2010, C14A-07.

*After Copenhagen: Climate change impacts in Antarctica*, Joint UT-Canada Conference on collaborative responses to climate change policy, TX, April. 2010.

An analogue model for understanding subglacial hydrology, AGU, 90(52), Fall Meeting 2009, C12A-04.

*The impact of surface meltwater on ice sheet change in Greenland*, Columbia University and City University of New York, NY, Nov. 2009.

*Understanding ice sheet change: Greenland*, University of Illinois, Champaign-Urbana, Sept 2009.

*Ice Sheet Dynamics: Impacts on mass balance*, California Institute of Technology, April 2009.

*Understanding Ice Sheet Change: Toward improved predictions*, University of Michigan, January 2009.

Understanding changes in the subglacial environment using internal layers, AGU, 89(53), Fall Meeting 2008, Abstract C42A-04.

*Giant Ice Sheets Threaten Globe?! Climate Change and the Greenland Ice Sheet*, UT Hot Science - Cool Talk outreach lecture series, Sept. 2008.

*Importance of melt-induced acceleration to increased rates of mass loss from Greenland*, Center for Space Research, UT, April 2007.

*Warming-induced ice sheet disintegration: Fact or fiction?*, Duke University, February 2007.

*Ice Sheet Variability: The shutdown of Kamb Ice Stream, West Antarctica*, UTIG, July 2005.

## CONFERENCE PROCEEDINGS:

\* indicates UT graduate student advisee

◦ indicates UT post-doc advisee

† indicates UT undergrad advisee

### 2012

J. MacGregor<sup>◦</sup>, M. Fahnestock, **G. Catania**, S. Price, J. Paden, The gap between ice-penetrating radar observations and the boundary conditions used in ice-sheet models, Abstract EGU2012-1033, presented at 2012 EGU General Assembly, Vienna, Austria, 22-27 April.

F. Walter, S. Husen, M. Meier, K. Plenkers, S. Hiemer, C. Ryser, M. Lüthi, M. Funk, **G. Catania**, and J. Clinton, Seismology on the Greenland ice sheet: results from the deployment of a high-density campaign seismic network in 2011, Abstract EGU2012-7465, presented at 2012 EGU General Assembly, Vienna, Austria, 22-27 April.

M. Lüthi, C. Ryser, **G. Catania**, M. Hoffman, R. Hawley, M. Funk, T. Neumann, A. Bauder, L. Andrews\*, and B. Moriss, Diurnal ice deformation variability driven by subglacial water pressure: Observations from boreholes at the margins of the Greenland Ice Sheet, Abstract EGU2012-7069, presented at 2012 EGU General Assembly, Vienna, Austria, 22-27 April.

### 2011

J.A. MacGregor<sup>◦</sup>, **G.A. Catania**, M.A. Fahnestock, S.F. Price, J.D. Paden, The gap between ice-penetrating radar observations and the boundary conditions used in ice-sheet models, Abstract C11C-068 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

J.D. Nowinski\*, **G. Catania**, J.A. MacGregor<sup>◦</sup>, J.D. Gulley<sup>◦</sup>, M.J. Hoffman, Seasonal speedup of ice near Swiss Camp, Greenland and the link to surface hydrology, Abstract C11D-0693 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

J.D. Gulley<sup>◦</sup>, M. Grabiec, J.B. Martin, J.A. Jania, **G.A. Catania**, P. Glowack, Effects of discrete basal recharge by moulins on subglacial hydrology, Abstract C11E-0705 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

B.F. Morriss, R.L. Hawley, **G.A. Catania**, M. Funk, M.J. Hoffman, M.P. Lüthi, T. Neumann, Pulse-drainage induced surface acceleration near Jakobshavn Isbrae: water availability from supraglacial lakes, Abstract C11E-0708 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

B.M. Wagman\*, **G.A. Catania**, J. Buttles, The influence of subglacial hydrology on ice stream velocity in a physical model, Abstract C11E-0714 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

L. Andrews\*, **G.A. Catania**, R.L. Hawley, M.J. Hoffman, B. Morriss, M.S. Markowski<sup>†</sup>, M.P. Lüthi, M. Funk, T. Neumann, Spatiotemporal heterogeneity of melt water delivery to the bed of the Greenland Ice Sheet, Abstract C13C-02 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

**G.A. Catania**, M.P. Luethi, L.C. Andrews\*, M. Funk, R.L. Hawley, M.J. Hoffman, B. Morriss, T. Neumann, C. Ryser, F.T. Walter, Interpreting summertime speedup of the Greenland ice sheet in the context of borehole observations of the subglacial hydraulic system, Abstract C13C-03 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

E. Logan\*, **G.A. Catania**, L.L. Lavier, Observations and modeling of grounding line basal crevasses: Connections between surface speed, topography and crevasse morphology, Abstract C23D-0523 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

R.L. Hawley, B.F. Morriss, L.C. Andrews\*, **G.A. Catania**, M. Funk, M.J. Hoffman, M.P. Lüthi, T. Neumann, New insights in the Pakitsoq region of the Greenland ice sheet from borehole optical televiewer measurements of in-situ ice properties, Abstract C33A-0622 presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

J.A. MacGregor°, **G. Catania**, M. Markowski†, A. Andrews†, Widespread loss of ice-shelf buttressing in the Amundsen Sea Embayment, West Antarctica between 1972 and 2010, IGS Symposium on the Interaction of Ice Sheets and Glaciers with the Ocean, Scripps CA, June 2011.

## 2010

**G. Catania**, M. Hoffman, T. Neumann, L. Andrews\*, Understanding the influence of supraglacial lakes in Greenland using surface-based geophysics and a physical model, AGU Fall Meeting 2010, C14A-07.

L.C. Andrews\*, **G. Catania**, J.L. Buttles, A. Andrews†, M. Markowski†, A physical model of ice sheet response to changes in subglacial hydrology, AGU Fall Meeting 2010, Abstract C21B-0543.

J.A. MacGregor°, **G. Catania**, M. Markowski†, A. Andrews†, Evolving ice fronts and surface speeds in the Amundsen Sea Embayment between 1972-2010, AGU Fall Meeting 2010, Abstract C11A-0531.

M.J. Hoffman, T.A. Neumann, G.A. Catania, L.C. Andrews\*, Links between acceleration, melting, and supraglacial lake drainage at the western Greenland Ice Sheet, AGU Fall Meeting 2010, Abstract C23B-0619.

## 2009

**G. Catania**, T. Neumann and J. Clark†, Correlating lake drainage and ice velocity near the margin of the Greenland Ice Sheet, AGU, 90(52), Fall Meeting 2009, Abstract C22D-05.

L.C. Sass, S. O'Neel, M.G. Loso, J.A. MacGregor\*, **G. Catania**, and C.F. Larsen, Contributions of climate and dynamics to mass wastage and accumulation zone thinning of Eklutna Glacier, Alaska, AGU, 90(52), Fall Meeting 2009, Abstract C32A-04.

T.J. Fudge, **G. Catania**, H. Conway, D.A. Young, D. Blankenship, S. Kempf and E. Leuro, Flow conditions of Thwaites Glacier for the past 1000 years using radar-detected internal layer patterns, AGU, 90(52), Fall Meeting 2009, Abstract C11A-08.

C.E. Webb°, **G. Catania**, J.G. Sonntag and W.B. Krabill, Changes in the Canadian Arctic Archipelago: Observations from spaceborne and airborne laser altimeters, AGU, 90(52), Fall Meeting 2009, Abstract C42A-07.

C. Hulbe, **G. Catania**, O. Sergienko, M. Fahnestock, Variations in grounding line position on the Gould and Siple Coasts, West Antarctica, over the last 1000 years.

**G. Catania**, C. Hulbe and H. Conway, Grounding line basal melt rates determined from internal stratigraphy, 16th Joint WAIS/FRISP Workshop, Seattle WA, Sept. 2009.

**G. Catania**, J. Buttles and D. Mohrig, Analogue modelling of water flow under ice; what can we learn?, 16th Joint WAIS/FRISP Workshop, Seattle WA, Sept. 2009.

T.J. Fudge, **G. Catania**, H. Conway, D. Blankenship, D. Young, S. Kempf and E. Leuro, Past flow conditions of Thwaites Glacier revealed by radar-detected internal layer patterns, 16th Joint WAIS/FRISP Workshop, Seattle WA, Sept. 2009.

## 2008

C. Webb°, **G. Catania**, R. Schutz, Using spaceborne laser altimetry to assess elevation change in Arctic Canada, AGU, 89(53), Fall Meeting 2008, Abstract C31B-0502.

J. Rumrill, T. Neumann, **G. Catania**, Analysis of spatial and temporal variations in strain rates near Swiss Camp, Greenland, Fall AGU Meeting, Abstract C31C-0523.

C. Hulbe, **G. Catania**, O. Sergienko and M. Fahnestock, Stagnation of Kamb Ice Stream investigated using flow features within the ice and numerical models, 2008, IGS Symposium on Radioglaciology, Madrid, Spain, June 2008.

**G. Catania**, T. Neumann, S. Price, Investigations of moulins with ground-based ice-penetrating radar, 2008, IGS Symposium on Radioglaciology, Madrid, Spain, June 2008.

**G. Catania**, C. Hulbe, J. Greenbaum\*, Evidence of relict ice-shelf rifting and timing of grounding line retreat for Kamb Ice Stream, Antarctica 2008, IGS Symposium on Radioglaciology, Madrid, Spain, June 2008.

**G. Catania**, H. Conway, C. Raymond, Bed-reflectivity beneath inter-ice stream ridges, West Antarctica, 2008, IGS Symposium on Radioglaciology, Madrid, Spain, June 2008.

**G. Catania**, T. Neumann, S. Price, Radar and model investigations of englacial drainage through the Greenland Ice Sheet, 2008 NASA-PARCA meeting, Boulder CO, Feb. 2008.

**G. Catania**, C. Hulbe, J. Greenbaum\*. Evidence of relict ice shelf rifts on the grounded ice of Kamb Ice Stream, Antarctica, 2008 NASA-PARCA meeting, Boulder CO, Feb. 2008.

J. Greenbaum\*, **G. Catania**, T. Neumann, T. Hess, N. Bangs, Seismic processing for radar sounding of moulins in Greenland, 2008 NASA-PARCA meeting, Boulder CO, Feb. 2008.

T. Neumann, **G. Catania**, J. Rumrill, Surface velocity variation during the 2007 melt season near Swiss Camp, 2008 NASA-PARCA meeting, Boulder CO, Feb. 2008.

## 2007

**G. Catania**, C. Hulbe, A modern analogy to relict grounding lines on Kamb Ice Stream, Antarctica, 14th Annual WAIS Workshop, Sterling VA, Sept. 2007.

J. Greenbaum\*, **G. Catania**, T. Neumann, N. Bangs, T. Hess, Investigations of near-vertical subsurface structures near Swiss Camp, Greenland, 14th Annual WAIS Workshop, Sterling VA, Sept. 2007.

S. Tulaczyk, C. Tung, **G. Catania**, I. Howat, I. Joughin, B. Smith, R. Jacobel, R. Petterson, M. King and S. Price, Kamb Ice Stream reactivation: Investigations with GPS, 14th Annual WAIS Workshop, Sterling VA, Sept. 2007.

T. Urban, **G. Catania**, R. Schutz, R. Harpold\*, C. Webb°, ICESat elevation change detection in Antarctica, IUGG Meeting, Perugia Italy, July 2007.

**G. Catania**, T. Neumann, Radar across the equilibrium line of the Greenland Ice Sheet: Evidence for surface water drainage, JPL Parca Meeting, January 2007.

T. Neumann, **G. Catania**, J. Rumrill, Seasonal ice acceleration near the Greenland ice sheet margin, Fall AGU, C53A-01.

S. Price, A. Payne, **G. Catania**, T. Neumann, Seasonal acceleration of inland ice via along-flow coupling to marginal ice, Fall AGU Meeting, Abstract C41B-0470.

## 2006

S. Anandakrishnan, **G. Catania**, R.B. Alley, H. Horgan, J.P. Winberry, Discovery of till deposition at the grounding line of Whillans Ice Stream and implications for ice stream stability, Fall AGU, C51C-05 **Invited**,

2006.

B. Schutz, T. Urban, R. Harpold, J. Chen, B. Gunter, **G. Catania**, Correlated polar change detection from coincident ICESat and GRACE data, Fall AGU Meeting, Abstract G12A-08.

J. Rumrill, T. Neumann and **G. Catania**, Assessing the spatial and temporal extent of velocity variations near Swiss Camp, Greenland, Fall AGU, C11A-1136, 2006.

### 2005

**G. Catania**, T. Scambos, H. Conway and C. Raymond, Century-scale ice stream variability: A case study of Kamb Ice Stream, West Antarctica, Fall AGU, C42A-06, 2005.

S. Anandakrishnan, H. Horgan, **G. Catania**, D. Voigt, I. Joughin, Grounding line position of Whillans Ice Stream, West Antarctica, Spring AGU, NS43A-04, 2005.

**G. Catania**, T. Scambos, H. Conway and C. Raymond, Evidence for rapid ice stream margin migration and sudden narrowing of Kamb Ice Stream, Antarctica, 12th Annual WAIS Workshop, 2005.

### As graduate student

**G. Catania**, H. Conway, T. Scambos, and C. Raymond, Ungrounded conditions in the mouth of Kamb Ice Stream?, 11th Annual WAIS Workshop, 2004.

**G. Catania**, H. Conway, T. Scambos, and C. Raymond, Flat ice terrain near the mouth of Kamb Ice Stream, 10th Annual WAIS Workshop, 2003.

**G. Catania**, H. Conway, T. Scambos, and C. Raymond, Duckfoot and Goosefoot: What happened at the lower end of Ice Stream C?, 9th Annual WAIS Workshop, 2002.

**G. Catania**, H. Conway, A. Gades, C. Raymond and H. Engelhardt, Bed-reflectivity beneath inactive ice streams in West Antarctica, International Symposium on Fast Glacier Flow, 2002.

**G. Catania**, H. Conway, T. Scambos and C. Raymond. GPR and RES records of disturbed internal layers on Ridge BC, 8th Annual WAIS workshop, 2001.

**G. Catania** and C. Paola, A physical model of subglacial braided channels, AGU Chapman Conference on the West Antarctic Ice Sheet, 1998, Orono Maine.

### CURRENT FUNDING

\$4.3M as lead PI (\$2M to UT); \$3.5M as co-PI (\$3M to UT)

#### **National Aeronautics and Space Administration, Earth Science/Cryosphere 2012-2015**

*Physical controls on ocean-terminating glacier variability in Central West Greenland*

Principal Investigator: Ginny Catania; Collaborators: Leigh Stearns (U. Kansas), David Sutherland (U. Oregon), Emily Shroyer (Oregon State), Jonathan Nash (Oregon State), Ryan Walker (Penn. State)

**Total award: \$1,524,256; UT portion: \$335,026; additional logistics: \$402,154**

#### **National Geographic Society, 2012**

*Greenland subglacial water pressure and its impact on ice flow*

Principal Investigator: Ginny Catania; Collaborators: Jason Gulley (UT)

**Total award: \$25,315**

#### **National Aeronautics and Space Administration, IceBridge 2012-2015**

*A synthetic approach to mapping the thermal state of the Greenland Ice Sheet using radio-stratigraphy and satellite remote sensing*

Principal Investigator: Ginny Catania; Collaborators: Joe MacGregor (UT), Mark Fahnestock (UAF)  
**Total award: \$460,588; UT portion: \$313,451**

**National Science Foundation, Arctic Natural Sciences 2011-2014**

*A new radio-stratigraphy of the Greenland Ice Sheet and critical boundary conditions for the next generation of ice sheet models*

Principal Investigator: Ginny Catania; Collaborators: Joe MacGregor (UT), Mark Fahnestock (UAF)  
**Total award: \$418,647; UT portion: \$306,430**

**National Science Foundation, Cyber-Enabled Discovery and Innovation 2010-2013**

*Dynamics of Ice Sheets: Advanced Simulation Models, Large-Scale Data Inversion, and Quantification of Uncertainty in Sea Level Rise Projection*

Principal Investigator: Omar Ghattas (UT); Collaborators: Ginny Catania, Don Blankenship, Marc Hesse, Thomas Hughes, Charles Jackson, Luc Lavier (all UT)

**Total award: \$2,002,463**

**National Aeronautics and Space Administration, ICESat-II 2010-2013**

*Linking ICESat Observations to CryoSat-2 and Future Missions: Elevation change detection, waveform analysis, and cross-calibration*

Principal Investigator: Robert Schutz (UT-CSR); Collaborators: Ginny Catania (UT), Tim Urban (UT-CSR), Charles Webb (UT-CSR)

**Total award: \$852,251**

**National Science Foundation, Arctic Natural Sciences 2009-2013**

*Subglacial controls on Greenland Ice Sheet marginal acceleration*

USA Principal Investigator: Ginny Catania, ETH Principal Investigator: Martin Lüthi; Collaborators: Martin Funk (ETH), Robert Hawley (Dartmouth), Thomas Neumann (NASA)

**Total award: \$1,287,230; UT portion: \$344,845; additional logistics: \$510,334**

**National Science Foundation, Antarctic Glaciology 2008-2013**

*Ice-flow history of the Thwaites Glacier, West Antarctica*

Principal Investigator: Ginny Catania; Collaborators: Howard Conway (UW)

**Total award: \$641,449; UT portion: \$416,362**

**EXPIRED FUNDING**

**National Science Foundation, Antarctic Glaciology 2006-2009**

*Grounding-line forensics: The history of grounding line retreat in the Kamb Ice Stream outlet region*

Principal Investigator: Ginny Catania; Collaborators: Christina Hulbe (Portland State)

**Total award: \$377,868; UT portion: \$237,140; additional logistics: not incl.**

**Jackson School of Geosciences Research Initiative 2006-2009**

*The response of Arctic glaciers and ice sheets to climate change*

Principal Investigator: Ginny Catania; Collaborators: Donald Blankenship (UT)

**Total award: \$184,133**

**National Aeronautics and Space Administration, Cryosphere 2006-2009**

*The importance of meltwater to the peripheral thinning of Greenland*

Principal Investigator: Tom Neumann (NASA); Collaborators: Ginny Catania (UT)

**Total award: \$637,190; UT portion \$133,094; additional logistics: \$73,180**



## STUDENT AND POST-DOC ADVISING

### Undergraduate Students

Name	Status	Date of Supervision	Institution	Role
Alex Mabrey*	Junior	09/11-present	UT-Geosci.	Adviser
Daniel Le*	Sophomore	01/11-present	UT-Geosci.	Adviser
Stewart Young	Sophomore	02/12-present	UT-Geosci.	Adviser
Susie Rybarski	Senior	06/12-present	UT Liberal Arts	Adviser
Evelyn Powell*	Sophomore	01/12-present	UT-Plan II	Adviser
Jesse Berney*	Senior	01/12-present	UT-Geosci.	Committee Member
John DeSanto*	Senior	01/12-present	UT-Geosci.	Committee Member
Nicole Kurka	Freshman	09/11-02/12	UT-Geosci.	Adviser
Alan Andrews	Senior	06/10-01/11	UT-Geosci.	Adviser
Michael Markowski	Senior	06/10-05/11	UT-Geosci.	Adviser

### Masters Students

Name	Status	Date of Supervision	Institution	Role
Benjamin Wagman	graduate	09/10-05/12	UT-Geosci.	Committee Chair
Kathleen Negrito	graduate	06/08-01/09	UTeach Nat. Sci.	Committee Chair
Ryan Elmore	graduate	12/07-12/08	UT-Geosci.	Committee Member
Julie Rumrill	graduate	09/06-09/08	Vermont-Geology	Committee Member

### Doctoral Students

Name	Status	Date of Supervision	Institution	Role
John Nowinski	pre-candidacy	09/11-present	UT-Geosci.	Committee Chair
Elizabeth Logan	candidate	09/10-present	UT-Geosci.	Committee Chair
Lauren Andrews	candidate	09/09-present	UT-Geosci.	Committee Chair
Marcelo Somos	pre-candidacy	09/11-present	UT-Civil Eng.	Committee Member
Kelly Hereid	candidate	06/10-present	UT-Geosci.	Committee Member
Jamin Greenbaum	transferred	01/07-09/08	UT-Geosci.	Committee Chair
Audrey Sawyer	graduate	06/09-05/11	UT-Geosci.	Committee Member
Robert Harpold	graduate	09/08-05/10	UT-Aerospace	Committee Member

### Post-doctoral Fellows

Name	Date of Supervision	Ph.D. Institution	Date Ph.D. Received
Joe MacGregor	09/10-present	U. Washington	2008
Jason Gulley	01/11-present	U. Florida	2010
Charles Webb	05/07-05/10	UT-Aerospace	2007

\*indicates honors student

### HONORS & AWARDS TO SUPERVISED STUDENTS

- 2012 UT-DGS Tech Sessions Best MS Student Presentation - Benjamin Wagman
- 2012 UT-UTIG Gale White Fellowship - Lauren Andrews
- 2012 UT-DGS Ronald DeFord Field Scholarship - Lauren Andrews
- 2012 UT-DGS Ronald DeFord Field Scholarship - John Nowinski
- 2012 Devon Energy Corporation Fellowship - Lauren Andrews
- 2010 UT-UTIG Ewing-Worzel Fellowship - Lauren Andrews

## TEACHING EXPERIENCE

### **GEO-371C: Glaciology**

This course addresses the fundamentals of glacier and ice-sheet dynamics and the key surface- and subsurface processes that drive ice to move. Course content includes derivation of glacier mass and energy balance, the material properties and rheology of ice, the basic equations of ice motion (with a review of conservation laws), ice-sheet and -shelf flow, basal processes, glacier hydrology, and unstable modes of flow. This course is intended for any graduate-level or senior undergrad student interested in the deformation of natural materials and ice in the environment. Course topics adjust to new and important findings from recent literature and conference proceedings. This is the first Glaciology course taught at UT. **Taught Spring 2010; Fall 2011; enrollment ~20**

### **UGS 302: Signature Course: Geology in the Movies** (writing flag)

This course serves as a introductory course in Geology to undergrads as part of the Signature Course series required by UT. In the course basic knowledge of "how the Earth works" will be taught with the aid of Hollywood disaster movies and documentaries on Earth science. This course provides students with a general background in Earth science as well as the communication tools to debate complex Earth science controversies with confidence. In this class we explore the realities of how the Earth works versus the Hollywood interpretation and students will re-write movies to make them more scientifically palatable. While not a required course for the Geology degree major, this course serves as a tool for interesting undeclared students in Earth science. **Taught every other year from Fall 2010; class size restricted to 18 students in 2010**

### **GEO-346C: Intro. to Physical and Chemical Hydrogeology** (quantitative reasoning flag)

This course serves as an introduction to hydrogeology and is a core course for the Environmental Science degree program, but also serves Geology and other majors as an elective. Course material covers the basics of surface and groundwater hydrology with a focus on Texas water resources. I have revised this course to use a quantitative data-analysis approach in the problem sets allowing students to examine real hydrology data (time-series and GIS data), which allow them to understand the types of assumptions that go into performing basic interpretations, i.e. how science is done. **Taught every Spring from 2012; enrollment ~50**

**Glaciology Reading Seminar** This course is intended to familiarize students and postdocs in the glaciological literature pertaining to subject matters that change each semester. Papers are read and discussed as a group. **Taught occasionally from Fall 2008; class size ~7**

## PROFESSIONAL SERVICE

### **Internal Service (UT-Austin)**

<b>Undergraduate Education Committee</b> , Dept. of Geosciences	09/09 - present
<b>Seminar Series Committee</b> , Institute for Geophysics	09/10 - present
<b>Postdoctoral Fellowship Committee</b> , Institute for Geophysics	09/09 - present
<b>GSC Membership Ad-Hoc Committee</b> , Jackson School of Geosciences	02/12-04/12
<b>Climate Scientist Search Committee</b> , Jackson School of Geosciences	09/07 - 06/08
<b>UTIG Director Search Committee</b> , Institute for Geophysics	09/08 - 05/09
<b>Hydrogeology Search Committee</b> , Dept. of Geosciences	12/10 - 04/11
<b>Oceanography Search Committee</b> , Institute for Geophysics	12/10 - 05/11

### **External Service: Referee**

(Average 6-7 manuscripts/year, 1-3 proposals/year, 0-1 panels requested/year)

**Journals:** Nature, Nature Geosciences, Geophysical Research Letters, Journal of Geophysical Research, Geology, Journal of Glaciology, Journal of Hydrology, Earth and Planetary Science Letters, The Cryosphere, Annals of Glaciology, Journal of Environmental & Engineering Geophys., Quaternary Research, USGS Special Publication on Antarctic Geology.

**Proposals:** NASA (Cryosphere), NSF (Office of Polar Programs (Arctic and Antarctic), Earth Sciences, Major Research Instrumentation and Division of Mathematical Sciences), NERC (UK), National Geographic Society.

**Panel member:** NASA Measures, NASA IPY, NSF OPP Post-doc Fellowships, NSF Arctic Natural Sciences Committee of Visitors.

### External Service: Other

CLIVAR Greenland Ice Sheet working group member	11/10 - present
Associate Editor for Journal of Glaciology	07/12 - present
Glaciology representative for the McMurdo Area Users Committee	03/08-05/11

### FIELD ACTIVITIES

Dates	Project	Location	Role
06/93 - 08/93	Alpine Glacier Hydrology	Switzerland	Research Assistant
06/94 - 08/94	Alpine Glacier Hydrology	British Columbia	Research Assistant
11/96 - 02/97	Ice Stream Dynamics	West Antarctica	Research Assistant
11/98 - 02/99	Ice Stream Dynamics	West Antarctica	Research Assistant
11/01 - 01/02	Ice Stream History	West Antarctica	Research Assistant
11/02 - 01/03	Ice Stream History	West Antarctica	Research Assistant
11/03 - 02/04	Ice Stream History and WAIS Core Selection	West Antarctica	Research Assistant
11/04 - 01/05	Ice Stream Basal Hydrology	West Antarctica	Research Assistant
11/06 - 12/06	Grounding Line History	West Antarctica	Chief Scientist
05/07 - 07/07	Ice Sheet Hydrology	Greenland	Co-Chief Scientist
11/07 - 12/07	Grounding Line History	West Antarctica	Chief Scientist
05/08 - 07/08	Ice Sheet Hydrology	Greenland	Co-Chief Scientist
09/08 - 09/08	Ice Sheet Hydrology	Greenland	Co-Chief Scientist
06/10 - 06/10	Ice Sheet Hydrology/Dynamics	Greenland	Chief Scientist
04/11 - 05/11	Ice Sheet Hydrology/Dynamics	Greenland	Chief Scientist
06/11 - 08/11	Ice Sheet Hydrology/Dynamics	Greenland	Chief Scientist
09/11 - 09/11	Ice Sheet Hydrology/Dynamics	Greenland	Chief Scientist
04/12 - 05/12	Ice Sheet Hydrology/Dynamics	Greenland	Chief Scientist
06/25 - 07/15	Ice Sheet Hydrology/Dynamics	Greenland	Chief Scientist

### OUTREACH ACTIVITIES

Founded "Ice Bound": <a href="http://www.ig.utexas.edu/outreach/ice-bound">www.ig.utexas.edu/outreach/ice-bound</a>	Ongoing
Invited faculty speaker for Camp Texas	07/12
Invited speaker UT-Geoscience Honors Research Program	02/12
Invited speaker on Greenland change for TXESS Revolution Program	10/10
Member of National Association of Geoscience Teachers climate education task force	2010
Invited speaker for workshop on teaching Antarctic science, Austin TX	11/09
Climate Change, Ice Sheets and the Media, SXSW Interactive Festival	03/09
Climate and Ice Sheets presentation for Unitarian Church, Austin TX	03/09
Extreme Science panel member for GK-12 Geoscience Learning teachers	02/09
NASA Quest Investigator ( <a href="http://quest.nasa.gov/challenges/lima/index.html">http://quest.nasa.gov/challenges/lima/index.html</a> ),	09/08
Invited speaker on ice sheets and climate, UT Lamp Organization	10/07
Presenter for Expanding Your Horizons Science conference for girls, Austin TX	03/06
Presenter for "Geosciences for Teachers" program, Austin TX	03/06
Presented "Life and Work in Antarctica" at the Burke Museum, Seattle WA	09/00
Participated in Shackleton Exhibit at the Burke Museum, Seattle WA. for K-8 students	09/00

### PRESS COVERAGE

Interviewed by FOX News Austin regarding record July 2012 Greenland melt	07/12
Interviewed by BBC for upcoming documentary series "Project Iceberg"	04/12
Press coverage for article on rifting in Amundsen Sea on CNN, Huffington Post and various blogs	04/12
Interviewed for Televisa Mexico regarding ice sheet impacts from warming	11/09
Interviewed for Earth & Sky Radio program #5636	10/08
Presenter for public radio panel regarding the impacts of global warming	04/08
Interviewed by KXAN for release of 4th IPCC Report	02/07
Interviewed by News 8 Austin about Antarctic science	03/07
Participant for IPY press organization Polar-Palooza ( <a href="http://passporttoknowledge.com/polar-palooza">passporttoknowledge.com/polar-palooza</a> )	2007-08
Interviewed for Soundprint Radio Show and Men's Journal in regards to Antarctic fieldwork	11/07
Interviewed by German Public Radio and the LA Times	06/07
Interviewed by Australian 60 Minutes	10/07
Interviewed for a 'scientist profile' for the monthly VECO Polar newsletter	08/07

### PROFESSIONAL MEMBERSHIPS

- 1996-present** International Glaciological Society  
**1999-present** American Geophysical Union

### COLLABORATORS

S. Anandakrishnan (Penn. State); H. Conway (Univ. of Washington); H. Engelhardt (California Institute of Technology); J. Gulley (Univ. of Texas); R. Hawley (Dartmouth University); M. Hoffman (Los Alamos); C. Hulbe (Portland State University); M. Luethi (ETH); J. Nash (Oregon State); J. MacGregor (Univ. of Texas); D. Mohrig (Univ. of Texas); T. Neumann (NASA); C. Paola (Univ. of Minnesota); S. Price (Los Alamos); C. Raymond (Univ. of Washington); T. Scambos (National Snow and Ice Data Center); R. Schutz (UT Center for Space Research); E. Shroyer (Oregon State); L. Stearns (UKansas); D. Sutherland (UOregon); R. Walker (Penn. State); F. Walter (ETH); C. Webb (NASA); D. Winebrenner (Univ. of Washington)