

CONTACT INFORMATION

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COSIM project
Fluid Dynamics and Solid Mechanics Group
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PROFESSIONAL EXPERIENCE

Climate Ocean and Sea Ice Modeling (COSIM) project
Fluid Dynamics and Solid Mechanics Group

Los Alamos National Laboratory

Los Alamos, NM (4/2010-present)

Title: Scientist II

Duties: Development and application of three-dimensional, predictive ice-flow models for the purpose of predicting changes in global sea level as a result of changes in ice sheet volume.

Climate Ocean and Sea Ice Modeling (COSIM) project

Fluid Dynamics and Solid Mechanics Group

Los Alamos National Laboratory

Los Alamos, NM (3/2008 – 4/2010)

Title: Post Doctoral Research Fellow

Duties: Development and application of three-dimensional, predictive ice-flow models for the purpose of predicting changes in global sea level as a result of changes in ice sheet volume.

Supervisors: Bill Lipscomb, Phil Jones

Bristol Glaciology Centre

School of Geographical Sciences

University of Bristol

Bristol, U.K. (8/2006 – 2/2008)

Title: Post Doctoral Research Associate

Duties: Development and application of a higher-order, three-dimensional, ice-flow model of the Greenland ice sheet for the purpose of understanding current and future changes in ice sheet volume.

Supervisor: Tony Payne

The Department of Earth and Space Sciences

University of Washington

Seattle, Washington (6/2001 – 6/2006)

Title: Graduate Research and Teaching Assistant

Duties: Development and application of higher-order, two-dimensional, ice-flow models for the purpose of, interpretation of ice-core records and radio-echo sounding data, ice-core site selection, and investigations into the controls on ice-stream flow; scientific programming; scientific writing for journal publication; presentations at scientific conferences; preparing and presenting lecture and lab materials for undergraduate courses in earth science

Advisors: Howard Conway, Edwin Waddington

SAIC General Sciences Corporation

NASA Goddard Space Flight Center

Greenbelt, MD (9/1998 – 6/2001)

Title: Programmer/Analyst

Duties: Support of physical glaciology research including: polar field work; GPS surveying and processing; shallow ice core recovery/processing; scientific programming for data processing and analysis; scientific writing for journal publication

Supervisor: Patricia Vornberger (SAIC-GSC), Robert Bindschadler (NASA)

Byrd Polar Research Center and Department of Geological Sciences

The Ohio State University

Columbus, OH (1/1996 - 9/1998)

Title: Graduate Research Assistant

Duties: Support of physical glaciology research including: polar field work; GPS surveying and processing; shallow ice core recovery/processing; satellite image processing and analysis; computer programming for data processing and analysis; scientific writing for journal publication

Advisors: Ian Whillans (academic and field research), Gordon Hamilton (field research)

Juneau Icefield Research Program

University of Idaho and University of Alaska, S.E.

Alaska/British Columbia (6/1996 - 8/1996)

Title: Graduate Teaching Assistant

Duties: Assistance in supervising college undergraduate and high school student summer research in geology and glaciology; field party leadership; facilities and logistic operations

Supervisor: Maynard Miller (JIRP), Gretchen Weeks (field and facilities support)

EDUCATION

The University of Washington: Ph.D. Geophysics (10/2006)

The Ohio State University: M.Sc. Geology (12/1998)

The University of North Carolina at Wilmington: B.Sc. Geology (7/1995)

SCHOLARSHIPS & AWARDS

National Academy of Sciences Kavli Fellow, 2008

Los Alamos National Laboratory, Directors Postdoctoral Fellow, 2008

David Johnston Scholarship, Dept. of Earth and Space Sciences, Univ. of Washington, 2002

Ohio State University Dept. Geological Sciences, Graduate Student Achievement award

North Carolina Systems Wide Field Camp scholarship, 1995

REU scholarship, 1994, Juneau Icefield Research Program

UNCW Dept. of Earth Sciences, Student Achievement award, 1994

PROFESSIONAL SOCIETIES

American Geophysical Union

European Geophysical Union

International Glaciological Society

COMMUNITY INVOLVEMENT

CISM (Community Ice Sheet Model) steering committee member and lead developer
NCAR Land Ice Working Group community liaison
Member U.S. CLIVAR working group on ice sheet / ocean interactions in Greenland
Portland State Univ. Ice Sheet Modeling Summer School instructor
Scholarly Reviews: Journal of Geophysical Research, Geophysical Research Letters, Nature Geoscience,
Reviews of Geophysics, The Cryosphere, Journal of Glaciology, Annals of Glaciology, National
Research Council

PUBLICATIONS (published)

- Price, S.F.**, A.J. Payne, I.M. Howat, and B.E. Smith. 2011. Committed sea-level rise for the next century from Greenland ice sheet dynamics during the past decade. *PNAS*, doi:10.1073/pnas.1017313108.
- Price, S.F.**, G. Flowers, and C. Schoof. 2011. Improving hydrology in land ice models. *EOS*, **92**(19), 164.
- Price, S.F.** 2009. From the front. *Nature Geosc.*, **2**(1), doi:10.1038/ngeo424.
- Price, S.F.**, A.J. Payne, G.A. Catania, and T.A. Neumann. 2008. Seasonal acceleration of inland ice via longitudinal coupling to marginal ice. *J. Glaciol.*, **54**(185), 213-219.
- Price, S.F.**, H. Conway, E.D. Waddington, and R.A. Bindschadler. 2008. Model investigations of inland migration of fast-flowing outlet glaciers and ice streams. *J. Glaciol.*, **54**(184), 49-60.
- Price, S.F.**, E.D. Waddington, and H. Conway. 2007. A full-stress, thermomechanical flowband model using the finite-volume method. *J. Geophys. Res.*, **112**, F03020, doi:10.1029/2006/JF000724.
- Price, S.F.**, H. Conway, and E.D. Waddington. 2007. Evidence for late Pleistocene thinning of Siple Dome, West Antarctica. *J. Geophys. Res.*, **112**, F03021, doi:10.1029/2006/JF000725.
- Price, S.F.** and J.S. Walder. 2007. Modeling the Dynamical Response of a Crater Glacier to Lava-Dome Emplacement Mount St. Helens, Washington, U.S.A. *Ann. of Glaciol.*, **45**, 21-28.
- Price, S.F.**, R.A. Bindschadler C.L. Hulbe, and D.D. Blankenship. 2002. Force balance along an inland tributary and onset to Ice Stream D, West Antarctica. *J. Glaciol.* **48**(160), 20-30.
- Price, S.F.**, R.A. Bindschadler, C.L. Hulbe and I. Joughin. 2001. Post-stagnation behavior in the upstream regions of Ice Stream C, West Antarctica. *J. Glaciol.*, **47**(157), 283-294.
- Price, S.F.** and I.M. Whillans. 2001. Crevasse patterns at the onset to Ice Stream B, West Antarctica. *J. Glaciol.*, **47**(156), 29-36.
- Price, S.F.** and I.M. Whillans. 1998. Delineation of a catchment boundary using velocity and elevation measurements. *Ann. Glaciol.*, **27**, 140-144.
- Leng, W., L. Ju, M. Gunzburger, and **S.F. Price**. 2013. Manufactured Solutions and the Numerical Verification of Isothermal, Nonlinear, Three-dimensional Stokes Ice Sheet Models. *The Cryosphere*, **7**, 19-29.
- Gladish, C., D. Holland, P.R. Holland, and **S.F. Price**. 2012. Ice shelf basal channels in a coupled ice/ocean model. *J. Glaciol.*, **58**(212), 1227-1244.
- Evans, K. J., A. G. Salinger, P. H. Worley, **S. F. Price**, W. H. Lipscomb, J. A. Nichols, J. B. White III, M. Perego, M. Vertenstein, J. Edwards, and J. F. Lemieux. 2012. A modern solver interface to manage solution algorithms in the Community Earth System Model. *Int. J. High Perform. Comp.* **26**, 54–62.
- Leng, W., L. Ju, M. Gunzburger, **S. Price**, and T. Ringler. 2012. A Parallel High-Order Accurate Finite Element Nonlinear Stokes Ice-Sheet Model and Benchmark Experiments. *J. Geophys. Res.*, **117**, F01001, doi:10.1029/2011JF001962.
- Carter, S. P., H. A. Fricker, D. D. Blankenship, J. V. Johnson, W. H. Lipscomb, **S.F. Price**, and D.A. Young. Modeling 5 years of subglacial lake activity in the MacAyeal Ice Stream (Antarctica) catchment through assimilation of ICESat laser altimetry. 2011. *J Glaciol.*, **57**, 1098–1112.
- Bougamont, M., **S. Price**, P. Christoffersen, and A.J. Payne. 2011. Dynamic patterns of ice stream flow in a 3d higher-order ice sheet model with plastic bed and simplified hydrology. *J. Geophys. Res.*, **116**, F04018, doi:10.1029/2011JF002025.
- Dukowicz, J. K., **S.F. Price**, and W. H. Lipscomb. 2011. Incorporating arbitrary basal topography in the variational formulation of ice sheet models. *J. Glaciol.* **57**(203), 461-467.

- Lemieux, J.F., **S.F. Price**, K.J. Evans, D. Knoll, A.G. Salinger, D. Holland, and A.J. Payne. 2011. Implementation of the Jacobian-Free Newton-Krylov method for solving the first-order ice sheet momentum balance. *J. Comput. Phys.*, **230**, 6531-6545, doi:10.1016/j.jcp.2011.04.037.
- Zhang H., L. Ju, M. Gunzburger, T. Ringler, and **S. Price**. 2011. Coupled models and parallel simulations for three-dimensional full Stokes ice sheet modeling. *Numer. Math. Theor. Meth. Appl.* **4**, 396-418.
- Dukowicz, J. K., **S.F. Price**, and W. H. Lipscomb. 2010. Consistent approximations for ice-sheet dynamics from a principle of least action. *J. Glaciol.*, **56**(197), 480-496.
- Catania, G.A., T.A. Neumann, and **S.F. Price**. 2008. Characterizing englacial drainage in the ablation zone of the Greenland ice sheet. *J. Glaciol.* **54**(187), 567-578.
- Lipscomb, W.H., R.A. Bindschadler, E. Bueler, D. Holland, J.V. Johnson, and **S.F. Price**. 2008. A community ice sheet model for sea level prediction. *EOS*, **3**, 23.
- Neumann, T.A., H.B. Conway, **S.F. Price**, E.D. Waddington, G.A. Catania, and D.L. Morse. 2008. Holocene accumulation and ice-sheet dynamics in central West Antarctica, *J. Geophys. Res.*, **113**, F02018, doi:10.1029/2007JF000764.
- Pattyn, F., Perichon, L., Aschwanden, A., Breuer, B., de Smedt, B., Gagliardini, O., Gudmundsson, G. H., Hindmarsh, R., Hubbard, A., Johnson, J. V., Kleiner, T., Konovalov, Y., Martin, C., Payne, A. J., Pollard, D., **Price, S.**, Ruckamp, M., Saito, F., Soucek, O., Sugiyama, S., and Zwinger, T. 2008. Benchmark experiments for higher-order and full-Stokes ice sheet models (ISMIP-HOM), *The Cryosphere*, **2**, 95-108.
- Joughin, I., S. Tulaczyk, R.A. Bindschadler, **S.F. Price**. 2002. Changes in west Antarctic ice stream velocities: Observation and analysis, *J. Geophys. Res.*, **107**(B11), 2289, doi:10.1029/2001JB001029.
- Joughin, I., L. Gray, R. Bindschadler, **S. Price**, D. Morse, C. Hulbe, K. Mattar and C. Werner. 1999. Tributaries of West Antarctic ice streams revealed by Radarsat interferometry. *Science*, **286** (5438), 283-286.

PUBLICATIONS (submitted)

- Straneo, F. and 16 others. Challenges to understanding the dynamic response of Greenland's marine terminating glaciers to oceanic and atmospheric forcing. *BAMS* (submitted)
- Bindschadler, R. A. and 27 others. Ice-sheet model sensitivities to environmental forcing and their use in projecting future sea-level (the SeaRISE project). *Journal of Glaciology* (submitted)
- Nowicki, S. and 30 others. Spatial sensitivities of the Greenland Ice Sheet to environmental changes (the SeaRISE project). *Journal of Geophysical Research - Earth Surface* (submitted)
- Nowicki, S. and 30 others. Spatial sensitivities of the Antarctic Ice Sheet to environmental changes (the SeaRISE project). *Journal of Geophysical Research - Earth Surface* (submitted)
- S.R. Shannon, A.J. Payne, I.D. Bartholomew, M.R. van den Broeke, T.L. Edwards, X. Fettweis, O. Gagliardini, F. Gillet-Chalet, H. Goelzer, M.J. Hoffman, P. Huybrechts, D. Mair, P. Nienow, M. Perego, **S. F. Price**, C.J.P.P Smeets, A.J. Sole, R.S.W. van de Wal and T. Zwinger. Contribution of the Greenland ice sheet to future sea level rise from enhanced basal lubrication. *PNAS* (submitted)
- T. L. Edwards, X. Fettweis, O. Gagliardini, F. Gillet-chalet, H. Goelzer, J. M. Gregory, M. Hoffman, P. Huybrechts, A.J. Payne, M. Perego, **S. F. Price**, A. Quiquet, and C. Ritz. Effect of uncertainty in surface mass balance elevation feedback on projections of the future sea level contribution of the Greenland ice sheet, Part I: Parameterisation. *The Cryosphere* (submitted)
- T. L. Edwards, X. Fettweis, O. Gagliardini, F. Gillet-chalet, H. Goelzer, J. M. Gregory, M. Hoffman, P. Huybrechts, A.J. Payne, M. Perego, **S. F. Price**, A. Quiquet, and C. Ritz. Effect of uncertainty in surface mass balance elevation feedback on projections of the future sea level contribution of the Greenland ice sheet, Part II: Results. *The Cryosphere* (submitted)
- Higdon, D., M. Pratola, J. Gattiker, C. Jackson, M. Tobis, S. Habib, K. Heitmann, **S. Price**. Computer Model Calibration Using the Ensemble Kalman Filter. *Technometrics* (submitted).

PUBLICATIONS (other)

- Straneo, F., O. Sergienko, P. Heimbach and 19 others. 2012. Understanding the dynamic response of Greenland's marine terminating glaciers to oceanic and atmospheric forcing: A whitepaper by the U.S. CLIVAR Working Group on Greenland Ice Sheet-Ocean Interactions (GRISO), Report 2012-2, U.S. CLIVAR Project Office, Washington, DC 20006, 22 pp.

Bindschadler, R.A., P.U. Clark, D.M. Holland, W. Abdalati, R. Hock, K. Leonard, L. Padman, **S.F. Price**, J. Stone, P. Winberry. 2011. A research program for projecting sea level rise from land ice loss. NSF, USAP Special Report following NSF-sponsored workshop, July 2010.

Price, S.F. 2006. Development and applications of a full-stress flowband model for ice. (Ph.D. thesis, University of Washington.)

Price, S.F. 1998. Studies in the catchment and onset regions of Ice Stream B, West Antarctica. (masters thesis, The Ohio State University.)