

Douglas Reed MacAyeal

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Education

1983	Ph.D. Geophysical Fluid Dynamics	Princeton University, Princeton, NJ advisor: Kirk Bryan
1979	M.S. Physics/Glaciology	University of Maine, Orono, ME advisor: Robert Thomas
1976	Sc.B. Physics	Brown University, Providence, RI <i>Magna cum laude</i> , honors in physics

Personal

Birth Date: 8 December, 1954; Age: 55

Birth Place: Boston, MA, USA

Marital Status: Divorced

Children: Leigh C. MacAyeal (Brown U., Sc.B.; Cornell U., Veterinary Medicine, second year), Hannah R. MacAyeal (U. Penn, fourth year), Evan C. MacAyeal (Carleton College, first year)

Research Interests

The focus of my research is to understand the physical processes that determine the evolution of ice masses on Earth and on other planets. My work involves a variety of approaches including theoretical analysis (*e.g.*, asymptotic expansion analysis of ice-stream stress balance equations), numerical modeling and simulation (*e.g.*, ice-shelf flow simulations) and field observation (*e.g.*, deployment of GPS and seismometers on icebergs). Results of my research are useful in understanding past ice-sheet discharge events that influence climate, the drift of icebergs that influence ocean thermohaline circulation, and the interpretation of seismic signals that emanate from ice masses in Antarctica.

Employment

Department of the Geosciences, University of Chicago
Professor

1983-Present

Teaching Experience

- GeoSci 353: Oceanic and Atmospheric Waves
- Granular Fluid Mechanics
- Glacial Isostasy
- Physical Science 108: The Earth
- Physical Science 109: Ice Age Earth

- Physical Science 132: Dynamic Environment and Emergence of Humankind
- Physical Science 133: Dynamic Environment and Settlement Systems
- GeoSci 235: Introduction to Inverse Methods in Geophysical Sciences
- GeoSci 233: Physical Oceanography
- GeoSci 212: Introduction to Seismology

Awards

1988 James Macelwane Medal of the AGU

1988 Fellow of the AGU

1997 Richardson Medal of the IGS

2002 Quantrell Teaching Award of the University of Chicago

2005 Provost's Teaching Award of the University of Chicago

2010 Goldthwait Award (Polar Medal) of the Byrd Polar Research Center of the Ohio State University

Students Advised

- Dean R. Lindstrom, PhD 1989 (Thesis title: Study of the Eurasian ice sheet using a combined grounded ice – ice shelf numerical model.)
- Robert W. Grumbine, PhD 1989 (Thesis title: Effect of coastal polynyas on the thermohaline circulation of the Antarctic continental shelves.)
- Cynthia J. Engberts, MS 1991 (Thesis title: Evaluation of the precipitation patterns over Antarctica.)
- Shinya Kakuta, MS 1992 (Thesis topic: Surface temperature history of Prudhoe Bay derived from borehole temperature profiles using control methods.)
- Hailing Wang, MS 1993 (Thesis topic: Ice-sheet thermodynamics.)
- Katsumi Matsumoto, MS 1996 (Thesis topic: Ice-rafted debris in the North Atlantic.)
- Charles S. Jackson, PhD 1998 (Thesis topic: Ice-sheet topography effects on atmospheric circulation.)
- Christina L. Hulbe, PhD 1998 (Thesis topic: West Antarctic ice-sheet modeling.)
- Theodore L. Gotis, MS 1999 (Thesis topic: Normal modes of the Great Lakes and World Ocean.)
- Leila Zajac, MS 2002 (Thesis topic: North American biomes.)
- Marianne H. Okal, MS 2005 (Thesis topic: Characteristics of Iceberg Collisions.)
- Olga V. Sergienko, PhD 2005 (Thesis topic: Surface melting of ice shelves and icebergs.)
- Ian D. Turnbull, MS 2006 (Thesis topic: Seasonal cycles on idealized planets.)
- K. M. Brunt, PhD 2008 (Thesis topic: Tidal influences on Ross Ice Shelf flow.)
- I. D. Turnbull, PhD 2008 (Thesis topic: Inverse barometer effect and icebergs.)
- Young-Jin Kim, on leave of absence (Thesis topic: Tidal motions of icebergs.)

Students at Other Universities Advised

- John Firestone, PhD University of Washington, 1992 (Thesis topic: Borehole paleothermometry inverse methods.)

- John W. Jenson, PhD Oregon State University, 1993 (Thesis topic: Subglacial till deformation and Lake Michigan ice-lobe modeling.)

Current Students

- L. Mac Cathles, PhD candidate (Thesis topic: Meltwater/Moulin interaction on ice sheets.)
- Kristopher Darnell, admitted for Autumn quarter 2010

Postdoctoral Scholars

- Jeremy Bassis, 2006-2009 (now on faculty of U. Michigan)
- Jason Amundson, beginning September 2010

Field Experience

- 11 field seasons in Antarctica (Ross Ice Shelf, Siple Coast Ice Streams, Icebergs of the Ross Sea)

Editorships

- Chief Editor, *Annals of Glaciology*, Vol. 14, IGS symposium on Ice and Climate, 1990.
- Associate Scientific Editor, *Journal of Glaciology*, Vol. 36, 1990.
- Chief Editor, *Journal of Glaciology*, Vols. 37 – 43, 1991 – 1998.
- Chief Editor, *Annals of Glaciology*, Vol. 40, IGS symposium on Ice and Water Interactions, 2004.
- Associate Scientific Editor, *Annals of Glaciology*, Vol. 53, IGS symposium on Snow and Avalanches, Manali, India, 2009.
- Co-Chief Scientific Editor, *Annals of Glaciology*, Vol. 58, IGS symposium on Snow, Ice and Humanity in a Changing Climate, Sapporo, Japan, 2010.
- Associate Scientific Editor, *Annals of Glaciology*, Vol. 59, IGS symposium on Earth's Disappearing Ice: Drivers, Responses and Impacts, Columbus, Ohio, USA, 2010.

Scientific Committees and Activities

- Committee of Advisors, Office of Polar Programs, National Science Foundation, 1999-1002.
- Polar Icebreakers in a Changing World: an Assessment of U.S. Needs, National Research Council, 2005-2006.
- Passcal (Program for Array Seismic Studies of Continental Lithosphere) Standing Committee, 2009-2012.

Current Research Grants

- PI: NSF 0907834 “Model Studies of Surface Meltwater Lakes of the Greenland Ice Sheet,” 2009 – 2012.
- PI: NSF ANT0944248 “Antarctic Surface Melting Processes and Models,” 2010-2013.
- PI: NSF ANT 0944193 “Disintegration Processes of Ice Shelves,” 2010-2013.

Publications in Review or in Advanced Stage of Preparation

Cathles, L. M., D. S. Abbot, J. N. Bassis and **D. R. MacAyeal**, submitted. Modeling the evolution of surface ablation features. *Annals of Glaciology*, 59.

Guttenburg, N., D. S. Abbot, J. M. Amundson, J. C. Burton, L. M. Cathles, **D. R. MacAyeal** and W. W. Zhang, submitted. Numerical model of ice mélange expansion during abrupt ice-shelf collapse. *Annals of Glaciology*, 59.

MacAyeal, D. R., D. S. Abbot and O. V. Sergienko, submitted. Iceberg tsunamis: Exploration of source mechanisms and hazard analysis using dimensional analysis. *Annals of Glaciology*, 58.

Brunt, K. M., L. Padman, H. A. Fricker and **D. R. MacAyeal**. Tidal modulation of ice shelf and ice stream flow: A viscoelastic model of Ross Ice Shelf. (advanced stage of preparation)

Publications Since 2000

Bromirski, P. D., O. V. Sergienko and **D. R. MacAyeal**, 2010. Transoceanic Infragravity Waves Impacting Antarctic Ice-Shelves. *Geophysical Research Letters*, 37, L02502, doi: 10.1029/2009/GL041488.

Martin, S., R. Drucker, R. C. Aster, F. J. Davey, E. A. Okal, T. Scambos and **D. R. MacAyeal**, 2010. Kinematic and seismic analysis of giant tabular iceberg breakup. *Journal of Geophysical Research*, 115, doi:10.1029/2009JB006700, in press.

Brunt, K. M., M. A. King, H. A. Fricker and **D. R. MacAyeal**, 2010. Flow of the Ross Ice Shelf, Antarctica, is modulated by ocean tide. *Journal of Glaciology*, 56 (195), 157-161.

Sergienko, O. V., R. A. Bindschadler and **D. R. MacAyeal**, 2009. Stick/Slip behavior of ice streams: Modeling investigations. *Annals of Glaciology*, 50(52), 87-94.

Cathles, L. M., E. A. Okal and **D. R. MacAyeal**, 2009. Sea-swell arrival at the front of the Ross Ice Shelf, Antarctica, observed in a 2-year seismometer record. *Journal of Geophysical Research*, 114, F02015, doi:10.1029/2007JF000934.

MacAyeal, D. R., E. A. Okal, R. C. Aster and J. N. Bassis, 2009. Seismic Observations of Glaciogenic Ocean Waves (Micro-Tsunamis) on Icebergs and Ice Shelves. *Journal of Glaciology*, 55(190), 193-206.

Sergienko, O. V., R. A. Bindschadler, P. L. Vornberger and **D. R. MacAyeal**, 2008. Ice stream basal conditions from block-wise surface data inversion and simple regression models of ice stream flow: Application for Bindschadler Ice Stream. *Journal of Geophysical Research*, 113, F04010, doi:10.1029/2008JF001004.

MacAyeal, D. R., E. A. Okal, R. C. Aster and J. N. Bassis, 2008. Seismic and hydroacoustic tremor generated by colliding icebergs. *Journal of Geophysical Research*, 113, F03011, doi: 10.1029/2008JF001005.

Arbic, B. K., J. X. Mitrovica, **D. R. MacAyeal** and G. A. Milne, 2008. On the factors behind large Labrador Sea tidal elevations during the last glacial cycle, and the potential implications for Heinrich events. *Paleoceanography*, 23, PA3211, doi: 10.1029/2007PA001573.

- Sergienko, O. V., **D. R. MacAyeal** and J. E. Thom, 2007. Reconstruction of snow/firn thermal properties from observed temperature variation: Application to iceberg C16 (Ross Sea, Antarctica), 2004-2007. *Annals of Glaciology*, 49, 91-95.
- Leonard, K. C., L.-Bruno Tremblay, **D. R. MacAyeal**, and S. S. Jacobs, 2008. Interactions of wind-transported snow with a rift in the Ross Ice Shelf, Antarctica, *Geophys. Res. Lett.*, 35, L05501, doi:10.1029/2007GL033005.
- MacAyeal, D. R.**, M. H. Okal, J. E. Thom, K. M. Brunt, Y.-J. Kim and A. K. Bliss, 2008. Tabular iceberg collisions within the coastal regime. *Journal of Glaciology*, 54(118), 371-386.
- Sergienko, O. V., **D. R. MacAyeal** and R. A. Bindschadler, 2007. Causes of sudden, short term changes in ice-stream surface elevation. *Geophysical Research Letters*, 34, L22503, doi:10.1029/2006GL027235.
- Okal, E. A. and **D. R. MacAyeal**, 2006. Seismic recording on drifting icebergs: Catching seismic waves, tsunamis and storms from Sumatra and elsewhere. *Seismological Research Letters*. 77(6): 659-671.
- MacAyeal, D. R.**, E. A. Okal, R. C. Aster, *et al.*, 2006. Transoceanic wave propagation links iceberg calving margins of Antarctica with storms in tropics and Northern Hemisphere. *Geophysical Research Letters*, 33(17): L17502
- Joughin, I., J. L. Bamber, T. Scambos, S. Tulaczyk, M. Fahnestock and **D. R. MacAyeal**, 2006. Integrating satellite observations with modeling: Basal shear stress of the Filchner-Ronne ice streams, Antarctica. *Philosophical Transactions of the Royal Society, A – Mathematical and Physical and Engineering Sciences*, 364(1844): 1795-1814.
- Brunt K.M., O. Sergienko and **D. R. MacAyeal**, 2006. Observations of unusual fast-ice conditions in the southwest Ross Sea, Antarctica: Preliminary analysis of iceberg and storminess effects. *Annals of Glaciology*, 44, 183-18.
- Committee on the Assessment of U. S. Coast Guard Polar Icebreaker Roles and Future Needs, National Research Council (including **D. R. MacAyeal**), 2006. *Polar Icebreakers in a Changing World: An Assessment of U. S. Needs*. The National Academies Press.
- Sergienko, O. V., and **D. R. MacAyeal**, 2005. Surface melting on Larsen Ice Shelf, Antarctica. *Annals of Glaciology*, 40: 215-218.
- Fricker, H. A., J. N. Bassis, B. Minster and **D. R. MacAyeal**, 2005. ICESat's new perspective on ice shelf rifts: The vertical dimension. *Geophysical Research Letters*, 32(23), L23S08.
- Parizek, B. R., R. B. Alley and **D. R. MacAyeal**, 2005. The PSU/UofC finite-element thermomechanical flowline model of ice-sheet evolution. *Cold Regions Science and Technology*, 42(2): 145-168.
- Scambos, T., O. Sergienko, A. Sargent, **D. R. MacAyeal** and J. Fastook, 2005. ICESat profiles of tabular iceberg margins and iceberg breakup at low latitudes. *Geophysical Research Letters*, 32: L23S09.
- Joughin, I., and **D. R. MacAyeal**, 2005. Calving of large tabular icebergs from ice shelf rift systems. *Geophysical Research Letters*, 32(2): L02501.
- Joughin, I., S. Tulaczyk and **D. R. MacAyeal**, 2004. Melting and freezing beneath the Ross ice streams, Antarctica. *Journal of Glaciology*, 50(168):96-108.

- Arbic, B. K., **D. R. MacAyeal**, J. X. Mitrovica, *et al.*, 2004. Paleoclimate – Ocean tides and Heinrich events. *Nature*, 432(7016), 460.
- Joughin, I., **D. R. MacAyeal** and S. Tulaczyk, 2004. Basal shear stress of the Ross ice streams from control method inversions. *Journal of Geophysical Research-Solid Earth*, 109(B9): B09405.
- MacAyeal, D. R.**, T. A. Scambos, C. L. Hulbe, *et al.*, 2003. Catastrophic ice-shelf break-up by an ice-shelf-fragment-capsize mechanism. *Journal of Glaciology*, 49(164), 22-36.
- Hulbe, C. L., **D. R. MacAyeal**, G. H. Denton, *et al.*, 2004. Catastrophic ice shelf breakup as the source of Heinrich event icebergs. *Paleoceanography*, 19(1): PA1004.
- Schmeltz, M., E. Rignot, T. K. Dupont and **D. R. MacAyeal**, 2002. Sensitivity of Pine Island Glacier, West Antarctica, to changes in ice-shelf and basal conditions: a model study. *Journal of Glaciology*, 48(163): 552-558.
- MacClune, K. L., A. G. Fountain, J. S. Kargel and **D. R. MacAyeal**, 2003. Glaciers of the McMurdo dry valleys: Terrestrial analog for Martian polar sublimation. *Journal of Geophysical Research-Planets*, 108(E4), 5031.
- Cutler, P. I., D. M. Mickelson, P. M. Colgan, **D. R. MacAyeal** and B. R. Parizek, 2001 Influence of the Great Lakes on the dynamics of the Southern Laurentide ice sheet: Numerical experiments. *Geology*, 29(11): 1039-1042.
- E. Rignot, D.G. Vaughan, M. Schmeltz, T.K. Dupont and **D.R. MacAyeal**, 2001. Acceleration of Pine Island and Thwaites Glaciers, West Antarctica. *Annals of Glaciology*, 34, 189-194.
- Schmeltz, M., E. Rignot and **D. R. MacAyeal**, 2001. Ephemeral grounding as a signal of ice-shelf change. *Journal of Glaciology*, 47(156), 71-77.
- Schmeltz, M., E. Rignot and **D.R. MacAyeal**, 2001. Tidal flexure along ice-sheets margins: Comparison of InSAR with an elastic plate model. *Annals of Glaciology*, 34, 202-208.
- Joughin, I., M. Fahnestock, **D. R. MacAyeal**, J. L. Bamber and P. Gogineni, 2001. Observation and analysis of ice flow in the largest Greenland ice stream. *Journal of Geophysical Research*, 106(D24), 34021-342001.
- Cutler, P. M., **D. R. MacAyeal**, D. M. Mickelson, *et al.*, 2000. A numerical investigation of ice-lobe-permafrost interaction around the southern Laurentide ice sheet. *Journal of Glaciology*, 46(153):311-325.
- Rignot, E., L. Padman, **D. R. MacAyeal** and M. Schmeltz, 2000. Observation of ocean tides below the Filchner and Ronne Ice Shelves, Antarctica, using synthetic aperture radar interferometry: Comparison with tide model predictions. *Journal of Geophysical Research—Oceans*, 105(C8), 19615-19630.

Publications Prior to 2000

- Lazzara, M.A., K.C. Jezek, T.A. Scambos, **D.R. MacAyeal** and C.J. van der Veen, 1999. On the Calving of Icebergs from the Ross Ice Shelf. *Polar Geography*, 23(3), 201-212.

- Hulbe, C. L. and **D. R. MacAyeal**, 1999. A new numerical model of coupled inland ice sheet, ice stream and ice shelf flow and its application to the West Antarctic Ice Sheet. *Journal of Geophysical Research*, 104 (B11), 349-366.
- MacAyeal, D. R.**, E. Rignot and C. L. Hulbe, 1998. Ice-shelf dynamics near the front of Filchner-Ronne Ice Shelf, Antarctica, revealed by SAR interferometry: model/interferogram comparison. *Journal of Glaciology*, 44, 419-428.
- Rignot, E. and **D. R. MacAyeal**, 1998. Ice-shelf dynamics near the front of Filchner-Ronne Ice Shelf, Antarctica, revealed by SAR interferometry. *Journal of Glaciology*, 44, 405-418.
- Hulbe, C. L., E. Rignot and **D. R. MacAyeal**, 1998. Comparison of ice-shelf creep flow simulations with ice-front motion of Filchner-Ronne Ice Shelf, Antarctica, detected by SAR interferometry. *Annals of Glaciology*, 27, 182-186.
- Licciardi, J. M., P. U. Clark, J. W. Jenson and **D. R. MacAyeal**, 1998. Deglaciation of a soft-bedded Laurentide Ice Sheet. *Quaternary Science Reviews*, 17, 427-448.
- Rommelaere, V. and **D. R. MacAyeal**, 1997. Large-scale rheology of the Ross Ice Shelf, Antarctica, computed by a control method. *Annals of Glaciology*, 24, 43-48.
- MacAyeal, D. R.**, V. Rommelaere, P. Huybrechts, C. L. Hulbe, J. Determann, and C. Ritz, 1996. An Ice-Shelf Model Test Based on the Ross Ice Shelf. *Annals of Glaciology*, 23, 46-51.
- Clark, P. U., J. M. Licciardi, **D. R. MacAyeal** and J. W. Jenson 1997. Numerical reconstruction of a soft-bedded Laurentide Ice Sheet during the last glacial maximum: Reply. *Geology*, 25, 380-381.
- Clark, P. U., J. M. Licciardi, **D. R. MacAyeal** and J. W. Jenson, 1996. Numerical reconstruction of a soft-bedded Laurentide Ice Sheet during the last glacial maximum. *Geology*, 23, 679-682.
- Jenson, J. W., **D. R. MacAyeal**, P. U. Clark, C. Ho and J. C. Vela, 1996. Numerical modeling of subglacial sediment deformation: Implications for the behavior of the Lake Michigan Lobe, Laurentide Ice Sheet. *Journal of Geophysical Research*, 101, 8717-8728.
- Huybrechts, P., T. Payne, and 14 others (incl. **D. R. MacAyeal**), 1996. The EISMINT benchmarks for testing ice-sheet models. *Annals of Glaciology*, 23, 1-12.
- Greve, R. and **D. R. MacAyeal**, 1996. Dynamic/thermodynamic simulations of Laurentide ice-sheet instability. *Annals of Glaciology*, 23, 328-335.
- MacAyeal, D. R.**, 1995. Challenging an ice-core paleothermometer (Perspectives). *Science*, 270(5235), 444-445.
- Jenson, J. W., P. U. Clark, **D. R. MacAyeal**, C. L. Ho and J. C. Vela, 1995. Numerical modelling of advective transport of saturated deforming sediment beneath the Lake Michigan Lobe, Laurentide Ice Sheet. *Geomorphology*, 14, 157-166.

- MacAyeal, D. R.**, R. A. Bindschadler and T. A. Scambos, 1995. Basal friction of ice stream E, West Antarctica. *Journal of Glaciology*, 41(138), 247-262.
- Alley, R. B., and **D. R. MacAyeal**, 1994. Ice-rafted debris associated with binge/purge oscillations of the Laurentide ice sheet. *Paleoceanography*, 9, 503-511.
- Lindstrom, D. R., and **D. R. MacAyeal**, 1993. Death of an ice sheet. *Nature*, 365, 214-215.
- MacAyeal, D. R.**, 1993. A low-order model of the Heinrich Event cycle. *Paleoceanography*, 8, 767-774.
- MacAyeal, D. R.**, 1993. Binge/Purge oscillations of the Laurentide Ice Sheet as a cause of the North Atlantic's Heinrich Events. *Paleoceanography*, 8, 775-784.
- MacAyeal, D. R.**, J. Firestone and E. Waddington, 1993. Paleothermometry Redux. *Journal of Glaciology*, 39, 423-431.
- MacAyeal, D. R.**, 1993. A tutorial on the use of control methods in ice sheet modelling. *Journal of Glaciology*, 39, 91-98.
- Barcilon, V., and **D. R. MacAyeal**, 1993. Steady flow of a viscous ice stream across a no-slip/free-slip transition at the bed. *Journal of Glaciology*, 39, 167-185.
- MacAyeal, D. R.**, 1992. Irregular oscillations of the West Antarctic ice sheet. *Nature*, 359, 29-32.
- MacAyeal, D. R.**, 1992. The basal stress distribution of ice stream E, Antarctica, inferred by control methods. *Journal of Geophysical Research*, 97(B1), 595-603.
- MacAyeal, D. R.**, J. Firestone and E. Waddington, 1991. Paleothermometry by control methods. *Journal of Glaciology*, 37(127), 326-338.
- MacAyeal, D. R.**, and D. R. Lindstrom, 1990. Effects of glaciation on Methane hydrate stability. *Annals of Glaciology*, 14, 183-185.
- Bindschadler, R. A., E. P. Roberts and **D. R. MacAyeal**, 1989. Distribution of net mass balance in vicinity of Crary Ice Rise, Antarctica. *Journal of Glaciology*, 35(121), 370-377.
- MacAyeal, D. R.**, 1989. Ice-shelf response to ice-stream discharge fluctuations: III. The Ross Ice Shelf. *Journal of Glaciology*, 35(119), 38-42.
- Lindstrom, D. R. and **D. R. MacAyeal**, 1989. Scandinavian, Siberian and Arctic Ocean glaciation: Effect of Holocene atmospheric CO₂ variations. *Science*, 245, 628-631.
- MacAyeal, D. R.**, 1989. Large-scale ice flow over a viscous basal sediment: Theory and application to ice stream B, Antarctica. *Journal of Geophysical Research*, 94(B4), 4071-4088.

- Lange, M. A. and **D. R. MacAyeal**, 1989. Numerical models of ice-shelf flow: Ideal/real. *Annals of Glaciology*, 12, 97-103.
- Lange, M. A. and **D. R. MacAyeal**, 1988. Numerical models of idealized ice shelf flow. In *Numerical Methods in Geomechanics*, G. Swoboda, ed., A. A. Balkema Press, Rotterdam, 713-717.
- Lange, M. A. and **D. R. MacAyeal**, 1988. Numerical models of steady-state thickness and basal ice configurations of the central Ronne Ice Shelf. *Annals of Glaciology*, 11, 64-70.
- MacAyeal, D. R.**, R. A. Bindschadler, K. C. Jezek and S. Shabtaie, 1988. Can relict crevasse plumes on Antarctic ice shelves reveal a history of ice-stream fluctuation? *Annals of Glaciology*, 11, 77-82.
- Bindschadler, R. A., P. L. Vornberger, S. N. Stephenson, E. P. Roberts, S. Shabtaie and **D. R. MacAyeal**, 1988. Ice shelf flow at the boundary of Crary Ice Rise. *Annals of Glaciology*, 11, 8-13.
- Shabtaie, S., C. R. Bentley, R. A. Bindschadler and **D. R. MacAyeal**, 1988. Mass balance studies of ice streams A, B and C, and possible surging behavior of ice stream B. *Annals of Glaciology*, 11, 137-149.
- MacAyeal, D. R.**, and V. Barcilon, 1988. Ice-shelf response to ice-stream discharge fluctuation: I. Unconfined ice tongues. *Journal of Glaciology*, 34(116), 121-127.
- MacAyeal, D. R.**, and M. A. Lange, 1988. Ice-shelf response to ice-stream discharge fluctuation: II. Ideal rectangular ice shelf. *Journal of Glaciology*, 34(116), 128-35.
- Lindstrom, D. R., and **D. R. MacAyeal**, 1987. Environmental Constraints on West Antarctic Ice Sheet Formation. *Journal of Glaciology*, 33(115), 1 - 11.
- MacAyeal, D. R.**, R. A. Bindschadler, S. Shabtaie, S. Stephenson, and C. R. Bentley, 1987. Force, mass and energy budgets of the Crary Ice Rise complex, Antarctica. *Journal of Glaciology*, 33(114), 218 - 230. (See also correction, 1989, *Journal of Glaciology*, pp. 151-152.)
- Bindschadler, R. A., S. N. Stephenson, **D. R. MacAyeal** and S. Shabtaie, 1987. Ice dynamics at the mouth of Ice Stream B, Antarctica. *Journal of Geophysical Research*, 92(B9), 8885 - 8894.
- MacAyeal, D. R.**, 1987. Ice-Shelf back pressure: Form drag vs. dynamic drag. In *Dynamics of the West Antarctic Ice Sheet*, C. J. van der Veen and J. Oerlemans, eds., D. Reidel, Dordrecht, 141-160.
- Bindschadler, R. A., **D. R. MacAyeal** and S. N. Stephenson, 1987. Ice stream-Ice shelf interaction in West Antarctica. In *Dynamics of the West Antarctic Ice Sheet*, C. J. van der Veen and J. Oerlemans, eds., D. Reidel, Dordrecht, 161-180.

- Jacobs, S. S., **D. R. MacAyeal** and J. L. Ardai, Jr., 1986. On the recent advance of the Ross Ice Shelf, Antarctica. *Journal of Glaciology*, 32(112), 464-474.
- MacAyeal, D. R.**, and G. Holdsworth, 1986. An investigation of low-stress ice rheology on the Ward-Hunt Ice Shelf. *Journal of Geophysical Research*, 91(B6), 6347-6358.
- MacAyeal, D. R.**, S. Shabtaie, C. R. Bentley and S. King, 1986. Formulation of Ice Shelf dynamic boundary conditions in terms of a Coulomb Rheology. *Journal of Geophysical Research*, 91(B8), 8177-8191.
- Lange, M. A., and **D. R. MacAyeal**, 1986. Numerical models of the Filchner-Ronne Ice Shelf: An assessment of re-interpreted ice thickness distributions. *Journal of Geophysical Research*, 91(B10), 10457-10462.
- Lindstrom, D. R., and **D. R. MacAyeal**, 1986. Paleoclimatic constraints on the maintenance of possible ice-shelf cover in the Norwegian and Greenland Seas, *Paleoceanography*, 1(3), 313-337.
- MacAyeal, D. R.**, 1985. Evolution of tidally triggered meltwater plumes below ice shelves. In *Oceanology of the Antarctic Continental Shelves*. S. Jacobs, ed., *Antarctic Research Series*, 43, 109-132, AGU, Washington, DC.
- MacAyeal, D. R.**, 1985. Tidal rectification below the Ross Ice Shelf, Antarctica. In *Oceanology of the Antarctic Continental Shelves*. S. Jacobs, ed., *Antarctic Research Series*, 43, 133-144, AGU, Washington, DC)
- MacAyeal, D. R.**, 1985. Optimal measurement of ice-sheet deformation from surface-marker arrays. *Journal of Glaciology*, 31(107), 54-59.
- MacAyeal, D. R.**, and R. H. Thomas, 1985. The effects of basal melting on the present flow of the Ross Ice Shelf. *Journal of Glaciology*, 32(110), 72-86.
- Thomas, R. H., **D. R. MacAyeal**, D. H. Eilers and D. R. Gaylord, 1984. Glaciological studies on the Ross Ice Shelf, Antarctica, 1973-1978. In *The Ross Ice Shelf: Glaciology and Geophysics*. C. R. Bentley and D. E. Hayes, eds., *Antarctic Research Series*, 42, 21-53, AGU, Washington DC.
- MacAyeal, D. R.**, 1984. Numerical simulations of the Ross Sea Tides. *Journal of Geophysical Research*, 89(C1), 607-615.
- MacAyeal, D. R.**, 1984. Thermohaline circulation below the Ross Ice Shelf: a consequence of tidally induced vertical mixing and basal melting. *Journal of Geophysical Research*, 89(C1), 597-606.
- MacAyeal, D. R.**, and R. H. Thomas, 1982. Numerical modeling of ice shelf motion. *Annals of Glaciology*, 3, 189-193.

Thomas, R. H., and **D. R. MacAyeal**, 1982. Derived characteristics of the Ross Ice Shelf, Antarctica. *Journal of Glaciology*, 28(100), 397-412.

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