

## Greg Balco

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### Education

*University of Washington, Seattle, WA.* Ph.D., Earth and Space Sciences, 2004. M.S., Applied Mathematics, 2004. Quaternary and glacial geology, surface processes, cosmogenic-nuclide geochemistry, quantitative geomorphology, GIS applications in geology. Main field areas included Antarctica and glaciated regions of North America. Advisor, Dr. John Stone.

*University of Maine, Orono, ME.* M.S., Geological Sciences, 1997. Coastal sedimentology, sea-level change, Quaternary and glacial geology, palaeoenvironmental reconstruction. Advisor, Dr. Dan Belknap.

*Williams College, Williamstown, MA.* Bachelor of Arts, magna cum laude, 1992. Advisor, Dr. David Dethier.

*Princeton-YBRA Geology Field Camp, Red Lodge, MT.* Summer 1991.

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### Awards and fellowships

National Science Foundation Polar Programs research fellowship, 2005-2007. Fannie and John Hertz Foundation Graduate Fellow, 1999-2003. Geological Society of America, J. Hoover Mackin Award, 2002. DOSECC Graduate Internship, 2002. American Federation of Mineralogical Societies Graduate Fellowship, 2000-2001. ARCS Fellow, University of Washington, 1998-1999. Dean John A. Knauss Sea Grant Marine Policy Fellow, 1997-1998. Geochron Laboratories Research Award, 1996. National Science Foundation Graduate Research Fellow, 1995-1999. Freeman Foote Prize in Geology, Williams College, 1992. Bruce Sanderson, Class of 1956, Prize in Architecture, Williams College, 1992. Class of 1960 Geology Scholar, Williams College, 1991-1992. Conoco Corporation Field Course Scholarship, Princeton-YBRA Field Camp, 1991. American Mineralogical Society Undergraduate Award, Williams College, 1991. Phi Beta Kappa Society. Sigma Xi Society.

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### Academic appointments and related experience

2007- postdoctoral research fellow, Berkeley Geochronology Center.

2005-2007. NSF Polar Programs research fellow, University of Washington. Glacial geology and geochronology of Antarctic ice sheets; Antarctic landscape evolution.

2004-2007. Research Associate, University of Washington. Cosmogenic-nuclide systematics and applications to geochronology and erosion-rate measurement.

2004-05 and 2005-06 field seasons. U.S. Antarctic Program. Remote field camp in McMurdo Dry Valleys.

2000-01 field season. U.S. Antarctic Program. Deep field deployment in Ford Ranges, West Antarctica.

2001. Graduate teaching assistant, University of Washington. Introductory geology courses.

1994-95. Graduate teaching assistant, University of Maine. Introductory geology courses.

Summer 1992. Teaching assistant, Keck Geology Consortium field project, Gaspé, Quebec.

1991-92. Undergraduate teaching assistant, Williams College. Environmental science, geomorphology, and mineralogy.

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### Other professional experience

1998. Carpenter, Otis Burt Construction, West Tisbury, MA. Built expensive houses.

1997-1998. Legislative staff (1998); Knauss-Sea Grant Marine Policy Fellow (1997), House Committee on Resources, Subcommittee on Fisheries Conservation, Wildlife, and Oceans, Washington, DC. Researched and disseminated information for Members of Congress and their staff, produced press releases and articles, wrote speeches, organized hearings, and drafted legislation on fisheries, wildlife, oceanography, and marine policy.

1993-1994. Staff geologist, JME Companies, Lakewood, CO. Clients included:

Runge Mining Inc., Brisbane, Australia. Created a hydrologic model of overburden from geophysical well logs at an open pit coal mine in the Powder River Basin, Wyoming.

Sunnyside Coal Company, Sunnyside, Utah. Modeling of surface water hydrology and sediment transport for use in engineering and environmental design at an underground coal mine and processing plant.

Robinson Brick Company, Denver, CO. Worked with ROBCO production staff to develop data generation and handling system for exploration and production drilling data, for use in reserve calculation and mine planning at 12 open-pit clay mines.

Teberebie Goldfields Ltd., Tarkwa, Ghana. Maintained block model of gold deposit, and used it for reserves evaluation and mine planning at a large open-pit mine. Trained Ghanaian engineering personnel in using mine modeling and planning system.

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### Other

Extensive training in emergency medicine and wilderness rescue (lapsed NREMT-B, WEMT; current OEC, BLS). Professional ski patrol, Solvista Ski Ranch, Granby, CO, 1993-2003. Avalanche and winter backcountry travel instructor, Washington Alpine Club, Seattle, WA, 2001-present. Skilled carpenter, photographer, draftsman, and ski mountaineer (AAJ, v. 49, pp. 129-130).

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## Greg Balco – bibliography

Nearly all of these publications – including preprints of not-yet-published work – are available in full at:

<http://faculty.washington.edu/balco/pubs/pubs.html>

### Online geochronology tools

[1] The CRONUS-Earth online exposure-age and erosion-rate calculators: <http://hess.ess.washington.edu/math>

### In press and in review

[2] Balco G., 2007 in review. Distinguishing incorrect from inaccurate exposure ages by correlation between  $^{26}\text{Al}$  and  $^{10}\text{Be}$  measurements. *Quaternary Geochronology*.

[3] Balco G., Stone J., Lifton N., Dunai T., 2007 in revision. A simple, internally consistent, and easily accessible means of calculating surface exposure ages and erosion rates from  $^{10}\text{Be}$  and  $^{26}\text{Al}$  measurements. *Quaternary Geochronology*.

[4] Putkonen J., Balco G., Morgan D., 2007 in revision. Slow regolith degradation without creep determined by cosmogenic nuclide measurements in Arena Valley, Antarctica. *Quaternary Research*.

[5] Balco G., Stone J.O.H., Jennings C.E., 2007 in revision. Fate of the preglacial regolith beneath the Laurentide Ice Sheet. *Earth and Planetary Science Letters*.

[6] Gendaszek A., Balco G., Montgomery D., Stone J.O.H., Thompson N., 2007 in revision. Long-term erosion rates and styles of erosion in the coastal ranges of the Pacific Northwest. *Geology*.

### Published

[7] Balco, G., Schaefer, J., 2006. Cosmogenic-nuclide and varve chronologies for the deglaciation of southern New England. *Quaternary Geochronology* 1, pp. 15-28.

[8] Balco, G., Cowdery, S., Todd, C., Stone, J.O.H., 2006. Antarctic ice sheet reconstruction using cosmic-ray-produced nuclides. in Knight, P., ed., *Glaciers and Earth's Changing Environment*, pp. 221-223. Blackwell Publishing, Oxford, UK.

[9] Balco, G., Stone, J.O.H., 2005. Measuring middle Pleistocene erosion rates with cosmic-ray-produced nuclides in buried alluvial sediment, Fisher Valley, southeastern Utah. *Earth Surface Processes and Landforms* 30, pp. 1051-1067.

[10] Balco, G., Stone, J.O.H., Mason, J., 2005. Numerical ages for Plio-Pleistocene glacial sediment sequences by Al-26/Be-10 dating of quartz in buried paleosols. *Earth and Planetary Science Letters* 232, pp. 179-191.

[11] Sugden D., Balco G., Cowdery S., Stone J.O.H., Sass L., 2005. Selective glacial erosion and weathering zones in the coastal mountains of Marie Byrd Land, Antarctica. *Geomorphology* 67, pp. 317-334.

[12] Balco, G., Stone, J.O.H., Jennings, C., 2005. Dating Plio-Pleistocene glacial sediments using the cosmic-ray-produced radionuclides Be-10 and Al-26. *American Journal of Science* 305, pp. 1-41.

[13] Balco, G., Rovey, C.W., Stone, J.O.H., 2005. The First Glacial Maximum in North America. *Science* 307, p. 222.

[14] Stone, J.O.H., Balco, G., Sugden, D., Caffee, M., Sass, L.C. III, Cowdery, S., Siddoway, C., 2003. Holocene deglaciation of Marie Byrd Land, West Antarctica. *Science* 299, p. 99.

[15] Balco, G., Stone, J.O.H., Porter, S.C., Caffee, M., 2002. Cosmogenic-nuclide ages for New England coastal moraines, Marthas Vineyard and Cape Cod, Massachusetts, USA. *Quaternary Science Reviews* 21, pp. 2127-2135.

[16] Montgomery, D., Balco, G., Willett, S., 2001. Climate, tectonics, and the morphology of the Andes. *Geology* 29, pp. 579-582.

[17] Dorion, C.C., Balco, G., Kaplan, M.R., Kreutz, K.J., Wright, J., Borns, H.W., 2001. The Deglaciation of Eastern Maine. in Retelle, M. and Weddle, T., eds., *Deglacial History and Relative Sea-Level Changes, Northern New England and Adjacent Canada: Geological Society of America Special Paper 351*.

[18] Balco, G., Belknap, D.F., and Kelley, J.T., 1998. Glacioisostasy and lake-level change, Moosehead Lake, Maine. *Quaternary Research* 49, pp. 157-170

#### **Abstracts of work not published elsewhere**

[19] Balco G., Rovey C., 2007.  $^{10}\text{Be}/^{26}\text{Al}$  Isochron ages for early and middle Pleistocene advances of the Laurentide Ice Sheet into Missouri. GSA Abstracts with Programs [2007 Annual Meeting], v. 39, no. 6, p. 513.

[20] Balco, G., 2007. A surprisingly large marine ice cap at Heard Island during the Last Glacial Maximum? in Antarctica: A Keystone in a Changing World – Online Proceedings of the 10th ISAES, edited by A.K. Cooper and C.R. Raymond et al., USGS Open-File Report 2007-1047, Extended Abstract 147.

[21] Putkonen J., Rosales M., Turpen N., Morgan D., Balco G., Donaldson M., 2007. Regolith transport in the Dry Valleys of Antarctica. in Antarctica: A Keystone in a Changing World – Online Proceedings of the 10th ISAES, edited by A. K. Cooper and C. R. Raymond et al. USGS Open-File Report 2007-1047, Short Research Paper 103.

[22] Balco, G., Anders, A., Finnegan, N., Gran, K., Mitchell, S., Stone, J.O.H., 2002. Be-10 measurements of soil balance and landscape stability in the Pacific Northwest. *Eos Trans. AGU*, 83(47), Fall Meeting Supplement, Abstract H22B-0895.

Poster: [http://depts.washington.edu/cosmolab/agu\\_poster\\_2002.pdf](http://depts.washington.edu/cosmolab/agu_poster_2002.pdf)

[23] Balco G., Stone J.O.H., Caffee M., Parnachov S., 2000. Cosmogenic-isotope ages for Siberian megafloods, Altai Republic, Russia. GSA Abstracts with Programs [2000 Annual Meeting], v. 32, no. 6, p. 117.

More information: <http://faculty.washington.edu/balco/dunedates.html>