

M. GRACE ANDREWS

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EDUCATION

- Ph.D.**, Earth and Planetary Sciences, Northwestern University 2017
Advisor: Andrew D. Jacobson
- M.S.**, Earth and Planetary Sciences, Northwestern University 2014
Advisor: Andrew D. Jacobson
- B.A. with distinction and honors**, Earth Sciences, Boston University 2010
Advisor: Ethan F. Baxter

PROFESSIONAL APPOINTMENTS

- Post-doctoral Research Fellow** 2017 –
Ocean and Earth Science, University of Southampton at the National Oceanography Centre,
Southampton, UK
Leverhulme Centre for Climate Change Mitigation (LC3M)
P.I.'s: Rachael James & Christopher Pearce

RESEARCH

- Post-doctoral Research**, University of Southampton 2017 –
Implementing and evaluating the first large-scale field tests of Enhanced Weathering as a climate
change mitigation strategy in northern hemisphere and equatorial agricultural sites
- Graduate Research**, Northwestern University 2012 – 2017
“Carbon cycling of glaciated landscapes on modern and geologic timescales: Investigation with
strontium and carbon isotope geochemistry”
- Post-undergraduate Research**, Northwestern University 2010 – 2012
“Quantification of fossil fuel derived CO₂ in Chicagoland water using stable carbon isotopes”
- Undergraduate Senior Thesis**, Boston University 2009 – 2010
“Oxygen and strontium isotope zonation in a shear zone garnet: evidence for open system
exchange”
- Undergraduate Directed Studies**, Boston University 2007 – 2009
“Development of a TIMS Total Evaporation method for measurement of stable strontium isotope
fractionation”

TEACHING

- Module Instructor**, University of Southampton 2017
Contemporary Topics (SOES6001); An upper level undergraduate and masters level course. Staff
members ask questions about topics in the geosciences presently under debate, provide key
readings, and grade presentations and reports. My module: “Controls on long-term climate”
- Teaching Certificate Program**, Northwestern University 2015 – 2016
A program that prepares participants for university-level teaching through seminars and
workshops. Participants also receive mentoring and discipline-specific direction as they build and
implement a university-level course.
- Teaching Assistant**, Northwestern University 2013 – 2016
Earth Systems Revealed (Earth 201); An undergraduate level, introductory geology course that
combines combination lecture, lab, and fieldwork. Duties included weekly lab instruction and field
instruction.

SERVICE

G3 (Geology, Geochemistry and Geophysics) Seminar organizer, 2018 –
National Oceanography Centre Southampton

GRANTS AND FELLOWSHIPS

Geologists' Association Research Award, Geologists' Association 2017
Goldschmidt Travel Grant, NSF 2016
Takken Student Research Presentation Travel Award, Association for Women Geoscientists 2016
Goldschmidt Travel Grant, NSF 2010
UROP Conference Participation Award, Boston University 2010

AWARDS

Horace A. Scott Graduate Award for Outstanding Research, 2016
Earth and Planetary Sciences, Northwestern University
Marion Sloss Award for Outstanding Graduate Teaching Assistant, 2016
Earth and Planetary Sciences, Northwestern University
Departmental Prize for Excellence in Earth Science, Earth Science, Boston University 2010

COLLABORATIONS

Oman Drilling Project, Phase 2 Science Party 2018
Kangerlussuaq International Research Network (KAIRN) 2016
Organizers: Jasmine Saros (University of Maine) and John Anderson (Loughborough University)

INVITED TALKS

University of Minnesota Twin Cities, Dept. of Earth Sciences 2019
University of Sheffield, LC3M Annual Meeting 2017, 2018
University of Illinois at Urbana – Champaign, Dept. of Plant Biology 2016

ABSTRACTS/CONFERENCES

Andrews, M.G., Pearce, C.R., James, R.H., Masters, M.D., Kantola, I.B., Yeong, K.L., Hanapi, M.J., Benedick, S., Reynolds, G., DeLucia, E.H., and Beerling, D.J. (2019) Field trials of Enhanced Weathering in two contrasting climate zones. Goldschmidt Conference, Barcelona, Spain.

Andrews, M.G., Pearce, C.R., James, R.H., Masters, M.D., Kantola, I.B., DeLucia, E.H., and Beerling, D.J. (2018) Enhanced rock weathering in agroecosystem field trials, Illinois, USA. Goldschmidt Conference, Boston, MA, USA.

Andrews, M.G., Jacobson, A.D., Osburn, M.R., and Flynn, T.F. (2017) Microbial CO₂ production at the Greenland Ice Sheet margin. Goldschmidt Conference, Paris, France. *Oral presentation.*

Jacobson, A.D., and **Andrews, M.G.** (2017) The impact of subsurface silicate weathering on the long-term C cycle. Goldschmidt Conference, Paris, France. *Oral presentation.*

Andrews, M.G. and Jacobson, A.D. (2016) Radiogenic and stable Sr isotope ratios as tracers of silicate and carbonate weathering in Iceland. Goldschmidt Conference, Yokohama, Japan. *Oral presentation.*

Andrews, M.G. and Jacobson, A.D. (2015) Seasonal variation and controls on subglacial riverine CO₂ concentrations from a small catchment, west Greenland Ice Sheet. Fall American Geophysical Union, San Francisco, CA, USA.

Andrews, M.G., Jacobson, A.D., and Lehn, G.O. (2014) Stable strontium isotopes ($\delta^{88/86}\text{Sr}$) as a tracer of Sr sources and biogeochemical cycling in two catchments draining Fiordland, New Zealand. Fall American Geophysical Union, San Francisco, CA, USA.

Andrews, M.G., Baxter, E.F., Pollington, A.D., Spicuzza, M. and Valley, J.W. (2010) Oxygen and strontium isotope zonation in a shear zone garnet: evidence for open system exchange. Goldschmidt Conference, Knoxville, TN, USA.

PUBLICATIONS

Andrews, M.G. and Taylor, L.L. Combating climate change through Enhanced Weathering of silicate rocks on agricultural lands. *Elements* 15(4). *Invited manuscript. In review.*

Saros, J., Anderson, N. J., Juggins, S., McGowan, S., Yde, J., Telling, J., Bullard, J., Yallop, M., Heathcote, A., Burpee, B., Fowler, F., Barry, C., Northington, R., Osburn, C., Pla-Rabes, S., Mernild, S.H., Whiteford, E., **Andrews, M.G.**, Kerby, J., and Post, E. Arctic climate shifts drive rapid ecosystem responses across the West Greenland landscape. *In review.*

Andrews, M.G. and Jacobson, A.D. (2018) Controls on the solute geochemistry of subglacial discharge from the Russell Glacier, Greenland Ice Sheet determined by radiogenic and stable Sr isotope ratios. *Geochimica et Cosmochimica Acta* 238, 312 - 329.

Andrews, M.G., Jacobson, A.D., Osburn, M.R., and Flynn, T.M. (2018) Dissolved carbon dynamics in meltwaters from the Russell Glacier, Greenland Ice Sheet. *Journal of Geophysical Research – Biogeosciences*. DOI: 10.1029/2018JG004458

Andrews, M.G. and Jacobson, A.D. (2017) The radiogenic and stable Sr isotope geochemistry of basalt weathering in Iceland: Role of hydrothermal calcite and implications for long-term climate regulation. *Geochimica et Cosmochimica Acta* 215, 247 – 262.

Andrews, M.G., Jacobson, A.D., Lehn, G.O., Horton, T.W., and Craw, D. (2016) Radiogenic and stable Sr isotope ratios ($^{87}\text{Sr}/^{86}\text{Sr}$, $\delta^{88/86}\text{Sr}$) as tracers of riverine cation sources and biogeochemical cycling in the Milford Sound region of Fiordland, New Zealand. *Geochimica et Cosmochimica Acta* 173, 284 – 303.

Jacobson, A.D., **Andrews, M.G.**, Lehn, G.O., and Holmden, C. (2015) Silicate versus carbonate weathering in Iceland: New insights from Ca isotopes. *Earth and Planetary Science Letters* 416, 132 – 142.

OUTREACH

Pint of Science Festival, Southampton, UK 2018
Event Host; this three-day festival brings science to the public over a pint of beer. Housed in pubs across the city, university researchers give informal talks about their work.

Bright Club, Southampton, UK 2018
Podcast interview; Episode 16. An in-depth conversation about the science behind the laughs of my routine for this science-based stand-up comedy club.

Café Scientifique featuring Bright Club, Salisbury, UK 2017
Comedian; at this merger event, researchers performed stand-up comedy and hosted a Q&A with the public.

Bright Club, Southampton, UK 2017
Comedian; this science-based stand-up comedy club combines laughs and research to educate and entertain a diverse public audience.

Pint of Science Festival, Southampton, UK 2017
Organizer; this three-day festival brings science to the public over a pint of beer. Housed in pubs across the city, university researchers give informal talks about their work.

STEAM Research and Design Program, Northwestern University 2016
Graduate Student Mentor; this partnership program between Evanston Township High School and NU brings high school students, interested in pursuing university STEM degrees, to shadow NU graduate students and then design their own research project.

- New York Times** 2015
“*Climate research at the end of the world*” (Josh Haner, 26 Nov.); a look at climate research in Greenland with a spotlight on my PhD work.
- NASA Television** 2015
“*Rising Seas: Science on the Greenland Ice Sheet*”; a profile on active scientific fieldwork in Greenland featuring an interview with me.
- Project EXCITE**, Northwestern University 2014, 2015
Module Presenter: “Evidence for paleoclimates through leaf margin analysis”; EXCITE is a collaborative educational and social outreach project between NU and Evanston, IL School District. EXCITE addresses the achievement gap between minority and non-minority students by providing extracurricular opportunities in mathematics and the sciences.
- Girls Do Hack**, Adler Planetarium, Chicago, IL 2014
Mentor; GDH is designed to encourage female high school students to pursue STEM careers by partnering them with female mentors in STEM fields. Together, students and mentors complete workshops designed to bolster skills needed to succeed in STEM careers.
- Research Magazine**, Boston University 2010
“*Rock of Ages*”; a profile on my undergraduate research in the Baxter Group TIMS Laboratory at Boston University.