

## ABBREVIATED CURRICULUM VITAE

### ROSS A. VIRGINIA

Dartmouth College  
Environmental Studies Program and Institute of Arctic Studies  
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<http://www.dartmouth.edu/~ravirg/index.htm>

#### EDUCATION

- B.S. SUNY College of Environmental Science and Forestry,  
Syracuse, New York. Forest Biology *magna cum laude*, 1972
- M.S. University of California, Davis. Ecology, 1974
- Ph.D. University of California, Davis. Ecology, 1980
- A.M. Dartmouth College (Honorary), 1992

#### EXPERIENCE

- 2008- Myers Family Professor of Environmental Science
- 2003- Director, Institute of Arctic Studies, within the John Sloan Dickey Center for International Understanding
- 1997-2004 Albert Bradley 1915 Third Century Professor in the Sciences
- 1992- Professor of Environmental Studies (Chair, 1992-2000)
- 1992- Adjunct Professor of Biological Sciences and Earth Sciences
- 1985- 1992 Professor (1988-1992), Associate Professor (1985-1988)  
Department of Biology, San Diego State University, San Diego, CA
- 1985- 1992 Associate Director/Director  
Systems Ecology Research Group, San Diego State University
- 1980-1985 Assistant Research Scientist (1982-1985), Postdoctoral Res. Sci. (1980-1982), Dept. of Soil and Environmental Science, Univ. California, Riverside

1974-1980 Graduate Research and Teaching Assistant  
Dept. of Land, Air & Water Resources, Univ. California, Davis

#### **RESEARCH INTERESTS**

Polar environmental change, Arctic policy, Soil biodiversity and biogeochemical cycling in polar systems, Ecosystem ecology and its relationships with environmental law and policy

#### **PROFESSIONAL ORGANIZATIONS/SERVICE/AFFILIATIONS/HONORS**

Distinguished Co-Lead Scholar, Fulbright Arctic Initiative, US Department of State Bureau of Educational and Cultural Affairs, 2014-2016, round two, 2017-19  
<http://www.cies.org/program/fulbright-arctic-initiative>

Global Fellow, Polar Institute, Woodrow Wilson International Center for Scholars, Washington D.C., 2017-19

Elected Fellow, Explorers Club, New York, 2018

Scientific Advisory Board, CER-ARCTIC, Arctic Research Center, Universitat Autònoma de Barcelona, 2017-present

Elected Fellow, American Association for the Advancement of Science (AAAS), Biological Sciences Section, 2016

Board of Governors, Ilisimatusarfik (University of Greenland), 2016-2020

Co-Director, University of the Arctic Institute for Arctic Policy, 2012- present, with Michael Sfraga, University of Alaska Fairbanks and Woodrow Wilson Center

University of the Arctic (UArctic), Board of Governors 2018-2021, Council Member 2004-2017

Associated Scientist, Stefansson Arctic Institute, Akureyri, Iceland, 2014- present

“Virginia Valley” named in 2004 by the U.S. and New Zealand Advisory Committees on Antarctic Names in honor of my research in soil biology conducted in the McMurdo Dry Valleys starting in 1989. Location: 77°29’S, 160°56’E, Olympus Range, Southern Victoria Land, Antarctica, feature ID 18694

Antarctic Service Medal, U.S. Congress, awarded 1994

Professional Affiliations: American Association for the Advancement of Sciences, American Institute of Biological Sciences, American Geophysical Union-Biogeosciences, American Polar Society, Ecological Society of America, Geological Society of America, International Arctic Social Sciences Association, Old Antarctic Explorers Association, Soil Science Society of America

#### **SELECTED PUBLICATIONS**

### **Authored Books, Edited Works:**

- Brooks, Richard O., Ross T. Jones and Ross A. Virginia. 2002. *Law and Ecology: The Rise of the Ecosystem Regime*. Ashgate Publishers Ltd.: Surrey UK, Brookfield USA, Singapore, Sydney, 430 pp. For the Series: Ecology and Law in Modern Society, edited by R. O. Brooks and R. A. Virginia
- Milne, J. E., J. LaMense, and R. A. Virginia (editors). 2009. *Mountain Resorts: Ecology and the Law*. Ashgate Publishers Ltd.: Aldershot, Brookfield USA, Singapore, Sydney, 490 pp. For the Series: Ecology and Law in Modern Society, edited by R. O. Brooks and R. A. Virginia

### **Selected Professional Articles, Chapters, Reports**

- Hansen, A. M. and R. A. Virginia. 2018. The future of hydrocarbon development in Greenland: Perspectives from residents of the North Slope of Alaska. *ARCTIC* 71(4):416-424, <https://doi.org/10.14430/arctic4750>
- Andriuzzi, W. S., B. J. Adams, J. E. Barrett, R. A. Virginia, and D. H. Wall. 2018. Observed trends of soil fauna in the Antarctic Dry Valleys: early signs of shifts predicted under climate change. *Ecology* 99:312-321, DOI/10.1002/ecy.2090
- Ball, B. A., B. J. Adams, J. E. Barrett, D. H. Wall, and R. A. Virginia. 2018. Soil biological responses to C, N, and P fertilization in a polar desert of Antarctica. *Soil Biology and Biochemistry* 122:7-18, doi.org/10.1016/j.soilbio.2018.03.025
- Balton, D., R. A. Virginia, and K. Yalowitz. 2018. America must act on the North and South Poles. *The National Interest*, September 11, 2018, Opinion-Editorial <https://nationalinterest.org/feature/america-must-act-north-and-south-poles-31047>
- Bradley-Cook, J. I., and R. A. Virginia. 2018. Landscape variation in soil carbon stocks and respiration in an Arctic tundra ecosystem, west Greenland. 2018. *Arctic, Antarctic, and Alpine Research*, 50:1, DOI: [10.1080/15230430.2017.1420283](https://doi.org/10.1080/15230430.2017.1420283)
- Culler, L. E., M. P. Ayres, and R. A. Virginia. 2018. Spatial heterogeneity in the abundance of Arctic mosquitoes. *Ecosphere* 9(8):e02345. 10.1002/ecs2.2345
- Heindel, R. C., F. C. Governali, A. M. Spickard, and R. A. Virginia. 2018. The role of soil biological crusts in nitrogen cycling and soil deflation in West Greenland. *Ecosystems*, pp 1-14, <https://doi.org/10.1007/s10021-018-0267-8>
- Heindel, R. C., W. B. Lyons, S. A. Welch, A. M. Spickard, and R. A. Virginia. 2018. Biogeochemical weathering of soil apatite grains in the McMurdo Dry Valleys, Antarctica. *Geoderma* 320:136-145, <https://doi.org/10.1016/j.geoderma.2018.01.027>
- Levy, L. B., M. A. Kelly, P. A. Applegate, J. A. Howley, and R. A. Virginia. 2018. Middle to late Holocene chronology of the western margin of the Greenland Ice Sheet: A comparison

with Holocene temperature and precipitation records. Arctic, Antarctic, and Alpine Research Vol. 50, No. 1, <https://doi.org/10.1080/15230430.2017.1414477>

Shaw, E. A., B. J. Adams, W. B. Lyons, R. A. Virginia and D. H. Wall. 2018. Stable C and N isotope ratios reveal soil food web structure and identify the omnivore-predator (*Eudorylaimus antarcticus*, Nematoda) in Taylor Valley, Antarctica. Polar Biology, <https://doi.org/10.1007/s00300-017-2243-8>

Urbanowicz, C. M., R. A. Virginia, and R. E. Irwin. 2018. Pollen limitation and reproduction of three plant species across a temperature gradient in western Greenland. Arctic, Antarctic, and Alpine Research, Vol 50:1, DOI: [10.1080/15230430.2017.1414485](https://doi.org/10.1080/15230430.2017.1414485)

Virginia, R. A. and M. Sfraga. 2018. Preface. In: *Arctic Marine Resource Governance and Development*. N. Vestergaard, B. A. Kaiser, and L. Fernandez (editors), Springer Polar Sciences

Young, O. R., D. G. Webster, M. E. Cox, J. Raakjaer, L. O. Blaxekjaer, N. Einarsson, R. A. Virginia, J. Acheson, D. Bromley, E. Cardwell, C. Carothers, E. Eythorsson, R. B. Howarth, S. Jentoft, B. J. McCay, F. McCormack, G. Osherenko, E. Pinkerton, R. van Ginkel, J. A. Wilson, L. Rivers III, and R. S. Wilson. 2018. Moving beyond panaceas in fisheries governance. Proceedings of the National Academy of Sciences Aug 2018, 201716545; DOI: 10.1073/pnas.1716545115

Gooseff, M. N., J. E. Barrett, B. J. Adams, P. T. Doran, A. G. Fountain, W. B. Lyons, D. M. McKnight, J. C. Priscu, E. Sokol, C. Takacs-Vesbach, M. L. Vandegehuchte, R. A. Virginia, and D. H. Wall. 2017. Decadal ecosystem response to an anomalous melt season in a polar desert in Antarctica. Nature Ecology and Evolution 1:1334-1338, doi:10.1038/s41559-017-0253-0

Heindel, R. C., L. E. Culler, and R. A. Virginia. 2017. Rates and processes of aeolian erosion in West Greenland. The Holocene 1-10, DOI: 10.1177/0959683616687381

Heindel, R. C., A. M. Spickard, and R. A. Virginia. 2017. Landscape-scale soil phosphorus variability in the McMurdo Dry Valleys, Antarctica. Antarctic Science 29:252-263, DOI: <https://doi.org/10.1017/S0954102016000742>

Urbanowicz, C. M., R. A. Virginia, and R. E. Irwin. 2017. The response of pollen transport networks to landscape-scale climatic variation. Polar Biology, DOI 10.1007/s00300-017-2138-8

Virginia, R. A. 2017. The Arctic environment in the age of man. The Wilson Quarterly, Vol 41, No. 3, Summer, 2017, <https://wilsonquarterly.com/quarterly/into-the-arctic/the-arctic-environment-in-the-age-of-man/>

Bradley-Cook, J. I. and R. A. Virginia. 2016. Soil carbon storage and respiration potential across an age and climate gradient in western Greenland. Polar Biology 39:1283-1295, DOI 10.1007/s00300-015-1853-2

- Foley, N., S. Tulaczyk, E. Auken, C. Schamper, H. Dugan, J. Mikulcki, R. Virginia and P. Doran. 2016. Helicopter borne transient electromagnetics in high latitude environments: An application in the McMurdo Dry Valleys, Antarctica. *Geophysics* 81(1), DOI 10.1190/GEO2015-0186.1
- Virginia, R. A. and M. Sfraga. 2016. How to create policy-relevant research for a sustainable Arctic future. *Arctic Deeply* opinion-editorial, September 20, 2016, <https://www.newsdeeply.com/arctic/community/2016/09/20/how-to-create-policy-relevant-research-for-a-sustainable-arctic-future>
- Virginia, R. A., M. Sfraga, T. Arnbom, L. Chamberlain, S. Chatwood, A. T. Dis, G. H. Gjørsv, T. K. Harms, A. Hansen, G. Holdmann, N. Johnson, T. Lantz, B. Magnússon, I. S. Neuhaus, G. Poelzer, L. Sokka, M. Tysiachniouk, O. Varpe, and N. Vestergaard. 2016. The Fulbright Arctic Initiative: An innovative model for policy relevant research and public outreach. *Arctic Yearbook* 2016: 180-193, [http://www.arcticyearbook.com/images/Articles\\_2016/briefing-notes/5-AY2016-Virginia.pdf](http://www.arcticyearbook.com/images/Articles_2016/briefing-notes/5-AY2016-Virginia.pdf)
- Ball, B. A. and R. A. Virginia. 2015. Controls on diel soil CO<sub>2</sub> flux across moisture gradients in a polar desert. *Antarctic Science*, available on CJO2015. doi: 10.1017/S0954102015000255
- Ball, B. A., C. R. Tellez, and R. A. Virginia. 2015. Penguin activity influences soil biogeochemistry and soil respiration in rookeries on Ross Island, Antarctica. *Polar Biology*, DOI 10.1007/s00300-015-1699-7
- Collins, J. F., R. A. Virginia, and K. S. Yalowitz. 2015. Diplomacy at the top of the world. Project Syndicate, August 26, 2015, Opinion-Editorial
- Collins, J. F., M. Sfraga, R. A. Virginia, and K. S. Yalowitz. 2015. How America can step up its leadership role in the Arctic. *The National Interest*, April 21, 2015, Opinion- Editorial
- Culler, L. E., M. P. Ayres, and R. A. Virginia. 2015. In a warmer Arctic, mosquitoes avoid increased mortality from predators by growing faster. *Proceedings of the Royal Society B* 282: 20151549. <http://dx.doi.org/10.1098/rspb.2015.1549>
- Dugan, H. A., P. T. Doran, S. Tulaczyk, J. A. Mikucki, S. A. Arcone, E. Auken, C. Schamper, and R. A. Virginia. 2015. Subsurface imaging reveals a confined aquifer beneath an ice-sealed Antarctic lake. *Geophysical Research Letters*, 42, DOI:10.1002/2014GL062431
- Heindel, R. C., J. Chipman, and R. A. Virginia. 2015. The spatial distribution and ecological impacts of aeolian soil erosion in Kangerlussuaq, West Greenland. *Annals of the Association of American Geographers* 105(5):875-890, DOI: 10.1080/00045608.2015.1059176
- Mikucki, J., E. Auken, S. Tulaczyk, R. A. Virginia, C. Schamper, K. I. Sorensen, P. T. Doran, H. Dugan, and N. Foley. 2015. Ancient groundwater and potential deep subsurface habitats beneath an Antarctic dry valley. *Nature Communications* 6, Article number:6831, doi:10.1038/ncomms7831

- Ball, B. A. and R. A. Virginia. 2014. The ecological role of moss in a polar desert: implications for aboveground- belowground and terrestrial- aquatic linkages. *Polar Biology* 37:651-664, DOI 10.1007/s00300-014-1465-2
- Ball, B. A. and R. A. Virginia. 2014. Microbial biomass and respiration responses to nitrogen fertilization in a polar desert. *Polar Biology* 37(4):573-585, doi 10.1007/s00300-014-1459-0
- Virginia, R. A., J. F. Collins, M. Sfraga, and K. S. Yalowitz. 2014. The US and a peaceful Arctic future. *The Hill*, August 8, 2014, Opinion-Editorial
- Collins, J. F., M. Sfraga, R. A. Virginia, and K. S. Yalowitz. 2013. *A Euro-Atlantic Action Plan for Cooperation and Enhanced Arctic Security. Conference Report and Recommendations to the Arctic Council and Interested Parties*. February 11-12, 2013, Carnegie Endowment of International Peace, Washington, D. C. and the University of the Arctic Institute for Applied Circumpolar Policy, Dartmouth College and the University of Alaska Fairbanks. <http://carnegieendowment.org/2013/05/14/euro-atlantic-action-plan-for-cooperation-and-enhanced-arctic-security/g3i8>
- Collins, J. F., R. A. Virginia, and K. Yalowitz. 2013. Hands across the melting ice. *The New York Times* and *International Herald Tribune*, May 13, 2013, Opinion-Editorial
- Virginia, R. A. and D. H. Wall. 2013. Ecosystem Function, Principles of. *In: Levin, S. A. (ed.) Encyclopedia of Biodiversity, second edition, Volume 3*, pp. 90-95. Waltham, MA: Academic Press
- Levy, L. M. A. Kelly, J. A. Howley, and R. A. Virginia. 2012. Age of the Ørkendalen moraines, Kangerlussuaq, Greenland: Constraints on the extent of the southwestern margin of the Greenland Ice Sheet during the Holocene. *Quaternary Science Reviews* 52:1-5, <http://dx.doi.org/10.1016/j.bbr.2011.03.031>
- Virginia, R. A. and K. S. Yalowitz (Editors). 2012. *A New Paradigm for Arctic Health: Challenges and Responses to Rapid Climate, Environmental and Social Change*. Workshop Report of an International Conference, May 23-25, 2011, Dartmouth College, Hanover, NH and the University of the Arctic Institute for Applied Circumpolar Policy, <http://iacp.dartmouth.edu/news/17-arctic-health-challenges-and-responses-to-rapid-climate-environmental-and-social-change>
- Nielsen, U. N., D. H. Wall, B. J. Adams, R. A. Virginia, B. A. Wall, M. N. Gooseff, and D. McKnight. 2012. The ecology of pulse events: insights from an extreme event in a polar desert ecosystem. *Ecosphere* 3(2):17.doi.org/10.1890/ES11-00325.1
- Forest, Pierre-Andre, L. Heininen, M. Sfraga, R. A. Virginia and K. S. Yalowitz. 2011. *Climate Change and Human Security*, Final Report and Main Findings of the 3rd Workshop of the University of the Arctic Institute of Applied Circumpolar Policy, September 3-6, 2010, University of Lapland, Rovaniemi, Finland

- Holm, L. K., L. A. Grenoble, and R. A. Virginia. 2011. A praxis for ethical research and scientific conduct in Greenland. *Études/Inuit/Studies*, Vol. 35 (1-2): 187-200, for the issue on "Intellectual Property and Ethics"
- Smith, T. E., D. H. Wall, I. D. Hogg, U. N. Nielsen, and R. A. Virginia. 2011. Thawing permafrost alters nematode populations and soil habitat characteristics in an Antarctic polar desert ecosystem. *Pedobiologia* 55:75-81, doi:10.1016/j.pedobi.2011.11.001
- Virginia, R. A. 2011. Foreword. *In*: P. D. Miller, *The Book of Ice*. Mark Batty, Publisher, Brooklyn, NY
- Virginia, R. A. 2010. Foreword, *In*: H. C. Petersen, pgs 13-15 (Greenlandic) and 267-268 (English), *In*: *Local Knowledge, Living Resources and Natural Assets in Greenland*. Univ Press of New England and International Polar Institute Press, Hanover, NH, USA.
- Yalowitz, K. S. and R. A. Virginia. 2010. The Arctic Region: Prospects for a Great Game or International Cooperation, Section 2.4B, Pgs. 125-130, *In: Perspectives on Political and Social Regional Stability Impacted By Global Crises - A Social Science Context*. White Paper published jointly by Strategic Multi-Layer Assessment (SMA) and U.S. Army Corps of Engineers R&D Directorate. H. Cabayan, B. Sotirin, R. Davis et al., Editors
- Yalowitz, K. S. and R. A. Virginia. 2010. The Arctic Region: Prospects for a Great Game or International Cooperation. The Atlantic Community, April 2010
- Virginia, R. A. 2009. An ecosystem approach to mountain resorts. Pgs. 24-38, *In*: Milne, J. E., J. LaMense, and R. A. Virginia (editors). *Mountain Resorts: Ecology and the Law*. Ashgate Publishers Ltd.: Aldershot, Brookfield USA, Singapore, Sydney. For the Series: Ecology and Law in Modern Society, edited by R. O. Brooks and R. A. Virginia
- Yalowitz, K. S., J. F. Collins, and R. A. Virginia. 2009. *The Arctic Climate Change and Security Policy Conference- Final Report and Findings*. Carnegie Endowment for International Peace, Washington D.C., 36 pgs
- Virginia, R. A., K. S. Yalowitz, and I. Krupnik. 2007. Introduction: Perceptions of Climate Change. *In*: Stuckenberger, N. (ed.). *Thin Ice: Inuit Traditions within a Changing Environment*. Pp. 12-15. Univ. Press of New England, Hanover, NH.
- Chapin, F. S. III, M. Berman, T. V. Callaghan, P. Convey, A-S Crépin, K. Danell, H. Ducklow, B. Forbes, G. Kofinas, A. D. McGuire, M. Nuttall, R. Virginia, O. Young, and S. A. Zimov. 2005. Polar Systems. Chapter 25, pp. 717-743. *In: Ecosystems and Human Well-Being: Current State and Trends. The Millennium Ecosystem Assessment Series, Vol 1*. R. Hassan, R. Scholes and N. Ash (eds.). Island Press, Washington D.C.
- Doran, P. T, J. C. Priscu, W. B. Lyons, J. E. Walsh, A. G. Fountain, D. M. McKnight, D. L. Moorhead, R. A. Virginia, D. H. Wall, G. D. Clow, C. H. Fritzen, C. P. McKay, and A. N. Parsons. 2002. Antarctic climate cooling and terrestrial ecosystem response. *Nature* 415:517-520

Wall, D. H. and R. A. Virginia. 2000. The world beneath our feet: Soil biodiversity and ecosystem functioning. Pp. 225-241, In: P. Raven and T. A. Williams (eds). *Nature and Human Society: The Quest for a Sustainable World*. National Academy of Sciences Press, Washington D.C. 644pp.

Virginia, R. A., and D. H. Wall. 1999. How soils structure communities in the Antarctic Dry Valleys. *BioScience* 49:973-983

Schlesinger, W. H., J. F. Reynolds, G. L. Cunningham, L. F. Huenneke, W. M. Jarrell, R. A. Virginia, and W. G. Whitford. 1990. Biological feedbacks in global desertification. *Science* 247:1043-1048

#### **RECENT RESEARCH PROJECTS AND EXTERNAL FUNDING**

2018-2022 Principal Investigator, Office of Polar Programs, *Partnerships for Polar Science Education and Outreach in Greenland (JSEP) and Antarctica (JASE)*. Co-PI: M. Albert, M. Ayres and L. Culler, \$994,119

2018-2019 Co-Principal Investigator, NSF Office of Polar Programs, *Facilitating Increased Engagement Between the Research Communities of Greenland and the U.S.* PI: Lauren E. Culler, \$47,957

2017-2020 Co-Principal Investigator, NSF Office of Polar Programs, Antarctic Integrated System Science, *Collaborative Research: Antarctic Airborne ElectroMagnetics (ANTAEM) - Revealing Subsurface Water in Coastal Antarctica*, \$128,405

2017-2019 Distinguished Co-Lead Scholar, US Department of State Bureau of Educational and Cultural Affairs, Fulbright Program, *Fulbright Arctic Initiative Round Two*, \$30,000

2008-2015 Principal Investigator, NSF Division of Graduate Education, Integrative Graduate Education and Research Traineeship program. *IGERT: Polar Environmental Change*. \$2,999,613

2011-2017 Co-Principal Investigator, NSF Long Term Ecological Research (LTER), *Increased Connectivity in a Polar Desert Resulting from Climate Warming: McMurdo Dry Valley LTER Program*, Total \$5,640,000

#### **PUBLIC OUTREACH- INTERNATIONAL POLAR YEAR EXHIBITIONS**

*"Polar Connections: Dartmouth and the Cold Regions"*, Nov. 2007-March 2008, Baker-Berry Library at Dartmouth College.

*"Navigating the Northwest Passage: Just Missing the Ice"*, May 25-July 31, 2007, Rauner Special Collections Library, Dartmouth College.

*"Thin Ice: Inuit Traditions within a Changing Environment"*, Jan. 27 – May 13, 2007, Hood Museum of Art, Dartmouth College.

**DARTMOUTH TEACHING EXPERIENCE RELEVANT TO THE ARCTIC**

From Pole to Pole: Environmental Issues of the Earth's Cold Regions (ENVS 15)  
Introduction to Environmental Science (ENVS 2)  
Global Environmental Science (ENVS 30)  
Seminar- Arctic Change: Traditional Knowledge and Western Science (ENVS 80)  
Introduction to Polar Sciences (BIOL 138/EARS 128)  
Polar Science, Ethics, and Politics (BIOL 148/ENVS 80)

**RECENT COMMITTEES AND SERVICE, DARTMOUTH**

Committee Advisory to the President, 2007-2010, 2013-2016 (Vice Chair, 2015-16)  
Steering Committee of the General Faculty, 2017-2020  
Provost Taskforce on Graduate and Advanced Studies, 2014-15  
Council on Academic Freedom and Responsibility, 2013- present  
Provost Search Committee, 2010  
International Studies Minor Steering Committee, 2009- present