

# R. SCOTT ST. GEORGE

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## QUALIFICATIONS

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### University of Arizona (*Tucson, USA*)

2003 – 2007      Doctor of Philosophy in Geoscience. *Advisors:* David Meko and Michael Evans.  
*Committee members:* Julio Betancourt, Katherine Hirschboeck and Jonathan Overpeck.  
*Dissertation:* Hydrological and paleo-drought variability in the Winnipeg River basin, Canada, and the Canadian Prairies

### University of Western Ontario (*London, Canada*)

1995 – 1998      Master of Science in Geography. *Advisor:* Brian Luckman. *Thesis:* Tree-ring reconstruction of summer temperatures in Banff and Jasper National Parks.

### University of Winnipeg (*Winnipeg, Canada*)

1991 – 1995      Bachelor of Science (Four Year) in Geography.

### Awards, Honors, and Training

2018      Most Accessed Article, *Journal of Climate*  
2018      Editor's Highlight, *Trees*  
2017      Europe Research Stay (Switzerland), Alexander von Humboldt Foundation  
2017      Arthur 'Red' & Helene B. Motley Exemplary Teaching Award, University of Minnesota  
2017      Faculty Development Leave, University of Minnesota  
2016      Humboldt Research Fellowship for Experienced Researchers, Alexander von Humboldt Foundation  
2016      Sabbatical Leave and Supplement, University of Minnesota  
2014      Editors' Citation for Excellence in Refereeing, *Geophysical Research Letters*  
2013      Expert Witness Training Academy, William Mitchell College of Law  
2012      Single Semester Leave, College of Liberal Arts, University of Minnesota  
2011      Resident Fellow, Institute on the Environment, University of Minnesota  
2007      Stephen Enders & William Jenney Prize for Second Place Paleoclimate Talk, Geosciences Symposium, University of Arizona  
2006      Andrew Ellicott Douglass Memorial Scholarship, University of Arizona  
2006      ConocoPhillips Prize for Best Quaternary Geology/Paleoclimate Talk, University of Arizona  
2005, 2006      Prairie Adaptation Research Collaborative Graduate Scholarship  
2005      Galileo Circle Scholar, University of Arizona  
2003      Prairie Adaptation Research Collaborative Postgraduate Scholarship Supplement  
2003      Canada Graduate Scholarship (declined)  
2003      Natural Sciences and Engineering Council of Canada Postgraduate Scholarship  
1995, 1996      Special University Scholarship, University of Western Ontario  
1995      Canadian Association of Geographers Award, University of Winnipeg  
1994      Board of Regents Academic Proficiency Scholarship, University of Winnipeg

## EMPLOYMENT AND APPOINTMENTS

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### **Department of Geography, Environment and Society, University of Minnesota** (*Minneapolis, USA*)

Associate professor, 2015 to present; Assistant professor, 2010 – 2015

Director of Graduate Students, 2019 to present

- I teach undergraduate and graduate courses on water resources, climate change, and science communication, and direct a wide-ranging research program on environmental volatility, paleoclimate, and natural hazards. As DGS, I chair the department's Graduate Policy Committee, serve as liaison to the College of Liberal Arts, and lead a seminar on professional development for our first-year cohort. I have also set targets for graduate admissions, created a new online system for annual reporting and assessment, and established a program to direct emergency funds to graduate students in financial need.

### **School of Environmental Studies, Queen's University** (*Kingston, Canada*)

Adjunct professor, 2009 to present

- At Queens, I have served on committees for graduate students in Environmental Studies conducting research on past climate change, and boreal forest ecology in northern Canada.

### **Johannes Gutenberg-Universität Mainz** (*Mainz, Germany*)

#### **Helmholtz-Zentrum Geesthacht — Zentrum für Material- und Küstenforschung** (*Geesthacht, Germany*)

Humboldt Research Fellow, 2017 – 2018

- I won support from Germany's Humboldt Foundation to launch a new project on decadal-to-multidecadal climate variability with researchers at Johannes Gutenberg University and the Helmholtz-Zentrum Geesthacht.

### **PAGES International Project Office** (*Bern, Switzerland*)

Visiting scientist, 2017

- While visiting the PAGES office, I coordinated the publication of a tree-ring database for North America to support climate change research, and served as co-editor for a special issue on decadal climate variability.

### **Geological Survey of Canada, Natural Resources Canada** (*Ottawa, Canada*)

Research scientist (RES-2), 2009 – 2010; Physical scientist (PS-2), 1999 – 2009

- In this position, I developed a new method to estimate the frequency and magnitude of past floods from flood-damaged trees, demonstrated how flood risks respond to climate and land use changes, and identified the risk posed by El Niño to wind energy production. I also served as project leader for the *Paleoenvironmental Perspectives on Climate Change* program, which contributed a geological perspective to policy and planning measures aimed at helping Canadians adapt to a changing climate. In that capacity, I produced an integrated work plan for the project team, advised the Program Manager on scientific products and budget requests, and approved expenditures and travel expenses.

### **Laboratory of Tree-Ring Research, University of Arizona** (*Tucson, USA*)

Research associate, 2004 – 2006

### **Department of Geography, University of Western Ontario** (*London, Canada*)

Laboratory co-ordinator, Dendrogeomorphology Laboratory, 1998

Research assistant, Dendrogeomorphology Laboratory, 1995 – 1997

## PUBLICATIONS

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### Books

1. **S. St. George**, T.A. Ault, *Megadrought* (in preparation), MIT Press.

### Articles († = graduate student author, ‡ = undergraduate student author)

64. **S. St. George**, A. Hefner<sup>†</sup>, J. Avila<sup>†</sup>, Paleofloods stage a comeback, *Nature Geoscience* (accepted September 25, 2020).
63. F. Seyfullayev, **S. St. George**, V. Farzaliyev, S. Guillet, M. Stoffel, U.K. Thapa<sup>†</sup>, The dendroclimatological potential of Common yew (*Taxus baccata* L.) from southern Azerbaijan, *Tree-Ring Research* (accepted September 17, 2020).
62. M. McPartland<sup>†</sup>, **S. St. George**, G. Pederson, K. Anchukaitis, Does signal-free detrending increase chronology coherence in large tree-ring networks? *Dendrochronologia* 63, 125755 (2020).
61. M. Heyman, **S. St. George**, S. Chatterjee, Quantifying spatial and temporal relationships among tree-ring records. *Statistics and Applications* (accepted July 15, 2020).
60. L. Klippel<sup>†</sup>, **S. St. George**, U. Büntgen, P. Krusic, J. Esper, Differing pre-industrial cooling trends between tree rings and lower-resolution temperature proxies, *Climate of the Past* 16, 729–742 (2020).
59. J.T. Martin, G.T. Pederson, C.A. Woodhouse, E.R. Cook, G.J. McCabe, K.J. Anchukaitis, E.K. Wise, P. Erger, L. Dolan, M. McGuire, S. Gangopadhyay, K. Chase, J.S. Littell, S.T. Gray, **S. St. George**, J. Friedman, D. Sauchyn, J. St. Jacques, and J. King, Increased drought intensity tracks warming in the United States' largest river basin, *Proceedings of the National Academy of Sciences* 201916208 (2020).
58. E. Tejedor, R. Serrano-Notivol, M. de Luis, M.A. Saz, C. Hartl, **S. St. George**, U. Büntgen, A. Liebhold, M. Vuille, J. Esper, A global perspective on the climate-driven growth synchrony of neighboring trees, *Global Ecology and Biogeography* 29, 1114-1125 (2020).
57. B. Zuckerberg, C. Strong, J. LaMontagne, **S. St. George**, J. Betancourt, W. Koenig, Climate dipoles as continental drivers of plant and animal populations, *Trends in Ecology & Evolution* 35, 440-453 (2020).
56. B.L. Coulthard, **S. St. George**, D.M. Meko, The limits of freely-available tree-ring chronologies, *Quaternary Science Reviews* 234, 106264 (2020).
55. J. Martin, G.T. Pederson, C.A. Woodhouse, E.R. Cook, G.J. McCabe, K.J. Anchukaitis, E.K. Wise, P. Erger, L. Dolan, M. McGuire, S. Gangopadhyay, K. Chase, J. Littell, S. Gray, **S. St. George**, J. Friedman, D. Sauchyn, J. St. Jacques, J. King, 1200 years of Upper Missouri River streamflow reconstructed from tree rings, *Quaternary Science Reviews* 224, 105971 (2019).
54. **S. St. George**, Aberrant synchrony of present-day warming, *Nature* 571, 483-484 (2019). Invited contribution
53. C. Hartl, **S. St. George**, O. Konter, L. Harr, D. Scholz, A. Kirchhefer, J. Esper, Warfare dendrochronology: Trees witness the deployment of the German battleship *Tirpitz* in Norway, *Anthropocene* 27, 100212 (2019). Invited contribution
52. U.K. Thapa<sup>†</sup>, **S. St. George**, Detecting climatic and human influences in the dry pine forests of eastern Nepal's Koshi River basin, *Forest Ecology and Management* 440, 12-22 (2019).
51. L. Klippel<sup>†</sup>, P.J. Krusic, O. Konter, **S. St. George**, V. Trouet, J. Esper, A 1200+ year reconstruction of temperature extremes for the northeastern Mediterranean region, *International Journal of Climatology* 39, 2336-2350 (2019).
50. **S. St. George**, M. Mudelsee, The weight of the flood-of-record in flood frequency analysis, *Journal of Flood Risk Management* 12, e12512 (2019).

49. **S. St. George**, J. Esper, Concord and discord among Northern Hemisphere paleotemperature reconstructions from tree rings. *Quaternary Science Reviews* **203**, 278-281 (2019).
48. B. Wilhelm, J.A. Ballesteros Cánovas, N. MacDonald, W.H.J. Toonen, V. Baker, M. Barriendos, G. Benito, A. Brauer, J.P. Correla, R. Denniston, R. Glaser, M. Ionita, M. Kahle, T. Liu, M. Luetscher, M. Macklin, M. Mudelsee, S. Munoz, L. Schulte, **S. St. George**, M. Stoffel, O. Wetter, Interpreting historical, botanical, and geological evidence to aid preparations for future floods, *WIREs: Water* **6**, e1318 (2019). Invited contribution
47. S.N. Appleton<sup>†</sup>, **S. St. George**, High-elevation mountain hemlock growth as a surrogate for cool-season precipitation in Crater Lake National Park, USA, *Dendrochronologia* **52**, 20-28 (2018).
46. T.R. Ault, **S. St. George**, Unravelling the mysteries of megadrought, *Physics Today* **71**, 44-50 (2018). Invited contribution
45. J. Esper, **S. St. George**, K. Anchukaitis, R. D'Arrigo, F. Ljungqvist, J. Luterbacher, L. Schneider, M. Stoffel, R. Wilson, U. Büntgen, Large-scale, millennial-length temperature reconstructions from tree rings. *Dendrochronologia* **50**, 81-90 (2018).
44. D.S. Kaufman, N. Abram, M.N. Evans, P. Francus, H. Goosse, H. Linderholm, M.F. Loutre, B. Martrat, H.V. McGregor, R. Neukom, **S. St. George**, C. Turney, L. von Gunten, Technical note: Open-paleo-data implementation pilot – The PAGES 2k special issue, *Climate of the Past* **14**, 593-600 (2018).
43. **S. St. George**, Mississippi rising, *Nature* **556**, 34-35 (2018). Invited contribution
42. J. Esper, S. Holzkämper, U. Büntgen, B. Schöne, F. Keppler, C. Hartl, **S. St. George**, D.F.C. Riechelmann, K. Treydte, Site-specific climatic signals in stable isotope records from Swedish pine forests. *Trees* **32**, 855-869 (2018).
41. T.R. Ault, **S. St. George**, J.E. Smerdon, S. Coats, C. Carillo, J.S. Mankin, B.I. Cook, S. Stevenson, A robust null hypothesis for the potential causes of western megadrought, *Journal of Climate* **31**, 3-24 (2018).
40. **S. St. George**, R.J. Telford, Fossil forest reveals sunspot activity in the early Permian: COMMENT, *Geology* **45**, e427 (2017).
39. J. Emile-Geay, N.P. McKay, D.S. Kaufman, L. von Gunten, J. Wang, K.J. Anchukaitis, N.J. Abram, J.A. Addison, M.A.J. Curran, M.N. Evans, B.J. Henley, Z. Hao, B. Martrat, H.V. McGregor, R. Neukom, G.T. Pederson, B. Stenni, K. Thirumalai, J.P. Werner, C. Xu, D.V. Divine, B.C. Dixon, J. Gergis, I.A. Mundo, T. Nakatsuka, S.J. Phipps, C.C. Routson, E.J. Steig, J.E. Tierney, J.J. Tyler, K.J. Allen, N.A.N. Bertler, J. Björklund, B.M. Chase, M.-T. Chen, E. Cook, R. de Jong, K.L. DeLong, D.A. Dixon, A.A. Ekaykin, V. Ersek, H.L. Filipsson, P. Francus, M.B. Freund, M. Frezzotti, N.P. Gaire, K. Gajewski, Q. Ge, H. Goosse, A. Gornostaeva, M. Grosjean, K. Horiuchi, A. Holmes, K. Husum, E. Isaksson, S. Kandasamy, K. Kawamura, K.H. Kilbourne, N. Koç, G. Leduc, H.W. Linderholm, A.M. Lorrey, V. Mikhalenko, P.G. Mortyn, H. Motoyama, A.D. Moy, R. Mulvaney, P.M. Munz, D.J. Nash, H. Oerter, T. Opel, A.J. Orsi, D.V. Ovhinnikov, T.J. Porter, H.A. Roop, C. Saenger, M. Sano, D. Sauchyn, K.M. Saunders, M.-S. Seidenkrantz, M. Severi, X. Shao, M.-A. Sicre, M. Sigl, K. Sinclair, **S. St. George**, J.-M. St. Jacques, M. Thamban, U.K. Thapa<sup>†</sup>, E.R. Thomas, C. Turney, R. Uemura, A.E. Viau, D.O. Vladimirova, E.R. Wahl, J.W.C. White, Z. Yu, J. Zinke, A global multiproxy database for temperature reconstructions of the Common Era. *Scientific Data* **4**, doi: 10.1038/sdata.2017.88 (2017).
38. **PAGES 2k Coordinators**, The third phase of the PAGES 2k Network. In Y. Kushnir, C. Cassou, **S. St. George**, N. Caltabiano, L. von Gunten (editors) Special issue on decadal climate variability, Joint publication of *CLIVAR Exchanges* and *Past Global Changes Magazine*, 71-74 (2017).
37. Y. Kushnir, C. Cassou, **S. St. George**, Editorial on decadal climate variability. In Y. Kushnir, C. Cassou, **S. St. George**, N. Caltabiano, L. von Gunten (editors) Special issue on decadal climate variability, Joint publication of *CLIVAR Exchanges* and *Past Global Changes Magazine*, 1 (2017).
36. U.K. Thapa<sup>†</sup>, **S. St. George**, D.K. Kharal, N.P. Gaire, Tree growth across the Nepal Himalaya during the last four centuries, *Progress in Physical Geography* **41**, 478–495 (2017).
35. **S. St. George**, D. Crawford<sup>‡</sup>, T. Reubold, E. Giorgi, Making climate data sing — Using music-like sonifications to convey a key climate record, *The Bulletin of the American Meteorological Society* **98**, 21-25 (2017).

34. D.K. Kharral<sup>†</sup>, U.K. Thapa<sup>†</sup>, **S. St. George**, H. Meilby, S. Rayamajhi, D.R. Bhujju, Tree-climate relations along an elevational transect in Manang Valley, central Nepal, *Dendrochronologia* **41**, 57-64 (2017).
33. J.A. Ballesteros-Cánovas, M. Stoffel, **S. St. George**, K.A. Hirschboeck, A review of flood records from tree rings, *Progress in Physical Geography* **39**, 794-816 (2015).
32. **S. St. George**, K.J. Anchukaitis, On the AD 1815 Tambora eruption and the matter of misplaced tree rings. *Past Global Changes Magazine* **23**: 60-61 (2015).
31. G.R. Brooks, **S. St. George**, Flooding, structural flood control measures, and a geomorphic context for the flood problem along the Red River, Manitoba, Canada, In P. Hudson, H. Middelkoop, (editors), *Geomorphic Approaches To Integrated Floodplain Management Of Lowland Fluvial Systems In North America And Europe*. Springer, 87-117 (2015).
30. **S. St. George**, M.C.A. Torbenson<sup>†</sup>, New ages for shoreline stumps along Lake Winnipeg, Canada and their implications for paleo-lake level estimates, *The Holocene* **24**, 1393-1397 (2014).
29. **S. St. George**, An overview of tree-ring width records in the Northern Hemisphere, *Quaternary Science Reviews* **95**, 132-150 (2014).
28. **S. St. George**, The global network of tree-ring widths and its applications to paleoclimatology. *Past Global Changes Magazine* **22**: 16-17 (2014).
27. **S. St. George**, T.R. Ault, The imprint of climate within Northern Hemisphere trees. *Quaternary Science Reviews* **89**, 1-4 (2014).
26. T.R. Ault, J.E. Cole, J.T. Overpeck, G.T. Pederson, **S. St. George**, B. Otto-Bliesner, C.A. Woodhouse, C. Deser, The continuum of hydroclimate variability in western North America during the last millennium, *Journal of Climate* **26**, 5863-5878 (2013).
25. **S. St. George**, T.R. Ault, M.C.A. Torbenson<sup>†</sup>, The rarity of absent growth rings in Northern Hemisphere forests outside the American Southwest, *Geophysical Research Letters* **40**, doi:10.1002/grl.50743 (2013).
24. E.L. Wertz<sup>‡</sup>, **S. St. George**, J.D. Zeleznik, Vessel anomalies in *Quercus macrocarpa* tree rings associated with recent floods along the Red River of the North, United States, *Water Resources Research* **49**, 630-634 (2013).
23. T.R. Ault, J.E. Cole, **S. St. George**, The amplitude of decadal to multidecadal variability in precipitation simulated by state-of-the-art climate models, *Geophysical Research Letters* **39**, L21705, doi:10.1029/2012GL053424 (2012).
22. K.F. Kipfmüller, E.R. Larson, **S. St. George**, Does uncertainty in proxy reconstructions affect the relations inferred between the Pacific Decadal Oscillation and wildfire activity in the western United States? *Geophysical Research Letters* **39**, L04703, doi:10.1029/2011GL05064 (2012).
21. **S. St. George**, T.R. Ault<sup>†</sup>, Is energetic decadal variability a stable feature of the central Pacific Coast's winter climate? *Journal of Geophysical Research - Atmospheres* **116**, D12102, doi:10.1029/2010JD015325 (2011).
20. **S. St. George**, D.M. Meko, E.R. Cook, The seasonality of precipitation signals encoded within the North American Drought Atlas, *The Holocene* **20**, 983-988 (2010).
19. **S. St. George**, Tree rings as paleoflood and paleostage indicators. In M. Stoffel, M. Bollschweiler, D.R. Butler, B.H. Luckman, (editors), *Tree-Ring Reconstructions In Natural Hazards Research: A State-of-the-Art*. Advances in Global Change Research series, Springer, 233-240 (2010).
18. **S. St. George**, Dendrohydrology and extreme floods along the Red River, Canada. In M. Stoffel, M. Bollschweiler, D.R. Butler, B.H. Luckman, (editors), *Tree-Ring Reconstructions In Natural Hazards Research: A State-of-the-Art*. Advances in Global Change Research series, Springer, 277-279 (2010).
17. T.R. Ault<sup>†</sup>, **S. St. George**, The magnitude of decadal and multidecadal variability in North American precipitation, *Journal of Climate* **23**, 842-850 (2010).
16. **S. St. George**, S.A. Wolfe, El Niño stills winter winds across the southern Canadian Prairies, *Geophysical Research Letters* **36**, L23806, doi:10.1029/2009GL041282 (2009).

15. **S. St. George**, D.M. Meko, M.P. Girardin, G.M. MacDonald, E. Nielsen, G.T. Pederson<sup>†</sup>, D.J. Sauchyn, J. Tardif, E. Watson, The tree-ring record of summer drought in the Canadian Prairies, *Journal of Climate* **22**, 689-710 (2009).
14. **S. St. George**, D.M. Meko, M.E. Evans, Regional tree growth and inferred summer climate in the Winnipeg River basin, Canada since AD 1783, *Quaternary Research* **70**, 158-172 (2008).
13. H.A. Catton<sup>†</sup>, **S. St. George**, W.R. Remphrey, An evaluation of bur oak (*Quercus macrocarpa* Michx.) decline in the urban forest of Winnipeg, Manitoba, Canada, *Arboriculture & Urban Forestry* **33**, 22-30 (2007).
12. **S. St. George**, Streamflow in the Winnipeg River basin, Canada: trends, extremes and climate linkages, *Journal of Hydrology* **332**, 396-411 (2007).
11. **S. St. George**, D.J. Sauchyn, Paleoenvironmental perspectives on drought in western Canada – Introduction, *Canadian Water Resources Journal* **31**, 197-204 (2006).
10. **S. St. George**, P.M. Outridge, E. Nielsen, High-resolution dendrochemical analysis of flood-affected oaks using laser ablation ICP-mass spectrometry, *International Association of Wood Anatomists Journal* **27**, 19-31 (2006).
9. G. Ferguson<sup>†</sup>, **S. St. George**, Historical and estimated groundwater levels near Winnipeg, Canada and their sensitivity to climatic variability, *Journal of the American Water Resources Association* **39**, 1249-1260 (2003).
8. **S. St. George**, E. Nielsen, Palaeoflood records for the Red River, Manitoba, Canada derived from anatomical tree-ring signatures, *The Holocene* **13**, 547-555 (2003).
7. **S. St. George**, B. Rannie, The causes, progression, and magnitude of the 1826 Red River flood in Manitoba, *Canadian Water Resources Journal* **28**, 99-120 (2003).
6. **S. St. George**, E. Nielsen, Flood ring evidence and its application to paleoflood hydrology of the Red River and Assiniboine River in Manitoba, *Geographie Physique et Quaternaire* **56**, 181-190 (2002).
5. **S. St. George**, E. Nielsen, F. Conciatori, J. Tardif, Trends in *Quercus macrocarpa* vessel areas and their implications for tree-ring paleoflood studies, *Tree-Ring Research* **58**, 3-10 (2002).
4. **S. St. George**, E. Nielsen, Hydroclimatic change in southern Manitoba since AD 1409 inferred from tree rings, *Quaternary Research* **58**, 103-111 (2002).
3. **S. St. George**, B.H. Luckman, Extracting a paleotemperature record from *Picea engelmannii* treeline sites in the central Canadian Rockies, *Canadian Journal of Forest Research* **31**, 457-470 (2001).
2. **S. St. George**, E. Nielsen, Signatures of high-magnitude 19<sup>th</sup> century floods in *Quercus macrocarpa* (Michx.) tree rings along the Red River, Manitoba, Canada, *Geology* **28**, 899-902 (2000).
1. B.H. Luckman, T.A. Kavanagh, I. Craig, **S. St. George**, Earliest photograph of Athabasca and Dome Glaciers, Alberta. *Geographie Physique et Quaternaire* **53**, 401-405 (1999).

#### Manuscripts in Submission or Revision

1. U.K. Thapa<sup>†</sup>, **S. St. George**, V. Trouet, Increasingly frequent poleward excursions by the Himalayan sub-tropical jet, *Geophysical Research Letters* (revision submitted September 10, 2020).

#### Manuscripts in Preparation

4. **S. St. George**, S.A. Wolfe, The spatial scale of persistent near-surface wind speed anomalies.
3. U. Büntgen, K. Allen, K. Anchukaitis, D. Arseneault, É. Boucher, A. Bräuning, S. Chatterjee, O.V. Churakova (Sidorova), C. Corona, F. Gennaretti, S. Guillet, J. Guiot, B. Gunnarson, S. Helama, M.K. Hughes, P. Huybers, A.V. Kirdyanov, P.J. Krusic, V.S. Myglan, K. Nicolussi, F. Reinig, K. Seftigen, Z. Stine, M. Stoffel, **S. St. George**, E. Tejedor, A. Trevino, V. Trouet, R. Wilson, B. Yang, G. Xu, J. Esper, Common Era temperature realisations from tree rings, *Geology*.

2. J.D. Zeleznik, M. Schlauderer<sup>†</sup>, J. Avila<sup>†</sup>, **S. St. George**, Dating historic log buildings in the Fargo-Moorhead area of North Dakota and Minnesota, USA. *Dendrochronologia*.
1. G.T. Pederson, K. Anchukaitis, C. Routson, N. McKay, **S. St. George**, Temperature-sensitive tree-ring widths and density data for North America, *Scientific Data*.

**Conference Abstracts** († = graduate student author, ‡ = undergraduate student author)

97. B. Wilhelm, J.A. Ballesteros Cánovas, N. MacDonald, W.H.J. Toonen, V. Baker, M. Barriendos, G. Benito, A. Brauer, J.P. Correla, R. Denniston, R. Glaser, M. Ionita, M. Kahle, T. Liu, M. Luetscher, M. Macklin, M. Mudelsee, S. Munoz, L. Schulte, **S. St. George**, M. Stoffel, O. Wetter, Interpreting historical, botanical, and geological evidence to aid preparations for future floods, Past global changes as indicators for future changes and strategies for sustainability, Sustainability Research and Innovation, Brisbane, Australia, June 14-17, 2020.
96. M. McPartland<sup>†</sup>, **S. St. George**, What do trees remember? Perspectives on biological memory in dendrochronology, American Association of Geographers Annual Meeting, Denver, USA, April 6-10, 2020.
95. M.N. Evans, N. Abram, O. Bothe, S. Eggelston, B. Konecky, H. Linderholm, B. Martrat, H. McGregor, R. Neukom, S. Phipps, **S. St. George**, The PAGES 2k Network: Overview, progress and vision, Climate of the Common Era, American Geophysical Union Fall Meeting, San Francisco, California, December 9-13, 2019. Invited contribution
94. S. Eggelston, N. Abram, O. Bothe, B. Konecky, H. Linderholm, B. Martrat, H. McGregor, R. Neukom, S. Phipps, **S. St. George**, Defining 'pre-industrial climate': Past global changes during the most recent two millennia, Climate of the Common Era, American Geophysical Union Fall Meeting, San Francisco, California, December 9-13, 2019.
93. U. K. Thapa<sup>†</sup>, **S. St. George**, V. Trouet, Poleward excursions of the Himalayan sub-tropical jet during the past four centuries, The Dynamics of the Large-Scale Atmospheric Circulation in Past, Present and Future Climate: Jet Streams, Storm Tracks, Stationary Waves, and Monsoons, American Geophysical Union Fall Meeting, San Francisco, California, December 9-13, 2019.
92. **S. St. George**, T. Harden, A. Hefner<sup>†</sup>, Taking paleoflood hydrology into the mainstream of flood risk assessments for the United States, Floods in a Warmer World: Insights from Paleohydrology, PAGES Floods Working Group, Geneva, Switzerland, November 11-13, 2019.
91. **S. St. George**, Tremendous antiquity: Why a longer view of our environment still has value on a human-dominated planet, Frontiers in Biogeography, Ecology, Anthropology, and Evolution: Humboldt and the 'Cosmos' revisited in the 21st Century, 9th Bonn Humboldt Award Winners' Forum, Bonn, Germany, October 16-20, 2019. Invited contribution
90. B. Martrat, S. Eggelston, N. Abram, O. Bothe, H. Linderholm, H. McGregor, R. Neukom, S. Phipps, **S. St. George**, The PAGES 2k Network: Understanding the climate of the Common Era (past 2000 years), Studying the Climate of the Last Two Millennium, European Geosciences Union General Assembly, April 7-12, 2019.
89. A. Hefner<sup>†</sup>, **S. St. George**, The relative magnitude of extreme Holocene paleofloods in the United States, Association of American Geographers Annual Meeting, Washington, D.C., USA, April 3-7, 2019.
88. U.K. Thapa<sup>†</sup>, **S. St. George**, Potential hydroclimatic information from pine trees in the dry valleys of eastern Nepal's Koshi River basin, Climate of the Common Era, Fall 2018 American Geophysical Union Meeting, Washington D.C., USA, December 10-14, 2018.
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71. **S. St. George**, Why do trees remember? Discerning biological and climatic persistence within tree-ring width chronologies and the global tree-ring network, Workshop on Paleoclimate Reanalyses, Data Assimilation and Proxy System Modelling, Louvain-la-Neuve, Belgium, May 29-June 1, 2017.
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65. T.R. Ault, **S. St. George**, A robust null hypothesis for the potential causes of western megadrought, Comparing data and model estimates of hydroclimate variability and change over the Common Era, PAGES 2K network and PAST2K PMIP, Lamont-Doherty Earth Observatory, Palisades, USA, June 1-3, 2016.
64. U. Thapa<sup>†</sup>, **S. St. George**, An evaluation of the Nepal Himalaya tree-ring network and its potential application to paleodischarge studies, Cross Community Workshop on Past Flood Variability, Grenoble, France, June 27-30, 2016.
63. **S. St. George**, Trees as flood sensors, Cross Community Workshop on Past Flood Variability, Grenoble, France, June 27-30, 2016.
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40. **S. St. George**, T.R. Ault<sup>†</sup>, Reading the bass line: how well do moisture-sensitive tree-ring records track decadal variability? The Climate Of The Common Era. Fall 2010 American Geophysical Union Meeting, San Francisco, California, December 13-17, 2010.

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3. **S. St. George**, E. Nielsen, G. Brooks, Red River Research Project: 2. Flood record of the Red River determined by tree-ring analysis – preliminary results. *In Red River Flooding – Decreasing Our Risks*. Symposium of the Canadian Water Resources Association. October 27-28, 1999, Winnipeg, Manitoba (1999).
2. **S. St. George**, University of Western Ontario Tree-Ring Laboratory Guide. Unpublished manuscript. Department of Geography, University of Western Ontario. 18 pp (1998).
1. B.H. Luckman, D.P. McCarthy, E. Watson, **S. St. George**, T.A. Kavanagh, B.J. Robinson, M.E. Colenutt, Field investigations in the Canadian Rockies. Report to Parks Canada and BC Parks Service. 66 pp (1998).

## PRESENTATIONS AND LECTURES

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*I've delivered public lectures on climate change, natural hazards, and science communication to universities, government agencies, and public audiences in Canada, the United States, and Europe.*

### University Lectures

Department of Geography, University of Nevada, Reno, December 2, 2020.

Climate Variability Across Scales Working Group, Past Global Changes, August 13, 2020.

Paleoclimate Seminar, Johannes Gutenberg-Universität, Mainz, Germany, October 22, 2019.

Department of Soil, Water and Climate, University of Minnesota, St. Paul, USA, October 2, 2019.

Second International TERENO Conference, Berlin, Germany, October 8-12, 2018.

Geographisches Institut, Johannes Gutenberg-Universität, Mainz, Germany, November 23, 2017.

Paleoclimate Seminar, Johannes Gutenberg-Universität, Mainz, Germany, November 15, 2017.

Institute of Geography, Universität Bern, Bern, Switzerland, November 1, 2017.

GoldenGate College, Kathmandu, Nepal, July 20, 2016.

Department of Geography, Trinity College, Dublin, Ireland, April 8, 2016.

Water Supply Convergence Colloquium, University of Minnesota, Minneapolis, USA, February 16, 2016.

Buffett Institute for Global Studies, Northwestern University, Evanston, USA, February 9, 2016.

KlimaCampus Colloquium, University of Hamburg and the Max Planck Institute of Meteorology, Hamburg, Germany, July 9, 2015.

Earth and Atmospheric Sciences Department, Cornell University, Ithaca, USA, February 4, 2015.

Quaternary Paleoecology Seminar Series, University of Minnesota, Minneapolis, USA, October 29, 2014.

Department of Geography, University of North Carolina, Chapel Hill, USA, October 24, 2014.

Frontiers in the Environment series, Institute on the Environment, University of Minnesota, Minneapolis, USA, November 20, 2013.

Environmental Science Graduate Program, University of Iowa, Ames, USA, April 29, 2013.

Incorporated Research Institutions for Seismology, Early Career Investigators Working Group, April 10, 2013.

College of Science and Engineering Ambassadors, University of Minnesota, Minneapolis, USA, October 25, 2012.

University of Wisconsin-Platteville, Platteville, USA, October 24, 2012.

Climate Science, Statistics and the Computational Sciences Reading Group, School of Statistics, University of Minnesota, Minneapolis, USA, April 6, 2012.

Department of Anthropology, University of Minnesota, Minneapolis, USA, January 27, 2012.

Department of Soil, Water and Climate seminar series, University of Minnesota, Minneapolis, USA, November 16, 2011.

Frontiers in the Environment series, Institute on the Environment, University of Minnesota, Minneapolis, USA, February 23, 2011.

Department of Geography Coffee Hour series, University of Minnesota, Minneapolis, USA, December 10, 2010.

Quaternary Paleoecology Seminar Series, University of Minnesota, Minneapolis, USA, November 10, 2010.

School of Environmental Studies, Queen's University, Kingston, Canada. December 3, 2009.

Department of Biology, Queen's University, Kingston, Canada. October 21, 2009.

Bert Bolin Centre for Climate Research, Stockholm University, Stockholm, Sweden, May 11, 2009.

Department of Geography, University of Lethbridge, Lethbridge, Canada. April 3, 2009.

Department of Geography, University of Regina, Regina, Canada. March 30, 2009.

Laboratory of Tree-Ring Research, University of Arizona, Tucson, USA. February 20, 2008.

Seventieth Anniversary Symposium, Laboratory of Tree-Ring Research, University of Arizona, Tucson, USA. November 30, 2007.

Laboratory of Tree-Ring Research, University of Arizona, Tucson, USA. March 10, 2004.

Geography Alumni Lecture Series, University of Winnipeg, Winnipeg, Canada. November 29, 2000.

### **Agency Presentations**

U.S. Nuclear Regulatory Commission, Rockville, Maryland, May 29-30, 2019.

GFZ German Research Centre for Geosciences, Potsdam, Germany, October 12, 2018.

Swiss Federal Institute for Forest, Snow and Landscape Research, Birmensdorf, Switzerland, November 7, 2017.

Webinar hosted by the North Dakota Water Science Center, U.S. Geological Survey, Bismarck, North Dakota, May 13, 2016.

Workshop on the 'Nameless Oscillation' organized by the California Department of Water Resources. San Diego, California, May 27-28, 2014.

St. Paul District Office, United States Army Corps of Engineers, St. Paul, Minnesota, April 23, 2012.

Review of the Earth Science Sector's Climate Change Geoscience Program. Ottawa, Canada, April 6, 2010.

### **Public Presentations**

Annual Conference, Minnesota Master Naturalists, Brainerd, Minnesota, May 18-20, 2018 (withdrawn due to family visa delays).

Minnesota Master Naturalist Volunteers, Minnetonka, Minnesota, October 8, 2015.

'A Brighter U', College of Liberal Arts alumni event, University of Minnesota, Minneapolis, USA, February 22, 2014.

Forestry Club Banquet, Department of Forest Resources, University of Minnesota, St. Paul, Minnesota, April 26, 2013.

A Sip of Science, National Center for Earth-Surface Dynamics, Minneapolis, Minnesota, March 13, 2013.

Minnesota Society of American Foresters Annual Meeting, Bunker Hills, Minnesota, February 26, 2013.

Minnesota Shade Tree Advisory Committee, Minneapolis, Minnesota, December 13, 2012.

Climate Change Impacts and Adaptation Week, Natural Resources Canada, Ottawa, Canada, November 3, 2009.

Quaternary Discussion Group lecture series, Geological Survey of Canada, Ottawa, Canada, June 5, 2006.

Quaternary Discussion Group lecture series, Geological Survey of Canada, Ottawa, Canada, March 8, 2002.

Manitoba Climate Change Task Force, Brandon, Canada. May 17, 2001.

Climate Research Branch Seminar. Meteorological Service of Canada. Toronto, Canada. September 18, 2000.

Manitoba Industry, Trade and Mines, Winnipeg, Canada. December 10, 1999.

Traffic Zone Center for Visual Art, Minneapolis, Minnesota, August 17, 2012.

Minnesota Shade Tree Short Course, Bethel University, Arden Hills, Minnesota, March 20 and 21, 2012.

Manitoba Branch of the Canadian Water Resources Association, Winnipeg, Canada, November 27, 2008.

Quetico Provincial Park, Canada, July 21, 2004.

Arbour Day in the Park, Winnipeg, Canada, May 3, 2003

Manitoba Naturalists Society, Winnipeg, Canada, March 12, 2003.

North Dakota Geological Society, Bismarck, USA, September 24, 2002.

Manitoba Association of Plant Biologists Annual Meeting, University of Winnipeg, Winnipeg, Canada, May 4, 2002.

Wolseley School, Winnipeg, Canada, March 9, 2000.



## TEACHING

### University of Minnesota (Minneapolis, USA)

Associate Professor in the Department of Geography, Environment and Society

2015 to present

Assistant Professor in the Department of Geography

2010 to 2015

Semester	Course	Title	Enrollment
Fall 2010	GEOG5426	Climate Variations	6
Spring 2011	GEOG3839/5839	Introduction to Dendrochronology	10
	GEOG8260	The Art of Scientific Presentations	8
Fall 2011	GEOG1403	Biogeography of the Global Garden	437
Spring 2012	GEOG5426	Climate Variations	6
	GEOG8260	The Art of Scientific Presentations	5
Fall 2012	GEOG5839	Introduction to Dendrochronology	3
	GEOG8280	The Impact of Decadal Climate Variability on Terrestrial Ecosystems	8
Spring 2013	GEOG1403	Biogeography of the Global Garden	509
	GEOG5426	Climate Variations	8
Fall 2013	<i>Single-semester leave</i>		
Spring 2014	GEOG5426	Climate Variations	7
	GEOG8260	The Art of Scientific Presentations	22
Fall 2014	GEOG1403	Biogeography of the Global Garden	499
Spring 2015	GEOG5426	Climate Variations	12
	GEOG8260	The Art of Scientific Presentations	21
Fall 2015	GEOG1403	Biogeography of the Global Garden	465
Spring 2016	GEOG8260	The Art of Scientific Presentations	27
	GEOG8280	Frontiers in Paleoclimatology	6
F2016/S2017	<i>Sabbatical</i>		
Fall 2017	<i>Humboldt Fellowship leave</i>		
Spring 2018	GEOG5426	Climate Variations	4
Fall 2018	<i>Parental leave</i>		
Spring 2019	GEOG5426	Climate Variations	7
	GEOG8260	The Art of Scientific Presentations	19
Fall 2019	GEOG3839/5839	Introduction to Dendrochronology	18
Spring 2020	GEOG3900	Global Freshwater in the 21st Century	14
	GEOG8260	Graduate Student Professional Development	11
	GEOG8405	The Art of Scientific Presentations	13

*GEOG1403, Biogeography of the Global Garden:* Biogeography uses ideas from biology, geography and history to explain the panorama of life on Earth. This course provides students with a broad introduction to important concepts and issues in ecology and environmental science. Over the semester, we investigate how weather and climate affects the distribution of species, how individuals interact with their own species and others, and discuss why species expand or go extinct. Within this framework, we also examine the many ways humans, either as individuals or in groups, act as agents of biotic change.

*GEOG3839/5839, Introduction to Dendrochronology:* The annual growth rings from trees provide us with an incredibly powerful and adaptable tool to study Earth's history. Beyond just telling us a tree's age, tree rings also help us understand how our environment has changed in the past and how key processes in atmospheric,

biological and geological systems operate over long timescales. This course teaches students the fundamental principles of dendrochronology through a combination of formal lectures, class discussion and laboratory exercises. By the end of the course, they are able to explain the key concepts underlying dendrochronology and discuss tree rings may be used to address contemporary issues in natural history, resource management and climate science.

*GEOG3900, Global Freshwater in the 21st Century:* Water is the most important substance on our planet. It is essential to all known forms of life, is the central component of the Earth's climate system, and underlies nearly every aspect of the global economy. By the end of the semester, students are able to explain the complexity of our planet's global waterscape and describe its physical origins and societal relevance. They will be intimately familiar with current trends in freshwater availability and be able to describe in detail how human-induced climate change is expected to affect water resources in the United States and elsewhere. They will also be able to provide examples that illustrate the benefits of sound water policies to human health, ecosystems, and the economy.

*GEOG5426, Climatic Variations:* Does the past really matter? This seminar course discusses the major applications of paleoclimatology, which uses physical and cultural evidence to make inferences about climates of the past. Students review the processes that govern our modern climate and explore what paleoclimate records tell us about how these systems respond to (and express) climate change. In the process, they learn how insights drawn from the past can help inform discussions of contemporary issues linked to climate change, hazards and the management of natural resources. Case studies are selected to focus on the Holocene (the last 10 ka) and, to a lesser degree, the climate of North America and Minnesota.

*GEOG8260, The Art of Scientific Presentations:* The ability to deliver effective and engaging oral presentations is a critical skill for students in all disciplines. Unfortunately, despite the importance of clear communication, scientific presentations are too frequently confusing, abstract and boring. In this seminar, students are introduced to a diverse set of presentation methods and use exercises to apply these techniques to their own ideas. The course also examines the characteristics common to exceptional scientific talks, shows how basic design principles can be used to create more effective visual aids, and discusses the science behind effective communication techniques.

*GEOG8280, The Impact of Decadal Climate Variability on Terrestrial Ecosystems:* The field of decadal prediction has emerged as a priority area for climate research, largely because the upcoming ten to thirty years are often a critical period for planning, resource management and public policy. This course examines decadal and multidecadal variability in the global climate system and investigates how this behavior might plausibly influence the dynamics of terrestrial ecology and landscape-scale disturbances. Students are challenged to conduct their own analysis of decadal variability in climate or ecology, either working on their own or as part of a small team.

*GEOG8280, Frontiers in Paleoclimate:* Piecing together climates of the past provides us with a baseline to gauge current and future climate change, allows us to document potential 'climate surprises', and provides a broader perspective to evaluate the interconnections between climate, ecology, and society. But proxy data (and our interpretations of those data) can also be confounding, so much so that the field is often a crucible for debate among climate scientists and other parties. In this seminar, we review current debates in paleoclimatology so that we may try to define the intellectual frontier(s) of this discipline.

*GEOG8405: Graduate Student Professional Development:* This one-credit course, which is required for all graduate students in Geography, serves as an extended orientation to our department. Participants set a plan for their graduate degree program, and identify strategies and resources to make their time in our department a success. In addition to reviewing the formal requirements of the Masters and Ph.D. programs in Geography, students identify potential post-degree career opportunities and opportunities to win financial support for their graduate education and research. We also discuss the 'inner-workings' of academic geography departments, as well as the university as a whole, and highlight common problems and pitfalls encountered by graduate students.

**University of Arizona (Tucson, USA)**

Teaching Associate in the Laboratory of Tree-Ring Research  
2003

**University of Western Ontario (London, Canada)**

Teaching Assistant in the Department of Geography  
1995-1997

**Graduate Student Advising and Committees**

*Advising*

J. Avila, *Paleohydrological assessment of extreme flooding events*, M.A. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (in progress).

M. McPartland, *Developing a paleoclimate framework for multi-decadal estimation of spring timing*, Ph.D. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (in progress).

U.K. Thapa, *Investigating changes in forest growth and atmospheric circulation in the Himalayan region during the past four centuries*, Ph.D. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (2020).  
Current position: NOAA Climate and Global Change Fellow, University of California, Santa Barbara.

A. Hefner, *Holocene paleofloods in the United States and their relevance to flood mitigation, hazard assessment and policy*, M.A. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (2020).

S. Appleton, *Tree-ring reconstruction of winter precipitation from mountain hemlock (*Tsuga mertensiana*) in Crater Lake National Park, Oregon*. M.A. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (2015). Current position: Education Product and Programs Specialist, National Geographic.

X. Li, *Assessing forward modeling of tree-ring growth and the impacts of non-climatic factors on tree-ring width in the Northern Hemisphere*. M.A. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (2014). Current position: Post-doctoral Researcher, Department of Earth and Atmospheric Sciences, Cornell University.

M.C.A. Torbenson, *Assessing the response of upper montane forests to decadal variability in winter precipitation*. M.A. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (2013). Current position: Post-doctoral Researcher, Department of Civil, Environmental and Geodetic Engineering, The Ohio State University.

*Committee member*

Matthew Schlauderaff, M.Sc. in Natural Resource Management, North Dakota State University, Fargo, North Dakota, USA (in progress).

M.L. Buchanan, *Drivers of the oak-maple transition across contrasting site types in southwestern Wisconsin*. Ph.D. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (in progress).

S. Chaliyakunnel, *Constraints on global and regional sources of atmospheric organic compounds from space-based measurements*, Ph.D. in Land and Atmospheric Science, University of Minnesota, Minneapolis, Minnesota, USA (2020).

T.V. dos Santos, *Climate change implications to irrigated rice production in southern Brazil: A modeling approach*, Ph.D. in Land and Atmospheric Science, University of Minnesota, Minneapolis, Minnesota, USA (2017).

M. Heyman, *Bootstrap estimator classification and applications of wavelet bases*. Ph.D. in Statistics, University of Minnesota, Minneapolis, Minnesota, USA (2016).

L. Dietz, *Applied statistical methods in climate change*. Ph.D. in Statistics, University of Minnesota, Minneapolis, Minnesota, USA (2016).

M. Mazzocato, *The impact of natural disturbance on subarctic alpine treeline dynamics in the southwestern Yukon*. M.Sc. in Environmental Studies, Queen's University, Kingston, Ontario, Canada (2015).

- K.J. Harding, *An examination of changes in the strength of land-atmosphere coupling and vegetation memory over the Sahel due to climate change*. Ph.D. in Land and Atmospheric Science, University of Minnesota, Minneapolis, Minnesota, USA (2014).
- L.J. Johnson, *Tree-ring reconstruction of island and mainland fire events along a historic canoe travel corridor in Minnesota's Boundary Waters Wilderness*, M.A. in Geography, University of Minnesota, Minneapolis, Minnesota, USA (2013).

*External examiner*

- A. Quesada Román, *Deciphering natural hazard histories based on tree-ring analyses in contrasting tropical ecosystems of Costa Rica*, Ph.D. in Environmental Science, University of Geneva, Geneva, Switzerland (in progress).
- F. Cuesta-Valero, *Earth's heat inventory from climate model simulations and observations*, Ph.D. in Environmental Science, Memorial University, St. John's, Canada (2020).
- S. Ma, *Lake level variation in south-eastern region of the Winnipeg River drainage basin over the past two millennia*. M.Sc. in Biology, Queen's University, Kingston, Ontario, Canada (2011).
- H.A. Haig, *Diatom-inferred changes in effective moisture from Gall Lake, northwestern Ontario, over the past two millennia*. M.Sc. in Biology, Queen's University, Kingston, Ontario, Canada (2011).

**Student Recognition and Awards**

- 2012 **Xiaolu Li** Graduate Fellowship, College of Liberal Arts
- 2013 **Max Torbenson** Graduate Research Partnership Program, College of Liberal Arts; Herbert Wright Quaternary Paleoecology Fellowship
- 2014 **Sarah Appleton** Graduate Research Partnership Program, College of Liberal Arts
- 2015 **Daniel Crawford** Outstanding Graduating Senior, Department of Geography, Environment and Society | **Uday Thapa** Herbert Wright Quaternary Paleoecology Fellowship
- 2016 **Jacob Arndt** Newton Winchell Award for Excellence in Earth Science | **Uday Thapa** Carolyn Crosby Award, University of Minnesota Graduate School
- 2018 **Uday Thapa** Best Graduate Student Publication & Ralph Hall Brown Fellowship, Department of Geography, Environment and Society; Graduate Research Partnership Program, College of Liberal Arts
- 2019 **Amanda Hefner** Graduate Research Partnership Program, College of Liberal Arts; ThinkSwiss Research Scholarship, Embassy of Switzerland | **Uday Thapa** Doctoral Dissertation Fellowship, University of Minnesota Graduate School; Dayton Fellowship, Bell Museum of Natural History | **Judith Avila** Beverly & Richard Fink First Year Fellowship, College of Liberal Arts; Graduate Fellowship, Department of Geography, Environment and Society
- 2020 **Mara McPartland** Natural History Award, Bell Museum of Natural History; Louise Dosedall Fellowship, University of Minnesota Graduate School (declined); Interdisciplinary Doctoral Fellowship, Center for Forest Ecology | **Uday Thapa** Climate & Global Change Fellowship, National Oceanic and Atmospheric Administration

## COMMUNITY SERVICE

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### Professional Service

Coordination Team Member, PAGES 2k Network, 2016 to present.  
Member, Scientific Committee, PAGES Floods Working Group, 2015 to present.  
Referee, Newcomb Cleveland Prize, American Association for the Advancement of Science, 2020.  
Member, Committee of Visitors, Division of Atmospheric and Geospace Sciences, National Science Foundation, 2020.  
Member, Framework for technical review of paleoflood information, United States Geological Survey, 2018 to 2020.  
International Member, Discovery Grant Evaluation Group - Geosciences, Natural Sciences and Engineering Research Council of Canada, 2017 to 2020.  
Site Visit Committee, Collaborative Research and Development Grant Program, Natural Sciences and Engineering Research Council of Canada, University of Waterloo, 2018.  
External Evaluator, Tenure and Promotion Committee, Department of Earth Sciences, University of Memphis, 2017.  
Member, Scientific Committee, 4th International Conference of Asian Dendrochronology, Kathmandu, Nepal, March 4-8, 2015.  
Member, Scientific Committee, 9th International Conference on Dendrochronology, Melbourne, Australia, January 13-17, 2014.

### University Service

Senator, University Senate, University of Minnesota, 2019-2021.  
Members' Representative, University Corporation for Atmospheric Research, 2011 to present.  
Host, Fulbright Scholar Program, Dr. Farid Seyfullayev, Azerbaijan Academy of Sciences, 2018.

### College Service

Faculty Advisory Committee for the Undergraduate Research Opportunity Program, 2014-16.

### Departmental Committees

Admissions and Financial Aid Committee, Department of Geography, University of Minnesota, 2010-2011, 2014-2018.  
Graduate Education and Policy Committee, Research/Awards Committee, Department of Geography, Environment and Society, University of Minnesota, 2013-2014.  
Search Committee for physical geography and urban geography positions (co-chair), Executive Committee, Undergraduate Education Policy Committee, Department of Geography, University of Minnesota, 2012-2013.  
Graduate student representative, Five-year administrative review of Dr. Thomas Swetnam, Director, Laboratory of Tree-Ring Research, University of Arizona, 2006.

### Scientific Reviewer

*Arctic*

*Arctic, Antarctic and Alpine Research*

*Belgian Journal of Botany*

*Bermuda Biological Station for Research*

*Canadian Journal of Forest Research*

*Climate Dynamics*

*Climate of the Past*

*CONICYT (Chile)*

*Dendrochronologia*

*Ecological Applications*

*Ecology and Evolution*

*Environmental Pollution*

*Environmental Research Letters*

*Frontiers in Plant Science*

*Geographie physique et Quaternaire*

*Geology*

*Geomorphology*

*Geophysical Research Letters*

*Global and Planetary Change*

*Global Biological Change*

*Hydrological Processes*  
*International Journal of Climatology*  
*International Journal of Wood Anatomists*  
*Journal of Archeological Sciences*  
*Journal of Biogeography*  
*Journal of Climate*  
*Journal of Great Lakes Research*  
*Journal of Geophysical Research - Atmospheres*  
*Journal of Hydrology*  
*Journal of the American Water Resources Association*  
NOAA Climate Program  
National Science Foundation  
*Natural Hazards and Earth System Sciences*  
Natural Sciences and Engineering Council of Canada  
*Nature*  
*Nature Communications*  
*Nature Climate Change*  
*Nature Geoscience*

*New Phytologist*  
*PAGES Magazine*  
*Physical Geography*  
*PLOS ONE*  
*Proceedings of the National Academy of Sciences*  
*Progress in Physical Geography*  
*Quaternary Research*  
*Science Advances*  
*Science of the Total Environment*  
Swiss National Science Foundation  
*Tree Physiology*  
*Tree Rings and Natural Hazards* [Springer]  
*Trees*  
*Tree-Ring Research*  
University of California Press  
Wageningen University, Netherlands  
*Water Resources Research*  
*WIREs Climate Change*

#### **Data Contributions**

- Martin, J.T., Pederson, G.T., Woodhouse, C.A., Cook, E.R., McCabe, G.J., Wise, E.K., Erger, P., Dolan, L., McGuire, M., Gangopadhyay, S., Chase, K., Littell, J.S., Gray, S.T., **St. George, S.**, Friedman, J., Sauchyn, D., St. Jacques, J., and King, J., A network of 31 Upper Missouri River Basin naturalized water-year (Oct-Sep) streamflow reconstructions spanning years 800-1998 CE: U.S. Geological Survey data release, <https://doi.org/10.5066/P9FC7ILX> (2019).
- PAGES2k Consortium, A global multiproxy database for temperature reconstructions of the Common Era. *figshare* <https://doi.org/10.6084/m9.figshare.c.3285353> (2017).
- S. St. George et al.**, *Canadian Prairies regional drought indices*. IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series # 2009-016. NOAA/NCDC Paleoclimatology Program, Boulder CO, USA (2009).
- S. St. George et al.**, *Winnipeg River basin regional ringwidth series*. IGBP-PAGES World Data Center for Paleoclimatology Data Contribution Series #2008-065. NOAA/NGDC Paleoclimatology Program. Boulder, CO, USA (2008).
- S. St. George** and E. Nielsen, *Southern Manitoba annual precipitation reconstruction*. International Tree-Ring Data Bank. IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series #2002-060. NOAA/NGDC Paleoclimatology Program. Boulder, CO, USA (2002).

#### **Editorial Service**

- Y. Kushnir, C. Cassou, S. St. George, N. Caltabiano, L. von Gunten (editors), Special issue on decadal climate variability, Joint publication of *CLIVAR Exchanges* and *Past Global Changes Magazine*, 2017.
- Review editor, *Frontiers in Ecology and Evolution* (Paleoecology section), 2013-present.
- Guest editor (with David Sauchyn), *Canadian Water Resources Journal* (Special Issue – “Paleoenvironmental perspectives on drought in western Canada”), 2006.

#### **Sessions, Workshops and Special Issues Organized**

- Shifting extremes: Understanding hydrological events for societal benefit* (with Seyedehzahra Samadi, Micheala Bray, and Stacey Archfield). A special session at the American Geophysical Union Fall Meeting. San Francisco, California, December 12 - 16, 2016.

*Fight the PowerPoint! Become a science presentation superstar* (with Todd Reubold). A one-hour workshop to develop effective and engaging oral presentations. American Association for the Advancement of Science Annual Meeting. Chicago, Illinois, February 14, 2014.

*Challenges in dendrochronology* (with Kurt Kipfmüller, Kevin Anchukaitis, and Neil Pederson). A special session at the American Association of Geographers Annual Meeting. New York, New York, February 24 - 28, 2012.

*Environmental and cultural insights from tree rings* (with Mike Pisaric). A special session at the Canadian Association of Geographers Annual Meeting. Sponsored by the Canadian Geomorphology Research Group. Carleton University, Ottawa, Ontario, May 26 – 30, 2009.

*Physical geography and tree-ring analysis* (with Dan Smith and Louise Filion). A special session at the Canadian Association of Geographers Annual Meeting. Sponsored by the Canadian Geomorphology Research Group and the Canadian Dendrochronology Research Group. Université de Laval, Québec, Québec, May 20 – 24, 2008.

*Drought in western Canada: Proxies, paleoclimate observations and human interactions* (with David Sauchyn). A special session at the Canadian Quaternary Association Biennial Meeting. University of Manitoba, Winnipeg, Manitoba, June 5 – 9, 2005.

*Past climatic change in Manitoba* (with Danny Blair), a one-day workshop highlighting ongoing scientific research in Manitoba dealing with climate change. University of Winnipeg, Winnipeg, Manitoba, August 30, 2001.

### **Workshops Attended**

*Riederalp 2018 workshop on disasters and societies*, a four-day workshop dedicated to the exposure, vulnerability and resilience of human societies to climate- and weather-related disasters from the Holocene to the Anthropocene. Riederalp, Switzerland, March 20-24, 2018.

*PAGES NAM2k Phase Two*, a four-day workshop focused on advancing understanding and reconstructions of North American climate over the past 2,000 years. Fort Collins, Colorado, October 12-15, 2015.

*PAGES NAM2K tree ring*, a two-day meeting to compile and analyze climate reconstructions from tree rings for North America. Tucson, Arizona, October 27-28, 2011.

*Presenting data and information*, a one day course on information design taught by Edward Tufte. Albuquerque, New Mexico, January 30, 2009.

*Past and future hydroclimatic variability: applications to water resource management in the Prairie Provinces*, a two-day workshop communicating paleoenvironmental research to water managers. Canmore, Alberta, March 16-18, 2008.

*Applying paleoenvironmental data to hydropower management in Manitoba*, a one-day workshop reviewing paleoclimate research projects sponsored by Manitoba Hydro and educating environmental scientists on current practices related to hydropower planning. University of Winnipeg, September 20, 2007.

*Climate change and hydropower*, a two-day workshop to examine the impacts of climate change on hydropower in Canada, and the US, and determine knowledge needed to facilitate future adaptation. Canadian Climate Impacts and Adaptation Research Network – Water Sector. Winnipeg, Manitoba, March 2-3, 2006.

*Planning workshop to develop hydroclimatic reconstructions for decision support in the Colorado River basin*, a two-day workshop to develop proposals, collaborations and/or pilot projects to broaden the use of paleoclimate data in the Colorado River basin management and decision making. University of Arizona, Tucson, Arizona, May 4-5, 2005.

*A multi-millennia perspective on drought and implications for the future*, a four-day workshop to define the state-of-the-art with respect to the record and mechanisms of drought in North America and Northern Africa. CLIVAR/PAGES/IPCC, University of Arizona, Tucson, Arizona, November 18-21, 2003.

*Paleoenvironmental records for climate change impacts and adaptation*, a two-day workshop to improve linkages between paleoenvironmental researchers and non-traditional user groups. Prairie Adaptation Research Collaborative, University of Regina, Regina, Saskatchewan, March 21-22, 2003.

*Social dimensions of adaptation to climate change on the prairies*, a one-day workshop discussing potential contributions of social scientists to the study of climate change in Manitoba. University of Winnipeg, Winnipeg, Manitoba, February 13, 2002.

*Hydroclimatic variability in North America*, a two-day meeting to establish a continent-wide hydrological database. Lamont-Doherty Earth Observatory, Columbia University, Palisades, New York. May 24-25, 2001.

### **Field Trips and Field Schools**

*Training workshop on dendrochronology as a tool of understanding climate change*, Tree-Ring Society of Nepal and University of Minnesota, Resources Himalaya Foundation, Kathmandu, Nepal, July 5-8, 2016.

*North American Dendroecological Fieldweek*, Group leader, Valles Caldera National Preserve, New Mexico, May 28 - June 5, 2012.

*Environmental geoscience and geomorphic systems in the Red River Valley, Manitoba* (with Greg Brooks). Canadian Quaternary Association Biennial Meeting. University of Manitoba, Winnipeg, Manitoba, June 3 – 4, 2005.

*CPG/NGSC Field trip*, co-leader (with Erik Nielsen) of trip featuring environmental geoscience in the Red River Valley, 2002 Energy and Mines Ministers' Conference, Winnipeg, Manitoba, September 14, 2002.

### **Media Interviews and Features**

CBC Radio's *The Current*, *Climate music project*, November 14, 2019.

New York Times, *This is what climate change sounds like*, November 9, 2019.

CBC News, *'Unprecedented' wet fall Manitoba weather hurts crops, puts flood fighters into action*, October 10, 2019.

Bloomberg, *Banks tout green credentials yet cling to fossil-fuel clients*, October 2, 2019.

David Suzuki Foundation, *It's our choice: turn down the heat or cook the planet*, July 31, 2019.

People, *There is 'no doubt' humans are causing climate change, scientists say in new report*, July 25, 2019.

Scientific American, *Current warming is unparalleled in the past 2,000 years*, July 25, 2019.

BBC Newsday, July 25, 2019.

Deutschlandfunk, *Lieblingsargument der Klimawandelleugner entkräftet*, July 25, 2019.

de Volkskrant, *Duidelijker wordt het niet: de klimaatverandering van nu is echt uniek*, July 24, 2019.

Carbon Brief, *Global extent of climate change is 'unparalleled' in past 2,000 years*, July 24, 2019.

El País, *El calentamiento actual es el más universal e intenso en 2.000 años*, July 24, 2019.

Nature Podcast, *The history of climate change, and making vaccines mandatory*, July 24, 2019.

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Cosmos, *Recent warming 'unmatched in the past 2000 years'*, July 24, 2019.

Business Insider, *Yes, the climate has changed before. But warming has never hit the entire planet at once the way it is now, new research shows*, July 24, 2019.

Los Angeles Times, *Earth warmed faster in the last few decades than the previous 1,900 years, study says*, July 24, 2019.

Gizmodo, *Climate shifts of the past 2,000 years were nothing like what's happening today*, July 24, 2019.

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NBC News, *Climate scientists drive stake through heart of skeptics' argument*, July 24, 2019.

Environmental Health News, *Ancient North Carolina trees that hold climate clues are under threat*, June 26, 2019.

Prairie Public Broadcasting, *Flood study using trees*, December 18, 2018.

Farm Forum, *NDSU and UMN researchers to unearth old Red River flood evidence*, December 7, 2018.

Physics Today, *Four ways we know pre-Columbian America was plagued by megadroughts*, August 1, 2018.

Championing Science, *Teaching grad students the art of communicating science*, July 27, 2018.

El País, *Los árboles no olvidan la guerra*, April 19, 2018.

Sciences Et Avenir, *Des arbres racontent le combat à mort d'un cuirassé allemand*, April 13, 2018.



As It Happens, *How Norwegian trees tell the story of a cloaked Nazi war ship*, April 12, 2018.

Smithsonian Magazine, *Norwegian trees still bear evidence of a World War II German battleship*, April 11, 2018.

Popular Mechanics, *How the Nazis' largest battleship is still affecting Norway today*, April 11, 2018.

BBC Science & Environment, *Nazi legacy found in Norwegian trees*, April 11, 2018.

Eos, *Tree rings tell a tale of wartime privations*, April 11, 2018.

Scientific American, *Taming the mighty Mississippi may have caused bigger floods*, April 10, 2018.

Southeastern Missourian, *Study fingers engineering along Mississippi for worsened floods*, April 5, 2018.

The Weather Network, *Flood controls blamed for floods in Mississippi, Louisiana*, April 5, 2018.

The Times-Picayune, *Mississippi River flood control blamed for flooding Louisiana*, Mississippi, April 5, 2018.

News@Northeastern, *Mississippi River keeps flooding and humans are to blame, data show*, April 5, 2018.

Minnesota Star-Tribune, *Study: flood control engineering likely has worsened floods*, April 4, 2018.

Washington Post, *Scientists say the Mississippi is flooding more than it has in 500 years — and we caused it*, April 4, 2018.

Chicago Tribune, *Study: flood control engineering likely has worsened floods*, April 4, 2018.

Science News, *Efforts to contain Mississippi floods may have made them worse*, April 4, 2018.

Lake City Graphic, *Felled tree has stories to tell*, March 22, 2018.

Physics Today, *What causes megadroughts?* February 2018.

Newsweek, *Is the U.S. heading for a giant drought? Climate history offers vital clues about the next century*, December 15, 2017.

Warm Regards, *Climate change and the world of Game of Thrones*, September 8, 2017.

Independent, *Climate change: Nearly 700 'natural thermometers' demonstrate the world is warmer than it's ever been*, July 12, 2017.

Science Daily, *Most comprehensive database on past global changes is online*, July 11, 2017.

Nature Climate Change, *The visceral climate change experience*, March 2017.

College of Liberal Arts, University of Minnesota, *Let's talk about trees*, December 20, 2016.

Forecast: A podcast about climate science and climate scientists, *Scott St. George on tree rings*, September 16, 2016.

Smithsonian Magazine, *This song is composed from 133 years of climate change data*, September 21, 2015.

Minneapolis Star-Tribune, *U students play the music of the warming spheres*, June 1, 2015.

Gaia Dergi, *Tek bir şarkıda 133 yılın iklim değişikliğini dinleyin*, May 27, 2015.

Sopitas, *Así suena el Calentamiento Global*, May 23, 2015.

EOS, *Musical composition conveys climate change data*, May 21, 2015.

Scientific American, *Now you can "hear" climate change*, May 21, 2015.

nrc.nl, *Luister dit muziekstuk en hoor hoe snel de aarde opwarmt*, May 15, 2015.

Wise Society, *Il riscaldamento climatico in una canzone*, May 15, 2015.

Climate Central, *What climate change sounds like from Amazon to Arctic*, May 10, 2015.

New York Times, *A Minnesota quartet, tuned to temperatures from the equator to the arctic, performs global warming*, May 8, 2015.

Winnipeg Free Press, *Ancient trees discredit drought*, Winnipeg Free Press, July 26, 2014.

New York Times, *Performing global warming*, October 31, 2013.

Popular Science, *Listen to 130 years of global warming, played on the cello*, July 19, 2013.

Slate, *The haunting melody of global warming*, July 18, 2013.

MinnPost, *U of M cellist renders climate as music to our ears, and it's lovely*, July 11, 2013.

The Weather Channel, *A tune to raise climate change awareness*, July 10, 2013.

MPR News, *How a University of Minnesota student set global warming to music*, July 9, 2013.

Slate, *This is what global warming sounds like*, July 3, 2013.

New York Times, *Global warming trend and variations charted by cello*, July 2, 2013.

io9, *130 years of global temperature data, converted to music*, July 1, 2013.

Minnesota Daily, *U student reads flood history in trees*, Minnesota Daily, April 26, 2012.

Minneapolis Star-Tribune, *U student's flood data project gets national attention*, April 6, 2012.  
Mid-Can Studios (Winnipeg), *Red River floods*, December 28, 2011.  
WCCO Radio (Minneapolis), *Flooding and Minnesota's natural history*, March 17, 2011.  
KSTP-TV (St. Paul), *How Minnesota's geography plays a role in flooding*, February 23, 2011.  
Power Week Canada, *Long-term study of river flows points to bright future for Manitoba power supply*, February 5, 2007.  
Lac du Bonnet Leader, *River flow picks up 58 percent*, January 26, 2007.  
Winnipeg Free Press, *Winnipeg River a turn-on for Manitoba Hydro*, January 22, 2007.  
The Independent of London, *Dating of wreck's timbers puts wind in sails of the 'Mary Celeste' mystery*, January 23, 2005.  
Country Canada digital channel, *Country Wide*, November 13, 2002.  
Winnipeg Free Press, *Imagine 100-year drought: Researchers use tree rings in climate study*, November 1, 2002.  
Winnipeg Free Press, *The record of the rings*, October 30, 2001.

## RESEARCH GRANTS

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*I have served as Principal Investigator or co-Principal Investigator on funded projects on climate change, drought, and water resources with budgets totaling nearly two million USD.*

### External Agencies

- S. St. George**, J. Zeleznik, 2018-2022. Paleohydrological assessment of extreme flooding events, Geography and Spatial Sciences Program, National Science Foundation, Award 1830640, \$349,934 USD.
- S. St. George**, 2017-2018. Decadal-to-multidecadal variability in the Earth's climate as viewed through the lens of ancient trees. Alexander von Humboldt Foundation, €89,398 EUR.
- S. Chatterjee, **S. St. George**, 2016-2019. On conditional statistical procedures for simultaneous model selection, inference and prediction in complex climate systems. Computational and Data-Enabled Science and Engineering in Mathematical and Statistical Sciences, Division of Mathematical Sciences, National Science Foundation, Award 1622483, \$174,997 USD.
- T. Ault, **S. St. George**, 2016-2020. Collaborative research: Quantifying the risk of widespread megadrought in North America. Paleoclimate Program, Directorate for Geosciences, National Science Foundation, Awards 1602512 and 1602564, \$530,940 USD.
- T. Edevold, J. Zeleznik, **S. St. George**, 2016. Survey of settlement-era buildings and remnants in Clearwater, Polk, and Mahnomen Counties. Minnesota Historical Society, \$10,000 USD.
- M. Jonason, A. Degerstrom, S. Kitchell, M. Peihl, J. Zeleznik, **S. St. George**, 2015. Survey of settlement-era buildings and remnants in Clay, Becker and Norman Counties. Minnesota Historical Society, \$9,800 USD.
- E.R. Cook, U. Lall, N. Pederson, N. Devineni, C.A. Woodhouse, E.K. Wise, **S. St. George**, 2014-2017. Collaborative research: Multi-site paleo-reconstruction of Missouri River streamflows from tree ring data. Paleoclimate Program, Directorate for Geosciences, National Science Foundation, Awards 1401698, 1404188, 1401549, 1403957, and 1403102, \$553,435 USD.
- K.F. Kipfmüller, **S. St. George**, 2011-2014. The impact of exceptionally strong decadal climate variability on recent fire, tree recruitment, and hydro-ecological dynamics within four Klamath Network park units. Great Lakes Northern Forest Cooperative Ecosystem Studies Unit, National Park Service, \$56,507 USD.
- S. St. George**, 2003-2007. The frequency, severity and causes of extreme droughts in the Winnipeg River basin. Research and Development Grant, Manitoba Hydro. \$98,200 CDN.
- E. Nielsen, T.W. Anderson, W.M. Buhay, D.L. Forbes, C.F.M. Lewis, **S. St. George**, L.H. Thorleifson, 2000-2001. Climatic extremes in southern Manitoba during the past millennium. Environment Canada, Climate Change Action Fund. \$25,000 CDN.

### Internal Grants

- S. St. George**, 2016-2017. The long view on drought in Nepal. Talle Faculty Research Award, College of Liberal Arts, University of Minnesota. \$47,996 USD.
- J. Arndt, **S. St. George**, 2016. Climate variability and its relationship with air travel times in the Seattle-Minneapolis/St. Paul corridor. Undergraduate Research Opportunities Program, Office of the Vice President for Research, University of Minnesota. \$1,400 USD.
- X. Duan, **S. St. George**, 2015. Quantifying long-term trends in the Red River of the North to inform decisions on flood protection. Undergraduate Research Opportunities Program, Office of the Vice President for Research, University of Minnesota. \$1,400 USD.
- S. St. George**, S. Chatterjee, 2012-2013. Decadal climate predictability in the Earth's climate system. Institute on the Environment, University of Minnesota. \$2,558 USD.
- D. Crawford, **S. St. George**, 2013. The sound of our warming planet: expressing global temperature change as a series of musical notes. Undergraduate Research Opportunities Program, Office of the Vice President for Research, University of Minnesota. \$1,400 USD.
- S. St. George**, 2011. Educational exchange with the University of Bergen (Norway). International Travel Grant, Global Programs and Strategic Alliance, University of Minnesota. \$1,600 USD.

E.L. Wertz, **S. St. George**, 2011. Searching for tree-ring evidence of the 2009 Red River flood in Minnesota and North Dakota. Undergraduate Research Opportunities Program, Office of the Vice President for Research, University of Minnesota. \$1,400 USD.

**S. St. George**, 2011-2012. Searching the north shore of Lake Winnipeg for paleobotanical evidence of ancient droughts. Grant-In-Aid Program, Office of the Vice President for Research, University of Minnesota. \$47,772 USD.

#### **Partnerships**

Indian Ocean World Center, 2018-2025. Appraising risk, past and present: Interrogating historical data to enhance understanding of environmental crises in the Indian Ocean World. Social Sciences and Humanities Research Council of Canada, \$2.5M CAN.

#### **Computing Allocations**

T. Ault, **S. St. George**, 2017. Feedbacks and forcings of medieval megadroughts in the western US. University Large Request, Computational & Information Systems Laboratory, National Corporation for Atmospheric Research. 2,400,000 core-hours.