
SCOTT J. DAVIDSON, PhD – CURRICULUM VITAE

CONTACT INFORMATION

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SUMMARY OF QUALIFICATIONS

Over 10 years' research experience focusing on characterizing the vulnerability of biogeochemical and biogeophysical functioning of terrestrial ecosystems to global change.

Experience in developing, organizing and teaching a range of ecology and environmental science classes.

7 lead author and 2 co-author publications in international, peer-reviewed journals.

Extensive experience of using field techniques in remote locations, remote sensing/GIS techniques and laboratory techniques.

Adjunct Assistant Professor status to allow for graduate student supervision

RESEARCH INTERESTS

- Plant-soil interactions
- Climate change
- Biogeosciences
- Ecosystem vulnerability and management
- Disturbance/restoration ecology
- Remote sensing and GIS
- Ecohydrology

TEACHING INTERESTS

- Ecology
 - Global Change
 - Ecosystem vulnerability and management
 - Science communication
 - Ecohydrology
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EDUCATION**PhD**

Nov 2013 – Aug 2017

University of Sheffield, UK &
San Diego State University, USA

PhD thesis: *Scaling methane in spatially heterogeneous Arctic tundra landscapes: the importance of Vegetation*

Supervisors: Dr. Donatella Zona
Prof. Gareth Phoenix
Dr. Maria J. Santos

Master of Science (Merit) Polar and Alpine Change

Oct 2012 – Oct 2013

University of Sheffield, UK

MSc thesis: *Comparisons of environmental controls on riparian and heathland vegetation community composition,*

Supervisors: Prof. Phillip Wookey

Master of Arts (First Class Hons) Geography

Sep 2007 – Jun 2012

University of Dundee, UK

Honours thesis: *Vegetation colonisation on a debris-covered glacier*

Supervisor: Dr. Mark Cutler

EMPLOYMENT HISTORY**Adjunct Assistant Professor
Postdoctoral Fellow**

Oct 2019 – Present

March 2018 – Present

University of Waterloo, Canada
Supervisor: Prof. Maria Strack

TEACHING EXPERIENCE	Sessional Instructor University of Waterloo, Canada Role: Leading discussions on ' <i>Managed Wetlands: Biogeochemistry</i> ' postgraduate course focusing on methane production, oxidation and emissions from wetlands	January 2019
	Sessional Instructor University of Waterloo, Canada Role: Developing, organising and teaching and innovative 2 nd year undergraduate module ' <i>Approaches to Research in Physical Geography</i> ' (12 lectures, 4 lab components, 1 exam) 60 students	Sep 2018 – Dec 2018
	PhD Mentor British Ecological Society Undergraduate summer school Role: Teaching undergraduate students about the importance of ecological and conservation research across the UK	July 2016
	Field Instructor University of Sheffield, UK Role: Co-leading 3 field trips to Arctic Sweden teaching undergraduate students about the importance of arctic ecosystems under a changing climate	2015 – 2017
STUDENT SUPERVISION	Abigail Shingler (MSc student) Project: Impact of wildfire on methane production and emissions from rock barren peatlands	2020-2022
	Megan Schmidt (MSc student) Project: Greenhouse gas exchange on restored peatland seismic lines (Co-supervised with Prof. Maria Strack)	2019 – 2021
	Tianshi Wang (BSc student) Project: Soil respiration following seismic line restoration	2019 – 2020
	Markus Kangur (High school student) Project: Carbon dynamics of northern peat swamps	2019 – 2020
	Olivia Trudeau (BSc student) Project: Soil properties following seismic line restoration	2018 – 2019
	Claire Estey (BSc student) Project: Estimating peatland vegetation phenology using digital photography AND Differences in mycorrhizal infection rates between three common boreal peatland plant species	2020 – 2021
INDUSTRY EXPERIENCE	Ecologist Atkins Global, UK	Jul 2017 – Feb 2018
	Assistant Ecologist FDM Ecology, UK	Sep 2011 – Sep 2012
PEER REVIEWED PUBLICATIONS (Underlined names indicate HQP)	<ol style="list-style-type: none"> Davidson, SJ, Goud, EM, Franklin, C, Nielsen, S and Strack, M. Seismic line disturbance alters soil physical and chemical properties across boreal forest and peat soils, <i>Front. Earth. Sci.</i> 8:821, https://doi.org/10.3389/feart.2020.00281 Arndt, KA, Santos, MJ, Ustin, S, Davidson, SJ, Stow, D, Oechel, WC, Tran, TTP, Graybill, B and Zona, D (2019) Arctic Greening Associated with Lengthening Growing 	

Season in Northern Alaska, *Environmental Research Letters*
<https://doi.org/10.1088/1748-9326/ab5e26>

3. **Davidson, SJ**, Strack, M, Bourbonniere, RA and Waddington, JM (2019) Controls on soil carbon dioxide (CO₂) and methane (CH₄) fluxes from a peat swamp vary by hydrogeomorphic setting, *Ecohydrology* <https://doi.org/10.1002/eco.2162>
4. **Davidson, SJ**, Elmes, MC, Rogers, H, van Beest, C, Petrone, R, Price, JS and Strack M (2019) Hydrogeologic setting overrides any influence of wildfire on pore water dissolved organic carbon (DOC) concentration and quality at a Boreal Fen, *Ecohydrology*, <https://doi.org/10.1002/eco.2141>
5. **Davidson, SJ**, van Beest, C, Petrone, R and Strack, M (2019) Wildfire overrides hydrological controls on boreal peatland methane emissions, *Biogeosciences*, 16, 2651-2660, <https://doi.org/10.5194/bg-16-2651-2019>
6. **Davidson, SJ**, Santos, MJ, Sloan, VL, Reuss-Schmidt, K, Phoenix, GK, Oechel, WC and Zona, D, (2017) Upscaling CH₄ Fluxes Using High-Resolution Imagery in Arctic Tundra Ecosystems, *Remote Sensing*, 9(12), 1227; <https://doi.org/10.3390/rs9121227>
7. **Davidson, SJ**, Santos, MJ, Sloan, VL, Watts, JD, Phoenix, GK, Oechel, WC and Zona, D (2016) Mapping Arctic Tundra Vegetation Communities Using Field Spectroscopy and Multispectral Satellite Data in North Alaska, U.S.A., *Remote Sensing*, 8(12), 978; <https://doi.org/10.3390/rs8120978>
8. **Davidson, SJ**, Sloan, VL, Phoenix, GK, Wagner, R, Fisher, JP, Oechel, WC and Zona, D (2016) Vegetation Type Dominates the Spatial Variability in CH₄ Emissions Across Multiple Arctic Tundra Landscapes, *Ecosystems*, 19: 1116. <https://doi.org/10.1007/s10021-016-9991-0>
9. Walker, DA, Breen, AL, Druckenmiller, LA, Wirth, LW, Fisher, W, Raynolds, MK, Šibík, J, Walker, MD, Hennekens, S, Boggs, K, Boucher, T, Buchhorn, M, Bütmann, H, Cooper, DJ, Daniëls, FJA, **Davidson, SJ** et al. (2016) The Alaska Arctic Vegetation Archive (AVA-AK). *Phytocoenologia*, 46(2), 221-229, <https://doi.org/10.1127/phyto/2016/0128>

**PUBLICALLY
AVAILABLE
DATASETS**

1. **Davidson, SJ, Zona, D and Walker, DA. 2017**, Pre-ABOVE: Arctic Vegetation Plots in Flux Tower Footprints, North Slope Alaska, 2014. ORNL DAAC, Oak Ridge, Tennessee, USA
https://daac.ornl.gov/ABOVE/guides/Flux_Tower_Zona_Veg_Plots.html

**PUBLICATIONS IN
PREPARATION/
REVIEW**

1. Drever, CR, Cook-Patton, SC, Akhter, F, Badiou, PH, Chmura, GL, **Davidson, SJ** et al. Natural Climate Solutions for Canada (in review: *Scientific Advances* IF: 13.1)
2. Engering, A, **Davidson, SJ**, Xu, B, Bird, M, Rochefort, L and Strack M. Evaluating Mineral Fill Removal and Burial Under Peat Layer for Restoration of a Peatland Impacted by an In-Situ Oil Sands Well-Pad: 2. Greenhouse Gas Exchange (In review: *Restoration Ecology* IF: 2.826)
3. **Davidson, SJ**, Goud, EM, Estey, CO and Strack, M. Using easily accessible digital photography to monitor phenology of boreal vegetation impacted by linear disturbances (journal for submission: *Journal of Applied Ecology* IF: 5.78)
4. **Davidson, SJ**, Smith, M, Prystupa, E, Murray, K, Nwaishi, F, Petrone, R and Strack, M. Drivers of methane emissions in a constructed fen over the first six years of ecosystem development (journal for submission: *Biogeosciences* IF: 3.7)
5. **Davidson, SJ**, Kangur, M, Finkelstein, S and Strack, M. A review of northern swamps under a changing climate (journal for submission: *TBC*)
6. Harris, L, Richardson, K, **Davidson, SJ** et al. Closing the emissions gap: the essential carbon value of peatlands in Canada (journal for submissions: *Nature Communications* IF: 11.880)
7. Phoenix, GK et al. (including **Davidson, SJ**). Event drivers in Arctic Browning (journal for submission: *Global Change Biology* IF: 8.88)

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8. Goud, EM, **Davidson, SJ**, Kleinke, K, Gauthier, T-L and Strack, M. Intraspecific variability of leaf traits in two geographically widespread peatland species (journal for submission: TBC)
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BOOK CHAPTER

1. Field KJ, **Davidson SJ**, Alghamdi SA and Cameron DD, Magnitude, dynamics and control of the carbon flow to mycorrhizas. In: Mycorrhizal Mediation of Soil; Fertility, Structure, and Carbon Storage. Eds: Nancy C Johnson, Catherine Gehring & Jan Jansa
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INVITED TALKS

1. **“Anthropogenic disturbances across Boreal Canada”**: Arctic Boreal Carbon Flux Upscaling Workshop, Virtual Workshop 2020
 2. **“Peatlands and climate change”**: Nature-Based Climate Solutions Summit, Nature Canada, Ottawa, Canada 2020
 3. **“Impact of anthropogenic and natural disturbances on Boreal Peatlands”** McMaster University, Hamilton, Canada 2019
 4. **“Effects of seismic line creation on soil characteristics across contrasting boreal soils”** Waterloo Ecology Network, Waterloo, Canada 2019
 5. **“Upscaling CH₄ emissions across contrasting arctic tundra landscapes”** University of Edinburgh, Edinburgh, UK 2016
 6. **“Remote sensing of Arctic tundra landscapes”** Utrecht University, Utrecht, The Netherlands 2016
 7. **“Vegetation type dominates CH₄ emissions across spatially heterogeneous arctic landscapes”** University College London, London, UK 2015
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CONFERENCE / WORKSHOP PRESENTATIONS
(Underlined names indicate HQP;
* indicates cancellation due to COVID19)

1. **Davidson, SJ**, Goud, EM, Franklin, C, Nielsen, SE and Strack M. *Seismic line disturbance alters soil physical and chemical properties across boreal forest and peatland soils*, Poster Presentation: Global Water Futures Virtual Meeting (June 2020)
2. Strack, M and **Davidson, SJ**. *Peatland management in Canada: Knowledge gaps, Opportunities and Trade-offs between Ecosystem Services*, Virtual Presentation: Canadian Geophysical Union Virtual Meeting (June 2020)
3. Robichaud, CD, **Davidson, SJ**, Rooney, R and Strack M. *Vulnerabilities of Canadian wetlands to a changing climate*, Poster Presentation: RE³ conference, Quebec, Canada (June 2020*)
4. **Davidson, SJ**, Goud, EM, Franklin, C, Nielsen, SE and Strack M. *Seismic line disturbance alters soil physical and chemical properties across boreal forest and peatland soils*, Poster Presentation: RE³ conference, Quebec, Canada (June 2020*)
5. **Davidson, SJ**, Robichaud, CD, Rooney, R and Strack M. *Vulnerabilities of Canadian wetlands to a changing climate*, Oral Presentation: Canadian Geophysical Union, Banff, Canada (May 2020*)
6. **Davidson, SJ**, Drever, CR, Santos, MJ and Strack M. *Road extent across Canadian peatlands*, Poster Presentation: Canadian Geophysical Union, Banff, Canada (May 2020*)
7. Schmidt, M, Strack, M and **Davidson, SJ**. *Impact of peatland seismic line restoration on CO₂ emissions*, Poster Presentation: World Wetlands Day, University of Waterloo, Canada (February 2020)
8. Strack, M, Korsah, P, Franklin, C, Nielsen, SE and **Davidson, SJ**. *The effect of seismic lines on soil properties in Boreal Peatlands*, Oral Presentation: Canadian Geophysical Union c/o International Union of Geodesy and Geophysics, Montreal, Canada (July 2019)
9. **Davidson, SJ**, Elmes, M, van Beest, C, Petrone, R, Price, J and Strack M. *Hydrogeologic setting overrides any influence on wildfire on pore water dissolved organic carbon concentration and quality at a boreal fen*, Poster presentation:

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- Canadian Geophysical Union c/o International Union of Geodesy and Geophysics, Montreal, Canada (July 2019)
10. **Davidson, SJ.** *Impact of disturbance on boreal peatland carbon exchange*, Poster presentation: Canadian Carbon Cycle Research Workshop, Toronto, Canada (June 2019)
 11. **Davidson, SJ,** van Beest, C, Petrone, R and Strack M. *Impact of wildfire on methane emissions at a continental boreal peatland*, Oral Presentation: EGU-BG12.17 Peatlands under pressure, European Geosciences Union Annual Meeting 2019, Vienna, Austria (April 2019)
 12. Trudeau, O, Strack, M and **Davidson, SJ,** *Impact of linear disturbances on soil characteristics in Northern Alberta*, Poster Presentation: World Wetlands Day, University of Waterloo, Canada (February 2019)
 13. Kleinke, K, **Davidson, SJ** and Strack, M: *Methane fluxes from Thuja occidentalis and Larix laricina stems in an Ontario fen*, Poster Presentation: World Wetlands Day, University of Waterloo, Canada (February 2019)
 14. **Davidson, SJ,** Elmes, M, van Beest, C, Petrone, R, Price, J and Strack, M. *Impact of wildfire on methane emissions and dissolved organic carbon at a boreal fen, Alberta, Canada*, Poster Presentation: B31F: The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change, American Geophysical Union Fall Meeting 2018, Washington DC, USA (December 2018)
 15. **Davidson, SJ,** Elmes, M, van Beest, C, Petrone, R, Price, J and Strack, M. *Impact of wildfire on methane emissions and dissolved organic carbon at a boreal fen, Alberta, Canada*, Poster Presentation: Peatlands and Climate Change, International Peatland Society Summit, Rotterdam, The Netherlands (September 2018)
 16. **Davidson, SJ,** Santos, MJ, Reuss-Schmidt, K, Watts, J, Sloan, VL, Phoenix, GK, Oechel, WC and Zona, D. *Upscaling CH₄ Fluxes Using High-Resolution Imagery in Arctic Tundra Ecosystems*, Poster Presentation: Canadian Society of Agricultural and Forest Meteorology (CSAFM) session, Canadian Geophysical Union, Niagara Falls, Canada (May 2018)
 17. **Davidson, SJ** and Zona, D. *Arctic methane emissions: the role of vegetation*, Oral Presentation, LGBTSTEMinar, University of Sheffield, UK (January 2016)
 18. **Davidson, SJ,** Sloan, VL, Phoenix, GK, Fisher, JP, Oechel, WC and Zona, D. *Vegetation type dominates the spatial variability in CH₄ emissions across multiple Arctic tundra landscapes*. Poster Presentation: UK British Ecological Society Annual General Meeting 2015, Edinburgh, UK (December 2015)
 19. **Davidson, SJ Davidson, SJ,** Sloan, VL, Phoenix, GK, Fisher, JP, Oechel, WC and Zona, D. *Improving the understanding of the spatial variability in methane fluxes across Arctic tundra*, Oral Presentation: EGU-BG 2.3 Understanding CO₂ and CH₄ fluxes from WETLANDS: Reducing the gaps between experimentalists and modellers European Geosciences Union General Assembly 2015, Vienna, Austria (April 2015)
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GRANTS, AWARDS AND SCHOLARSHIPS	Co-Principal Investigator: Canadian Institute of Ecology and Evolution Working Group: <i>Vulnerabilities of Canadian Wetlands in a Changing Climate</i> \$10,280 (approx. £6000)	2020
	Allan Robertson Research Grant: International Peatland Society \$710 (approx. £500)	2019
	COST Action: ES1309: Short Term Scientific Mission: Scaling CH ₄ fluxes using hyperspectral and multispectral data in Arctic tundra ecosystems £2000	2016
	APS PhD Research and Travel Grant £830	2015
	British Ecological Society Training and Travel Grant £580	2015
	Ian Dunderdale Scholarship for Academic Achievement £2000	2012

ACADEMIC SERVICES	Co-founder Peatland ECR Action Team (PEAT) Network	2020 - Present
	Committee member American Geophysical Union – Biogeosciences Early Career Researchers	2020 - Present
	Session Convener Old Peat, New Voices: Frontiers in global peatland research from early career researchers American Geophysical Union (Virtual)	2020
	Organiser Workshop: Global Peatland Initiative (Global Peatland Assessment/United Nations Environment Programme)	2020-2021
	Symposium Convener *cancelled due to COVID19 Conference Symposium: The role of wildfire in wetland ecosystems: Drawing insights from the Arctic to the Tropics Quebec RE ³	2020
	Session Convener *cancelled due to COVID19 Conference session: Disturbance impacts across boreal and subarctic wetlands and peatlands Canadian Geophysical Union, Canada	2020
	Co-organiser *cancelled due to COVID19 Conference sessions: Advances in Methane Measurements, Attribution and Modeling/ Spatial and Temporal Extremes in Carbon Cycling North American Carbon Program (NACP) Open science Meeting, USA	2020
	Co-organiser World Wetlands Day, University of Waterloo, Canada	2019 - Present
	Co-organiser LGBTSTEMinar University of Sheffield, UK	2017
	Journal Reviewer Remote Sensing (3); Ecosystems (2); Journal of Glaciology (1); Journal of Remote Sensing and Photogrammetry (2), Forests (2), Biogeosciences (2), Catena (1), Geophysical Research Letters (1)	2017 - Present
LGBTQ+ Representative Athena Swan University of Sheffield, UK	2015 - Present	
ADDITIONAL TRAINING	Scaling Molecular Physiology to Leaf and Crop Canopy Field Techniques workshop NERC/Plant Environmental Physiology Group, Lisbon, Portugal	Sep 2015
	Applied Plant Taxonomy, Identification and Field Survey Skills Natural History Museum, London, UK	Mar 2014
	Flux measurement techniques for non-CO₂ GHG: methods, sensors, databases and modeling Poznan University of Life Sciences, Poznan, Poland	July 2013

**PROFESSIONAL
AND ACADEMIC
MEMBERSHIPS**

Society of Wetland Scientists
International Peatland Society
Canadian Geophysical Union
American Geophysical Union
European Geosciences Union

Since 2020
Since 2018
Since 2018
Since 2016
Since 2015

**REFEREE
INFORMATION**

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