CURRICULUM VITAE

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**Dr. Julie Loisel**

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**Education**

2012 Ph.D. in Earth and Environmental Science, Lehigh University, USA

*Autogenic and allogenic controls on carbon dynamics in peatlands from Alaska and Patagonia*

Committee: Zicheng Yu (advisor), Robert Booth, Frank Pazzaglia, Nigel Roulet

Funded by NSERC fellowship, Dean’s fellowship, and NSF DDRI award  
  
2008 M.Sc. in Physical Geography, University of Quebec - Montreal, Canada

*Late-Holocene paleoecological reconstruction from two peatlands, James Bay Lowlands*

Committee: Michelle Garneau (advisor), Benoit St-Onge, Pierre Richard, Ed Mitchell

Funded by NSERC and FQRNT fellowships  
2006 B.Sc. in Physical Geography*,* University of Quebec - Montreal, Canada

3x NSERC REU student

**Academic Appointments**

2017- Assistant Professor, Texas A&M University, Department of Geography

2016 Visiting Assistant Professor, Texas A&M University, Department of Geography

2015 Post-Doctoral Research Scholar, University of California – Los Angeles, Department of Geography

*Southwest climate change and impacts on terrestrial systems*

Mentor: Glen MacDonald; funded by the US-DOI

2014 Post-Doctoral Research Scholar, Lehigh University, Department of Earth and Environmental Science

*Carbon accumulation in moss banks of the Antarctic Peninsula*

Mentor: Zicheng Yu; funded by the NSF (I co-wrote the proposal)

2013 Post-Doctoral Research Scholar, Lehigh University, Department of Earth and Environmental Science

*Sensitivity of circum-arctic peatland carbon to Holocene warm climates*

Mentor: Zicheng Yu; funded by the NSF (I co-wrote the proposal)

**Other Research Experience**

*Visiting Scholar*2014 **Lignin, phenols, carbohydrates, and amino acid extraction and analysis of peat**

Collaborator and host: Karl Kaiser (Texas A&M University – Galveston)

2012 **Modeling non-linear ecosystem shifts**

Mentor and host: Paolo D’Odorico (University of Virginia, USA)

2011 **Cellulose extraction and isotopic analysis (C,H,O) of *Sphagnum* moss**

Mentors and hosts: Tim Daley and Neil Loader (Swansea University, Wales)

2007 **Peat humification analysis**

Mentor and host: Frank Chambers (University of Gloucestershire, England)

2005 **Pollen analysis**

Mentor and host: Pierre Richard (University of Montreal, Canada)

**Journal Editorship**

2018- Associate Editor, *Climate of the Past*

2018- Associate Editor, *Scientific Reports*

**Honors and Awards**

As a Faculty Member

2020 Nominated for the University Excellence Teaching Award (only 1 nomination per Department); results pending, Texas A&M University

2020 Altmetric score of 369 (the top 5% of all research outputs ever tracked by [Altmetric](https://nature.altmetric.com/details/95589184)) for a recent publication in *Nature Climate Change*: Expert assessment of future vulnerability of the global peatland carbon sink ([Loisel et al.](https://www.nature.com/articles/s41558-020-00944-0)).

2020 Nominated for the College of Geosciences Early-Faculty Teaching Award (only 1 nomination per Department), Texas A&M University

2019 Nominated for the College of Geosciences Early-Faculty Teaching Award (only 1 nomination per Department), Texas A&M University

2018 One of the top 25 most cited papers in *Global Change Biology*: Pathways for the science community to characterize the state, vulnerabilities, and management opportunities of soil organic matter ([Harden et al.](https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.13896)).

2018 Nominated for the College of Geosciences Early-Faculty Teaching Award (only 1 nomination per Department), Texas A&M University

2017 TAMU’s best STEM undergraduate thesis award to Kate Von Ness (advisor: Julie Loisel)

As a Student

2012 Core Competencies Grant award and Baker Startup Grant for Social Ventures at the Eureka Venture Series for Entrepreneurship (Lehigh University) to implement ‘*Turning Trash into Treasure*’, a unique and easy-to-use composting kit for schools. The kit includes Earth Science lessons and experiments, the equipment required for composting cafeteria food scraps, entrepreneurial activities for kids, and more.

2009 Kerry Kelt Research Award, Geological Society of America (Limnogeology Division); *Expanding peatlands in south-central Alaska: a response to glaciers-climate feedbacks?*

2008-12 Dean's PhD Fellowship, College of Arts and Sciences, Lehigh University

2008-11 Alexander Graham Bell Canada Doctoral Postgraduate Scholarship, NSERC

2008-11 Quebec Doctoral Research Scholarship B2 (declined), FQRNT

2007-08 Quebec Masters Research Scholarship B1, FQRNT

2006-07 Alexander Graham Bell Canada Masters Postgraduate Scholarship, NSERC

2006 Excellence in Research Scholarship, University of Quebec Foundation

2004-06 Fairfax Financial Holdings Ltd Scholarship, Association of Universities and Colleges of Canada

2005 Atmospheric and Meteorological Science Award, NSERC “REU”

2005 Undergraduate Student Research Award, NSERC “REU”

2004-05 Canada Excellence Award for Leadership, Canada Millennium Scholarship Foundation

2004 Undergraduate Student Research Award, NSERC “REU”

**Grant Funding**

Since the start of my tenure-track position (2017), I have been directly involved in 20 competitively funded projects (total award amount of $2,557,017), of which $967,414 were directly attributed to and managed by me. This includes externally and internally funded research proposals as well as funding for workshops.

External Funding

(pending) Lead PI, Past Global Changes (PAGES), Data steward award, $15,000; *C-PEAT data stewardship*

*for dataset integration into the LiPD framework & Neotoma database.*

The C-PEAT working group has been synthesizing and uploading peatland-carbon datasets to

PANGAEA. PI Loisel has used her own research funds to pay undergraduate students to complete this work; she also used her research funding to pay a stipend of 500 euros to Pangaea for their archiving and QA/QC services. So far, these datasets only comprise: age-depth model information and peat geochemical data (bulk density, carbon and nitrogen content, etc). But we still haven't organized or archived our peat-based paleoecological datasets. Those are going to become increasingly important, as one of the main goals of C-PEAT is to make peat-based paleo data more accessible. The interest is high among the peat community to see peat records integrated to regional paleoclimate reconstructions, such as the 2k network. Increasing the accessibility and visibility of peat-core data should help fulfill this goal. We hope we can convince the lake, speleothem, tree-ring, ice, and other specialists of peat's promise as an archive!

(pending) Lead PI, National Science Foundation, CAREER Program, $646,549; *CAREER: Past, Present, and*

*Future of the Peatlands of the Caribbean: Implications for the Carbon Cycle in a Changing Climate.*

This proposal combines new field work with paleoecological and modeling studies as well as

extensive student training on the terrestrial carbon balance of Caribbean peatlands. My students and I seek to know how these ecosystems function, how they have responded to past environmental changes, and how they might respond to future disturbances. We are integrating 1) new data collection from multiple sites along the Caribbean coast of Nicaragua and Costa Rica, 2) a synthesis of existing data from other Caribbean peatlands, and 3) processed-based ecological simulations. The overarching question is: what are the conditions that enable peatland initiation, facilitate peat development, and control peatland carbon balance over decadal to millennial timescales? Overall, we will produce the first comprehensive assessment of the location, extent, genesis, and development of Caribbean peatlands. This work is necessary to assess the past, present, and future resilience of tropical ecosystems and help inform land management decisions; it will also allow to benchmark Earth System Models and test hypotheses about the role of tropical peatlands in the Holocene global carbon cycle.

(pending) Co-PI, National Science Foundation, Low-Temperature Geochemistry Program, $342,193; *Collaborative Proposal: A Tale of Two Cycles: The Role of Halogenation in Carbon Cycling.*

This proposal develops an understanding of the halogen biogeochemical cycle as an important

process across different domains of the Earth System, with a specific focus on northern peatlands. We postulate that halogenation of organic matter in peatlands, during humification, plays important roles in both soil carbon stabilization and atmospheric chemistry. Although this project focuses on the terrestrial ecosystem, it has a broader impact on the Earth System as a whole, because analogous pathways for halogenation likely also occur in the ocean.

(26) Co-PI, Brookhaven National Lab, National Synchrotron Light Source II, beam time; *Effects of*

*Halogenation on Carbon Preservation in Patagonian Peatlands*

This project investigates the roles of chlorination and bromination in the stabilization of organic

carbon in peatlands from southern Chile. Coastal and continental soil cores will be examined by Cl

and Br K-edge XANES spectroscopy to determine organochlorine and organobromine content up to

8,000 years before present. The distribution and stabilization of chlorinated organic carbon in the

botanical matrix will be illuminated by XRF mapping and micro-XANES spectra. These experiments

will definitively assess the role of halogens in stabilizing organic carbon over millennial timescales,

which will be crucial to assessing their role in mitigating climate change.

(25) Co-PI, 2020 Brookhaven National Lab, National Synchrotron Light Source II, beam time; *Chlorine and*

*Bromine in Peat Samples from Patagonia*.

This pilot experiment used Br XANES spectroscopy to quantify concentrations of organobromine

along a 430-cm peat core from a coastal site in southern Chile. All Br in the core is bonded to

aromatic carbon, and the aromatic organobromine becomes enriched with sample depth/age. This

initial dataset is highly promising for linking halogenation with organic matter preservation. Our

new proposal (see above) expands on this finding by exploring peat cores from other locations and

over longer chronological records to look for similar enrichment of both organobromine and

organochlorine with age.

(24) Lead PI, 2020 Los Alamos National Lab, Exploration Grant, $1500; *Travel grant to visit LANL and*

*discuss collaboration opportunities for Arctic research*.

(23) Collaborator, 2019-20, Colorado Water Center Grant Program, $25,000; *Hydrologic drivers of peatland*

*development and carbon accumulation in western* Washington.

This project is using testate amoeba as proxies for past changes in peatland surface moisture. We

collected peat cores across drained and pristine sites to determine how land-use practices and

environmental change have been affecting peatland hydrology and carbon accumulation over the

past century; these reconstructions are compared to long-term Holocene conditions. Preliminary

results suggest that peatlands in western Washington are approaching, or have recently passed, an

hydrological tipping point, where a rapidly changing climate coupled with intensive land use

practices have shifted seasonal water table dynamics and biogeochemical cycling to extremes that

rarely occurred throughout the Holocene. The current and predicted future seasonal hydrologic

variability in these sites has profound implications for the long-term viability of temperate peats.

(22) Institutional PI and Interim lead PI, 2018-23, National Science Foundation, Macro-Systems Biology

and Navigating the New Arctic Programs, $1,675,735 ($263,740);*Collaborative Research: RUI: MSB-FRA:*

*Peat Expansion in Arctic Tundra: Pattern, Process, and the Implication for the Carbon Cycle in a Changing*

*Climate (TundraPEAT)*.

This [project](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1802838&HistoricalAwards=false) examines potential migration/expansion of the northern peatland frontier in a

warming Arctic and its significance in the regional and pan-Arctic carbon cycle. The lead PI left the

project and our team elected me as the new lead, though it is not official per NSF regulations. Outreach materials include this [storymap](https://storymaps.arcgis.com/stories/879b209a32d84e9d919b34da21aafe65) prepared by my student.

(21) Lead PI, 2018-19, National Geographic Society & Texas Fund for Geography Education, $47,961; *I Dig It: A soil education toolkit for high school geography teachers.*

This [educational](https://www.welovesoil.org/) project provides High School teachers with a geography education toolkit that is

designed to familiarize their students with soils, food/fiber production, land-use change, and soil degradation. I developed this soil curriculum with the assistance of 10 undergraduate students.

(20) Collaborator, 2017-20, Poland OPUS21, $121,571; *Resilience of* Sphagnum *moss communities: response to Holocene climate change and effects on carbon accumulation rates in ombrotrophic mountain peatlands in Central Europe.*

(19) Lead PI, 2017-18, National Geographic Society, $21,820; *The value of Magallanes peatlands on the carbon market.*

This project quantifies the spatial distribution of belowground soil-carbon stocks in southern Patagonia to help calculate national soil-carbon reference levels for Chile as defined by the United Nation Climate Change Conference. This project uses a unique combination of remote sensing imagery, ground-based geophysical surveys (GPR), ecosystem modeling, and soil analysis. We are also developing the concept of “Carbon Parks” as a means to protect these carbon-rich ecosystems. Carbon Parks can complement the Paris Climate Agreement’s global temperature targets and build on recent proposals such as the Global Deal for Nature, which recommends global protection targets that conserve species and secure ecosystem services. Outreach materials include this [news story](https://today.tamu.edu/2018/09/27/texas-am-students-collect-time-capsule-peat-samples-on-patagonia-trek/) and that [short documentary](https://vimeo.com/283205523), both prepared by my students.

(18) Proposal co-writer, 2015-17, National Science Foundation, P2C2 Program, $303,703; *Water isotopes in peat mosses as proxies for understanding atmospheric circulation changes in Patagonia.*

This [project](https://nsf.gov/awardsearch/showAward?AWD_ID=1502891) uses isotope records to document and understand climate and atmospheric circulation changes in the last millennium using a novel, dual water isotope approach and systematic modern calibration from single species peat mosses (*Sphagnum*) as preserved in peat bogs in southernmost Patagonia. I helped write the proposal but had already moved to UCLA by the time it got funded.

(17) Proposal co-writer and Post-doc, 2013-15, National Science Foundation, Antarctic Program, $238,669; *Response of Carbon Accumulation in Moss Peatbanks to Past Warm Climates in the Antarctic Peninsula.*

This [project](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1246190) investigates how Antarctic peatbanks have responded to past warm climates on the Western Antarctic Peninsula over the last 1000 years and whether these peaty ecosystems could be used as high-resolution paleoclimate archives. This work also extends our understanding of climate controls on peat carbon accumulation to Antarctic peatbanks, thus enabling a bi-polar perspective and an “end-member” study of ecosystem processes. We also documented the [first peatland](https://www.nature.com/articles/s41598-017-12479-0) on the Antarctic continent. I helped write the proposal and worked as a post-doc on the project for a year.

(16) Proposal co-writer and Post-doc, 2011-15, National Science Foundation, Arctic System Science Program, $504,172; *Collaborative Research: Sensitivity of Circum-Arctic Peatland Carbon to Holocene Warm Climates and Climate Seasonality.*

This [project](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1107981) evaluates the outcomes of “natural climate-warming experiments” (Holocene Thermal Maximum and Medieval Climate Anomaly) that have occurred across the Arctic over the Holocene. New peat cores were collected and analyzed across the circum-boreal region, a [northern peatland database](https://journals.sagepub.com/doi/10.1177/0959683614538073) was developed, and the role of temperature on peat carbon accumulation rates was investigated. I helped write the proposal, built the database, and worked as a post-doc on the project for a year.

(15) PI, 2011-12, National Science Foundation, DDIR, Ecosystems Program, $14,610; *Impacts of temperature and precipitation on peat-carbon dynamics in Alaska and Patagonia.*

This PhD supplement funded multi-proxy peat core analyses from Patagonia to evaluate and contrast the impact of orbital-scale changes in insolation on peatland carbon stocks in the northern (Alaska) vs. southern (Patagonia) hemispheres.

Internal Funding

(14) PI, 2021-22, Texas A&M University, Presidential Transformational Teaching Grant (PTTG) Program, $20,000; *A Data-Driven Approach to Eco-Friendly Decision Making.*

This course proposal will provide undergraduate students with an opportunity to collaborate on a semester-long, interdisciplinary project aimed at gathering and synthesizing data to evaluate a number of eco-friendly “solutions” for sustainable living. For example, what is the carbon footprint of a new electric car? What about a reusable grocery bag? The emphasis will be on carbon cycling literacy. Students who enroll in this course will gain valuable knowledge and critical thinking skills, learn how to recognize reputable sources of information, gather and analyze data, combine and fact-check material from across many disciplines, and present their findings in written and oral formats. This hands-on training will also allow students to disseminate their findings to a general audience in the form of blog posts. The vision for this blog is that it will grow into a reliable source of information for a lay audience over the years, as new student projects will be added every semester. I would also like to turn those blog entries into a book on sustainable living.

(13) PI, 2020-21, Texas A&M University, Triads for Transformation (T3) Program, $32,000; *Carbon Parks as Conservation Tools.*

This [project](https://t3.tamu.edu/fundedproject) develops an ecosystem service valuation system for ecosystem carbon storage. We quantify carbon storage for different ecosystems (forests, grasslands, peatlands, agricultural lands) using models and assemble available data for performance analysis. We then integrate carbon storage within ecosystem service valuation tools.

(12) PI, 2018-21, Texas A&M University, X-Grant Program, $500,000; *Monitoring rapidly changing arctic ecosystems using high-resolution satellite data and artificial intelligence.*

This [project](https://xgrants.tamu.edu/public) combines novel satellite-based datasets (from NASA and PLANET) with emerging computational and information technologies such as Machine-Learning and Artificial Intelligence to monitor and document rapid changes in permafrost soils and their associated greenhouse gas emissions across the Arctic landscape. Our specific research objectives are to (1) generate high-resolution maps of permafrost-affected ecosystems in the Arctic, and (2) provide new soil carbon stock and flux estimates by combining our imagery with large datasets that have been compiled by partner organizations.

(11) Co-PI, 2018-20, Texas A&M University, Triads for Transformation (T3) Program, $32,000; *Tracing*

*Biological Processes Across Scales with Compound-Specific Isotope Analysis.*

This [project](https://t3.tamu.edu/fundedproject) looks at the hydrogen isotopic composition of fatty acids from leaf waxes in *Sphagnum* mosses. Using incubation chambers at 15C and 30C, we evaluate the relative importance of physiological processes to n-alkane H isotope variation under different temperature treatments. The goal is to test whether H isotopes provide a reliable temperature proxy for peat-based paleo records.

(10) PI, 2017-20, Texas A&M University, Institutional Technology Services, $74,856; *Bringing Research*

*Experience to the Classroom via Virtual Science Field Trips, GEOG203.*

This educational project pertains the Planet Earth (GEOG203), our Intro to Physical Geography course. With an enrollment > 1000 students per semester, Planet Earth is one of the two most popular core curriculum courses related to environmental literacy on our campus. This project allows students to (1) take virtual science field trips to international research stations such as Palmer in Antarctica and Darwin in the Galapagos Islands via an interactive “textbook” in TopHat, and (2) enroll in a permanent, online version of Planet Earth. For the latter, five of my students helped develop a series of [documentaries](https://www.youtube.com/playlist?list=PLM-Loofp5fMEuD9uxD4DzWXnIo_vu_mFL); for the former, those same students contributed to the making of three 10-long virtual experiences available integrated field experiences that include geology, biology, chemistry, and geography concepts in [TopHat](https://tophat.com/).

(09) PI, 2016-17, Texas A&M University, Department of Atmospheric Sciences, $18,000; *The impacts of*

*hydraulic fracturing on land-use change and air quality in the Eagle Ford Shale Region**of**South Texas –*

*implementing an educational program for middle and high school students.*

This educational project led to the development of a fracking and energy curriculum for Texas 8th graders. It is being reviewed by the Texas Alliance for Geographic Education.

(08) PI, 2011-12, Lehigh University, Palmer Grant, $2000; *Peatland dynamics in Patagonia: abrupt mid-Holocene fen-to-bog transition and carbon sequestration.*

(07) PI, 2010-11, Lehigh University, Palmer Grant, $2000; *Abrupt shifts of the Southern Hemisphere westerlies during the Holocene thermal maximum.*

(06) Co-PI, 2009-10, Lehigh University, Faculty Innovation Grant, $25,000; *Holocene carbon dynamics of peatlands in Patagonia: toward a global synthesis.*

(05) PI, 2009-10, Lehigh University, Palmer Grant, $2000; *Holocene peatland development in southeastern Patagonia: an important data and knowledge gap.*

Workshop Funding

(04) Co-organizer, 2019, Past Global Changes (PAGES), $5000; C-PEAT workshop at the University of Exeter.

(03) Co-organizer, 2019, International Union for Quaternary Research (INQUA), $5000; C-PEAT workshop at the University of Exeter.

(02) Lead organizer, 2018, Past Global Changes (PAGES), $5000; C-PEAT workshop at Texas A&M University.

(01) Lead organizer, 2018, International Union for Quaternary Research (INQUA), $5000; C-PEAT workshop at Texas A&M University.

**Peer-Reviewed Publications**

Citations: 2422, h-index: 20, i10-index: 24 in [Google Scholar](https://scholar.google.com/citations?user=8mvVQecAAAAJ&hl=en)

RG Score: 31.39, higher than 90% of [ResearchGate](https://www.researchgate.net/profile/Julie_Loisel) members

\*denotes a student author

*In Review, Accepted, and In Press*

(46) **Loisel J**, Walenta J, Hugelius G, Harden J, Parsekian A, Carmody M, Puschel N, Mansilla CA, Bunsen M\*, Hillin J\*, Didio L\*, Sherman A\*, Utt S\*, Emery K\*. In Review. Peatland Carbon Parks as natural climate solutions.

*Nature Sustainability.*

(45) Young DM, Baird AJ, Gallego-Sala A, **Loisel J**. In Review. The apparent Carbon Accumulation Rate (aCAR) obtained from peat cores does not provide a useful measure of past rates of net carbon accumulation in peatlands.

*Scientific Reports.*

(44) Yu Z, Joos F, Bauska TK, Stocker B, Fisher H, **Loisel J**, Brovkin V, Hugelius G, Nehrbass-Ahles C, Kleinen T, Schmitt J. In Press. No support for carbon storage of >1000 GtC in northern peatlands.

*Nature Geoscience*.

<https://doi.org/10.31223/osf.io/hynm7>

*Published*

(43) **Loisel J**. 2021. *CubeSats technology and periglacial landscape analysis*. In: M Bishop and J Giardino (eds.). Treatise in Geomorphology, 2nd edition. Elsevier. Invited book chapter.

<https://www.sciencedirect.com/science/article/pii/B9780128182345000390/>

(42) **Loisel J**, Gallego-Sala AV, Amesbury MJ, Magnan G, Anshari G, Beilman D, Benavides JC, Blewett J, Camill P, Charman DJ, Chawchai S, Hedgpeth A, Kleinen T, Korhola A, Large D, Mansilla CA, Müller J, van Bellen S, West JB, Yu Z, Bubier J, Garneau M, Moore T, Sannel ABK., Page S, Väliranta M, Bechtold M, Brovkin V, Cole LES, Chanton JP, Christensen TR, Davies MA, De Vleeschouwer F, Finkelstein SA, Frolking S, Gałka M, Gandois L, Girkin N, Harris L, Heinemeyer A, Hoyt AM, Jones MC, Joos F, Juutinen S, Kaiser K, Lacourse T, Lamentowicz M, Larmola T, Leifeld J, Lohila A, Milner A, Minkkinen K, Moss P, Naafs BDA, Nichols J, O’Donnell J, Payne R, Philben M, Quillet A, Ratnayake AS, Roland T, Sjogersten S, Sonnentag O, Swindles GT, Swinnen W, Talbot J, Treat C, Valach AC, Wu J, Piilo S. 2020. Future vulnerability of the global peatland carbon sink.

*Nature Climate Change.*

<https://doi.org/10.1038/s41558-020-00944-0>

Outreach pieces were also published in [*The Conversation*](https://theconversation.com/peatlands-keep-a-lot-of-carbon-out-of-earths-atmosphere-but-that-could-end-with-warming-and-development-151364)and [*Carbon Brief*](https://www.carbonbrief.org/guest-post-how-human-activity-threatens-the-worlds-carbon-rich-peatlands).

(41) Hugelius G, **Loisel J**, Chadburn S, Jackson R, MacDonald G, Marushchak M, Packalen M, Siewert M, Treat C, Turetsky M, Voigt C, Yu Z. 2020. Large stocks of peatland carbon and nitrogen are vulnerable to permafrost thaw.

*Proceedings of the National Academy of Sciences*, 117(34): 20438-20446.

<https://doi.org/10.1073/pnas.1916387117>

(40) **Loisel J**, Bunsen MS\*. 2020. Abrupt fen-bog transition across southern Patagonia: timing, causes, and impacts on carbon sequestration.

*Frontiers in Ecology and Evolution*, 8:273.

<https://doi.org/10.3389/fevo.2020.00273>

(39) Bunsen MS\*, **Loisel J**. 2020. Carbon storage dynamics in peatlands: Comparing recent‐ and long‐term accumulation histories in southern Patagonia.

*Global Change Biology*, 26(10): 5778-5795.

<https://doi.org/10.1111/gcb.15262>

(38) Xia Z, Zheng Y, Stelling J, **Loisel J**, Huang Y, Yu Z. 2020. Understanding environmental controls on the carbon and water isotopes in peatland *Sphagnum* mosses.

*Geochimica Cosmochimica Acta*, 277(15): 265-284.

<https://doi.org/10.1016/j.gca.2020.03.034>

(37) Gunderson K, Holmes C, **Loisel J**. 2020. Recent digital technology trends in geoscience teaching, research, and practice.

*GSA Today*, 30(1): 39-41.

<https://doi.org/10.1130/GSATG404GW.1>

(36) Amesbury M, Gallego-Sala A, **Loisel J**. 2019. Peatlands are prolific carbon sinks. Invited article.

*Nature Geoscience*, 12:880-881.

<https://doi.org/10.1038/s41561-019-0455-y>

(35) Gallego-Sala A, **Loisel J**. 2019. Peatland ecosystem services during the Anthropocene and beyond.

*Past Global Changes Magazine*, 27(2), 77.

(34) Jiang Z\*, Von Ness K\*, **Loisel J**, Wang A. 2019. ArcticNet: A Deep Learning Solution to Classify Arctic Wetlands.

*Computer Vision and Pattern Recognition*.

<https://github.com/geekJZY/arcticnet>

(33) **Loisel J**, Casellas Connors J, Hugelius G, Harden J, Morgan C. 2019. Soils can help mitigate CO2 emissions, despite the challenges.

*Proceedings of the National Academy of Sciences*, 116(21): 10211-10212.

<https://doi.org/10.1073/pnas.1900444116>

(32) Treat C, Broothaerts N, Dalton A, Dommain R, Douglas T, Drexler J, Finkelstein S, Grosse G, Hope G, Hutchings J, Jones M, Kleinen T, Kuhry P, Lacourse T, Lähteenoja O, **Loisel J**, Notebaert B, Payne R, Peteet D, Sannel B, Stelling J, Strauss J, Swindles G, Talbot J, Tarnocai C, Verstraeten G, Williams C, Xia Z, Yu Z, Brovkin V. 2019. Widespread global peatland establishment and persistence since the last interglacial.

*Proceedings of the National Academy of Sciences*, 116(11): 4822-4827.

<https://doi.org/10.1073/pnas.1813305116>

(31) Galka M, Szal M, Broder T, **Loisel J**, Knorr K-H. 2019. Peatbog resilience to pollution and climate change over the past 2700 years in the Harz Mountains, Germany.

*Ecological Indicators* 97, 183-193.

<https://doi.org/10.1016/j.ecolind.2018.10.015>

(30) **Loisel J**, Gallego-Sala A. 2018. A forward modeling approach to paleoclimatic interpretation of peat cores.

*Quaternary Perspectives*, International Union for Quaternary Research (INQUA).

(29) Amesbury MJ, Booth RK, Roland TB, Bunbury J, Clifford MJ, …, **Loisel J** , …, Sullivan ME, Swindles GT, Talbot J, van Bellen S, Warner BG. 2018. Towards a global synthesis of peatland testate amoeba ecology: development of a new continental-scale palaeohydrological transfer function for North America and comparison to European data.

*Quaternary Science Reviews* 201, 481-500.

<https://doi.org/10.1016/j.quascirev.2018.10.034>

(28) **Loisel J**, Gallego-Sala A. 2018. New research directions for the PAGES C-PEAT working group.

*Past Global Changes Magazine*, 26(2): 91.

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*Nature Climate Change*, 8: 907-913.

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*Geology*, 46 (10): 855–858.

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(25) Stelling J, Yu Z, Beilman DW, **Loisel J**. 2018. Dynamic response of moss peatbank ecosystems to late Holocene hydroclimate change in the western Antarctic Peninsula.

*Quaternary Science Reviews*, 188: 77-89.

<https://doi.org/10.1016/j.quascirev.2017.10.033>

(24) **Loisel J**, MacDonald GM, Thomson M. 2017. Little Ice Age climatic erraticism as an analogue for future enhanced hydroclimatic variability across the American Southwest.

*PLoS One*.

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(23) **Loisel J**, Yu Z, Beilman DW, Kaiser K, Parnikoza I. 2017. Past and present peatland development in Antarctica under warm climates.

*Scientific Reports* 7, 12344.

<https://doi.org/10.1038/s41598-017-12479-0>

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*Global Change Biology*, 24(2): 705-718.

<https://doi.org/10.1111/gcb.13896>

(21) **Loisel J**, Malhotra A, Phillips C. 2017. A new platform for managing soil carbon and soil health.

*Eos* *Magazine (AGU)*, 98.

<https://doi.org/10.1029/2017EO080753>

(20) **Loisel J**, van Bellen S, Pelletier L, Talbot J, Hugelius G, Karran D, Yu Z, Nichols J, Holmquist J. 2017. Insights and issues with estimating northern peatland carbon stocks and fluxes since the Last Glacial Maximum. Invited review.

*Earth Science Reviews*, 165:59-80.

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(19) Yu Z, Beilman DW, **Loisel J**. 2016. Transformations of landscape and peat-forming ecosystems responding to late Holocene climate change in the western Antarctic Peninsula.

*Geophysical Research Letters*, 43.

<https://doi.org/10.1002/2016GL069380>

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*Journal of Geophysical Research – Biogeosciences* 121(1): 78-94.

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315. In: E Domínguez and D Vega-Valdés (eds.). Funciones y servicios ecosistémicos de las turberas en Magallanes. INIA Nº 33. Punta Arenas, Chile. 334 pp. Invited book chapter.

(16) **Loisel J,** Yu Z, Beilman DW, Camill P, Alm J, Amesbury MJ, Anderson D, Andersson S, Bochicchio C, Barber K, Belyea LR, Bunbury J, Chambers FM, Charman DJ, De Vleeschouwer F, Fiałkiewicz-Kozieł B, Finkelstein SA, Gałka M, Garneau M, Hammarlund D, Hinchcliffe W, Holmquist J, Hughes P, Jones MC, Klein ES, Kokfelt U, Korhola A, Kuhry P, Lamarre A, Lamentowicz M, Large D, Lavoie M, MacDonald G, Magnan G, Mäkilä M, Mallon G, Mathijssen P, Mauquoy D, McCarroll J, Moore TR, Nichols J, O’Reilly B, Oksanen P, Packalen M, Peteet D, Richard PJH, Robinson S, Ronkainen T, Rundgren M, Sannel ABK, Tarnocai C, Thom T, Tuittila E-S, Turetsky M, Väliranta M, van der Linden M, van Geel B, van Bellen S, Vitt D, Zhao Y, Zhou W. 2014. A database and synthesis of northern peatland soil properties and Holocene carbon and nitrogen accumulation.

*The Holocene*, 24(9): 1028-1042.

<https://doi.org/10.1177/0959683614538073>

(15) Yu Z, **Loisel J**, Charman DJ, Beilman DW, Camill P. 2014. Holocene peatland carbon dynamics in the circum-Arctic region: an Introduction.

*The Holocene,* 24(9): 1021-1027.

<https://doi.org/10.1177/0959683614540730>

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(13) Yu Z, **Loisel J.** 2014. Holocene circum-Arctic peatland carbon dynamics.

*Past Global Changes Magazine*, 22(1): 41.

(12) **Loisel J**, Yu Z. 2013. Surface vegetation patterning controls carbon accumulation in peatlands. *Geophysical Research Letters*, 40.

<https://doi.org/10.1002/grl.50744>

(11) **Loisel J**, Yu Z. 2013. Holocene peatland carbon dynamics in Patagonia.

*Quaternary Science Reviews,* 69: 125-141.

<https://doi.org/10.1016/j.quascirev.2013.02.023>

(10) **Loisel J**, Yu Z, Parsekian A, Nolan J, Slater L. 2013. Quantifying landscape morphology influence on peatland lateral expansion using ground penetrating radar (GPR) and peat core analysis.

*Journal of Geophysical Research – Biogeosciences*, 118.

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(09) Yu Z, **Loisel J**, Turetsky MR, Cai S, Zhao Y, Frolking S, MacDonald GM, Bubier JL. 2013. Evidence for elevated emissions from high-latitude wetlands causing high atmospheric CH4 concentration in the early Holocene.

*Global Biogeochemical Cycles*, 27.

<https://doi.org/10.1002/gbc20025>

(08) **Loisel J**, Yu Z. 2013. Recent acceleration of carbon accumulation in a boreal peatland, south-central Alaska.

*Journal of Geophysical Research – Biogeosciences*, 118.

<https://doi.org/10.1029/2012jg001978>

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*Biogeosciences*, 10: 929-944.

<https://doi.org/10.5194/bg-10-929-2013>

(06) **Loisel J**, Gallego-Sala AV, Yu Z. 2012. Global-scale pattern of peatland *Sphagnum* growth driven by photosynthetically active radiation and growing season length.

*Biogeosciences*, 9: 2737-2746.

<https://doi.org/10.5194/bg-9-2737-2012>

(05) Yu Z, **Loisel J**, Brosseau D, Beilman D, Hunt S. 2010. Global peatland dynamics since the Last Glacial Maximum.

*Geophysical Research Letters* 37, L13402.

<https://doi.org/10.1029/2010GL043584>

(04) **Loisel J**, Garneau M. 2010. Late-Holocene paleoecohydrology and carbon accumulation estimates from two boreal peat bogs in eastern Canada: potential and limits of multi-proxy analyses.

*Palaeogeography, Palaeoclimatology, Palaeoecology* 291:493-533.

<https://doi.org/10.1016/j.palaeo.2010.03.020>

(03) **Loisel J**, Garneau M, Hélie J-F. 2010. *Sphagnum* δ13C values as indicators of paleohydrological changes in a peat bog.

*The Holocene* 20(2): 285-291.  
<https://doi.org/10.1177/0959683609350389>

(02) **Loisel J**, Garneau M, Hélie J-F. 2009. Modern *Sphagnum* δ13C signatures follow a surface- moisture gradient in two boreal peat bogs, James Bay lowlands, Québec.

*Journal of Quaternary Science* 24(3): 209-214.

<https://doi.org/10.1002/jqs.1221>

(01) Ali AA, Ghaleb B, Garneau M, Asnong H, **Loisel J.** 2008. Recent peat accumulation rates in minerotrophic peatlands of Bay James region, Eastern Canada, inferred by 210Pb and 137Cs radiometric techniques.

*Applied Radiation and Isotopes* 66: 1350-1358.

<https://doi.org/10.1016/j.apradiso.2008.02.091>

**Most Relevant Conferences and Seminar Presentations**

1st authored presentations only; full list available upon request

\*denotes a student author

*Invited and Keynote Presentations*

**Loisel J**, Sarna K\*, Martinez M\*. 2020. Peatland record from southern Patagonia shows centennial variability over the last 4200 years. Invited talk, *Geological Society of America*, online.

**Loisel J**. 2019. Carbon Sequestration in Peatlands in the Anthropocene. Invited talk, *Biological and Agricultural Engineering Department,* *Texas A&M University*, College Station, USA.

**Loisel J**. 2019. Carbon Sequestration in Peatlands in the Anthropocene. Invited talk, *Department of Soil and Crop Science,* *Texas A&M University*, College Station, USA.

**Loisel J** and Medina-Cetina Z. 2019. Modeling risks in the Arctic system. Invited talk, *Arctic Futures 2050, hosted by ARCUS & SEARCH at the National Academies of Sciences*, Washington DC, USA.

**Loisel J**, Gallego-Sala A, C-PEAT Community. 2019. Past, present, and future vulnerability of the global peatland carbon sink. Invited keynote talk, *International Union for Quaternary Research (INQUA) Quadrennial Meeting,* Dublin, Ireland.

**Loisel J**. 2019. Carbon sequestration in peatlands in a warmer world. Invited talk, *NASA’s Jet Propulsion Lab (JPL) Distinguished Scientist Visit* *and Science Visitor and Colloquium Program (SVCP)*, Pasadena, USA.

**Loisel J.** 2019. Integrating expert judgement with evidence-based science: the good, the bad, and the ugly. Invited talk, *Department of Geology and Geophysics,* *Texas A&M University*, College Station, USA.

**Loisel J.** 2019. Carbon sequestration in peatlands in a warmer world. Invited talk, *Department of Atmospheric Sciences,* *Texas A&M University*, College Station, USA.

**Loisel J.** 2019. Integrating expert judgement with evidence-based science: the good, the bad, and the ugly. Invited talk, *Department of Geology and Geophysics,* *University of Wyoming*, Laramie, USA.

**Loisel J.** 2019. Integrating expert judgement with evidence-based science: the good, the bad, and the ugly. Invited keynote talk, *Department of Earth & Environmental Sciences, Lehigh University*, Bethlehem, USA.

**Loisel J**. 2018. Carbon in peatlands. Invited talk, *Department of Ecosystem Science and Management, Texas A&M University*, College Station, USA.

**Loisel J**. 2018. Carbon sequestration in peatlands in a warmer world. Invited talk, *Department of Geography and the Environment, University of Texas – Austin*, Austin, USA.

**Loisel J**. 2018. Patagonian peatlands. Invited talk, *Instituto Antartico Chileno, Magallanes University*, Punta Arenas, Chile.

**Loisel J,** Harden J, Hugelius G. 2017. A Soil Service Index: Peatland soils as a case study for quantifying the value, vulnerability, and status of soils. Invited talk, *AGU Fall Meeting*, New Orleans, USA.

**Loisel, J.** 2015. A bipolar perspective on Holocene carbon accumulation in peatlands. Invited talk, *Department of Geography, Texas A&M University*, College Station, USA.

**Loisel J.** 2015. Modern *Sphagnum* growth driven by photosynthetically active radiation and growing season length: implications for Holocene carbon sequestration in peatlands. Invited talk, *Botanical Society of America Annual Meeting*, Edmonton, Canada.

**Loisel J.** 2014. Peatland dynamics during warm climate intervals. Invited talk, *Department of Biology, Villanova University*, Villanova, USA.

**Loisel J.** 2014. Insights and issues with quantifying Holocene peatland lateral expansion rate and associated carbon stocks. Invited talk, *Department of Earth and Environmental Science, Rutgers University*, New Brunswick, USA.

**Loisel J,** Yu Z, Beilman DW, Camill P, Holocene Peat Carbon Network. 2013. A synthesis of northern peatland soil properties and Holocene carbon accumulation. Invited talk, *AGU Fall meeting*, San Francisco, USA.

**Loisel J.**2013. A bipolar perspective on carbon accumulation in peatlands over the Holocene. Invited talk, *Lamont-Doherty Earth Observatory*, *Columbia University,* Palisades, USA.

**Loisel J.** 2013. Holocene history of high-latitude peatlands. Invited talk, *Department of Earth Science, University of California – Santa Barbara*, Santa Barbara, USA.

**Loisel J.** 2013. A bottom-up approach for estimating the carbon density of circum-arctic peatlands. Invited talk, *Department of Geography*, *McGill University,* Montreal, Canada.

**Loisel J.**2012. The dynamic histories of Alaskan and Patagonian peatlands. Invited talk, *Department of Geography*, *University of Toronto - Mississauga,* Mississauga, Canada.

**Loisel J.** 2011. Recent- and long-term peat-carbon accumulation: rates, timing, and climatic controls. Invited talk, *School of Environment & Society, Swansea University,* Swansea, UK.

**Loisel J.** 2007. Carbon accumulation in Canadian boreal peatlands: Can climatic information be inferred from *Sphagnum* δ13C values? Invited talk, *Centre for Environmental Change and Quaternary*, *University of Gloucestershire,* Cheltenham, UK.

*Presentations with Proceedings or Published Abstracts*

**Loisel J**, Bunsen M\*. 2020. Abrupt Fen-Bog Transition Across Southern Patagonia: Timing, Causes, and Impacts on Carbon Sequestration. Poster, *AGU Fall Meeting*, online.

**Loisel J**, Gallego-Sala A, Amesbury M, Magnan G, and C-PEAT Community. 2019. Expert assessment suggests global peatlands will switch to a carbon source in the near future. Poster, *AGU Fall Meeting*, San Francisco, USA.

**Loisel J**, Hillin J\*, Martinez M\*, Cheta M\*, Campbell P\*. 2018. Peat-Based Proxies from Cushion Plants in the High Andes: Potential for New Paleoenvironment and Paleoclimate Archives. Poster, *AGU Fall Meeting*, Washington DC, USA.

**Loisel J**. 2018. Peatland Sensitivity to Hydroclimatological Conditions in the Peruvian Andes. Oral, *AAG Annual Meeting*, New Orleans, USA.

**Loisel J,** MacDonald G, Thomson M. 2017. The future ‘warm LIA’ scenario across the American Southwest.Oral, *GSA Annual Meeting*, Seattle, USA.

**Loisel J,** Yu Z, Beilman D, Parnikoza I. 2017. Past and present peatland development in Antarctica under warm climates. Oral, *GSA Annual Meeting*, Seattle, USA.

**Loisel J,** Booth R, Charman D, van Bellen S, Yu Z. 2017. Testate amoebae communities sensitive to surface moistureconditions in Patagonian peatlands. Poster, *AGU Fall Meeting*, New Orleans, USA.

**Loisel J**, Nichols J, Kaiser K, Beilman D, Yu Z. 2016. Cellulose and lignin carbon isotope signatures in *Sphagnum* moss reveal complementary environmental properties. Poster, *AGU Fall Meeting*, San Francisco, USA.

**Loisel J**, Jepson W. 2016. Creating a common culture of evidence-based climate change science in higher education. Oral, *AAG Annual Meeting*, San Francisco, USA.

**Loisel J**, MacDonald G, Kremenetski K, Holmquist J. 2015. Timing of fen-bog transition across the northern peatland domain. Poster, *INQUA Quadrennial Congress*, Nagoya, Japan.

**Loisel J**, MacDonald G. 2015. Late-Holocene Changes in Climate Variability, Variance, and Periodicity in the US Southwest, and Effects on Landscape Dynamics. Poster, *Climate Workshop*, Pacific Grove, USA.

**Loisel J**, Yu Z, Beilman D, Kaiser K. 2014. Developmental history of an intriguing peat-forming community along the West Antarctic Peninsula. Poster, *AGU Fall meeting*, San Francisco, USA.

**Loisel J**, Yu Z, Beilman D, Kaiser K. 2014. Biochemical, geochemical, and paleoecological analyses of a newly discovered peatland on the West Antarctic Peninsula. Oral, *GSA* *Annual meeting*, Vancouver, Canada.

**Loisel J**, Nichols J, Beilman D, Yu Z, Kaiser K, Booth R. 2014. Solving the conundrum of carbon isotope signature in *Sphagnum* moss. Poster, *GSA Annual meeting*, Vancouver, Canada.

**Loisel J**, Yu Z, Holocene Peat Carbon Network. 2014. Insights and issues with estimating Holocene peatland carbon stocks: a synthesis and review. Oral, *EGU Annual meeting*, Vienna, Austria.

**Loisel J**, Yu Z, Beilman D, Bochicchio C, Dirksen O, Dirksen V. 2013. Holocene peatland-carbon dynamics in Kamchatka, Far East Russia. Poster, *AGU Fall meeting*, San Francisco, USA.

**Loisel J**, Yu Z. 2013. Carbon accumulation in circum-arctic peatlands over the Holocene: a synthesis. Oral, *American Association of Geographers*, Los Angeles, USA.

**Loisel J**, Yu Z. 2012. The unique developmental history of Patagonian peatlands. Oral, *GSA Annual meeting*, Charlotte, USA.

**Loisel J**, Yu Z. 2012. Climate control of carbon sequestration in peatlands mediated by local-scale ecohydrological feedbacks. Oral, *AGU Fall meeting*, San Francisco, USA.

**Loisel J**, Yu Z, D’Odorico P. 2012. Peatland dynamics in Patagonia: abrupt mid-Holocene fen-to-bog transition and carbon sequestration implications. Oral, *14th International Peat Congress*, Stockholm, Sweden.

**Loisel J**, Yu Z. 2011. Post-Little Ice Age warming induces a state shift in peat-carbon accumulation rates in Alaska. Oral, *41st Arctic Workshop*, Montreal, Canada.

**Loisel J**, Yu Z. 2011. Southern peatlands: a new perspective on Holocene carbon dynamics. Oral, *GSA Annual Meeting*, Minneapolis, USA.

**Loisel J**, Yu Z. 2011. Recent acceleration of carbon accumulation rates in wet boreal peatlands. Poster, *AGU Fall Meeting*, San Francisco, USA.

**Loisel J**, Yu Z. 2010. Holocene peat-carbon dynamics in Patagonia: timing, rates, and potential causes. Oral, *2nd International LOTRED-South America Symposium (PAGES)*, Valdivia, Chile.

**Loisel J**, Nolan J, Yu Z, Parsekian A, Slater L. 2010. The influence of landscape morphology on peatland dynamics and carbon accumulation inferred from ground penetrating radar (GPR) and peat core analysis. Poster, *AGU Fall Meeting*, San Francisco, USA.

**Loisel J**, Yu Z, Jones M. 2009. Expanding peatlands in Alaska caused by accelerated glacier melting under a warming climate. Oral, *AGU Joint Assembly*, Toronto, Canada.

**Loisel J**, Yu Z, Jones M. 2009. Expanding peatlands in south-central Alaska: a response to glaciers-climate feedbacks? Poster, *2nd International Symposium: Peatlands in the Global Carbon Cycle*, Prague, Czech Republic.

**Loisel J**, Yu Z, Jones M, Booth RK. 2008. Expanding sloping bog systems under a continental climate in south-central Alaska: possible causes and carbon-cycle implications. Poster, *AGU Fall Meeting*, San Francisco, USA.

**Loisel J**, Garneau M. 2008. The effects of moisture, climate and vegetation on long-term carbon sequestration rates in a boreal peatland, James Bay, Québec, Oral, *Geological Association of Canada (GAC) Annual Meeting*, Québec, Canada.

**Loisel J**, Garneau M, Hélie J-F. 2007. *Sphagnum* δ13C values as potential indicators of paleohydrological changes in boreal peat bogs. Poster, *AGU Fall Meeting*, San Francisco, USA.

**Loisel J**, Garneau M, Hélie J-F. 2007. Testate amoebae, *Sphagnum* carbon isotopic composition and other proxy data as paleoindicators of surface-moisture changes in two boreal peatlands during the late Holocene: preliminary results. Oral, *Canadian Quaternary Association (CANQUA)*, Ottawa, Canada.

**Loisel J**, Garneau M, Hélie J-F. 2007. Carbon accumulation in boreal peatlands estimated by *Sphagnum* carbon isotopic composition and proxy indicators. Poster, *1st International Symposium: Peatlands in the Global Carbon Cycle*, Wageningen, The Netherlands.

**Teaching**

*Instructor of record*

2015- **Texas A&M University:** Introduction to Geosciences (GEOS101); Planet Earth (GEOG203: in-

class, [online](https://www.youtube.com/playlist?list=PLM-Loofp5fMEuD9uxD4DzWXnIo_vu_mFL), and hybrid formats); Workshop in Environmental Studies (GEOG380); Past

Climates (GEOG442, GEOS442, GEOG642); Science and Politics of Climate Change (GEOS444);

Field Geography(GEOG450: study abroad in Peru); Processes in Physical Geography (GEOG604).

2011 **Lehigh University:** Terrestrial Ecosystem Ecology (EES250).

*Teaching Assistant*

2009-11 **Lehigh University:** Terrestrial Ecosystem Ecology(EES250); Field Camp (EES341).

2005-08 **University of Quebec – Montreal:** Climatology (GEO1062); Biogeography (GEO2082); Hydroclimatology (GEO3061); Field Camp (GEO3082); Lab. Methods in Physical Geography (GEO5032).

*Graduate Student Mentoring*

I am currently the primary advisor of five graduate students (five women of whom three are under-represented minorities) and have graduated my first graduate student in May 2020; results from his thesis were published in [*Global Change Biology*](https://doi.org/10.1111/gcb.15262) and [*Frontiers*](https://doi.org/10.3389/fevo.2020.00273). Due to their research experience as undergraduates, my current students display a high aptitude for individual research. I anticipate at least one peer-reviewed publication from each one of their theses.

2018- **Texas A&M University:** Graduate thesis supervisor for students M Bunsen (MSc; 2018-20); K Von Ness, K Beall, L Didio (MSc; 2019-21); J Sanders, (MSc; 2020-22); J Hillin (PhD; 2019-24).

Graduate committee member for students M Martinez (MSc 2019-21) and R Riggs (PhD 2019-24); external examiner of the following PhD candidates: P Matthijssen (University of Helsinki); Y Zhu (TAMU); J Arsenault (University of Montreal); G Sierra Duran (TAMU); K Sanbonmatsu (TAMU).

*Undergraduate Student Mentoring*

Over the past four years at Texas A&M University, I have trained over 80 ‘student-semesters’ (i.e., number of students for each semester, summed); many of these students completed multiple semesters of research. A total of 9 students have completed their undergraduate thesis under my guidance (see below). These theses are (slowly) being converted into peer-reviewed manuscripts. Many undergraduate students have also participated in field campaigns.

2016- Supervisor of undergraduate students working in my laboratory

Texas A&M University (GEOG491 and GEOG485 – independent research credits).

2016- **Texas A&M University:** Undergraduate thesis supervisor for students K Von Ness and C

Kohlmeyer (2016-17); C Brewer, M Cheta, and M Martinez (2017-18); J Hillin and A Lemos (2018-

19); K Sarna and K Emery (2019-20).

2010-11 **Lehigh University:** Undergraduate thesis supervisor for student G Sills.

2007-08 **University of Quebec – Montreal:** Undergraduate thesis supervisor for student C Lacroix.

**Professional Development**

### Workshops and Technical Course Attendance

### 2020 Understanding phenology with remote sensing, organized by NASA

Online

2019 PAGES-INQUA C-PEAT Workshop on Anthropocene, organized by A Gallego-Sala

University of Exeter (Exeter, UK)

### 2018 PAGES-INQUA C-PEAT Workshop on Tipping Points, organized by J Loisel

Texas A&M University (College Station, USA)

### 2017 International Soil Carbon Network action group workshop, organized by J Harden

Stanford School of Earth, Energy, and Environmental Sciences (Stanford, USA)

### 2016 NOVUS III Workshop on ecosystem disturbance, organized by K McLauchlan

NSF RCN, Cedar Creek LTER, and University of Minnesota (Minneapolis, USA)

### 2015 Embedding research in undergraduate classes, thought by D Mogk

### American Geophysical Union (San Francisco, USA)

2015 PAGES-INQUA C-PEAT Workshop on Emerging Themes, organized by Z Yu

Lamont-Doherty Earth Observatory, Columbia University (USA)

### 2014 Introduction to ground-based lidar for Earth Science Research, thought by C Crosby

Geological Society of America (Vancouver, Canada)

2014 PAGES-INQUA C-PEAT Workshop on Peatland Synthesis, organized by Z Yu

Lehigh University (Bethlehem, USA)

2013 Near-surface geophysics for non-geophysicists, thought by G Baker

# Geological Society of America (Denver, USA)

### 2013 Plant macrofossil identification, thought by C Yansa and GM Macdonald

Association of American Geographers (Los Angeles, USA)

### 2013 Tackling the statistical challenges of interpreting past environmental change

Center for Discrete Mathematics and Theoretical Computer Science (Newark, USA)

# 2012 Mars for Earthlings: Teaching modules integrating Earth and Planetary Science

# Geological Society of America (Charlotte, USA)

# 2012 Preparing for an academic career in the geosciences

# Cutting Edge Research Group (Chapel Hill, USA)

2012 Science and policy conference

American Geophysical Union (Washington D.C., USA)

2012 Science communication

National Geographic Society (Washington D.C., USA)

2010 Teacher development series

Lehigh University (Bethlehem, USA)

2008 4th international workshop on the ecology of *Sphagnum,* organized by D Vitt & J Shaw

PeatNet (Anchorage and Juneau, USA)

2006 Peatland ecology and bryophyte identification, thought by L Rochefort

University Laval (Québec, Canada)

*Field research experience*

2019 Canadian High Arctic Research Station, Nunavut, Canada

2017 Kananaskis Research Station, Alberta, Canada

2017 Cordillera Vilcanota, Andes, Peru

2016 Cedar Creek Ecological Reserve, Minnesota

2014 Rocky Mountains, Utah

2014 Antarctic Peninsula

2013 Mackenzie River Basin, Alberta and NW Territories, Canada

2011 Big Island, Hawai’i (field course)

2010, 14, 18 Southern Patagonia, Chile and Argentina

2009 Northern Apennines, Italy (field course)

2008, 09, 10 South-Central, South-Eastern, and the Interior, Alaska

2006, 07 James Bay Lowlands, Québec, Canada

2004, 05 Lanoraie Peatland Conservation Area, Québec, Canada

Organizational Memberships

.American Association of Geographers, AAG .American Geophysical Union, AGU

.Ecological Society of America, ESA .Geological Society of America, GSA

.Canadian Association of Palynologists, CAP .Canadian Quaternary Association, CANQUA

.Botanical Society of America, BSA .International Peat Society, IPC

.International Soil Carbon Network, ISCN .Past Global Changes, PAGES

.Global Carbon Project, GCP .Carbon in Peat on Earth through Time, C-PEAT

.Arctic Research Consortium for the US, ARCUS .Isobank

.Interagency Arctic Research Policy Committee, IARPC .International Permafrost Association, IPA

.International Union for Quaternary Research, INQUA .Society for Ecological Restoration, SER

**Service**

*Scientific community*

2021 NSF Review Panelist.

2019- Texas A&M University representative for [ARCUS](https://www.arcus.org/).

2018- Co-leader of [*C-PEAT*](http://pastglobalchanges.org/science/wg/peat-carbon/intro) *(Carbon in Peat on Earth through Time)*, a *Past Global Changes* *(PAGES)*

Working Group on climate forcings. We currently have over 225 members. My functions include

writing the monthly newsletter, organizing annual meetings, applying for workshop funding

(INQUA, PAGES, etc.), convening sessions, growing our network, etc.

2018- Data contributor to [PANGAEA](https://www.pangaea.de/) on behalf of C-PEAT; so far, my students and I have made over 300

peat records available to the public (look for the C-PEAT tag).

2018 NSF Review Panelist.

2017- Peer reviewer for proposals to NSF (US), NERC (UK), NSERC (Canada), FONDECYT (Chile), NCN

(Poland).

2017- Scientific Steering Group member (elected), International Soil Carbon Network ([ISCN](https://iscn.fluxdata.org/)).

2016 Guest Editor for a special issue of *Quaternary International* on American Southwest

Paleoclimatology.

2014- Session chair and convener in at least one large conference per year, including GSA, AGU, and AAG meetings.

2014-17 Steering Group Committee Member, *C-PEAT*.

2014 Guest Editor for a special issue of *The Holocene* on Holocene carbon dynamics in the

circum-arctic region.

2008- Peer reviewer for over 100 scientific research articles submitted to international journals

including *Nature*, *PNAS*, *EPSL*, *GRL*, *QSR*, *GCA*, *JGR, Ecology,* *Earth Science Reviews,* etc.

*Department, College, University*

2018- Member of the Faculty Advisory Committee, TAMU School of Innovation

2019- Steering Committee Member of the College of Geoscience Strategic Plan Team

2020- Member of the College of Geosciences committee on Data Science and AI/Machine Learning

2019-20 Member of the Search Committee for an Instructional Faculty, Department of Geography

2019-20 Member of the 2:1 Teaching Load task force, Department of Geography

2017-19 Faculty Committee Member, Department of Geography’s Undergraduate Program

2017-19 Co-organizer, Department of Geography Speaker Series