



# New Dean and New Faculty Members

When **Dr. Stephan Pflugmacher Lima** was growing up in Bavaria, Germany, he never would have thought that moving to Manitoba would be in his future. But that's exactly what happened when he arrived in September 2020 to take on the role of Dean of the Clayton H. Riddell Faculty of Environment, Earth, and Resources.

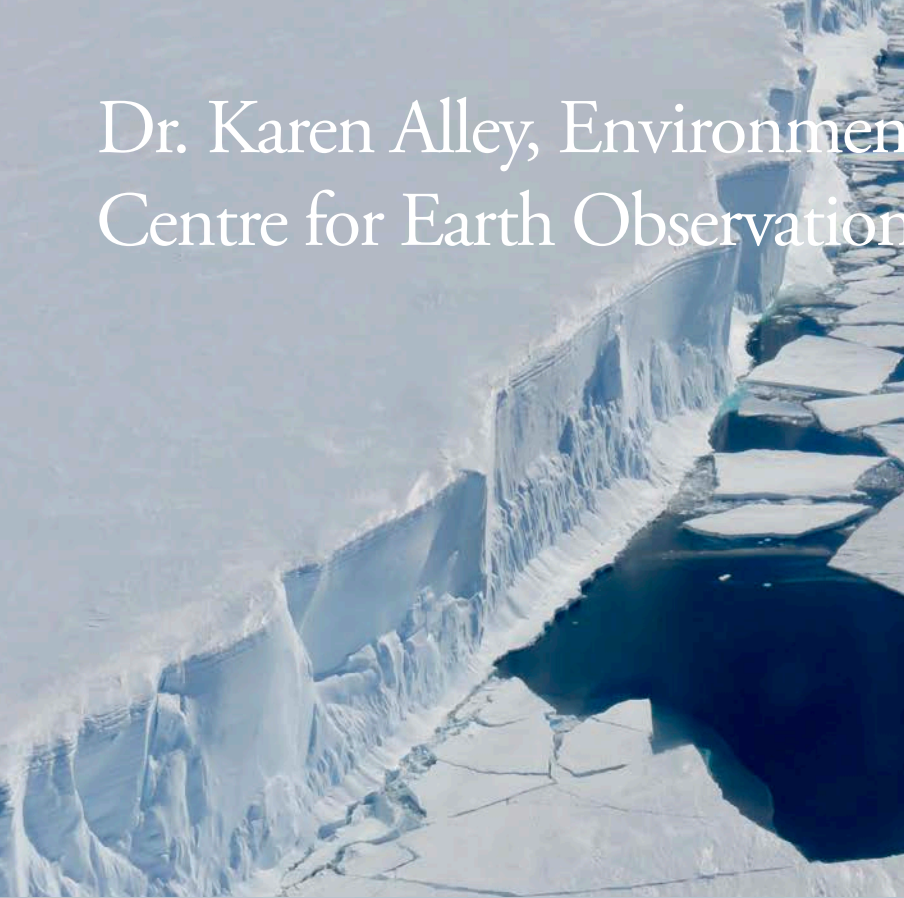
Dr. Pflugmacher Lima grew up in Augsburg, Germany, a city close to Munich. He attended the University of Ulm where he studied Biology with focus on Plant Physiology, Microbiology and Biochemistry. He wrote his diploma thesis on the effects of air pollution on spruce trees at the Fraunhofer Institute of Atmospheric Research in Garmisch-Partenkirchen. From there, he went to the University of Munich and the German Research Center for Environmental Health, which is part of the Helmholtz Society, where he received his Ph.D. in Natural Science with a focus on Plant Stress Physiology and Ecotoxicology. After graduation, he traveled the world doing post-doctoral research in Berlin, Scotland, Brazil, Argentina, Australia and China. He started his professorial career as a Full Professor and Chair of Ecological Impact Research & Ecotoxicology at the Technical University of Berlin where he researched and taught for seven years before joining the University of Helsinki as a Full Professor for Aquatic Ecotoxicology in an Urban Environment. Together with the Korean Institute of Science & Technology (KIST) he set up a Joint Laboratory of Applied Ecotoxicology.

As he looks to the future, Dr. Pflugmacher Lima sees the profile and work of the Riddell Faculty growing to new heights and forming a Faculty 4.0 contributing substantially to the needs of our society (local, national and international) and mother Earth.

*"The faculty is already well known in Winnipeg and Canada, but I think we can work to increase our footprint even more. I also see that locally, there is a need for research on sustainability as well as on water systems, and I'd like to focus on establishing cross cutting research domains in our faculty to enhance interdisciplinary research and thinking within these topics."*



# Dr. Karen Alley, Environment & Geography/ Centre for Earth Observation Science



**Dr. Karen Alley**, (Pictured below left) a glaciologist, has a B.A. in Geology from Colgate University and a Ph.D. in Geological Sciences (2017) from the University of Colorado Boulder. Following her graduate studies, she taught at the College of Wooster in Ohio before joining CEOS and the Department of Environment and Geography in the summer of 2020.

Alley's research focuses on constraining the interactions between glaciers and the ocean in order to more accurately predict future sea-level rise. Her past work has been primarily Antarctic, investigating the stability of the floating extensions of the ice sheet, which are known as ice shelves. Her work has contributed in particular to understanding channelized plumes of buoyant ocean and melt water that form on the undersides of ice shelves. These features, which are a lot like upside-down rivers, can change rapidly and often weaken the most vulnerable parts of ice shelves. Her work primarily relies on remote sensing, including using optical imagery and satellite laser altimetry, but she also incorporates field data and numerical modeling into her investigations. During the 2019-2020 field season, she worked with the Thwaites-Amundsen Regional Survey and Network (TARSAN) team of the International Thwaites Glacier Collaboration (ITGC) to understand changes on Thwaites Glacier (pictured), the glacier holding the single biggest control on future sea-level rise, and the nearby Dotson Ice Shelf. Now that she has moved to Manitoba, Alley intends to turn many of her research questions farther north, investigating the details of ice-ocean interaction at the calving faces of glaciers in Canadian Arctic and Greenland fjords.

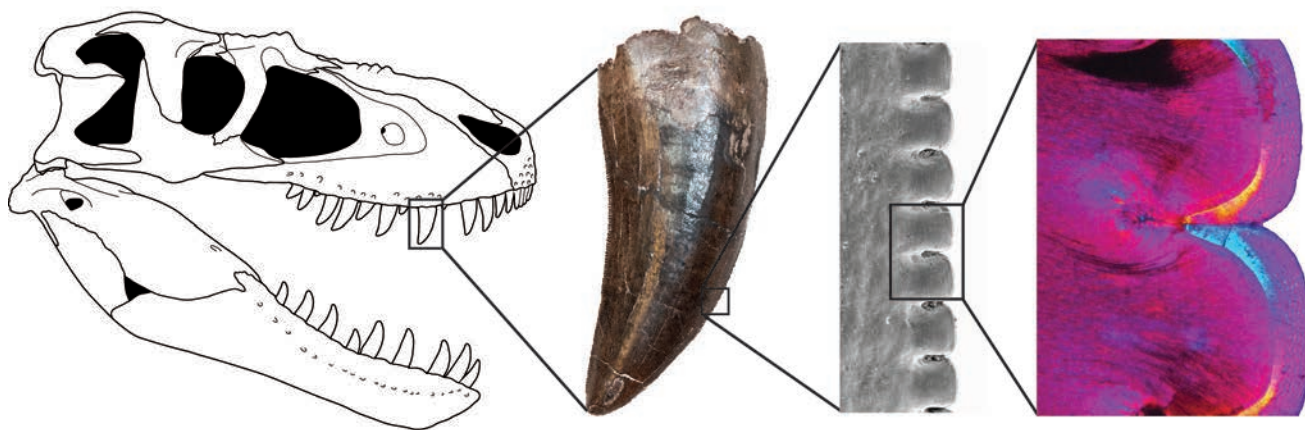




## Dr. Kirstin Brink, Earth Sciences

**Dr. Kirstin Brink** (Pictured right) received her B.Sc. from the University of Alberta, her M.Sc. from the University of Calgary, and her Ph.D. from the University of Toronto. She joined the U of M as an Assistant Professor in the Department of Earth Sciences in January 2020 after working as a Killam Postdoctoral Fellow, a Michael Smith Foundation for Health Research Postdoctoral Trainee, and a Banting Postdoctoral Fellow at the University of British Columbia. Dr. Brink is a vertebrate palaeontologist interested in the evolution and development of teeth and bones, specifically tissue structure and growth rates, and the relationship between structure, growth, and animal ecology. Her research involves the use of living animal models to understand how extinct animals grew and interacted with their environment. She uses histology, microscopy, CT scans, and SEM to investigate microscopic features of biomineralized tissues, and is particularly eager to examine bones and teeth at the nanoscale in the new Environmental Nanogeoscience Facility. Dr. Brink is also a newly appointed Adjunct Curator of Fossil Vertebrates at the Canadian Fossil Discovery Centre in Morden, MB, and is excited to learn more about the marine vertebrates from the Cretaceous of Manitoba.

Below: Microanatomy of a Gorgosaurus tooth. Skull outline by Danielle Dufault.



# Dr. Stefanie Brueckner, Earth Sciences

**Dr. Stefanie Brueckner** (Pictured below) started her faculty position at the Department of Earth Sciences at the University of Manitoba in January 2020. Before her appointment as Assistant Professor in Economic Geology, she was a Research Associate at Laurentian University working with Harold Gibson, Ross Sherlock and Pretivm Resources Inc. on exploration targets in north-central British Columbia (2018-2019) and a Lecturer at Auburn University, Alabama (2016-2018). Stefanie took the lecturer position after graduating with a Ph.D. from Memorial University of Newfoundland where she worked on a metamorphosed, gold-bearing volcanogenic massive sulfide deposit under the supervision of Dr. Steve Piercey and Dr. Paul Sylvester. Before coming to Newfoundland in 2010, she grew up in Bautzen, Germany, and received her Diploma in Geology/Paleontology (M.Sc. equivalent) from the University of Mainz, Germany, where she did her thesis on Archean migmatites from central Finland under the supervision of Dr. Stephen Foley. Her love for rocks and travel took her also to the University of Greifswald, Germany and the University of Helsinki, Finland, before graduating in geology from Mainz in

2008. She worked for the GEOROC and GeoReM databases at the Max-Planck-Institute for Chemistry, Mainz, from 2008-2009.

Stefanie's research focuses on hydrothermal mineral deposits enriched in precious and critical metals that are used for green, medical and communication technologies. These deposits formed by relatively hot ( $>100^{\circ}\text{C}$ ) fluids circulating through the Earth's crust. Her research combines macroscopic field data with microscopic observations and micro-analytical tools to constrain ore mineralogy and chemistry, fluid conditions transporting and depositing metals, the source of metals, the setting in which these deposits can form, and the role of metamorphism on metal enrichment. She received the Governor General's Academic Medal in 2016 for best Ph.D. thesis in NL.





# Dr. Eric Collins, Environment & Geography/ Centre for Earth Observation Science

**Dr. Eric Collins** (Pictured below) received his B.Sc. in Biochemistry at Washington State University, and his M.Sc. and Ph.D. in Biological Oceanography (with a Certificate in Astrobiology) at the University of Washington. He was a postdoctoral fellow at McMaster University and McGill University before joining the faculty at the University of Alaska Fairbanks in 2013. Dr. Collins returned to Canada in 2019 as Canada Research Chair in Arctic Marine Microbial Ecosystem Services in the Centre for Earth Observation Sciences at the University of Manitoba.

Dr. Collins' research interests are on the diversity, distribution, and function of microbes in the cryosphere, including sea ice, snow, and glaciers. He is particularly interested in Ecosystem Services, or the ways in which these microbes benefit human well-being by supporting habitat health, regulating environmental homeostasis, provisioning resources and biotechnology, and satisfying cultural needs. His lab primarily uses high-throughput DNA sequencing to explore the taxonomic diversity and geographic distribution of microbes in these extreme environments, discover the evolutionary strategies used by microbes to survive extreme cold using complete genome sequencing of cultured and uncultured members of Arctic microbial communities, and assess how metabolic networks and ecological functions linking these microbes might change as a result of ongoing climate warming.

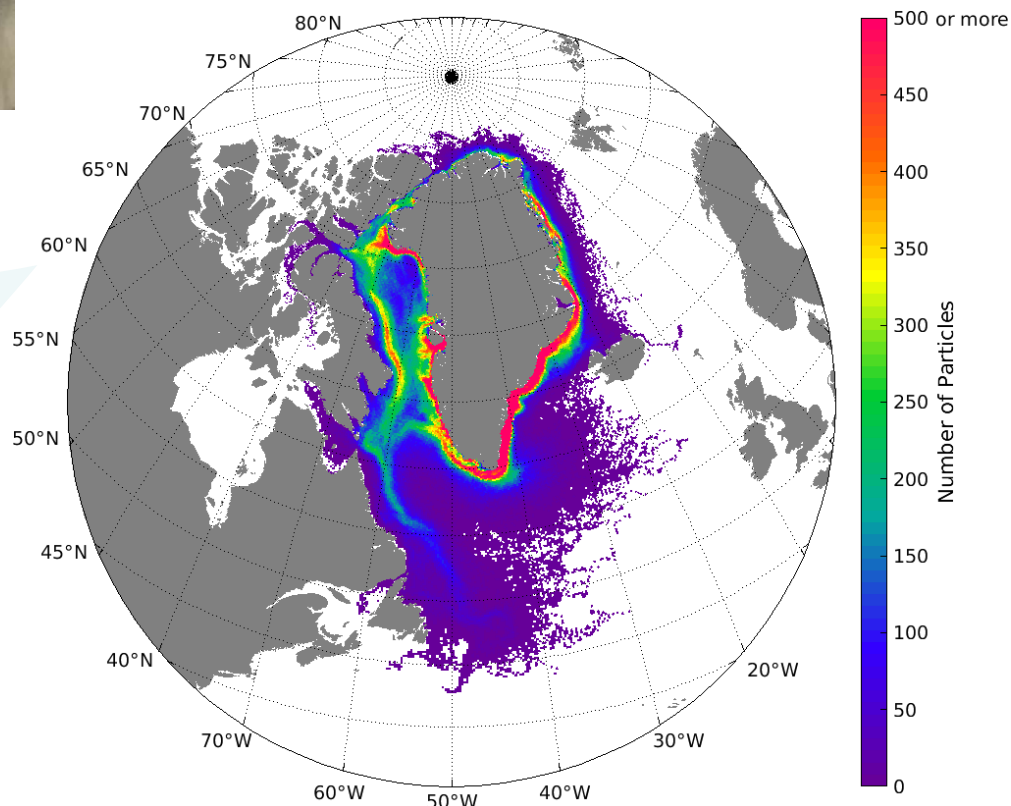


# Dr. Juliana Marson, Environment & Geography/ Centre for Earth Observation Science



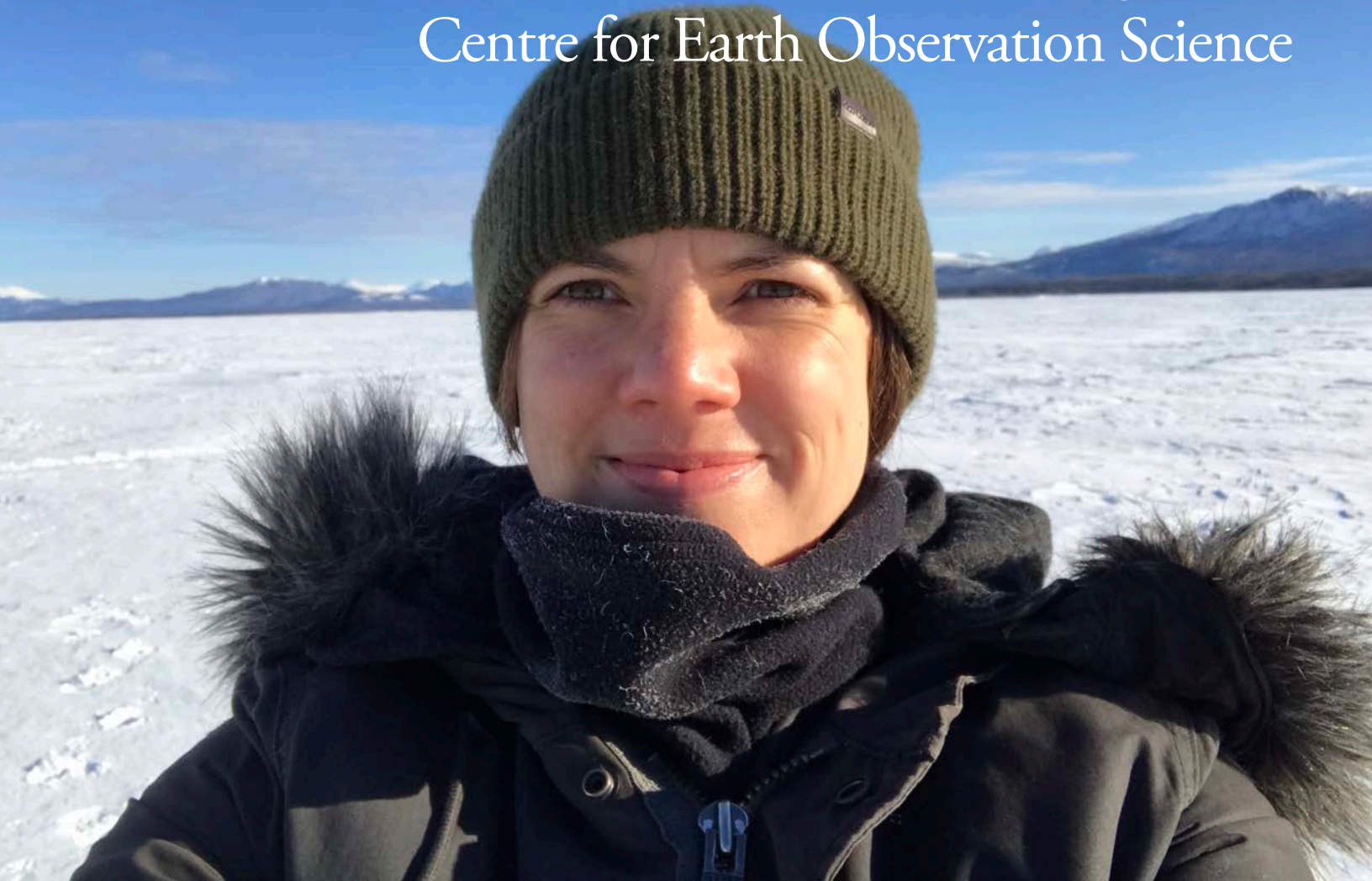
**Dr. Juliana Marson** (Pictured left) has joined the University of Manitoba and CEOS as an Assistant Professor in January 2021. She is originally from Brazil, and received her BSc in Oceanography in 2008 (Universidade Federal do Rio Grande, FURG), M.Sc. in Physical Oceanography in 2010 (FURG), and Ph.D. in Physical Oceanography in 2015 (Universidade de São Paulo, USP). Dr. Marson was also a visiting student at the Alfred Wegener Institute (AWI, Germany) working with Dr. Wolfgang Dierking in 2008, and at McGill University working with Dr. Lawrence Mysak in 2014. In 2015, she moved to Canada to pursue a Postdoctoral Fellowship at the University of Alberta with Dr. Paul Myers.

Dr. Marson's research focus lies on the polar oceans, their interactions with the cryosphere and climate. In particular, she uses numerical models to understand how warming and increasing freshwater input to the polar and subpolar oceans (especially from melting land ice) can change their physical and biogeochemical characteristics. She is also fascinated by icebergs, their role in ocean dynamics and primary productivity, their patterns of drift, and how they can affect marine transportation and other offshore activities. Dr. Marson has specialized in iceberg modelling in the past few years and part of her scientific efforts are dedicated to improving the numerical representation of icebergs so we can better predict their environmental impacts and trajectories. The figure below shows an example of the distribution of "*particles*" (groups of icebergs) originating from Greenland after 15 model years of simulation (more details in Marson et al., 2018).





# Dr. Nicole J. Wilson, Environment & Geography/ Centre for Earth Observation Science



**Dr. Nicole J. Wilson**, (Pictured above) is a new SSHRC Tier 2 Canada Research Chair in Arctic Environmental Governance and Change. She is a scholar of settler origin who was born on Treaty 7 territory in Calgary, Alberta. She holds a B.A. in Development Studies from the University of Calgary, an M.Sc. in Natural Resources from Cornell University, and a Ph.D. in Resource Management and Environmental Studies from the University of British Columbia. She was awarded scholarships including the Vanier Canadian Graduate Scholarship and the Killam Doctoral Scholarship. Following her Ph.D., she completed a Mitacs Elevate Post-Doctoral Scholarship in the Peter A. Allard School of Law at the University of British Columbia.

Dr. Wilson's research focuses on Indigenous peoples, environmental governance, and environmental change in the Arctic. In particular, her research examines the many ways that Indigenous peoples are asserting their self-determination and revitalizing their governance systems to respond to various stressors including climate change and resource development. For instance, her doctoral research analyzed how Modern land claims in Yukon, Canada create and constrain spaces for Indigenous water governance. Dr. Wilson is a community-engaged scholar who conducts interdisciplinary social science research in partnership with Indigenous governments and organizations (e.g., Carcross/Tagish, Kluane, Tr'ondëk Hwëch'in, and White River First Nations). As a Canada Research Chair at the U of M, she is working to develop new partnerships with Indigenous communities in the Eastern Arctic to conduct research related to Community-Based Monitoring, environmental governance and policy, and climate change adaptation.



# Remembering Dr. David G. Barber

Dr. David G. Barber tragically passed away on April 15th 2022. David had been a member of the Department of Environment and Geography since 1993 (then Department of Geography). On arrival to the University of Manitoba, he immediately established the Centre for Earth Observation Science (CEOS), and then with great energy worked to grow the research enterprise of the Centre, Riddell Faculty and the University of Manitoba. This was his passion until his passing.

In his research David applied a System Science approach to the study of the Arctic Ocean. He was extraordinary in his ability to undertake, communicate and fund research, and a defining skill was his ability to motivate others. It was the combination of his abilities that led to the development of internationally the largest, the most innovative, and most comprehensive field and infrastructure projects that showed the world that a small university in prairie Canada could achieve great things in the realm of ocean science. In doing so he created opportunity for innumerable students, fellow professors and staff who will forever be grateful. He showed those who knew him that success requires the simple ingredients of courage, hard work and perseverance.

David's contributions have been recognized with the highest awards and distinctions. David was a Distinguished Professor at this University, and Tier 1 Canada Research Chair. He was awarded the Officer of the Order of Canada, Fellow of both the Royal Society of Canada and the Royal Canadian Geographical Society, and the Northern Science Award for exemplary achievement in the field of northern research. His greatest award however was to be blessed with a loving family, and the friendship of a large cohort of researchers from across Canada and around the world. He will be sorely missed.

See the following URL for a discussion on BaySys:  
<https://www.youtube.com/watch?v=Y5eNfvvu6io&t=49s>



Clayton H. Riddell Faculty of  
Environment, Earth, and Resources



University  
of Manitoba