

2023 MBL Seminar Series
Distinguished Scientist Seminar- Semester in Environmental Science

Oswaldo Sala Ph.D.
Julie A Wrigley, Regents' and Foundation Professor
Arizona State University

*Effect of Climate Change in Drylands:
Amount and Variability of Precipitation*

**September 15th —11:30 AM, Speck Auditorium,
MBL, Woods Hole, MA**



Oswaldo Sala is the Julie A. Wrigley, Regents' and Foundation Professor, at Arizona State University, where he contributes to both the School of Life Sciences and School of Sustainability. He is also the Founding Director of the Global Drylands Center. He came to ASU in 2010 from Brown University where he was the founding Director of the Environmental Change Initiative and the Sloan Lindemann Professor of Biology. Oswaldo has been trained as a dryland ecologist working from the local to the global levels. He is known for his large-scale field manipulative experiments simulating climate change around the world. At the global scale, he has developed highly cited (>11,000 citations) scenarios of biodiversity change for the year 2100. He has had a prolific scientific production with more than 62,000 citations and H>100. His work has been truly interdisciplinary, collaborating with geologists, social scientists, mathematicians and humanists. Oswaldo Sala received PhD (1982) and MSc from Colorado State University and BSc from University of Buenos Aires. Oswaldo Sala served in numerous national and international institutions from the Scientific Committee on Problems of the Environment, Millennium Ecosystem Assessment and IPCC (Intergovernmental Panel on Climate Change) to being President of the Ecological Society of America. He has been a contributor to several reports associated with global change including IPCC, Global Biodiversity Assessment and Millennium Ecosystem Assessment. He has received several recognitions to his academic work including being an elected Member of the American Academy of Arts and Sciences, the Academy of Sciences of Argentina, Fellow of the American Geophysical Union, the American Association for the Advancement of Science and the Ecological Society of America.

Suggested readings:

Gherardi, Laureano A. and Oswaldo E. Sala. "Enhanced precipitation variability decreases grass- and increases shrub-productivity." *Proceedings of the National Academy of Sciences* 112 (2015): 12735 - 12740.

Currier, Courtney M, and Oswaldo E Sala. "Precipitation versus temperature as phenology controls in drylands." *Ecology* vol. 103,11 (2022): e3793. doi:10.1002/ecy.3793

Maurer, Gregory E et al. "Sensitivity of primary production to precipitation across the United States." *Ecology letters* vol. 23,3 (2020): 527-536. doi:10.1111/ele.13455

2023 MBL Seminar Series
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Environmental Science*

Susan Natali Ph.D.
Arctic Program Director, Senior Scientist
Woodwell Climate Research Center

*Local to global impacts of permafrost thaw:
Integrating science into just and equitable
climate policy and action*

**October 27th— 11:30 AM, Speck Auditorium, MBL,
Woods Hole, MA**



Dr. Susan Natali is an Arctic ecologist whose focus on permafrost thaw is motivated by an acute awareness of the risks it poses. She earned her PhD from the Department of Ecology and Evolution at Stony Brook University in 2008. She currently leads Woodwell Climate’s Arctic Program, which investigates the drivers and consequences of rapid Arctic change. Her research examines the effects of climate change, including permafrost thaw and increasing wildfires, on northern ecosystems and the impact these changes have on Arctic residents and the global climate. Dr. Natali’s research team combines field research of permafrost and carbon cycling with remote sensing and modeling to assess the current and future impacts of climate change across the Arctic. She has worked extensively in remote regions of Alaska and Siberia, conducting research and—as the Director of the Polaris Project—training the next generation of Arctic scientists. Dr. Natali also leads the Permafrost Pathways Initiative, which brings together leading experts in climate science, policy action, and environmental justice to inform and develop adaptation and mitigation strategies to address permafrost thaw. She is committed to seeing the local and global impacts of a rapidly changing Arctic incorporated into policy. She has briefed federal lawmakers, testified before Congress, and presented her work at events associated with international climate negotiations. Dr. Natali frequently speaks with the media, and has been quoted by the New York Times, Washington Post, Newsweek, The New Yorker, CBS News, and BBC News and has presented her work on the TED stage.

Suggested readings:

Natali, Susan M., Holdren, John P., Rogers, Brendan M. *et al.* “Permafrost carbon feedbacks threaten global climate goals.” *Proceedings of the National Academy of Sciences* 118 (2021).

Susan M Natali *et al* 2022 *Environ. Res. Lett.* **17** 091001.

Natali, S.M., Watts, J.D., Rogers, B.M. *et al.* Large loss of CO₂ in winter observed across the northern permafrost region. *Nat. Clim. Chang.* **9**, 852–857 (2019).

Schuur, E., McGuire, A., Schädel, C. *et al.* Climate change and the permafrost carbon feedback. *Nature* **520**, 171–179 (2015). <https://doi.org/10.1038/nature14338>.

2023 MBL Seminar Series
*Early Career Scholar -Semester in
Environmental Science*

Linta Reji

Postdoctoral Research Associate, Department of
Geosciences at Princeton University

*Tracing Microbial Cycling of Climate Active
Trace Gases in Wetland and Upland Ecosystems*

**November 17th - 11:30AM, Speck Auditorium, MBL,
Woods Hole, MA**

Linta Reji is a geomicrobiologist studying microbially driven elemental cycles in terrestrial and coastal ecosystems. Her research focuses on developing mechanistic insights into how microbial communities respond to natural and anthropogenic global change factors. She is particularly interested in investigating the biogeochemical consequences of the enormous microbial diversity found in natural ecosystems. Her work integrates perturbation experiments in the lab with spatially and temporally resolved field observations, using a combination of cutting-edge tools from microbial ecology and biogeochemistry.

Linta received her bachelor's and Ph.D. degrees from Stanford University. She is currently a postdoctoral researcher at Princeton University. Linta will join the University of Chicago in July 2024, as an Assistant Professor in the Department of Geophysical Sciences.



Suggested readings:

Reji L., Zhang, X. 2022. *Genome-Resolved Metagenomics Informs the Functional Ecology of Uncultured Acidobacteria in Redox Oscillated Sphagnum Peat.* mSystems.
DOI: [10.1128/msystems.00055-22](https://doi.org/10.1128/msystems.00055-22).

Greening, C., Grinter, R. *Microbial oxidation of atmospheric trace gases.* Nat Rev Microbiol 20, 513–528 (2022). <https://doi-org.ezproxy.princeton.edu/10.1038/s41579-022-00724-x>.

2023 MBL Seminar Series
*Distinguished Scientist Seminar-Semester in
Environmental Science*

Kai Bischof Ph.D.
University of Bremen, Germany

Seaweed Biology in a Changing Arctic

**December 1st – 11:30 AM, Speck Auditorium,
MBL, Woods Hole, MA**



Professor Dr. Kai Bischof is Head of the Department of Marine Botany at the University of Bremen, Germany. His research covers all aspects of seaweed ecophysiology, with a focus on the field of acclimation to abiotic drivers and mechanisms of range expansion. He received his PhD from University of Bremen in 2000 studying the effects of UV radiation on macroalgae in polar regions. He carried out two post-docs at the Alfred Wegener Institute for Polar and Marine Research, in Bremerhaven, Germany and the Department of Marine Biology, University of Groningen, The Netherlands prior to becoming Assistant Professor for Biological Oceanography, Institute for Polar Ecology at the University of Kiel, Germany. He has mentored graduate students in projects focused on ecophysiology of macroalgae spanning polar to tropical regions, including studying the effects of light, temperature, nutrients, and CO₂ on physiology, photosynthesis, and early and late stages of development of macroalgae. He is co-editor of the book *Seaweed Biology* and co-author of *Seaweed Ecology and Physiology*. Currently, Prof. Dr. Bischof is the Scientific Coordinator of the EU Horizon 2020 project FACE-IT which aims to enable adaptive co-management of social-ecological fjord systems in Greenland, Svalbard, and Norway in the face of rapid cryosphere and biodiversity changes. He is leading a collaborative team in identifying and quantifying key drivers of biodiversity changes and their past and future trends, identifying cascading effects of a changing biodiversity associated with ongoing and projected changes in Arctic coastal food webs, assessing the interdependencies between environmental changes and Arctic coastal livelihoods, and supporting adaptive co-management at the local and national levels.

Suggested readings:

Krause-Jensen, Dorte et al. "Imprint of Climate Change on Pan-Arctic Marine Vegetation." Frontiers in Marine Science (2020).

Niedzwiedz, Sarina & Bischof, Kai. (2023). Glacial retreat and rising temperatures are limiting the expansion of temperate kelp species in the future Arctic. Limnology and Oceanography. 68. 10.1002/lno.12312.

Scheschonk, Lydia & Becker, Stefan & Hehemann, Jan-Hendrik & Diehl, Nora & Karsten, Ulf & Bischof, Kai. (2019). Arctic kelp eco-physiology during the polar night in the face of global warming: A crucial role for laminarin. Marine Ecology Progress Series. 611. 10.3354/meps12860.