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DEPARTMENT OF BIOLOGY
NTNU / NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET
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RESEARCH PROFESSOR (20% APPOINTMENT)
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APPOINTMENTS

2021-	Associate Professor, ***Department of Biology, NTNU / Norwegian University of Science and Technology, Norway***
2021-	20% Research Professor/Researcher I, ***NORCE Norwegian Research Centre, Norway***
2019-2021	Research Professor†/Researcher I, ***NORCE Norwegian Research Centre, Norway*** *(†Awarded to those who reached research achievements at Full Professor level after external evaluation)*
2017-2021	Research Theme Leader*, ***NORCE Norwegian Research Centre, Norway*** *(*Position started under Uni Research Climate, which became NORCE Climate in 2019)*
2016-2019	Adjunct Professor, ***Department of Biology, University of Bergen, Norway***
2014-2019	Senior Researcher*/Researcher II, ***NORCE Norwegian Research Centre, Norway***
2011-2014	Postdoctoral Research Associate, ***National Center for Atmospheric Research, USA***
2009-2011	Postdoctoral Fellow, ***New Mexico State University, USA***

ACADEMIC BACKGROUND

2004-2009	Ph.D., Department of Botany, ***University of Florida, USA***
2002-2004	M.A., Environmental Science & Ecological Engineering, ***Korea University***
1999-2002	B.A., Biotechnology and Environmental Science, ***Korea University***
1998-2002	B.A., Horticultural Science, ***Korea University, Republic of Korea***

MOBILITY

2015-2016	Visiting scientist, ***National Centre for Atmospheric Research, USA (4 months)***
2009-2011	Visiting scientist, ***Los Alamos National Laboratory, USA (15 months)***

RESEARCH INTERESTS

I am a terrestrial ecosystem ecologist and land surface modeler interested in the feedback cycles of global climate change and ecosystem carbon cycles. My work focuses on understanding how climate and environmental changes affect ecosystem structure and function, particularly ecosystem C cycling. My recent research interests involve climate change impacts on nature and society. I am particularly interested in how climate change affects people's lives in high latitude ecosystems and how our efforts to mitigate affect future climate and ecosystems.

HIGHLIGHTS

I have been very successful at obtaining external funding. I played a leading role in obtaining 10 large grants (3-5 year projects), which totals approximately 18 million Euros (approximately 7 million Euros were brought into the home institute). From the projects I play a partnering role, approximately 1 million Euros were brought into the home institute. With this, I supervised 8 postdocs at NORCE and supported 4 senior researchers. I graduated 1 PhD student at the University of Bergen as a main supervisor and am currently main supervisor of 3 PhD students at NTNU. In addition, I am co-supervising 3 PhD students at NTNU, University of Oslo, and University of Bergen. My research on permafrost carbon-climate feedback using

observations and modeling is very well recognized, which has led to being invited to serve as an associate editor at The Cryosphere journal and as a keynote speaker at various conferences. I have authored in 48 peer-review journal articles, which account for over 5500 citations. I was a Research Theme leader of the Land-Atmosphere Interaction Group at NORCE for 4 years, where the group consisted of 10-12 senior researchers and postdocs working on ground-based and remote sensing observations as well as regional and Earth System modeling.

PUBLICATIONS

Peer-reviewed scientific journal articles

55 in peer-review journals, 9 submitted/in review/revision, over 5900 citations, H-Index: 25, i-10 index: 38

In review Streletskiy D.A., Maslakov A., Grosse G., Shiklomanov N.I., Farquharson L., Zwieback S., Iwahana G., Bartsch A., Liu L., Strozzi T., **Lee H.**, Debolskiy M. Thawing permafrost is subsiding at a global scale - review and perspectives, *Submitted to **Environmental Research Letters***.

In revision Park S.W., Kug J.S., **Lee H.**, Steinert N.J., An S.I., Shin J. Potential intensification of permafrost carbon feedback under net-zero and negative emissions, *Submitted to **Science Advances***.

In revision Steinert N.J., Schwinger J., Chadwick R., Kug J.S., **Lee H.** Lasting seasonal changes of land water availability after temperature overshoot driven by a shift of the Intertropical Convergence Zone, *Submitted to **Nature Communications***.

In revision Althuizen I., Gya R., Jaroszynska F., **Lee H.**, Telford R., Chipperfield J., Enquist B., Goldberg D., Vandvik V. Divergent plant investment strategies in response to climate strongly regulate ecosystem carbon cycling in alpine grasslands, *Submitted to **Journal of Ecology***.

In revision Vickers H.M.S., Mooney P.A., Malnes E., **Lee H**. Comparing rain-on-snow representation across different observational methods and a regional climate model, *Submitted to **The Cryosphere***. https://doi.org/10.5194/tc-2022-57

Accepted Aalto T., Tsuruta A., Mäkelä J., Mueller J., Tenkanen M., Burke E., Chadburn S., Gao Y., Mannisenaho V., Kleinen T., **Lee H.**, Leppänen A., Markkanen T., Materia S., Miller P., Peano D., Peltola O., Poulter B., Raivonen M., Saunois M., Wårlind D., Zaehle S. Air temperature and precipitation constraining the modelled wetland methane emissions in a boreal region in Northern Europe, https://doi.org/10.5194/egusphere-2023-2873, 2024. *Submitted to **Biogeosciences***.

Accepted Petit Bon M., Beard K.H., Bråthen K.A., **Lee H.**, Jónsdóttir I.S. Goose grubbing and warming suppress summer net ecosystem CO_2 uptake differentially across high-Arctic tundra habitats, *Submitted to **Ecology***.

Accepted Li F., Song X., Harrison S.P., Marlon J.R., Lin Z., Leung L.R., Schwinger J., Marécal V., Wang S., Ward D.S., Dong X., **Lee H.**, Nieradzik L., Rabin S.S., Séférian R. Evaluation of global fire simulations in CMIP6 Earth system models, *Submitted to **Geoscientific Model Development***. https://doi.org/10.5194/gmd-2024-85

Accepted Zweigel R.B., Dashtseren A., Temuujin K., Sharkhuu A., Webster C., **Lee H.**, Westermann S. Impact of livestock activity on near-surface ground temperatures in Mongolia, *Submitted to **Biogeosciences***, https://doi.org/10.5194/egusphere-2024-1790

2024 Kim I.W., Timmermann A., Rodgers K.B., Lee S.S., **Lee H.**, Wieder W.R. Abrupt regime shifts in subarctic wildfires due to future permafrost thawing, ***Nature Communications.*** 15, 7868. https://doi.org/10.1038/s41467-024-51471-x

2024 Müller R., Kim J.S., **Lee H.**, Muri H., Tjiputra J., Yoon J.H., Schaepman-Strub G. Radiative forcing geoengineering under high CO_2 levels leads to higher risk of Arctic wildfires and permafrost thaw than a targeted mitigation scenario, ***Communications Earth & Environment***. 5, 180. https://doi.org/10.1038/s43247-024-01329-3

2024 Levine X., Williams R., Marshall G., Orr A., Seland Graff L., Handorf D., Karpechko A., Köhler R., Wijngaard R., Johnston N., **Lee H.**, Nieradzik L., Mooney P. Storylines of Summer Arctic climate change constrained by Barents-Kara Sea and Arctic tropospheric warming for climate risks assessment, ***Earth System Dynamics***. 15, 1161–1177,

https://doi.org/10.5194/esd-15-1161-2024, 2024.

2024 Zweigel R.B., Dashtseren A., Temuujin K., Aalstad K., Webster C., Stuenzi S.M., Aas K.S., **Lee H.**, Westermann S. Simulating the thermal regime and surface energy balance of a permafrost underlain forest in Mongolia, ***JGR-Earth Surface***. 129, e2023JF007609. https://doi.org/10.1029/2023JF007609

2024 Nitzbon J., Schneider von Deimling T., Chadburn S., Grosse G., Laboor S., **Lee H.**, Steinert N., Stuenzi S.M., Westermann S., Langer M. No respite from permafrost-thaw impacts in absence of a global tipping point, ***Nature Climate Change***. 14, 573-585. https://doi.org/10.1038/s41558-024-02011-4

2024 Pirk N., Aalstad K., Mannerfelt E.S., Clayer F., de Wit H., Christiansen C.T., Althuizen I., **Lee H.**, Westermann S. Disaggregating the carbon exchange of degrading permafrost peatlands using Bayesian deep learning, ***Geophysical Research Letters***. 51, e2024GL109283, https://doi.org/10.1029/2024GL109283

2024 Maes S.L., Dietrich J., Midolo G., Schwieger S., Kummu M., Vandvik V., Aerts R., Althuizen I.H.J., Biasi C., Björk R.G., Böhner H., Carbognani M., Chiari G., Christiansen C.T., Clemmensen K.E., Cooper E.J., Cornelissen J., Elberling B., Faubert T.G.W., Fetcher N., Forte T.G.W., Gaudard J., Gavazov K., Guðmundsson J., Gya R., Hallin S., Hansen B.B., Haugum S.V., He J., He J.S., Hicks Pries C., Hovenden M.J., Jónsdóttir I.S., Juhanson J.Y., Jung J.Y., Kaarlejärvi E., Kwon M.J., Lamprecht R.E., Le Moullec M., **Lee H.**, Marushchak M.E., Michelsen A., Munir T.M., Myrsky E., Nielsen C.S., Nyberg M., Olofsson J., Parker T.C., Pedersen E.P, Petit Bon M., Petraglia A., Raundrup K., Ravn N.M.R., Rinnan R., Rodenhizer H., Ryde I., Schmidt N.M., Schuur E.A.G., Stark S., Strack M., Tang J., Tolvanen A., Töpper J.P., Väisänen M., van Logtestijn R., Voigt C., Walz J., Yang Y., Ylänne H., Óskarsson H., Sjogersten S., Guan Z.H., Björkman M.P., Sarneel J.M., Dorrepaal E. Environmental drivers of persistent increased ecosystem respiration with warming in the tundra, ***Nature***. 629, 105-113, https://doi.org/10.1038/s41586-024-07274-7

2024 Asaadi A., Schwinger J., **Lee H.**, Tjiputra J., Arora V., Séférian R., Liddicoat S., Hajima T., Santana-Falcón Y., Jones C.D. Carbon cycle feedbacks in an idealized simulation and a scenario simulation of negative emissions in CMIP6 Earth system models, ***Biogeosciences***. 21, 411-435, https://doi.org/10.5194/bg-21-411-2024, 2024.

2024 Steinert N.J., Debolskiy M.V., Burke E.J., Garcia-Pereira F., **Lee H.** Evaluating permafrost definitions for global permafrost area estimates in CMIP6 climate models, ***Environmental Research Letters*.** 19, 014033, https://doi.org/10.1088/1748-9326/ad10d7

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2022 Jónsdóttir I.S., Althuizen I.H.J., Björnsdóttir K., Christiansen C.T., Halbritter A.H., Henn J.J., Haugum S.V., Maitner B.S., Malhi Y., Michaletz S.T., Roos R.E., Klanderud K., **Lee H**., Enquist B.J., Vandvik V. Intraspecific trait variability is a key feature underlying high Arctic plant community resilience to climate warming, ***Ecological Monographs***. 93, e1555, https://doi.org/10.1002/ecm.1555

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functional groups mediating climate impacts on carbon and biodiversity of alpine grasslands, ***Scientific Data***. 9, 1-19. https://doi.org/10.1038/s41597-022-01559-0

2022 Smith N.D., Chadburn S.E., Burke E.J., Aas K.S., Althuizen I.HJ., Boike J., Christiansen C.T., Etzelmüller B., Friborg T., **Lee H.**, Rumbold H., Turton R., Westermann S. Explicitly modelling microtopography in permafrost landscapes in a land surface model (JULES vn5.4_microtopography), ***Geoscientific Model Development***. 15, 3603-3639. https://doi.org/10.5194/gmd-15-3603-2022

2022 Mooney P.A., **Lee H.** Afforestation affects Rain-On-Snow climatology over Norway, ***Environmental Research Letters***.17, 054011. https://doi.org/10.1088/1748-9326/ac6684

2022 Schwinger J., Asaadi A., Goris N., **Lee H.** Possibility for strong northern hemisphere high-latitude cooling under negative emissions, ***Nature Communications***. 13, 1-9. https://doi.org/10.1038/s41467-022-28573-5

2022 Rixen C., Høye T.T., Macek P., Aerts R., Alatalo J., Anderson J.T., Arnold P.A., Barrio I.C., Bjerke J.W., Björkman M.P., Blok D., Blume-Werry G., Boike J., Bokhorst S., Carbognani M., Christiansen C.T., Convey P., Cooper E.J., Cornelissen J.H.C., Coulson S.J., Dorrepaal E., Elberling B., Elmendorf S., Elphinstone C., Frei E., Geange S., Gehrmann F., Gibson C., Grogan P., Harte J., Henry G., Inouye D., Irwin R., Jespersen G., Jónsdóttir I.S., Jung J.Y., Klinges D., Kudo G., Lämsä J., **Lee H.**, Lembrechts J., Lett S., Mann H.M., Mastepanov M., Morse J., Myers-Smith I., Olofsson J., Paavola R., Petraglia A., Phoenix G.K., Semenchuk P., Siewert M.B., Slatyer R., Spasojevic M., Suding K., Sullivan P., Thompson K., Väisänen M., Vandvik V., Venn S., Walz J., Way J., Welker J.M., Whittingham Forte T.G., Wipf S., Zong S. Winters are changing: snow effects on Arctic and alpine tundra ecosystems, ***Arctic Science***. 8, 572-608. https://doi.org/10.1139/AS-2020-0058

2021 Boike J., Chadburn S., Martin J., Zwieback S., Althuizen I.H.J., Anselm N., Cai L., Coulombe S., **Lee H.**, Liljedahl A.K., Schneebeli M., Sjöberg Y., Smith N., Smith S.L., Streletskiy D.A., Stuenzi S.M., Westermann S., Wilcox E.J. Standardized monitoring of permafrost thaw: a user-friendly, multi-parameter protocol, ***Arctic Science***. 8, 1-30. https://doi.org/10.1139/as-2021-0007

2021 Kwon T.O., Shibata H., Kepfer-Rojas S., Schmidt I.K., Steenberg Larsen K., Beier C., Berg B., Verheyen K., Lamarque J.F., Hagedorn F., Eisenhauer N., TeaComposition Network, Djukic I. (**Lee H.** part of the TeaComposition Network) Effects of climate and atmospheric nitrogen deposition on early to mid-term stage litter decomposition across biomes, ***Frontiers in Forests and Global Change***, 4, 678480. https://doi.org/10.3389/ffgc.2021.678480

2021 Schneider von Deimling, T., **Lee, H.**, Ingeman-Nielsen, T., Westermann, S., Romanovsky, V., Lamoureux, S., Walker, D. A., Chadburn, S., Trochim, E., Cai, L., Nitzbon, J., Jacobi, S., and Langer, M. Consequences of permafrost degradation for Arctic infrastructure – bridging the model gap between regional and engineering scales, ***The Cryosphere***, 15, 2451-2471. https://doi.org/10.5194/tc-15-2451-2021

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2021 **Lee H.**, Muri H., Ekici A., Schwinger J., Tjiputra J. The response of terrestrial ecosystem carbon cycling under different aerosol-based radiation management geoengineering, ***Earth System Dynamics***. 12, 313-326. https://doi.org/10.5194/esd-12-313-2021

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2009 Schuur E.A.G., Vogel J.G., Crummer K.G., **Lee H.**, Sickman J.O., Osterkamp T.E. The effects of permafrost thaw on old carbon release and net carbon exchange from tundra. ***Nature***. 459, 556-559. https://doi.org/10.1038/nature08031

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2007 Ok Y.S., **Lee H.**, Kim J.G. Enhanced uptake of cadmium by native plant (*Artemisia princeps* var. *orientalis*) using ethylenediaminetetraacetic acid. ***Journal of Biological Sciences***. 7, 681-684. https://doi.org/10.3923/jbs.2007.681.684

2005 **Lee H.**, Lee W.K., Kim J.G. EMERGY analysis of Korean agriculture. ***Korean Journal of Environment and Agriculture***. 24, 169-179. https://doi.org/10.5338/KJEA.2005.24.2.169

2004 **Lee H.**, Ok Y.S., Kim J.G. Screening of Wintering Cd Hyperaccumulators. ***Korean Journal of Soil Science and Fertilization***. 37, 14-18.

2003 Ok Y.S., Kim S.H., Kim D.Y., **Lee H.**, Lim S.K., Kim J.G. Feasibility study of phytoremediation for metal-contaminated mining area. ***Korean Journal of Soil Science and Fertilization***. 36, 1-10.

Peer-reviewed conference proceedings

2018 **Lee H.**, Ekici A., Robson B.A., Fan Y., Westermann S., Langer M. Vulnerability of permafrost thaw and the emerging risks for the Arctic infrastructure. 5th European Conference on Permafrost, Abstract. Chamonix-Mont Blanc, France, 24-29 June.

2018 Ekici A., **Lee H.**, Lawrence D.M., Swenson S.C. Coupling ground subsidence and surface wetlands. 5th European Conference on Permafrost, Abstract. Chamonix-Mont Blanc, France, 24-29 June.

2018 Christiansen C.T., Westermann S., Risk D., **Lee H.** Advancing permafrost carbon climate feedback – improvements and evaluations of the Norwegian Earth System Model with

observations, 5th European Conference on Permafrost**,** Abstract. Chamonix-Mont Blanc, France, 24-29 June.

2018 Chadburn S., Fan Y., Aalto T., Bartsch A., Biasi C., Boike J., Burke E., Comyn-Platt E., Dolman H., Friborg T., Gao Y., Gedney N., Hayman G., Hugelius G., van Huissteden K., Jammet M., **Lee H.**, Lohila A., Marushchak M., Parmentier F., Sachs T., Shurpali N. Methane emissions from high latitude peatlands: Constraining models with observations. 11th International Conference on Permafrost, Abstract. Potsdam, Germany, 20-24 June.

2016 **Lee H.**, Swenson S.C., Lawrence D.M. Parameterizing permafrost thaw induced wetland dynamics and its effects on CH_4 dynamics in the Community Land Model (CLM). 11th International Conference on Permafrost, Abstract. Potsdam, Germany, 20-24 June.

2012 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Modeling permafrost thaw effects and thermokarst parameterization in the Community Land Model. *The Tenth International Conference On Permafrost*. Abstract. June, 2012. Salekhard, Russia.

2008 **Lee H.**, Schuur E.A.G., Vogel J.G. Spatial variation in CO_2 release from arctic tundra as a result of permafrost thawing and thermokarst development. *Ninth International Conference on Permafrost.* Fairbanks, AK.

Reports

2006 Schuur E.A.G., Vogel J.G., Crummer K.G., Dutta K., **Lee H.**, Trucco C., Sickman J.O. Using radiocarbon to detect change in ecosystem carbon cycling in response to permafrost thawing. ***Denali National Park Annual Scientific Summary***. Physical Environment and Sciences. Denali National Park and Preserve, AK. pp. 34-36.

Non-peer reviewed journal articles

2022 **Lee H.**, Johnston N., Nieradzik L., Orr A., Mottram R., van de Berg W.J., Mooney P.A. Towards effective collaborations between regional climate modeling and impacts relevant modeling studies in Polar Regions, ***Bulletin of the American Meteorological Society***. E1866, 1-9. https://doi.org/10.1175/BAMS-D-22-0102.1

2013 **Lee H.**, Mishurov M. Scaling climate change experiments across space and time. ***New Phytologist***. 200:595-597. https://doi.org/10.1111/nph.12543

2012 **Lee H.**, Wullschleger S.D., Luo Y. Enhancing terrestrial ecosystem sciences by integrating empirical-modeling approaches. ***Eos-Trans***. *AGU*, 93(25):237. https://doi.org//10.1029/2012EO250008

Popular science articles

2020- Research blog under **Forsknings.no**, Søkelys på skogplanting (https://blogg.forskning.no/blogg-sokelys-pa-skogplanting), **Lee: blog host and lead author**.

: Trøbbel ved tropisk treplanting

: Et nytt syn på skogplanting

: Skogens påvirkning på klima

: Jordsmonnets hemmelighet

: Ikke bare-bare å plante skog

: Noe å tenke over når man skal plante trær

2018 Bjune A., **Lee H.**, Lange H. Jord som karbonlager, **PAN: Harvest Publishing** 2016. (https://www.harvestmagazine.no/pan/jorda-er-vart-viktigste-karbonlager)

2018 **Lee H.,** Christiansen C.T. Nå tiner permafrosten, **Energi og Klima**: Norsk klimastiftelses nettmagasin 2018. (https://energiogklima.no/to-grader/na-tiner-permafrosten/)

2017 **Lee H.,** Velle L.V., Vandvik V. Skogplanting har skjulte kostnader. **Energi og Klima**: Norsk klimastiftelses nettmagasin 2017. (http://energiogklima.no/to-grader/skogplanting-har-skjulte-kostnader/)

Other publications

2022 Koirala S., Jones C., Ahrens B., Fan N., Brovkin V., Delire C., Fan Y., Gayler V., Joetzjer E., **Lee H.**, Materia S., Nabel J., Peano D., Peylin P., Wårlind D., Wiltshire A., Zaehle S., Reichstein R., Carvalhais N. Underrepresented controls of aridity in climate sensitivity of carbon cycle models, *ResearchSquare*. https://doi.org/10.21203/rs.3.rs-2013805/v1

2020 Boike J., Chadburn S., Martin J., Zwieback S., Althuizen I., Cai L., Coulombe S., **Lee H.**, Liljedahl A.K., Schneebeli M., Sjöberg Y., Smith N., Smith S.L., Streletskiy D., Stuenzi S., Westermann S., Wilcox E.J. T-MOSAiC Permafrost Thaw: Permafrost Thaw AG - Field sampling protocols Level 0. *INTERACT field protocol*.

Dataset and metadata description

2020 **Lee H.,** Cai L. MOCABORS site simulations.
https://doi.org/10.5281/zenodo.4311802 (version 1)
https://doi.org/10.5281/zenodo.4323492 (version 2)

2019 **Lee H.,** D. Hewins, N. McDowell, W. Pockman, and T. Rahn. Photopriming litter decomposition ver 0. Environmental Data Initiative. https://doi.org/10.6073/pasta/83751fda854b625c43a9dd232423a414.

2016 **Lee H.**, Schuur E.A., and Bonanza Creek LTER. Eight Mile Lake Research Watershed, Thaw Gradient: Growing season CO2 fluxes and several ecosystem measurements, growing season 2006-2007. ver 18. Environmental Data Initiative. https://doi.org/10.6073/pasta/a93e86120b13fa0001a05d673f2a80cc.

2013 **Lee H.** Eight Mile Lake gradient sites: Growing season CO_2 fluxes and several ecosystem measurements taken during the growing season of 2006 and 2007. ver 13. Environmental Data Initiative. https://doi.org/10.6073/pasta/33674c735d10c2546d6125ada1304e85.

GRANTS AND HONORS

Large grants[§]: Leading role (§3-5 yr projects)

Below is the list of projects that I play a major role (project leader/co-leader, designed/co-designed the project, and wrote the majority or at least a large part of the proposal) in securing the funding.

2022-2025 *International Calls / Support for Bilateral Project.* **Research Council of Norway – Polar program**. Permafrost, wildfire, climate change processes, interactions, and feedbacks: co-development of Earth System Models between China and Norway (CN-coESM). **Lee: Project leader** (10 million NOK)

2021-2025 *Research grant.* **European Commission – Horizon2020**. Polar Regions in the Earth System (PolarRES): Role of local-regional scale polar processes in the changing polar and global climate systems. **Lee: WP leader** (8 million Euro)

2021-2024 *International partnership grant.* **Research Council of Norway – INTPART**. ES651575/(PRISM) Permafrost thaw RIsks to nature and Society: Multidisciplinary efforts towards solving a multi-dimensional problem. **Lee: Project leader** (4.5 million NOK, currently the project is led by Hannah Vickers at NORCE under my mentorship)

2020-2023 *Research grant.* **Research Council of Norway – KLIMAFORSK**. Permafrost4Life: Permafrost ecosystems entangled with human life in Mongolia - evaluating the impact of land use change in a warming climate. **Lee: Project co-leader** (12 million NOK)

2019-2022 *Research grant.* **Research Council of Norway – KLIMAFORSK**. Emit now, mitigate later? IMPlications of temperature OverShoots for the Earth system (IMPOSE). **Lee: Project co-leader** (10 million NOK)

2019-2022 *Research grant.* **Research Council of Norway – KLIMAFORSK**. Terrestrial ecosystem-climate interactions of our EMERALD planet. **Lee: Project leader group**. (30 million NOK)

2018-2021 *Research grant.* **SKD (Centre for Climate Dynamics).** Low and overshoot emission scenarios – from a high to a low carbon society (LOES). **Lee: Project co-leader** (8 million NOK)

2017-2020 *Research grant.* **Research Council of Norway – KLIMAFORSK**. Hidden costs of implementing afforestation as a climate mitigation strategy (HiddenCosts). **Lee: project leader** (10.9 million NOK)

2016-2019 *Research grant.* **Research Council of Norway – KLIMAFORSK**. PERMANOR - Permafrost landscapes in transformation – from local-scale processes to the global model NorESM. **Lee**: **Project co-leader** (10 million NOK)

2016-2019 *Research grant.* **Research Council of Norway – FRINATEK: Young Research Talents Grant**. Advancing permafrost carbon climate feedback – improvements and evaluations of

the Norwegian Earth System Model with observations (FEEDBACK). **Lee: Project leader** (7 million NOK)

Large grants: Partner

Below is the list of projects that I play a minor role (work package leader, project partner, and participated in writing parts of the proposal) in securing the funding.

2024-2028 *Research grant.* **European Commission – Horizon Europe**. Investigating Methane for Climate Action (IM4CA). **Lee: Partner** (8 million Euro)

2022-2026 *Research grant.* **Research Council of Norway**. The underappreciated roles of dwarf-shrubs in responding to and influencing global climate change (DURIN). **Lee: Partner**

2022-2027 *Research grant.* **European Commission – Horizon Europe**. Response of the Earth System to overshoot, Climate neUtrality and negative Emissions (RESCUE). **Lee: Partner** (8 million Euro)

2021-2026 *Research grant.* **Research Council of Norway – Collaborative research / Climate and Polar**. NATURACT – Nature-based solutions for climate change: upscaling landscape-based climate mitigation and adaptation actions. **Lee: WP leader** (25 million NOK)

2019-2022 *Research grant*. **Research Council of Norway – MILJØFORSK**. Integrated assessment to aid mitigation of negative impacts by THREE global change Drivers on alpine biodiversity and ecosystem function. **Lee: partner** (5 million NOK)

2018-2021 *Research partnership grant.* **Research Council of Norway – INTPART**. RECITE: Research and Education Partnership in Climate Change Impacts on Terrestrial Ecosystems. **Lee: partner** (4.5Million NOK)

2017 *Research grant.* **Natural Environment Research Council, UK**. Climate feedbacks from wetlands and permafrost thaw in a warming world (CLIFFTOP). **Lee: partner**.

2017-2020 *Research grant.* **Research Council of Norway – KLIMAFORSK**. **Mo**isture dynamics and **ca**rbon sequestration in **bor**eal **s**oils - MOCABORS. **Lee**: **WP leader** (10 million NOK)

2015-2018 *Research grant.* **European Commission – Horizon2020: Advanced Earth-system models.** CRESCENDO: Coordinated Research in Earth Systems and Climate: Experiments, kNowledge, Dissemination and Outreach. **Lee**: **Participant** of work package.

2014-2017 *Research grant*. **Research Council of Norway - KLIMAFORSK/ØKOSYSTEM**. The role of Functional group interactions in mediating climate change impacts on the Carbon dynamics and Biodiversity of alpine ecosystems: FunCaB (8.9 million NOK). **Lee: WP leader** (WP4&5).

Small grants

2021 *Skill development stipend for female associate professors*. **NTNU. Lee: Project leader** (150 kNOK)

2019 *Arrangement grant.* **Research Council of Norway – KLIMAFORSK.** European heathland carbon storage synthesis (EuroHeath). **Lee: Project leader** (100 kNOK)

2017 *Course grant.* **ResClim/CHESS.** Land surface modeling course. **Lee: Course leader**. (100 kNOK)

2017 *Research grant.* **Uni Research - STEP.** From microbes to the Earth system - Developing microbial biomarkers to help understand the impacts of permafrost thaw on future climate change (MicroEarth). **Lee: Project leader**. (150 kNOK)

2016-2018 *Marie Skłodowska-Curie Individual Fellowships.* **European Commission – Horizon2020.** Integrating Ecosystem Heterogeneity to Enhance ESM Performance (iEcoH). Recipient: Daniel Hewins, **Lee: Host** (195 kEuro: declined by the recipient)

2016-2017 *Fieldwork grant.* **Research Council of Norway / Svalbard Science Forum.** Towards the first year-round continuous measurement of soil respiration at tundra warming experiment sites in Svalbard. **Lee: Project leader**.

2015-2016 *Fieldwork grant.* **Research Council of Norway / Svalbard Science Forum.** Effects of summer and winter warming on CO_2 efflux in high Arctic tundra (RiS ID: 10116, 55 kNOK). **Lee: Project leader**.

2008 *Research Fellowship.* ***Murie Science and Learning Center, Denali National Park and Preserve/Department of Interior***. Monitoring effects of climate change and permafrost

carbon in Denali National Park. **Lee: Project leader**. (5,000 USD)

Travel/Mobility grants and fellowships

2020 Mobility grant. **European Economic Area Financial Mechanism - Poland. Lee:** Host.

2017 *Visiting scholar grant.* **Research Council of Norway – KLIMAFORSK.** Climate forestry under extreme climate - developing plant physiological parameters under extreme drought for climate model application. **Lee: host**.

2017 *Bjerknes visitor grant.* **Bjerknes Centre for Climate Research / Centre for Climate Dynamics (SKD).** Visitor: William Wieder (NCAR), **Lee:** host.

2017 *Visiting scholar grant.* **Research Council of Norway – KLIMAFORSK**. Collaborative Earth System Model development and intercomparison on permafrost processes (CoMIP). **Lee: host**.

2016 *Bjerknes visitor grant.* **Bjerknes Centre for Climate Research / Centre for Climate Dynamics (SKD).** Visitor: Hyungjun Kim (University of Tokyo), **Lee: host**.

2015 *Mobility grant.* **Research Council of Norway – KLIMAFORSK**. Improving representation of the permafrost and terrestrial processes within the Norwegian Earth System Model (CLIMATELAND).

2015 *Visiting scholar grant.* **Research Council of Norway – KLIMAFORSK**. **C**onnecting **E**cosystem and **E**arth system **M**odels (CeeMod): Predicting climate change feedbacks Norway's alpine carbon pools. **Lee**: **host** for Dr. Daniel Hewins

2015 *Bjerknes visitor grant.* **Bjerknes Centre for Climate Research / Centre for Climate Dynamics (SKD)**. Visitor: Daniel Hewins (University of Alberta), **Lee: host**.

2013 *Travel grant. United States Permafrost Association (USPA).* Fieldwork support

2013 *Travel Grant*. ***INTERFACE and CLIMMANI research networks***. To attend CLIMMANI/INTERFACE workshop held in Mikulov, Czech Republic.

2013 *Travel Funding*. Early Career Scientists Assembly. ***National Center for Atmospheric Research***.

2013 *Early Career Scientist Travel Stipend.* ***Climate and Cryosphere (CliC) Project***. The 3rd International Symposium on the Arctic Research.

2012 *Travel grant.* ***United States Permafrost Association (USPA)***. 2012 AGU Annual Meeting.

2012 *Travel Grant*. ***NSF Research Coordination Network FORECAST***. To attend RCN FORECAST conference.

2012 *TICOP travel grant*. ***International Arctic Research Center, University of Alaska – Fairbanks***.

2012 *Young Researcher Travel Stipend.* ***Yamal-Nenets Government-Permafrost Young Researchers Network***. Tenth International Conference on Permafrost.

2012 *Travel Funding*. Early Career Scientists Assembly. ***National Center for Atmospheric Research***.

2012 *Travel Grant*. COST action ES0804 – ABBA. ***European Union***.

2011 *Travel Funding*. Early Career Scientists Assembly. ***National Center for Atmospheric Research***.

2009 *Travel Grant.* ***Jornada Basin LTER***, New Mexico State University.

2008 *Travel Grant.* Graduate Student Council, ***University of Florida***.

2008 *Educational Stipend.* ***Permafrost Young Researchers Network***. Ninth International Conference on Permafrost.

2007 *Travel Grant.* Graduate Student Council, ***University of Florida***.

2007 *Travel Grant.* College of Liberal Arts and Sciences, ***University of Florida***.

2006 *Travel Grant.* Graduate Student Council, ***University of Florida***.

2004-2006 *Graduate Study Abroad Scholarship.* ***Korea Science and Engineering Foundation***. (60k USD)

Honors and awards

2004 *Best Presentation Award*. ***Korean Society of Agriculture and Environment.*** EMERGY

analysis of Korean agriculture.

2001 *Alumni Scholarship.* ***Korea University Alumni***.

2000 *Scholarship.* Department of Horticulture, ***Korea University***.

2000 *Class Honors Award.* Department of Horticulture, ***Korea University***.

PRESENTATIONS

Invited conference keynote speaker

2022 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Risk D. Long lasting greenhouse gas emissions beyond abrupt permafrost thaw event in permafrost peatlands, CAGE International Conference on 'Methane in a changing Arctic', 14-16 September, 2022. Tromsø, Norway

2022 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Greschkowiak A., Risk D. Greenhouse gas exchange and vegetation composition change beyond abrupt permafrost thaw event in permafrost peatlands, Cryosphere 2022 - International Symposium on Ice, Snow and Water in a warming world, 21-26 August, 2022. Reykjavík, Iceland.

2022 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Risk D. CO_2 and CH_4 Dynamics from Organic Matter Decomposition beyond Abrupt Permafrost Thaw Event, 8th International Symposium on Soil Organic Matter, 27-30 June, 2022. Seoul, Republic of Korea.

Invited talks

2022 Moon Soul Graduate School of Future Strategy, **Korea Advanced Institute for Science and Technology**, Daejeon, Korea (10/22, Title: Greenhouse gas exchange beyond abrupt permafrost thawing and climate feedbacks)

2022 ICCP, **Institute of Basic Science**, Busan, Korea (10/22, Title: Greenhouse gas exchange beyond abrupt permafrost thawing and climate feedbacks)

2022 Department of Earth Sciences, **University of Gothenburg**, Department seminar series (09/22, Title: Greenhouse gas exchange beyond abrupt permafrost thawing)

2022 **Korea Polar Research Institute,** Korea, Seminar series (06/22, Title: Greenhouse gas emissions under rapid permafrost thawing)

2022 ***O'Jung Ecological Resilience Institute***, Korea University, Seoul, Korea. Seminar series (06/22, Title: Pitfalls of using afforestation as climate mitigation strategy)

2021 School of Civil & Environmental Engineering, **Yonsei University**, Korea, Seminar series (12/21, Title: Greenhouse gas emissions under rapid permafrost thawing)

2019 **Asian School of the Environment**, Nanyang Technological University, Singapore, Seminar series (12/19, Title: Afforestation to mitigate climate doesn't always work)

2019 Tech seminar series, Department of Geography, **National University of Singapore**, Singapore (12/19, Title: Afforestation to mitigate climate doesn't always work)

2019 Department seminar, Department of Environmental Engineering, **Swinburn University**, Kuching, Malaysia (11/19, Title: Afforestation to mitigate climate doesn't always work)

2019 **EMERALD webinar**, EMERALD project seminar series (06/19, Title: The role of vegetation in the climate system)

2018 ***O'Jung Ecological Resilience Institute***, Korea University, Seoul, Korea. Seminar series (12/18)

2018 ***Department of Environmental Sciences***, Pohang University of Technology, Pohang, Korea. Department seminar series (12/18, Title: Permafrost carbon climate feedback cycles)

2018 ICCP, **Institute of Basic Science**, Busan, Korea (11/18)

2017 **Laboratoire des sciences du climat et de l'environnement (*LSCE)***, Institut Pierre Simon Laplace (IPSL), Paris, France. Department seminar series (11/17, Title: Advancing permafrost carbon climate feedback - improvements and evaluations of the Norwegian Earth System Model with observations)

2017 ***CHESS Annual All Staff Meeting***, Os, Norway. Keynote speaker (03/17, Title: Representing land in the climate system)

2015 ***O'Jung Ecological Resilience Institute***, Korea University. Seminar series (08/15)

2015 ***Department of Geosciences,*** University of Oslo, Norway. Seminar series (04/15, Title: Integrating observations and models to understand permafrost carbon-climate feedback)

2013 ***Bjerknes Centre for Climate Research***, Bergen, Norway. Seminar series (11/13, Title: Integrating observations and models to understand permafrost carbon-climate feedback)

2013 ***National Oceanic and Atmospheric Administration***, Boulder, CO. Seminar series (11/13, Title: Integrating observations and models to understand permafrost carbon-climate feedback)

2013 ***US Geological Survey***, Boulder, CO. Fall seminar series (11/13, Title: Integrating observations and models to understand Arctic carbon-climate feedback in a warmer world)

2013 ***National Ecological Observatory Network***, Boulder, CO. Science talk (10/13, Title: Integrating observations and models to understand permafrost carbon-climate feedback)

2013 ***Utah State University – Uintah basin campus***, Department of Biology, Research seminar series (09/13, Title: Integrating observations and models to understand Arctic carbon cycling carbon cycling in a warmer world)

2013 ***National Center for Atmospheric Research***, Boulder, CO. ASP summer colloquium on 'Carbon-Climate Connections in the Earth System' (08/13, Topic: Key biomes – Arctic soils)

2012 ***Rutgers University at Newark***, Research seminar (12/12, Title: Linking observations and models to understand Arctic carbon cycling in a warmer world)

2012 ***Seoul National University***, Research seminar series (10/12, Title: How do physical changes in permafrost influence Arctic carbon cycling? – linking observations and modeling)

2012 ***Korea Institute of Construction Technology***, Ilsan, Korea. Research seminar (10/12, Title: Linking observations and modeling to understand permafrost thaw and thermokarst processes under climate change)

2012 ***Southwest Climate: Past, Present and Future Workshop***, Valles Caldera National Preserve's Science and Education Center in Jemez Springs, NM. (09/12, Title: The effects of UV radiation, litter chemistry, and drought on desert litter decomposition)

2012 ***University of California at Berkeley***, Berkeley Atmospheric Sciences Center Fall seminar series (09/12, Title: Linking observations and modeling to understand Arctic carbon cycling where permafrost is thawing)

2012 ***Korea Polar Research Institute***, Ny Ålesund, Norway. Dasan research seminar (08/12, Title: Linking permafrost region biogeochemical and biogeophysical processes in the Community Land Model)

2012 ***Colorado State University***, Fort Collins, CO. Research seminar (07/12, Title: The effects of UV radiation, litter chemistry, and drought on desert litter decomposition)

2012 ***Colorado State University***, Fort Collins, CO. Research seminar (04/12, Title: The dynamics of permafrost carbon under changing climate)

2011 ***Korea University***, Seoul, Korea. Research seminar (10/11, Title: The release of permafrost carbon under climate change and its feedback cycles)

2011 ***Korea Polar Research Institute***, Songdo, Korea. Research seminar (10/11, Title: The release of permafrost carbon under climate change and its feedback cycles)

2011 ***National Center for Atmospheric Research***, Boulder, CO. CLM meeting (09/11, Title: Ecosystem carbon dynamics under thawing permafrost)

2011 ***Oak Ridge National Laboratory***, Environmental Sciences Division (04/11, Title: Carbon dynamics under climate and ecosystem change)

2010 ***Los Alamos National Laboratory***, Arctic hydrology group (09/10, Title: Changes in ecosystem carbon balance where permafrost is thawing)

2009 ***New Mexico State University***, Department of Biology, Seminar series (09/09, Title: Carbon cycling in changing ecosystems)

Conference presentations

2024 Yun J.E., Althuizen I., Greschkowiak A., **Lee H.**, Lee J.Y., Kang H.J. Enhanced Methane Emissions Linked to Influences of Microbial Activities and Edaphic Factors in Thawing Permafrost of Northern Norway, AOGS 2024, The 21st Annual Meeting, 23-28 June 2024,

Pyung Chang, Korea.

2024 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Risk D. Greenhouse gas exchange in permafrost peatlands under thawing and natural succession, The 9th International Symposium on Soil Organic Matter, May 26-31, 2024. Ben Guerir, Morocco.

2024 Nieradzik L.P., Miller P., Wårlind D., **Lee H.**, Schwinger J. Changes in global vegetation distribution and composition under idealized overshoot scenarios, European Geosciences Union General Assembly, 14-19 April, 2024. Vienna, Austria and online.

2024 Ribbers E., **Lee H.**, Mooney P., Muri H., Cai L., Kim J.S., Nieradzik L. Development of wind and fire risk indices for climate-mitigation forestry, European Geosciences Union General Assembly, 14-19 April, 2024. Vienna, Austria and online.

2024 Kim I.W., Timmermann A., Rodgers K.B., Lee S.S., **Lee H.**, Wieder W.R. Abrupt increase in Arctic-Subarctic wildfires following permafrost thawing in a warmer climate, European Geosciences Union General Assembly, 14-19 April, 2024. Vienna, Austria and online.

2023 Park S., Kug J.S., An S.I., Shin H.J., Steinert N.J., **Lee H.** Changes of permafrost environment under net-zero and negative emissions, American Geophysical Union 2023 Annual Meeting, 11-15 December, San Francisco, USA.

2023 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Risk D. Impact of permafrost thaw, palsa degradation, and natural succession on greenhouse gas exchange, The 4th International Conference on Environmental Science and Technology (EST2023), 10-13 August, Ulaanbaatar, Mongolia.

2023 Zagaceta C.H.Q., Bjune A.E., Seddon A., **Lee H.** Long-term changes in Carbon accumulation in mountain peatbogs in the South-West of Norway, XXI INQUA Congress 2023. 13-20 July 2023, Rome, Italy.

2023 Eberle A., Ring-Hrubesh F., **Lee H.**, Gallego-Sala A., Pancost R.D., Bryce C. The role of iron in thawing permafrost peatlands, Goldschmidt 2023 Conference, 9-14 July, 2023. Lyon, France.

2023 Bender E., Debolskiy M., Steinert N., Lambert M., Aas K.S., Westermann S., **Lee H.** Modeling permafrost landscape evolution and greenhouse gas emissions from rapid thawing of ground ice with a new subgrid permafrost representation in CLM5, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Steinert N.J., Debolskiy M., **Lee H.**, Westermann S. Impact of different permafrost definitions on the interpretation of modeling results on different scales, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Steinert N.J., Burke E., Schwinger J., **Lee H.** Permafrost-carbon feedback under emission overshoot scenarios, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Park S., Kug J.S., An S.I., Shin H.J., **Lee H.** Changes of permafrost environment under net-zero and negative emissions, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Debolskiy M., **Lee H.**, Westermann S., Dashtseren A., Sharkhuu A., Temuujin K. Modeling land use effects on the soil thermal state in Mongolia, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Risk D. Greenhouse gas exchange beyond initial thermokarst formation in permafrost peatlands, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Eberle A., Ring-Hrubesh F., **Lee H.**, Gallego-Sala A., Pancost R.D., Bryce C. Variability of iron involved in organic carbon protection in thawing palsa mires across northern Scandinavia, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Zweigel R.R., Dashtseren A., Temuujin K., **Lee H.**, Debolskiy M., Westermann S. Simulating forest cover and terrain effects on ground hydrothermal regime in Mongolia and Siberia, 6th European Conference on Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Kim I.W., Timmermann A., Rodgers K., Lee S.S., **Lee H.**, Wieder W. Abrupt change in subarctic wildfires following future permafrost thawing, 6th European Conference on

Permafrost, 18-22 June, 2023. Puigcerdà, Spain.

2023 Nitzbon N., Schneider von Deimling T., Chadburn S.E., Grosse G., Laboor S., **Lee H.**, Steinert N., Stuenzi S.M., Westermann S., Langer M. Is Arctic Permafrost a Climate Tipping Element? Potentials for Rapid Permafrost Loss Across Spatial Scales, European Geosciences Union General Assembly, 24-28 April, 2023. Vienna, Austria and online.

2023 Nieradzik L.P., Miller P., Wårlind D., **Lee H.**, Schwinger J. Fire in the Earth system: understanding effects across spatiotemporal scales, European Geosciences Union General Assembly, 24-28 April, 2023. Vienna, Austria and online.

2023 Steinert N.J., **Lee H.**, Schwinger J. Regional surface climate irreversibility under temperature overshoot scenarios, European Geosciences Union General Assembly, 24-28 April, 2023. Vienna, Austria and online.

2023 Zagaceta C.H.Q., Bjune A.E., Seddon A., **Lee H.** Long-term changes in Carbon accumulation in mountain peatbogs in the South-West of Norway, European Geosciences Union General Assembly, 24-28 April, 2023. Vienna, Austria and online.

2023 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Greschkowiak A., Risk D. Greenhouse gas and vegetation change beyond initial thermokarst formation in permafrost peatlands, Arctic Science Summit Week 2023 Science Symposium: The Arctic in the Anthropocene, 21-24 February, 2023. Vienna, Austria.

2022 Steinert N., Schwinger J., de Vrese P., Asaadi A., Debolskiy M., **Lee H.** Arctic carbon cycle feedbacks under idealized overshoot scenarios, Cryosphere 2022 - International Symposium on Ice, Snow and Water in a warming world, 21-26 August, 2022. Reykjavík, Iceland.

2022 Müller R., Kim J.-S., **Lee H.**, Muri H., Tjiputra J., Schaepman-Strub G. Increased Arctic Temperature Extremes Under Geoengineering Radiation Management, World Biodiversity Forum, 26 June-1 July, 2022. Davos, Switzerland.

2022 Asaadi A., Schwinger J., **Lee H.**, Tjiputra J., Arora V., Séférian R., Liddicoat S., Hajima T., Santana-Falcòn Y., Jones C.D. Cooling the Climate: Can we and Should we? European Geosciences Union General Assembly, 23-27 May, 2022. Vienna, Austria and online.

2022 Schwinger J., Asaadi A., **Lee H.** Towards a net-zero world: remaining carbon budgets, mitigation pathways, zero emissions commitment, and implications for policy, European Geosciences Union General Assembly, 23-27 May, 2022. Vienna, Austria and online.

2022 Jiao Y., Davie-Martin C.L., Kramshøj M., Christiansen C.T., **Lee H.**, Althuizen I., Rinnan R. Biogenic Volatile Organic Compounds (bVOCs) of Terrestrial Ecosystems – the Integration of Plants and Microbes into Fluxes, European Geosciences Union General Assembly, 23-27 May, 2022. Vienna, Austria and online.

2022 **Lee H.**, Christiansen C., Althuizen I., Michelsen A., Dörsch P., Westermann S., Risk D. Long lasting greenhouse gas emissions beyond abrupt permafrost thaw event in permafrost peatlands, European Geosciences Union General Assembly, 23-27 May, 2022. Vienna, Austria and online.

2022 Pilkinton L.C., Althuizen I., **Lee H.**, Gallois E., Myers-Smith I,, Turner L., Gilbert L. An experimental test of ectomycorrhizal plant-soil interactions in a warming Arctic, UK Arctic Science Conference, 11-13 April 2022, Durham, UK

2021 Zwieback S., Boike J., Chadburn S., Martin J., Althuizen I.H.J., Anselm N., Cai L., Coulombe S., **Lee H.**, Liljedahl A.K., Schneebeli M., Sjöberg Y., Smith N., Smith S.L., Streletskiy D.A., Stuenzi S.M., Westermann S., Wilcox E.J. A user-friendly, multi-parameter protocol for monitoring permafrost thaw, American Geophysical Union Annual Meeting, 13-17 December 2021. New Orleans, USA and online.

2021 Althuizen I., Christiansen C., Michelsen A., Westermann S., Pirk N., Kjær S., Dörsch P., Risk D., **Lee H.** Abrupt thaw enhances annual global warming potential of an actively degrading permafrost peatland, European Geosciences Union General Assembly, 25-30 April 2021. Online.

2021 Aalto T., Tsuruta A., Burke E., Chadburn S., Gao Y., Kangasaho V., Kleinen T., **Lee H.**, Leppänen A., Lienert S., Markkanen T., Miller P., Mueller J., Mäkelä J., Peano D., Peltola O., Raivonen M., Tenkanen M., Wårlind D., Zaehle S. Evaluating modelled wetland methane emissions in Northern Europe, CRESCENDO General Assembly – Science

Conference. 31 March 2021. Online.

2021 Schneider von Deimling T., **Lee H.**, Ingeman-Nielsen T., Westermann S., Romanovsky V., Lamoureux S., Walker D.A., Chadburn S., Cai L., Trochim E., Nitzbon J., Jacobi S., Langer M. Consequences of permafrost degradation for Arctic infrastructure - bridging the model gap between regional and engineering scales, Arctic Science Summit Week Scientific Conference, 24-26 March 2021. Online.

2021 Althuizen I., Christiansen C., Michelsen A., Westermann S., Risk D., **Lee H.** Abrupt thaw enhances annual global warming potential of an actively degrading permafrost peatland, Arctic Science Summit Week Scientific Conference, 24-26 March 2021. Online.

2020 Smith N., Chadburn S., Burke E., Westermann S., **Lee H.**, Christiansen C.T., Boike J. More methane: making the case for explicitly modelling microtopography in permafrost landscapes, AGU Fall Meeting 2020. Online.

2020 Davies-Barnard T., Meyerholt J., Zaehle S., Friedlingstein P., Brovkin V., Fan Y., Fisher R.A., Jones C.D., **Lee H.**, Liddicoat S., Peano D., Smith B., Wårlind D., Wiltshire A. Nitrogen in CMIP6 Terrestrial Models: Progress and Limitations. AGU Fall Meeting 2020. Online.

2020 Althuizen I., Christiansen C., Michelsen A., Westermann S., Pirk N., Risk D., **Lee H.** Annual ecosystem carbon budgets across an abrupt permafrost thaw gradient in Northern Norway. 4th ICOS Science Conference 2020. 15-17 Sept. Online.

2020 Davies-Barnard T., Meyerholt J., Zaehle S., Friedlingstein P., Brovkin V., Fan Y., Fisher R.A., Jones C.D., **Lee H.**, Liddicoat S., Peano D., Smith B., Wårlind D., Wiltshire A. Nitrogen in CMIP6 Terrestrial Models: Progress and Limitations. EGU General Assembly. Vienna, Austria. 3-8 May.

2020 Hemming D., Peano D., Materia S., Park T., Wårlind D., Fan Y., **Lee H.**, Wiltshire A., Jones C.D., Davies-Barnard T., Joetzjer E., Delire C., Peylin P., Brovkin V., Zaehle S. Plant phenology evaluation of CRESCENDO land surface models. EGU General Assembly. Vienna, Austria. 3-8 May.

2020 Jaroszynska F.O.H., Althuizen I., Chipperfield J., Guittar J., **Lee H.**, Klanderud K., Olsen S.K., Telford R., Vandvik V. Functional groups differentially regulate the effect of drought on forb seedling recruitment in semi-natural grasslands. OIKOS Biannual meeting. Reykjavik, Iceland. 2-5 March.

2020 Althuizen I., Jaroszynska F.O.H., **Lee H.**, Halbritter A., Olsen S.L., Vandvik V. Compensation capacity of plant functional groups for ecosystem carbon exchange in alpine grasslands under climate change, OIKOS Biannual meeting. Reykjavik, Iceland. 2-5 March.

2019 Jaroszynska F.O.H., Althuizen I., Halbritter A., **Lee H.**, Klanderud K., Olsen S.L., Telford R., Vandvik V. Functional group interactions mediate climate change impacts on the Carbon dynamics and Biodiversity of alpine ecosystems. International Mountain Conference, Innsbruk, Austria. 08-12 Sept.

2019 Christiansen C.T, **Lee H.** Ecosystem carbon budgets across a permafrost thaw gradient in Northern Norway. 20th International Tundra Experiment (ITEX) meeting, Bologna, Italy. 09-15 Sept.

2019 Mooney P.A., Sobolowski S.P., **Lee H.** Impact of Land Cover Changes on Temperature at High Latitudes at Convection Permitting Scales. Latsis Symposium on High Resolutions Climate Modelling, Zurich, Switzerland. 20-23 Aug.

2019 **Lee H.**, Velle L.V., Althuizen I., Haugum S., Vandvik V. Soil carbon storage of coastal heathlands in Norway under different management practices. 16th European Heathlands Workshop, Dorset and the New Forest, UK. 18-24 Aug.

2019 Cai L., **Lee H.**, Aas K., Westermann S. Development of the subgrid excess ground ice framework in the Community Land Model. EGU General Assembly, Vienna, Austria. 07-12 Apr.

2018 McDonald R., Christiansen C.T., **Lee H.**, Risk D. Development and validation of an autonomous measurement system for CO_2 and CH_4 from discontinuous permafrost. ArcticNet Annual Scientific Meeting, Ottawa, Canada. 10-14 Dec.

2018 Chadburn S., Fan Y., Aalto T., Aurela M., Bartsch A., Boike J., Burke E., Christiansen C.,

Comyn-Platt E., Dolman A.J., Friborg T., Gedney N., Hayman G., Holl D., Hugelius G., van Huissteden K.J., Jammet M., Kutzbach L., **Lee H.**, Lohila A., Marushchak M.E., Parmentier F.J.W., Richter A., Sachs T., Shurpali N.J. Including microbial dynamics is essential for modelling Arctic methane emissions. Washington D.C., USA. 10-14 Dec.

2018 Althuizen I., Jaroszynska F.O.H., Gya R., **Lee H.**, Telford R., Enquist B.J., Goldberg D.E., Vandvik V. Trait shifts affect ecosystem carbon exchange under climate change in Alpine grasslands. Washington D.C., USA. 10-14 Dec.

2018 Michaletz S., Asner G.P., Bentley L.P., Brown J.H., Buzzard V.R., Duran S.M., Farfan-Rios W., Gaitan M., Halbritter A.H., Henn J.J., Hernandez M., Hogan J.A., Kaspari M., Klanderud K., **Lee H.**, Maitner B.S., McDowell N.G., McGann J., Moerland A., Oliveras I., Patterson L., Ran F., Savage V.M., Silman M.R., Telford R., Vandvik V., Waide R.B., Wieczynski D.J., Yang Y., Zhou J., Enquist B.J. On the kinetics of plant growth from leaves to ecosystems, New Orleans, USA. 5-9 Aug.

2018 **Lee H.**, Ekici A., Robson B.A., Fan Y., Westermann S., Langer M. Vulnerability of permafrost thaw and the emerging risks for the Arctic infrastructure. 5th European Conference on Permafrost, Chamonix-Mont Blanc, France. 24-29 Jun.

2018 Ekici A., **Lee H.**, Lawrence D.M., Swenson S.C. Coupling ground subsidence and surface wetlands. 5th European Conference on Permafrost, Chamonix-Mont Blanc, France. 24-29 Jun.

2018 Christiansen C.T., Westermann S., Risk D., **Lee H.** Advancing permafrost carbon climate feedback – improvements and evaluations of the Norwegian Earth System Model with observations, 5th European Conference on Permafrost**,** Chamonix-Mont Blanc, France. 24-29 Jun.

2018 Christiansen C.T., Rønn R., Blok D., Elberling B., **Lee H.**, Michelsen A. Does deciduous shrub growth enhance decomposition rates in Arctic tundra? POLAR Science Conference, Arctic Science Summit Week, Davos, Switzerland. 15-23 Jun.

2018 Westermann S., Aas K., Martin L., Nitzbon J., Kristiansen H., Langer M., Kaiser S., von Deimling T.S., Boike J., **Lee H.**, Etzelmüller B. Towards representing small-scale changes in permafrost hydrology in Earth System Models. EGU General Assembly, Vienna, Austria. 08-13 Apr.

2018 Slettebø I., **Lee H.**, Christiansen C.T. Peak-summer CO_2 balance in a thawing permafrost peat mire in northern Norway. EGU General Assembly, Vienna, Austria. 08-13 Apr.

2018 Althuizen I., Jaroszynska F.O.H., Gya R., **Lee H.**, Telford R., Vandvik V. Plant functional traits as predictors of ecosystem carbon fluxes across climatic gradients in alpine grasslands. OIKOS Biannual meeting. Trondheim, Norway. 19-22 Feb.

2018 Althuizen I., **Lee H.**, Sarneel J.M., Vandvik V. Long-term climate regime modulates the impact of short-term climate variability on decomposition in alpine grassland soils. OIKOS Biannual meeting. Trondheim, Norway. 19-22 Feb.

2018 Christiansen C.T., Rønn R., Blok D., Elberling B., **Lee H.**, Michelsen A. Does deciduous shrub growth enhance decomposition rates in Arctic tundra? OIKOS Biannual meeting. Trondheim, Norway. 19-22 Feb.

2018 Jaroszynska F.O.H., Althuizen I., Halbritter A., **Lee H.**, Telford R., Klanderud K., Vandvik V. Mosses - the regulating blanket of alpine grasslands? OIKOS Biannual meeting. Trondheim, Norway 19-22 Feb.

2018 Jaroszynska F.O.H., Althuizen I., Vandvik V., **Lee H.**, Halbritter A., Telford R., Klanderud K. Built-in insulation; plant functional groups regulate soil conditions in alpine grasslands. CHESS All Staff Meeting, Tromsø, Norway, 14-16 Mar.

2017 Lange H., Stokland J.N., Ahrens B., Dalsgaard L., Eisner S., **Lee H.**, Marthews T., Meissner H.R., Sippel S. Carbon and soil moisture interactions: the Mocabors project. 4th Conference on Modelling Hydrology, Climate and Land Surface Processes, Lillehammer, Norway. 12-14 Sep.

2017 Vandvik V., Bargmann T., Bruvoll S.S., Daws M.I., Grimsrud K., **Lee H.**, Thorvaldsen P., Velle L.G., Töpper J.P. A burning issue: Ecological and evolutionary imprints of climate and land-use in coastal heathlands in Western Norway. State of the Worlds Plants Science

Symposium, London, UK. 25-26 May.

2017 Velle L.G., Grimsrud K.M., Jansen E., **Lee H.**, Sobolowski S.P., Tvinnereim E., Vandvik V. Hidden costs of implementing afforestation as a climate mitigation strategy: A comprehensive assessment of direct and indirect impacts. 15th European heathland workshop. Lowland heaths under pressure: challenges in ecological restoration, Nijmegen - Dwingeloo, The Netherlands. 20-25 Aug.

2016 Grosse G.A., Sannel B.K., Abbott B., Arp C., Camill P., O'Donnell J., Farquharson L., Günther F., Hayes D., Jones B.M., Jorgenson M.T., Kokelj S., Kuhry P., **Lee H.**, Lenz J., Lewkowicz A., Liu L., McGuire A.D., Morgenstern A., Nitze I., Olefeldt D., Parsekian A., Romanovsky V., Roy-Léveillée P., Schuur E.A.G., Turetsky M., Walter Anthony K., Wullschlaeger S. A synthesis of thermokarst and thermo-erosion rates in northern permafrost regions. Abstract. Fall meeting, AGU, San Francisco, USA. 11-16 Dec.

2016 **Lee H**. Advancing permafrost carbon climate feedback – improvements and evaluations of the Norwegian Earth System Model with observations. 2nd ICOS Science Conference, Helsinki, Finland. 27-29 Sept.

2016 **Lee H.**, Swenson S.C., Lawrence D.M. Effects of Gridcell Inundated Fraction Parameterization on CH_4 Dynamics in the Community Land Model. Korea Polar Research Institute Symposium, Songdo, Republic of Korea. 10-11 May, 2016.

2016 **Lee H.**, Risk D., Jónsdóttir I.S. A continuous observation of tundra warming effects on CO_2 efflux at a high Arctic tundra in Svalbard. Korea Polar Research Institute Symposium, Songdo, Republic of Korea. 10-11 May, 2016.

2016 Westermann S., Langer M., **Lee H.**, Berntsen T., Boike J., Krinner G., Aalstad K., Aas K., Peter M., Heikenfeld M., Etzelmüller E. Permafrost landscapes in transition - towards modeling interactions, thresholds and feedbacks related to ice-rich ground. April 17-22, 2016. EGU General Assembly, Vienna, Austria.

2016 **Lee H.**, Swenson S.C., Lawrence D.M. Effects of Gridcell Inundated Fraction Parameterization on CH_4 Dynamics in the Community Land Model. Annual LATICE meeting. Sundvollen. 09-10 Feb.

2015 **Lee H.**, Swenson S.C., Lawrence D.M. Effects of Gridcell Inundated Fraction Parameterization on CH_4 Dynamics in the Community Land Model. Abstract. Fall meeting, AGU, San Francisco, CA, 13-18 Dec.

2015 **Lee H.**, Swenson S.C., Lawrence D.M. Incorporating Excess Ground Ice in the Community Land Model on Projections of Permafrost in a Warming Climate. Invited Talk. Fall meeting, AGU, San Francisco, CA, 13-18 Dec.

2015 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Effects of excess ground ice on projections of permafrost in a warming climate. Terrestrial systems - frontiers of our understanding Workshop. 21-24 September 2015, Freudenstadt, Germany.

2015 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Effects of excess ground ice on projections of permafrost in a warming climate. Abstract. 45th International Arctic Workshop. Bergen, Norway. 10-13 May.

2013 **Lee H.**, Lawrence D.M., Swenson S.C., Slater A.G., Riley W., Wieder W.R., Phillips C.L., Risk D.A. Evaluating methane dynamics under thawing permafrost using CLM4.5BGC. Abstract. Fall meeting, AGU, San Francisco, CA, 09-13 Dec.

2013 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Methane dynamics under melting excess ice and permafrost thaw in the Community Land Model 4.5. The 19th International Symposium on Polar Sciences. Korea Polar Research Institute, Incheon, Republic of Korea, October 16-18, 2013.

2013 **Lee H.** Incorporating thermokarst in a global model to enhance predictions of permafrost carbon dynamics. *Ignite presentation*. August 05-09, 2013. Ecological Society of America 98th Annual Meeting. Minneapolis, MN.

2013 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Modeling excess ice and thermokarst in the Community Land Model. CESM Annual Workshop. June 17-20, 2013. Breckenridge, CO.

2013 **Lee H.** Incorporating thermokarst in a global model to enhance predictions of permafrost

carbon dynamics. June 04-07, 2013. CLIMMANI/INTERFACE workshop – Scaling climate change experiments across space and time: Challenges of informing large-scale models with small-scale experiments. Mikulov, Czech Republic.

2013 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Modeling excess ice and thermokarst in the Community Land Model. April 07-12, 2013. EGU General Assembly, Vienna, Austria.

2013 Schädel C., Schuur E.A.G., Bracho R., Elberling B., Knoblauch C., Kotowska A., **Lee H.**, Luo Y., Natali S.M., Shaver G.R., Turetsky M.R. Pan-arctic permafrost C quality and vulnerability over time: A synthesis of long-term incubation studies. April 07-12, 2013. EGU General Assembly, Vienna, Austria.

2013 Schuur E.A.G., Schädel C., Bracho R., Elberling B., Knoblauch C., Kotowska A., **Lee H.**, Luo Y., Natali S.M., Shaver G.R., Turetsky M.R. Circumpolar assessment of organic matter decomposability as a control over potential permafrost carbon loss with climate warming. Abstract. North America Carbon Project meeting, February 04-07, 2013, Albuquerque, NM.

2013 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Modeling excess ice and thermokarst in the Community Land Model. Abstract. The Third International Symposium on the Arctic Research, January 14-17, 2013, Tokyo, Japan.

2012 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Modeling excess ice and thermokarst in the Community Land Model. Abstract. Fall meeting, AGU, San Francisco, CA, 02-07 Dec.

2012 **Lee H.**, Throop H.L., Rahn T. Temperature sensitivity of CO_2, CH_4, CO, and H_2 release during photodegradation of organic material. Abstract. Fall meeting, AGU, San Francisco, CA, 02-07 Dec. (***Invited presentation***)

2012 Schädel C., Schuur E.A.G., Bracho R., Elberling B., Knoblauch C., Kotowska A., **Lee H.**, Luo Y., Lupascu M., Natali S.M., Shaver G.R., Turetsky M.R. Pan-arctic permafrost C quality and vulnerability over time: A synthesis of long-term incubation studies. Abstract. B13H-02. Fall meeting, AGU, San Francisco, CA, 02-07 Dec.

2012 Swenson S.C., Lawrence D.M., Slater A.G., **Lee H.** Modeling permafrost and hydrological cycle interactions in CESM. Abstract. C13D-0651. Fall meeting, AGU, San Francisco, CA, 02-07 Dec.

2012 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Modeling and parameterizing permafrost thaw and thermokarst in the Community Land Model. RCN FORECAST Conference. October 8-11, 2012. Woods Hole, MA.

2012 Nieto B., **Lee H.**, Hewins D.B., Barnes B.W., McDowell N.G., Pockman W., Rahn T., Throop H.L. The effects of UV radiation, litter chemistry, and drought on desert litter decomposition. Ecological Society of America Annual Meeting. August 6-10, 2012. Portland, OR.

2012 Slater A.G., Lawrence D.M., Swenson S.C., **Lee H.** Improved cold region hydrology process representation as a cornerstone of Arctic biogeochemical modeling. NSF-EaSM PI meeting. July 9-11, 2012. Arlington, VA.

2012 **Lee H.**, Swenson S.C., Higgins, M.E., Lawrence D.M., Slater A.G. Modeling permafrost thaw effects and thermokarst parameterization in the Community Land Model. The Tenth International Conference On Permafrost. Abstract. June 25-29, 2012. Salekhard, Russia.

2012 Swenson S.C., Lawrence D.M., Slater A.G., **Lee H.** Improving cold region hydrology in the Community Land Model. CESM Annual Workshop. June 18-21, 2012. Breckenridge, CO.

2012 **Lee H.**, Swenson S.C., Lawrence D.M., Slater A.G. Modeling and parameterizing permafrost thaw in the Community Land Model. CESM Annual Workshop. June 18-21, 2012. Breckenridge, CO.

2012 **Lee H.**, Throop H.L., Rahn T. Temperature sensitivity of CO_2, CH_4, CO, and H_2 release during photodegradation of organic material. Geophysical Research Abstracts, Vol. 14, EGU2012-2167, April 23-27, 2012. EGU General Assembly, Vienna, Austria.

2011 **Lee H.**, Nieto B., Hewins D.B., Barnes B.W., McDowell N.G., Pockman W., Rahn T., Throop H.L. The effects of UV radiation, litter chemistry, and drought on desert litter decomposition. Abstract B33F-0528, 2011 Fall meeting, AGU, San Francisco, CA, 04-09 Dec.

2011 Lawrence D.M., Swenson S.C., Slater A.G., **Lee H.** Advances in Modeling Interactions

Between Thermal, Hydrologic, and Ecosystem States in Permafrost-affected Zones in the Community Land Model. Abstract C53G-06, 2011 Fall meeting, AGU, San Francisco, CA, 04-09 Dec.

2010 **Lee H.**, Throop H.L., Rahn T. Temperature sensitivity of CO_2, CH_4, CO, and H_2 emissions during photodegradation of plant material. Abstract B41G-0389. Presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

2009 **Lee H.**, Throop H.L., Rahn T. Abiotic decomposition in drylands. *Eos*, Vol. 90, Number 52, 29 AGU Fall Meet. Suppl., Abstract B51F-0357.

2009 **Lee H.** and Throop H.L. Influences of soil-litter mixing and soil moisture on dryland litter decomposition. *LTER All Scientist Meeting.* Estes Park. CO.

2009 **Lee H.**, Schuur E.A.G., Vogel J.G., Inglett K.S., Chanton J.P. The climate forcing from permafrost carbon release under aerobic and anaerobic conditions. *ESA Annual Meeting.* Albuquerque, NM.

2008 **Lee H.**, Vogel J.G., Schuur E.A.G., Inglett K.S. The fate of permafrost carbon after permafrost thaw. *Eos Trans. AGU, 89*(53), Fall Meet. Suppl., Abstract B51E-0432.

2008 **Lee H.**, Schuur E.A.G., Vogel J.G. Spatial variation in CO_2 release from arctic tundra as a result of permafrost thawing and thermokarst development. *Ninth International Conference on Permafrost.* Fairbanks, AK.

2007 **Lee H.**, Schuur E.A.G., Vogel J.G. Spatial variation in carbon release from arctic tundra resulting from microtopography created by permafrost thawing. *Eos Trans. AGU, 88*(52), Fall Meet. Suppl., Abstract B23D-1602. San Francisco, CA.

2007 Schuur E.A.G, Vogel J.G., Crummer K.G., **Lee H.**, Sickman J., Dutta K. The Contribution of Old Carbon to Respiration from Alaskan Tundra Following Permafrost Thaw. *Eos Trans. AGU, 88*(52), Fall Meet. Suppl., Abstract B21C-07. San Francisco, CA.

2007 Vogel J.G., Schuur E.A.G., Sickman J.O., **Lee H.**, Trucco C. The degree of permafrost thawing determines arctic tundra carbon balance. *Eos Trans. AGU, 88*(52), Fall Meet. Suppl., Abstract B21C-06. San Francisco, CA.

2006 **Lee H.**, Schuur E.A.G, Vogel J.G. Soil carbon dioxide fluxes in subarctic tundra where permafrost is thawing. *Eos Trans. AGU, 87*(52), Fall Meet. Suppl., Abstract GC51A-0440. San Francisco, CA.

2006 **Lee H.**, Schuur E.A.G, Vogel J.G. Soil carbon dioxide fluxes in subarctic tundra where permafrost is thawing. Soil *and Water Science Student Forum.* Department of Soil and Water Sciences, University of Florida. Gainesville, FL.

2006 Schuur E.A.G, Vogel J.G., Dutta K., Crummer K.G., **Lee H.** The contribution of old carbon to respiration from arctic tundra following permafrost thaw. ESA/SER Joint Meeting. COS 21-7. San Jose, CA.

2005 **Lee H.**, Schuur E.A.G, Vogel J.G. Seasonal variations of soil CO_2 flux in subtropical pine forest. *Soil and Water Science Student Forum.* Department of Soil and Water Sciences, University of Florida. Gainesville, FL.

2004 **Lee H.** and Kim J.G. EMERGY analysis of Korean agriculture. *Annual proceedings of Korean Journal of Agriculture and Environment* 7. 1-2. p. 200.

2004 Ok Y.S., Yang J.E., Kim H.J., Ryu K.R., **Lee H.**, Kim J.G. Comparison of cadmium availability between artificially and naturally contaminated soils. *ACS-CSSA-SSSA.* Annual Meetings. No. 4561.

2004 Ok Y.S., Yang J.E., Kim H.J., Ryu K.R., **Lee H.**, Kim J.G. Enhanced phytoextraction of cadmium from the contaminated soils. *ACS-CSSA-SSSA.* Annual Meetings. No. 4872.

2003 **Lee H.**, Ok Y.S., Lim S.K., Kim J.G. Comparing Cd fractions between phytoextraction and phytostabilization. 2003. 10. 16. 10. 17. *Annual proc. Kor. Soc. Soil Sci. Fert.* pp. 217-218. ISSN 0367-6315 KJSSF 36 (special Edition 2).

2003 Shin S.Y., **Lee H.**, Ok Y.S., Kim J.G. Growth rate and Cadmium absorption of *Helianthus auuns* and *Artemisia princepts* var. *orientalis* in water stress conditions. *Annual proceedings of Korean Journal of Agriculture and Environment* 7. 2-4. p. 222.

2003 **Lee H.**, Ok Y.S., Lee S.J., Lim S., Kim J.G. Wintering Cd hyperaccumulators and their

application. *Annual proceedings of Korean Society of Soil Science and Fertilization* p. 80. ISSN 0367-6315. KJSSF 36. (Special edition 1).

2003 Ok Y.S., Jung J., Lee O.M., **Lee H.**, Lim S., Kim J.G. 2003 Role of adsorption on uptake of cadmium by plants. 2003. 10. 16. 10. 17. *Annual proceedings of Korean Society of Soil Science and Fertilization* pp. 144-145. ISSN 0367-6315 KJSSF 36 (special Edition 2).

2003 Ok Y.S., Jung J., **Lee H.**, Lim S., Kim J.G. Enhancement of plant availability for soil-sorbed Cadmium. *ACS-CSSA-SSSA.* Annual Meetings. p.175.

2003 Ok Y.S., **Lee H.**, Kim D.Y., Lee S.J., Lim S., Kim J.G. Implications of adsorption in phytoremediation. *Annual proceedings of Korean Society of Soil Science and Fertilization* p. 81-82. ISSN 3067-6315. KJSSF 36. (Special edition 1).

2002 Ok Y.S., **Lee H.**, Lee O.M., Lim S., Kim J.G. Feasibility study of enhanced-phytoextraction for Cd contaminated soils. *Annual proceedings of Korean Society of Soil Science and Fertilization* pp. 213-215.

2002 Ok Y.S., **Lee H.**, Lim S., Kim J.G. Interpretation of sorption-edge properties of Cd using surface charge properties. *Annual proceedings of Korean Society of Soil Science and Fertilization* pp. 29-31.

2002 Ok Y.S., **Lee H.**, Lee S.J., Lim S., Kim J.G. Comparison in binding forms of Cadmium between mine soil and artificially contaminated soils. *Annual proceedings of Korean Journal of Agriculture and Environment* p. 148.

PROFESSIONAL ACTIVITIES

Editor

2022- The Cryosphere (https://www.the-cryosphere.net/editorial_board.html)

Advisory board

2024- FireMIP (Model Intercomparison Project).

2022- Eco-Leader Education Committee of BK21 FOUR R&E Center for Environmental Science and Ecological Engineering of Korea University, Korea.

2016-2017 Climate change and emission management corporation of Edmonton, Alberta. University of Alberta, Canada.

Commissioned service

2022 External reviewer for promotion. CICERO, Norway.

Conference/International workshop organizer/session convener

2023 European Conference on Permafrost (EUCOP). Modeling, Permafrost, climate change, Carbon cycling, climate feedbacks, terrestrial ecosystem responses, land-atmosphere/climate interactions. 18-22 June 2023. Puigcerdà, Spain.

2021 *International workshop.* Towards efficient collaborations between regional climate modeling and impacts relevant studies, November 08, 2021 (online). Workshop organizer and host.

2021 Arctic Science Summit Week, Virtual scientific conference, Session organizer of ID:30 - Permafrost thaw effects to the Arctic nature and society. March 24-26, 2021.

2020 Pan-European heathland carbon synthesis workshop. Workshop organizer and host. May 29 / June 17, 2020 (online).

2020 Ocean Outlook 2020: The Near Future of the Oceans, Virtual Preview Meeting: May 6, 2020, Session 2: Arctic Methane from the Seafloor to the Atmosphere.

2013 European Geosciences Union General Assembly, Cryospheric Sciences 6.2: Assessing the effects of global warming on permafrost degradation - contributions from field studies, remote sensing and modeling. Session co-convener.

2012 Permafrost Young Researchers Network workshop. Tenth International Conference on Permafrost. Salekhard, Russia. Session leader.

Invited participation

2021 Arctic Science Day, Arctic science and climate change, hosted by the British Embassy of Norway, Oslo, Norway.

2021 Improving integration of permafrost carbon emissions in Earth system models, hosted by

IARP and NSF, USA (Online).

2019 Fagseminar om karbonlagring i jord i åpent lavland/naturbeitemark:kartlegging, albedo, biologisk mangfold og avveining mellom økosystemtjenester, Oslo, Norway.

2019 Rapid Permafrost Degradation Processes and their Impacts on Human beings and Ecosystem Functions in the Arctic, Berlin, Germany.

2018 Institute of Tibetan Plateau-Bjerknes workshop, Chinese Academy of Sciences, Beijing, China.

2018 ICCP-Bjerknes workshop, ICCP, Institute of Basic Science, Busan, Korea.

2018 Peatland modeling workshop, SOMPA project, Helsinki, Finland.

2018 COST ACTION-CLIMMANI working group meeting on 'Common protocols for improving inter-site comparison: WorkGroup Meeting, Bergen, Norway.

2017 COST ACTION-CLIMMANI workshon on 'Global change effects on terrestrial ecosystems across spatial and temporal scales: gradients, experiments, remote sensing & models', Kapp Dorn, Netherlands.

2016 COST ACTION-CLIMMANI/INTERFACE workshop on 'Handling the extreme – experimentation and forecasting of impacts in terrestrial ecosystems when thresholds are exceeded', Florence, Italy.

2014 JPL, NASA, Climate Science Carbon Workshop, Pasadena, CA, USA.

2013 CLIMMANI/INTERFACE workshop on 'Scaling climate change experiments across space and time: Challenges of informing large-scale models with small-scale experiments', Mikulov, Czech Republic.

2012 Rice University Future Faculty Workshop. Rice University, Houston, TX.

2012 IGPP sponsored Southwest Climate Workshop: Past, Present, and Future. Jemez Springs, NM.

2012 Department of Energy-National Science Foundation, FORECAST Research Coordination Network Workshop on 'Strategies to Promote Integrated Experiment-Model Approaches to Terrestrial Ecosystem Study'. Washington D.C.

2012 Field consultant for Korea Polar Research Institution. August 2012. Dasan Arctic station, Ny-Ålesund, Svalbard.

2012 NIMBioS Workshop on 'Disturbance Regimes and Climate-Carbon Feedback'. University of Tennessee, Knoxville, TN.

Reviewer service: Peer-reviewed journals

Biogeochemistry, Biogeosciences, Canadian Journal of Soil Science, Earth System Science Data, Ecological Applications, Ecological Modelling, Ecosystems, Environmental Research Letters, Geophysical Research Letters, Global Change Biology, Journal of Advances in Modeling Earth Systems, Journal of Geophysical Research-Biogeosciences, Nature Communications, New Phytologist, Pedosphere, Permafrost and Periglacial Processes, Plant and Soil, Plant Ecology, PLoS ONE, Polar Biology, Polar Science, and Science of the Total Environment.

Reviewer service: Grant proposals

2024-2025 Swedish Research Council: FORMAS program, review panel member.

2024 Department of Energy (DOE-BER): NGEE Arctic Phase 4 proposal review.

2022 European Commission: ERC Consolidator grant.

2021 European Commission: ERC Starting grant.

2019 Dutch Research Council: Vidi - NWO Domain Science.

2015 National Science Foundation: Office of Polar Programs-Division of Arctic Sciences

2013 National Science Foundation: Office of Polar Programs-Division of Arctic Sciences

Reviewer service: MS and PhD thesis

2023 Yonsei University, Seoul, Republic of Korea, PhD committee, Jeongeun Yun. Title: Biogeochemical Mechanisms of Microbial Activity and Greenhouse Gas Dynamics in the Changing Arctic Landscape under Climate Change.

2023 Pohang University of Science and Technology, Pohang, Republic of Korea, PhD committee,

Sowon Park. Title: Biophysical and biochemical feedback of terrestrial ecosystem.

2023 Ghent University, Belgium, MS thesis sensor, Ruben van Daele.

2022 Pohang University of Science and Technology, Republic of Korea, PhD midterm evaluation sensor, Sowon Park.

2021 Swinburne University, Sarawak campus, Malaysia, MS thesis sensor, Florina Stephanie Richard.

Administrative service

2022 NTNU Department of Biology, Master exam internal sensor, Domenica Naranjo

2022 NTNU Department of Biology, PhD defense administrator, Anne Mehlhoop

2021 NTNU Department of Biology, PhD midterm evaluation, Damaris Matten

Academic rankings and invitation

2023 Shortlisted for the Senior Lecturer Search, Department of Physical Geography and Ecosystem Science, Lund University, Sweden. Ranked 2nd.

2021 Shortlisted for the Associate Professor Search, Department of Biology, University of Copenhagen, Denmark. Invited to the first-round interview.

2020 Ranked 4th for the Associate Professor Search, Department of Biological Sciences, University of Bergen, Norway. Invited to the interview (declined the invitation).

2020 Ranked 1st for the Associate Professor Search, Department of Biology, Norwegian University of Science and Technology (NTNU), Norway. Invited to on campus interview. Position offered.

2012 Shortlisted for the Assistant Professor Search, Department of Earth and Environmental Sciences, Rutgers University – Newark campus, USA. Invited to on campus interview.

Membership

T-MOSAIC: Permafrost thaw action group (2019-), International Permafrost Association (IPA, 2012-), European Geosciences Union (EGU, 2012-), Earth Science Women's Network (ESWN, 2011-), Association of Polar Early Career Scientists (APECS, 2011-), Permafrost Carbon Research Coordination Network (RCN, 2011-), Permafrost Young Researchers Network (PYRN, 2008-), American Geophysical Union (AGU, 2006-)

TEACHING EXPERIENCE

Lecturer/Course leader

2023- Global Change Biology (BI2080), Department of Biology, NTNU, 15 ETC.

2021- Biology without borders (BI3085), Department of Biology, NTNU, 7.5 ETC.

2021- Community ecology and ecosystem (BI2034), Department of Biology, NTNU, 15 ETC.

2019 Terrestrial Ecosystem Ecology (BIO348), Department of Biology, University of Bergen, 10 ETC.

2017 Land Surface Modeling Course, CHESS (Norwegian Climate School), 1-week intensive PhD level course, 2 ETC.

2016 Intensive Seminar in Terrestrial Ecosystem Ecology, Department of Biology, University of Bergen, Graduate level course, 10 ETC.

2016 International Plant Functional Traits Course, Alpine Ecosystem Observation and Experiment Station of Mt. Gongga, Sichuan, China, Graduate level 2 week intensive summer field course.

Guest lectures

2022 Climate Change Mitigation (TEP4300), NTNU. Topic: Permafrost carbon-climate feedback.

2022 Community ecology and ecosystem (BI2034), Department of Biology, NTNU, 15 ETC.

2022 Plant Ecology (BI3036), NTNU. Topic: The role of plants in climate.

2022 Global Change Biology (BI2080), NTNU. Topic: Afforestation to mitigate climate change.

2021 Climate Change Mitigation (TEP4300), NTNU. Topic: Permafrost carbon-climate feedback.

2021 Plant Ecology (BI3036), NTNU. Topic: The role of plants in climate.

2017 Winter Ecology Field Course, University Centre in Svalbard (UNIS). Topic leader:

Ecosystem C cycling in the cold environments

2010 General Ecology, New Mexico State University. Topic: Decomposition and carbon mineralization.

2009 Ecosystem Ecology, New Mexico State University. Topic: Writing scientific review articles.

Teaching assistant at the University of Florida

2008-2009 General Ecology Laboratory, Fall 2008 & Spring 2009. Head TA, 2009.

2005-2007 Introduction to Ecology Field Course, Fall semesters.

2005-2007 Biology Laboratory, Spring semesters.

Teaching assistant at Korea University

2003 Plant and Environmental Science Laboratory, Fall.

2003 General Chemistry Laboratory, Spring.

2002 Analytical Chemistry Laboratory, Fall.

2002 Plant Nutrition, Soil Science, Spring.

Pedagogical training

2023 NTNU UNIPED (110hr) - Pedagogical basic competence

2023 NTNU UNIPED Module (20hr) - Creating meaning by involving students in research

SUPERVISION

Postdocs

2022- ***Norman Steinert***, NORCE Norwegian Research Centre Climate and Environment.

2021- ***Matvey Debolskiy***, NORCE Norwegian Research Centre Climate.

2020- ***Ali Asaadi***, NORCE Norwegian Research Centre Climate.

2020- ***Inge Althuizen***, NORCE Norwegian Research Centre Climate.

2018-2020 ***Lei Cai***, NORCE Norwegian Research Centre Climate.

2017-2020 ***Casper Tai Christiansen***, Uni Research Climate/NORCE Climate

2016-2017 ***Yuancho Fan***, Uni Research Climate.

2016-2017 ***Altug Ekici***, Uni Research Climate.

Doctoral students

2023- ***Els Ribbers***, Department of Biology, Norwegian University of Science and Technology, Norway.

2022- ***Esther Bender***, Department of Biology, Norwegian University of Science and Technology, Norway.

2022- ***Anja Greschkowiak***, Department of Biology, Norwegian University of Science and Technology, Norway.

2022- ***Homa Esfandiari***, Department of Industrial Ecology, Norwegian University of Science and Technology, Norway. (co-supervisor)

2021- ***Robin Zweigel***, Department of Geosciences, University of Oslo, Norway. (co-supervisor)

2021- ***Christian Quintana***, Department of Biological Sciences, University of Bergen, Norway. (co-supervisor)

2015-2018 ***Inge Althuizen***, Department of Biological Sciences, University of Bergen, Norway.
Thesis title: The importance of vegetation functional composition in mediating climate change impacts on ecosystem carbon dynamics in alpine grasslands. (ISBN 978-82-308-3634-7)

Master students and thesis interns

2022 ***Abigail Ecker,*** Science, Management and Innovation Master Specialisation, Radboud University, Netherlands.

2022 ***Lisa van Solt,*** Science, Management and Innovation Master Specialisation, Radboud University, Netherlands.

2020 ***Els Ribbers***, Science, Management and Innovation Master Specialisation, Radboud University, Netherlands.

2018 ***Gilles Quabron***, Environmental Studies, University of Liege, Belgium.

2017-2019 ***Xiaoxiang Zhao***, Chinese Academy of Sciences, Chengdu, China.

2017-2018 ***Isak Slettebø***, Geophysical Institute, University of Bergen, Norway.

2016-2017 ***Vinzent Klaus***, Erasmus intern. Department of Meteorology, University of Vienna, Austria.

Bachelor students

2022 ***Daniel Angulo***, Degree in Biology, Autonomous University of Madrid, Spain.

2010 ***Erica Velasco***, Department of Biology, New Mexico State University, USA.

2009 ***Jessica Fitzgerald***, Department of Biology, New Mexico State University, USA.

2009 ***Elizabeth Brown***, Department of Biology, University of Florida, USA.

ACADEMIC VISITORS

2018 ***Dominique Sperlich***, Postdoc, University of Freiburg, Germany. KLIMAFORSK personal visitor program

2017 ***William Wieder***, Project scientist, National Center for Atmospheric Research, USA. Bjerknes Visiting Fellow Program

2017 ***Sarah Chadburn***, Research scientist, Hadley Centre, UK. KLIMAFORSK personal visitor program

2016 ***Hyungjun Kim***, Assistant professor, University of Tokyo, Japan. Bjerknes Visiting Fellow Program

2016 ***Daniel Hewins***, Assistant professor, Rhode Island College, USA. KLIMAFORSK personal visitor program

2015 ***Daniel Hewins***, Postdoc, University of Alberta, Canada. Bjerknes Visiting Fellow Program

PUBLIC OUTREACH AND MEDIA APPEARANCE

2022 Interview with Lars Ursin, Energi og Klima. 2ºC Manazine, Ekspertintervju, Ny forskning: CO2-fangst kan gi rask nedkjøling (https://energiogklima.no/to-grader/ekspertintervju/ny-forskning-co2-fangst-kan-gi-rask-nedkjoling/)

2022 Interview with Linn Kongsli Hillestad, E24 Magazine: Den store treplantingsdugnaden (https://e24.no/shared/det-groenne-skiftet/i/RrJ6gO/den-store-treplantingsdugnaden?pwsig2=0747d072ad72518ce320eb54c694dbaf2ddda3d0949b8db9bf032264b8debdaa_1665529427_TGlubg==)

2022 Documentary interview, PBS NOVA, Arctic Sinkholes (https://www.pbs.org/video/arctic-sinkholes-9jwenj/); in Sweden (https://www.svtplay.se/video/36300685/vetenskapens-varld/vetenskapens-varld-sasong-35-arktis-smalter?info=visa)

2021 Magazine interview, DN Magazinet, Kanarifuglen på finnmarksvidda, 2021 (https://www.dn.no/magasinet/klima/klima/co2/finnmarksvidda/kanarifuglen-pa-finnmarksvidda/2-1-1092425)

2021 Interview with Synnøve Gjerstad, TV2, Beinrester dukker opp etter tusenvis av år – det er et illevarslende tegn (https://www.tv2.no/nyheter/14336695)

2021 Debatt, Dagens Næringsliv, Innlegg: Klimatiltaket kan gjøre vondt verre (https://www.dn.no/innlegg/klima/miljo/skog/innlegg-klimatiltaket-kan-gjore-vondt-verre/2-1-1084386)

2021 Magazine interview, DN Magazinet, Planter klimaskog i Norge – forsker kaller det en farlig idé, 2021 (https://www.dn.no/magasinet/klima/skogbruk/klima/artsmangfold/planter-klimaskog-i-norge-forsker-kaller-det-en-farlig-ide/2-1-1034657)

2021 Interview with Rune Langlo, Documentary film 'Norsk hodepine'. (https://tv.nrk.no/program/KOID75006420)

2021 Interview with Trygve Grønne, NRK, Tree planting and climate, (https://www.nrk.no/tromsogfinnmark/mdg-topp-mener-harstads-planer-om-granplanting-er-et-skrekkeksempel-pa-darlig-klimapolitikk-1.15486973)

2021 Guest appearance, NRK Radio Dagens, Skogplanting til klimatiltak (https://radio.nrk.no/serie/dagens/DMTA01008321)

2021	Interview with Ellen Viste, Bjerknes Centre for Climate Research, No quick fix for climate change (https://www.bjerknes.uib.no/en/article/news/no-quick-fix-climate-change)
2021	Interview with Lars Ursin, Energi og Klima. 2ºC Manazine, Ekspertintervjuet: Skogplanting som klimatiltak (https://energiogklima.no/to-grader/ekspertintervju/ekspertintervjuet-skogplanting-som-klimatiltak/)
2021	Interview with Lars Ursin, Energi og Klima. 2ºC Manazine, Ekspertintervjuet: En fjerdedel av permafrost tiner dette århundret (https://energiogklima.no/to-grader/ekspertintervju/ekspertintervjuet-en-fjerdedel-av-permafrost-tiner-dette-arhundret/)
2020	Video tutorial of permafrost field methods (https://youtu.be/pFVKnXULnA0), Lee: leader.
2020	Polular science blog about afforestation: Søkelys på skogplanting (https://blogg.forskning.no/blogg-sokelys-pa-skogplanting)
2020	Insight post, Permafrost som tiner - risiko for natur og samfunn (https://www.norceresearch.no/innsikt/permafrost-som-tiner)
2020	Art and Science MS project. University of Bergen (https://www.art-science-research-group.online/), Lee: Host. https://www.art-science-research-group.online/post/finnmark-part-1-2 https://www.art-science-research-group.online/post/finnmark-part-2-2
2020	Interview with Lena Márjá Myrskog, NRK Sapmi.
2020	Interview with Dan Robert Larsen, NRK Sapmi. (https://www.nrk.no/sapmi/forskere_-_-tinende-permafrost-en-tikkende-miljobombe-1.15046495)
2019	Interview with Thomas Halleland, NRK Rogaland.
2019	Interview with Adam Vaughan, New Scientist.
2019	Interview with Nils Martin Kristensen, Guovdageainnu Lagasradio.
2019	Interview with Marie Elise Nystad, NRK Sapmi. (https://www.nrk.no/sapmi/klimaendringer-gjor-at-permafrosten-tiner-1.14727817)
2018	Busan National University, Busan, Korea. MOOC interview.
2018	Utah State University, Vernal, USA. Online course interview.
2018	Interview with Stefano Valentino, GlobalReporter.
2018	NORCE news. When eternally frozen ground thaws. (https://www.norceresearch.no/en/news/when-the-eternally-frosen-ground-thaws)
2018	The Green Party, Bergen, Norway. Seminar series.
2016	BCCR interview. The way we use our space (https://www.bjerknes.uib.no/en/article/news/way-we-use-our-space)
2013	Invited speaker of general public seminar series at Utah State University, Uintah basin campus.
2012	Interview with EcoVision magazine on permafrost research.
2008	Author of Denali National Park Fact Sheet. Title: Climate change research in Denali National Park.
2008	Mentor of Denali National Park Volunteers research experiences program. Participant: Heather Parker.
2008	Interview on book ‘Climate Change in Alaska’ with Michael Collier.
2007	Interview with Amy Mayer, Permafrost in Flux: Tracking Carbon in the Alaskan Tundra, BioScience, 58:96-100 (https://doi.org/10.1641/B580203)
2007	Interview with Amy Mayer, ‘Fieldwork’, Alaskan Public Radio.