

# CHARTER Project Publications

Papers acknowledging CHARTER and published in peer-reviewed journals until June 2024.  
In addition, several manuscripts are in review.

Akperov, M., Wenxin Zhang, Paul A Miller, Igor I Mokhov, Vladimir A Semenov, Heidrun Matthes, Benjamin Smith and Annette Rinke. 2021. Responses of Arctic cyclones to biogeophysical feedbacks under future warming scenarios in a regional Earth system model. *Environmental Research Letters*, Volume 16, Number 6

Barrio, I.C., Barbero-Palacios, L., Kaarlejarvi, E. et al. What are the effects of herbivore diversity on tundra ecosystems? A systematic review protocol. *Environ Evid* 11, 1 (2022). <https://doi.org/10.1186/s13750-022-00257-z>

Bartsch, A., Efimova, A., Widhalm, B., Muri, X., von Baeckmann, C., Bergstedt, H., Ermokhina, K., Hugelius, G., Heim, B., and Leibman, M.: Circumarctic land cover diversity considering wetness gradients, *Hydrol. Earth Syst. Sci.*, 28, 2421–2481, <https://doi.org/10.5194/hess-28-2421-2024>, 2024.

Bartsch, A., G. Pointner, I. Nitze, A. Efimova, D. Jakober, S. Ley, E. Hogstrom, G. Grosse, P. Schweitzer (2021): Expanding infrastructure and growing anthropogenic impacts along Arctic coasts. *Environmental Research Letters*.

<https://doi.org/10.1088/1748-9326/ac3176>

Bartsch, A., Bergstedt, H., Pointner, G., Muri, X., Rautiainen, K., Leppanen, L., Joly, K., Sokolov, A., Orekhov, P., Ehrich, D., and Soininen, E. M. (2023): Towards long-term records of rain-on-snow events across the Arctic from satellite data, *The Cryosphere*, 17, 889–915, <https://doi.org/10.5194/tc-17-889-2023>.

Bartsch, A., Strozzi, T., and Nitze, I.: Permafrost Monitoring from Space, *Surveys in Geophysics*, 2023. <https://link.springer.com/article/10.1007/s10712-023-09770-3>

Berner, L.T., Orndahl, K.M., Rose, M. et al. The Arctic Plant Aboveground Biomass Synthesis Dataset. *Sci Data* 11, 305 (2024). <https://doi.org/10.1038/s41597-024-03139-w>

Bjerke, J.W., Magnussen, K., Bright, R.M., Navrud, S., Erlandsson, R., Finne, E.A., & Tømmervik, H. 2024 Synergies and trade-offs between provisioning and climate-regulating ecosystem services in reindeer herding ecosystems. *Science of The Total Environment*, 927, 171914, <https://doi.org/10.1016/j.scitotenv.2024.171914>.

Castano C, Hallin S, Egelkraut D, Lindahl B, Olofsson J, Clemmensen KE 2023 Contrasting plant- soil microbial feedbacks stabilize vegetation types and uncouple topsoil C and N stocks across a subarcticalpine landscape. *New Phytologist* 238:2621-2633

Doering, N., Dudeck, S., Elverum, S., Fisher, C., Henriksen, J.E., Herrmann, T., Kramvig, B., Laptander, R., Milton, J., Omma, E.M., Saxinger, G., Scheepstra, A.J.M. & Wilson, K. 2022. Improving the relationships between Indigenous rights

holders and researchers in the Arctic: An invitation for change in funding and collaboration. Environmental Research Letters, 17 (6): 065014. DOI 10.1088/1748-9326/ac72b5

Eilola, S., Horstkotte, T., Forbes, B.C. et al. Perceptions on and impacts of environmental changes under multiple stressors: a case study from two communities in northern Fennoscandia. Reg Environ Change 24, 89 (2024).  
<https://doi.org/10.1007/s10113-024-02241-4>

Erlandsson, R., Bjerke, J.W., Finne, E.A., Myneni R.B., Piao, S., Wang, X., Virtanen, T., Rasanen, A., Kumpula, T., Kolari, T.H.M., Tahvanainen, T., Tommervik, H. 2022. An artificial intelligence approach to remotely assess pale lichen biomass. Remote Sensing of Environment 280 (2022) 113201.  
<https://doi.org/10.1016/j.rse.2022.113201>

Forbes, B. C., Kumpula, T., Meschtyb, N., Laptander, R., Macias-Fauria, M., Zetterberg, P., Verdonen, M., Skarin, A., Kim, K.-Y., Boisvert, Linette N., Stroeve, J. C., Bartsch, A. 2022. Coping with a Warming Winter Climate in Arctic Russia: Patterns of Extreme Weather Affecting Nenets Reindeer Nomadism. In: Resilience Through Knowledge Co-Production, eds. Marie Roue, Douglas Nakashima, Igor Krupnik (pp.217-232). Cambridge: Cambridge University Press.  
DOI:10.1017/9781108974349.017

Frost, G. & Macander, M., Bhatt, U., Epstein, H., Logan, B., Bjerke, J.W., & Forbes, B., Goetz, S., Lara, M., Phoenix, G., Reynolds, M., Tommervik, H., Walker, D. (2021). Tundra greenness in: Blunden J. & Boyer T. (red.): State of the Climate in 2020. Bulletin of the American Meteorological Society 102 (8): S297–S299.  
doi:10.1175/2021BAMSStateoftheClimate. Bulletin of the American Meteorological Society. 102. S297-S299. 10.1175/2021BAMSStateoftheClimate.1.  
[https://doi.org/10.1175/BAMS-D-21-0082.1.](https://doi.org/10.1175/BAMS-D-21-0082.1)

Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Goetz, S.J., Heijmans, M.J., Lara, M.J., Magnusson, R.I., Park, T., Pheinix, G.K., Pinzon, J.E., Serbin, S.P., Tommervik, H., Tucker, C.J., Walker, D.A., & Yang D. 2022. State of the Climate in 2021: 5. The Arctic. Bulletin of The American Meteorological Society - (BAMS), 103 (8), S290- S293.  
[https://doi.org/10.1175/BAMS-D-22-0082.1.](https://doi.org/10.1175/BAMS-D-22-0082.1)

Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Goetz, S.J., Lara, M. J., Magnusson, R. I., Phoenix, G.K., Serbin, S.P., Tommervik, H., Tutubalina, O., Walker, D.A. and Yang, D. 2023. Tundra greenness [in "State of the Climate in 2022"]. Bull. Amer. Meteor. Soc., 104 (9), S305–S308,  
<https://doi.org/10.1175/10.1175/BAMS-D-23-0079.1>.

Hannon, G.E., Molinari, C., Bradshaw, R.H.W. 2022. Factors influencing late-Holocene vegetation dynamics and biodiversity on Hallands Väderö, SW Sweden: A statistical evaluation. The Holocene 32, 1317-1326.

Horstkotte, T., Kumpula, J. Sandstrom, P. Tommervik, H., Kivinen, S. Skarin, A. Moen, J. & Sandstrom, S. 2022. Pastures under pressure. Effects of other land users

and the environment. I: Reindeer Husbandry and Global Environmental Change. Routledge 2022 ISBN 9781003118565. 76-

Istomin, K. V. & M. J. Dwyer (2021). Reindeer herder's thinking: A comparative research of relations between economy, cognition and way of life. Furstenberg/Havel: Kulturstiftung Sibirien; SEC Publications.

Istomin, K.V. 2020. Roads versus Rivers: two systems of spatial structuring in Northern Russia and their effects on local inhabitants. *Sibirica: Interdisciplinary Journal of Siberian Studies*, 19(2): 1-26. doi: 10.3167/sib.2020.190202

Istomin, K.V. 2022. Why (not) Marry a Reindeer Herder? Gender displacement and gender replacement among Izhma-Komi reindeer herders of Bol'shezemel'skaya Tundra. *Region: Regional Studies of Russia, Eastern Europe, and Central Asia*, 11 (3): 47-68.

Istomin, K.V., Habeck, J.O. & Laptander, R. 2022. Reindeer Herding Statistics in Russia: issues of reliability, interpretation, and political effect. *Pastoralism: Research, Policy and Practice*, 12(1): 19. <https://doi.org/10.1186/s13570-022-00233-9>

Istomin, K. V. (2023). Cultured reindeer, domesticated land, and (self)-cultivated herders: Histories and structures of reindeer herding landscapes in the European part of Russia. *Pastoralism: Research, Policy and Practice*, 2023, 13(1): 11 . <https://doi.org/10.1186/s13570-023-00273-9>

Истомин К. В. (2023) Между свободой и необходимостью движения: типы оленеводческих миграций в крупностадном оленеводстве севера европейской части России и Западной Сибири. *Этнография*, №1, сс. 139–163.

Istomin, K. Snowmobile revolution and sedentarization of reindeer-herding nomads in the Kola Peninsula and Bolshezemelskaya tundra, North of European Russia. In Allan Degen (ed.), *Lifestyle and Livelihood Changes among Formerly Nomadic Peoples: Entrepreneurship, diversity and urbanisation*. Springer, 2024

Kaaronen, R.O., Manninen, M.A., Eronen, J.T. 2023. Rules of thumb, from Holocene to Anthropocene. *The Anthropocene Review* <https://doi.org/10.1177/20530196221149105>

Kaaronen, R.O. Manninen, M.A. Eronen, J.T. 2023. Body-based units of measure in cultural evolution. *Science* 380, 948-954.

Kaasik M, Meinander O, Leppanen L, Anttila K, Dagsson-Waldhauserova P, Ginnerup A, Hampinen T, Liu Y, Gunnarsson A, Langley K, et al. Accuracy of Manual Snow Sampling, Depending on the Sampler's Cross-Section—A Comparative Study. *Geosciences*. 2023; 13(7):205. <https://doi.org/10.3390/geosciences13070205>

Karlsen, S.R.; Stendardi, L.; Tommervik, H.; Nilsen, L.; Arntzen, I.; Cooper, E.J. Time-Series of Cloud-Free Sentinel-2 NDVI Data Used in Mapping the Onset of

Growth of Central Spitsbergen, Svalbard. *Remote Sens.* 2021, 13, 3031.  
<https://doi.org/10.3390/rs13153031>

Kuosmanen, N., Valiranta, M., Piilo, S., Tuittila, E-S., Oksanen, P. and Wallenius T. (2023). Repeated fires in forested peatlands in sporadic permafrost zone in Western Canada. *Environmental Research Letters* 18, 094051, Doi: 10.1088/1748-9326/acf05b

Laptander, R. The weight of words and the power of silence in the Nenets life story narratives. *Scientific Journal of the Yamal Nenets Autonomous Okrug*, 111: 60-78 (in Russian). doi: 10.26110/ARCTIC.2021.111.2.004

Laptander, Roza, Tim Horstkotte, Joachim Otto Habeck, Sirpa Rasmus, Teresa Komu, Heidrun Matthes, Hans Tømmervik, Kirill Istomin, Jussi T. Eronen, Bruce C. Forbes. Critical seasonal conditions in the reindeer-herding year: A synopsis of factors and events in Fennoscandia and northwestern Russia. *Polar Science*, Volume 39, 2024, 101016, ISSN 1873-9652,  
<https://doi.org/10.1016/j.polar.2023.101016>.

Laptander, R. The Yamal Nenets' traditional and contemporary environmental knowledge of snow, ice, and permafrost. *Ecology and Society*, 2023, Volume28, Issue 3. <https://doi.org/10.5751/ES-14353-280306>

Martin, A.C., Assmann, J.J., Bradshaw, R.H.W., Kuoppamaa, M., Kuosmanen, N.I., Normand, S., Speed, J.D.M., Macias-Fauria, M. 2022 What evidence exists for temporal variability in Arctic terrestrial and freshwater biodiversity throughout the Holocene? A systematic map protocol, (*Environmental Evidence*, Volume 11, 13)  
<https://doi.org/10.1186/s13750-022-00267-x>

Martin, A.C., Macias-Fauria, M., Bonsall, M.B., Forbes, B.C., Zetterberg, P. and Jeffers, E.S. (2021), Common mechanisms explain nitrogen-dependent growth of Arctic shrubs over three decades despite heterogeneous trends and declines in soil nitrogen availability. *New Phytol.* <https://doi.org/10.1111/nph.17529>

McCrann, M.R., J. Stroeve, M. Serreze, J. Screen and B. Forbes (2021), New climate models reveal faster and larger increases in Arctic precipitation than previously projected, *Nat Comm.*, 12, 6765, <https://doi.org/10.1038/s41467-021-27031-y>.

Oehri, J., Schaeppman-Strub, G., Kim, JS. et al. Vegetation type is an important predictor of the arctic summer land surface energy budget. *Nat Commun* 13, 6379 (2022). <https://doi.org/10.1038/s41467-022-34049-3>

Pedersen, A.O., E.M. Soininen, B.B. Hansen, M. Le Moullec, L.E. Loe, I.M.G. Paulsen, Eischeid, S.R. Karlsen, E. Ropstad, A. Stien, A. Tarroux, H. Tommervik and V. Ravolainen, High seasonal overlap in habitat suitability in a non-migratory High Arctic ungulate, *Global Ecology and Conservation*, (2023) doi:<https://doi.org/10.1016/j.gecco.2023.e02528>

Piilo, S.R., M. M. Valiranta, M. J. Amesbury, M. A. Aquino-Lopez, D. J. Charman, A. Gallego-Sala, M. Garneau, N. Koroleva, M. Karppa, A. M. Laine, A. B. K. Sannel, E.-S. Tuittila, H. Zhang. 2022. Consistent centennial-scale change in European sub-Arctic peatland vegetation towards Sphagnum dominance – implications for carbon sink capacity. *Global change biology*. <https://doi.org/10.1111/gcb.16554>

Pointner, G., Bartsch, A., Dvornikov, Y. A., and Kouraev, A. V. (2021): Mapping potential signs of gas emissions in ice of Lake Neyto, Yamal, Russia, using synthetic aperture radar and multispectral remote sensing data. *The Cryosphere*, 15, 1907–1929, <https://doi.org/10.5194/tc-15-1907-2021>

Pointner, G.; Bartsch, A. (2021): Mapping Arctic Lake Ice Backscatter Anomalies Using Sentinel-1 Time Series on Google Earth Engine. *Remote Sensing*, 13, 1626. <https://doi.org/10.3390/rs13091626>

Povoroznyuk, O., Vincent, W.F., Schweitzer, P., Laptander, R., Bennett, M., Calmels, F., Sergeev, D., Arp, C., Forbes, B., Roy-Leveillee, P., Walker, D. 2022. Arctic Roads and Railways: Social and environmental consequences of transport infrastructure in the circumpolar North. *Arctic Science*, 11 August 2022, <https://doi.org/10.1139/as-2021-0033>

Power, Candice C., Signe Normand, Georg von Arx, Bo Elberling, Derek Corcoran, Amanda B. Krog, Nana Knakergaard Bouvin, Urs Albert Treier, Andreas Westergaard-Nielsen, Yijing Liu, Angela L. Prendin. No effect of snow on shrub xylem traits: Insights from a snow-manipulation experiment on Disko Island, Greenland. *Science of The Total Environment*, Volume 916, 2024, 169896, ISSN 0048-9697. <https://doi.org/10.1016/j.scitotenv.2024.169896>.

Rasmus, Sirpa, Johanna Yletyinen, Simo Sarkki, Mia Landauer, Maria Tuomi, Marit K. Arneberg, Jarle W. Bjerke, Dorothee Ehrich, J. Otto Habeck, Tim Horstkotte, Sonja Kivinen, Teresa Komu, Timo Kumpula, Leena Leppänen, Heidrun Matthes, Christian Rixen, Sari Stark, Ningning Sun, Hans Tømmervik, Bruce C. Forbes, Jussi T. Eronen. Policy documents considering biodiversity, land use, and climate in the European Arctic reveal visible, hidden, and imagined nexus approaches. *One Earth*, Volume 7, Issue 2, 2024, Pages 265-279, ISSN 2590-3322, <https://doi.org/10.1016/j.oneear.2023.12.010>.

Ravolainen, Virve, Ingrid M.G. Paulsen, Isabell Eischeid, Jennifer Sorensen Forbey, Eva Fuglei, Tomáš Hájek, Brage B. Hansen, Leif Egil Loe, Petr Macek, Jesper Madsen, Eeva M. Soininen, James D.M. Speed, Audun Stien, Hans Tømmervik, Åshild Ønvik Pedersen. Low spatial habitat overlap of herbivores in the High Arctic tundra, *Global Ecology and Conservation*, Volume 49, 2024, e02797,ISSN 2351-9894, <https://doi.org/10.1016/j.gecco.2024.e02797>.

Sarkki, S., Pihlajamaki, M., Rasmus, S., Eronen, J.T. 2023. “Rights for Life” scenario to reach biodiversity targets and social equity for indigenous peoples and local communities. *Biological Conservation* 280, 109958. <https://doi.org/10.1016/j.biocon.2023.109958>

Serreze, M.C., Gustavson, J., Barrett, A.P., Druckenmiller, M.L., Fox, S., Voveris, J., Stroeve, J., Sheffield, B., Forbes, B.C., Rasmus, S., Laptander, R., Brook, M., Brubaker, M., McCrystall, M.R., Bartsch, A. 2021. Arctic Rain on Snow Events: Bridging observations to understand environmental and livelihood impacts. Environmental Research Letters, 16, 105009. <https://doi.org/10.1088/1748-9326/ac269b>

Skarin, A., Verdonen, M., Kumpula, T., Macias-Fauria, M., Alam, M., Kerby, J & B.C. Forbes (2020). Reindeer use of tundra in a nomadic herding system: shrub growth, greening and climate feedbacks in low Arctic tundra. Environmental research letters. <https://iopscience.iop.org/article/10.1088/1748-9326/abbf15>

Spiegel, M. P., Volkovitskiy, A., Terekhina, A., Forbes, B. C., Park, T., & Macias-Fauria, M. (2023). Top-Down Regulation by a Reindeer Herding System Limits Climate-Driven Arctic Vegetation Change at a Regional Scale. Earth's Future, 11(7), e2022EF003407. doi:10.1029/2022EF003407

Stroeve, J., V. Nandan, R. Willatt, R. Dadic, P. Rotosky,...,M. Scheebli (2022), Rain-on-snow (ROS) understudied in sea ice remote sensing: A multi-sensor analysis of ROS during MOSAiC, Cryosphere, 16(10), <https://doi.org/10.5194/tc-16-4223-2022>.

Stark, S., Horstkotte, T., Kumpula, J. Olofsson; J. Tommervik, H., and Turunen, M. 2023. The ecosystem effects of reindeer (*Rangifer tarandus*) in northern Fennoscandia: Past, present and future. Perspectives in Plant Ecology, Evolution and Systematics 58, 2023, 125716, DOI.ORG/10.1016/J.PPEES.2022.125716.

Stendardi, L. Karlsen, S.R., Malnes, E., Nilsen, L., Tommervik, H., Cooper, E.J. and Notarnicola, C. 2022. Multi-Sensor Analysis of Snow Seasonality and a Preliminary Assessment of SAR Backscatter Sensitivity to Arctic Vegetation: Limits and Capabilities. Remote Sensing 14(8), 1866; <https://doi.org/10.3390/rs14081866>

Tømmervik, H., Julitta, T., Nilsen, L., Park, T., Burkart, A., Ostapowicz, K., Karlsen, S.R., Parmentier, F.-J., Pirk, N., Bjerke; J.W. 2023. The northernmost hyperspectral FLoX sensor dataset for monitoring of high-Arctic tundra vegetation phenology and Sun-Induced Fluorescence (SIF). Data in Brief, Vol. 50, 2023, 109581, ISSN 2352-3409, <https://doi.org/10.1016/j.dib.2023.109581>.  
(<https://www.sciencedirect.com/science/article/pii/S2352340923006807>)

Verdonen, M., Berner, L.T., Forbes, B.C. & T. Kumpula (2020). Periglacial vegetation dynamics in Arctic Russia: decadal analysis of tundra regeneration on landslides with time series satellite imagery Environmental research letters <https://doi.org/10.1088/1748-9326/abb500>

Verdonen, M., Stormer, A., Lotsari, E., Korpelainen, P., Burkhard, B., Colpaert, A. & Kumpula. T. 2023. Permafrost degradation at two monitored palsas in north-west Finland. The Cryosphere 17: 1803–1819.

Villoslada, M., Yläne, H., Juutinen, S., Kolari, T.H.M., Korpelainen, P., Tahvanainen, T., Wolff, F. and Kumpula, T. (2023), Reindeer control over

shrubification in subarctic wetlands: spatial analysis based on unoccupied aerial vehicle imagery. *Remote Sens Ecol Conserv.* <https://doi.org/10.1002/rse2.337>

Miguel Viloslada, Logan T. Berner, Sari Juutinen, Henni Yläne, Timo Kumpula. Upscaling vascular aboveground biomass and topsoil moisture of subarctic fens from Unoccupied Aerial Vehicles (UAVs) to satellite level, *Science of The Total Environment*, Volume 933, 2024, 173049, ISSN 0048-9697.  
<https://doi.org/10.1016/j.scitotenv.2024.173049>.

Wang, W., He, C., Moore, J., Wang, G., & Niu, G.-Y. (2022). Physics-based narrowband optical parameters for snow albedo simulation in climate models. *Journal of Advances in Modeling Earth Systems*, 14, e2020MS002431.  
<https://doi.org/10.1029/2020MS002431>

Ward Jones, M., Habeck, J. O., Ulrich, M., Crate, S., Gannon, G., Schwoerer, T., ... Borchard, N. (2024). Socioecological dynamics of diverse global permafrost-agroecosystems under environmental change. *Arctic, Antarctic, and Alpine Research*, 56(1). <https://doi.org/10.1080/15230430.2024.2356067>

Windirsch, T., Guido Grosse, Mathias Ulrich, Bruce C Forbes, Mathias Gockede, Juliane Wolter, Marc Macias-Fauria, Johan Olofsson, Nikita Zimov, Jens Strauss. Large Herbivores on Permafrost – a Pilot Study of Grazing Impacts on Permafrost Soil Carbon Storage in Northeastern Siberia, published in *Frontiers in Environmental Science*, section *Atmosphere and Climate*. *Front. Environ. Sci.*, 2022  
<https://doi.org/10.3389/fenvs.2022.893478>

Zhang, J., Huang, X., Wang, J., Bradshaw, R.H.W., Wang, T., Xiang, L. Luo, D., Wang, Z., Chen, F. 2022. An inverse relationship between moisture and grazing intensity in an arid mountain-basin system. *Progress in Physical Geography* 46, 310-322.