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## Employment

### Professor

Geography 1  
København K  
1 Dec 2014 → nu

### Senior scientist

Institut for Kemiteknik, DTU  
Lyngby, Denmark  
1 Jan 2011 → 30 Nov 2014

### Senior scientist

Forskningscenter Risø  
Roskilde, Denmark  
1 Jan 1997 → 1 Jan 2011

### Visiting research associate

Michigan State University  
United States  
1 Jan 1995 → 1 Jan 1996

### Scientist

Forskningscenter Risø  
Roskilde, Denmark  
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## Publications

### Long-term summer warming reduces post-fire carbon dioxide losses in an arctic heath tundra

Xu, W., Elberling, Bo & Ambus, Per Lennart, 2024, In: Agricultural and Forest Meteorology. 344, 10 p., 109823.

### Nitrogen immobilization could link extreme winter warming events to Arctic browning

Rasmussen, Laura Helene, Danielsen, Birgitte Kortegaard, Elberling, Bo, Ambus, Per Lennart, Björkman, M. P., Rinnan, Riikka & Andresen, L. C., 2024, In: Soil Biology and Biochemistry. 191, 11 p., 109319.

### Regional emissions of soil greenhouse gases across Tibetan alpine grasslands

Wang, Peiyan, Wang, J., Elberling, Bo, Ambus, Per Lennart, Li, Y., Pan, J., Zhang, R., Guo, H. & Niu, S., 2024, In: Geoderma. 443, 10 p., 116843.

### Deepened snow in combination with summer warming increases growing season nitrous oxide emissions in dry tundra, but not in wet tundra

Xu, W., Frendrup, L. L., Michelsen, Anders, Elberling, Bo & Ambus, Per Lennart, 2023, In: Soil Biology and Biochemistry. 180, 12 p., 109013.

**Delayed nitrogen application after straw and charred straw addition altered the hot moment of soil N<sub>2</sub>O emissions**

Ye, X., Ran, H., Wang, X., Li, G., Ambus, Per Lennart, Wang, G. & Zhu, K., 2023, In: European Journal of Soil Science. 74, 1, 15 p., e13349.

**Effects of long-term organic fertilizer substitutions on soil nitrous oxide emissions and nitrogen cycling gene abundance in a greenhouse vegetable field**

Xu, W., Zhao, D., Ma, Y., Yang, G., Ambus, Per Lennart, Liu, X. & Luo, J., 2023, In: Applied Soil Ecology. 188, 10 p., 104877.

**Fate and stabilization of labile carbon in a sandy boreal forest soil – A question of nitrogen availability?**

Meyer, N., Sietiö, O., Adamczyk, S., Ambus, Per Lennart, Biasi, C., Glaser, B., Kalu, S., Martin, A., Mganga, K. Z., Olin, M., Seppänen, A., Shrestha, R. & Karhu, K., 2023, In: Applied Soil Ecology. 191, 14 p., 105052.

**Fire intensity regulates the short-term postfire response of the microbiome in Arctic tundra soil**

Ramm, E., Ambus, Per Lennart, Gschwendtner, S., Liu, C., Schloter, M. & Dannenmann, M., 2023, In: Geoderma. 438, 11 p., 116627.

**High nitrous oxide emissions from temporary flooded depressions within croplands**

Elberling, Bo, Kovács, Gyula Mate, Hansen, Hans Frederik Engvej, Fensholt, Rasmus, Ambus, Per Lennart, Tong, Xiaoye, Gominski, Dimitri Pierre Johannes, Mueller, Carsten W., Poultney, D. M. N. & Oehmcke, Stefan, 2023, In: Communications Earth and Environment. 4, 1, 9 p., 463.

**Moderate nitrogen retention in temperate heath ecosystem after elevated CO<sub>2</sub>, drought and warming through 7 years**

Andresen, L. C., Ambus, Per Lennart, Beier, Claus & Michelsen, Anders, 2023, In: European Journal of Soil Science. 74, 4, 13 p., e13397.

**Spatial controls of methane uptake in upland soils across climatic and geological regions in Greenland**

D'Imperio, Ludovica, Li, B., Tiedje, J. M., Oh, Y., Christiansen, Jesper Riis, Kepfer Rojas, Sebastian, Westergaard-Nielsen, Andreas, Brandt, Kristian Koefoed, Holm, Peter Engelund, Wang, P., Ambus, Per Lennart & Elberling, Bo, 2023, In: Communications Earth & Environment. 4, 1, 10 p., 461.

**Våd natur kan give væsentlig klimaeffekt – men på lang sigt**

Christiansen, Jesper Riis, Jepsen, Martin Rudbeck, Ambus, Per Lennart, Elberling, Bo, Mueller, Carsten W., Bruun, Sander, Busck, Anne Gravsholt, Jensen, Lars Stoumann, Bruun, Hans Henrik, Krøijer, Stine, Jessen, Nina Toudal, Jessen, Søren & Stisen, S., 25 May 2022, BIO (DM).

**A review of the importance of mineral nitrogen cycling in the plant-soil-microbe system of permafrost-affected soils—changing the paradigm**

Ramm, E., Liu, C., Ambus, Per Lennart, Butterbach-bahl, K., Hu, B., Martikainen, P. J., Marushchak, M. E., Mueller, Carsten W., Rennenberg, H., Schloter, M., Siljanen, H. M. P., Voigt, C., Werner, C., Biasi, C. & Dannenmann, M., 1 Jan 2022, In: Environmental Research Letters. 17, 1, 34 p., 013004.

**Challenges in measuring nitrogen isotope signatures in inorganic nitrogen forms: An interlaboratory comparison of three common measurement approaches**

Biasi, C., Jokinen, S., Prommer, J., Ambus, Per Lennart, Dörsch, P., Yu, L., Granger, S., Boeckx, P., Van Nieuland, K., Brueggemann, N., Wissel, H., Voropaev, A., Zilberman, T., Jaentti, H., Trubnikova, T., Welti, N., Voigt, C., Gebus-Czupyt, B., Czupyt, Z. & Wanek, W., 2022, In: Rapid Communications in Mass Spectrometry. 36, 22, 16 p., 9370.

**Effects of fire on CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O exchange in a well-drained Arctic heath ecosystem**

Hermesdorf, Lena, Elberling, Bo, D'Imperio, Ludovica, Xu, W., Lambæk, A. & Ambus, Per Lennart, 2022, In: Global Change Biology. 28, 16, p. 4882-4899

**Microbial carbon use efficiency along an altitudinal gradient**

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**Modelling impacts of lateral N flows and seasonal warming on an arctic footslope ecosystem N budget and N<sub>2</sub>O emissions based on species-level responses**

Rasmussen, Laura Helene, Zhang, W., Ambus, Per Lennart, Jansson, P. E., Kitzler, B. & Elberling, Bo, 2022, In: Biogeochemistry. 158, 2, p. 195–213 19 p.

**Normalizing time in terms of space: What drives the fate of spring thaw-released nitrogen in a sloping Arctic landscape?**

Rasmussen, Laura Helene, Mortensen, Louise Hindborg, Ambus, Per Lennart, Michelsen, Anders & Elberling, Bo, 2022, In: Soil Biology and Biochemistry. 175, 8 p., 108840.

**Pyrogenic organic matter as a nitrogen source to microbes and plants following fire in an Arctic heath tundra**

Xu, W., Elberling, Bo & Ambus, Per Lennart, 2022, In: Soil Biology & Biochemistry. 170, 9 p., 108699.

**Re-visiting soil carbon and nitrogen stocks in a temperate heathland seven years after the termination of free air CO<sub>2</sub> enrichment (FACE)**

Li, Qiaoyan, Ambus, Per Lennart, Michelsen, Anders, Schmidt, Inger Kappel, Beier, Claus, Dietzen, Christiana Amalie, Reinsch, S., Arndal, M. F. & Larsen, Klaus Steenberg, 2022, In: Geoderma. 428, 7 p., 116185.

**Effects of experimental fire in combination with climate warming on greenhouse gas fluxes in Arctic tundra soils**

Xu, W., Lambæk, A., Holm, S. S., Furbo-halken, A., Elberling, Bo & Ambus, Per Lennart, 1 Nov 2021, In: Science of the Total Environment. 795, 12 p., 148847.

**Deepened snow enhances gross nitrogen cycling among Pan-Arctic tundra soils during both winter and summer**

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**Short-term effects of experimental fire on CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O exchange in a well-drained arctic tundra**

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**Analysis of narwhal tusks reveals lifelong feeding ecology and mercury exposure**

Dietz, R., Desforges, J., Rigét, F. F., Aubail, A., Garde, E., Ambus, Per Lennart, Drimmie, R., Heide-Jørgensen, M. P. & Sonne, C., 2021, In: Current Biology. 31, 9, p. 2012-2019.e2 10 p.

**Effects of two wood-based biochars on the fate of added fertilizer nitrogen—a <sup>15</sup>N tracing study**

Kalu, S., Oyekoya, G. N., Ambus, Per Lennart, Tammeorg, P., Simojoki, A., Pihlatie, M. & Karhu, K., 2021, In: Biology and Fertility of Soils. 14 p.

**Fire increases soil nitrogen retention and alters nitrogen uptake patterns among dominant shrub species in an Arctic dry heath tundra**

Xu, W., Elberling, Bo & Ambus, Per Lennart, 2021, In: Science of the Total Environment. 807, Part 3, 11 p., 150990.

**Nitrogen transport in a tundra landscape: the effects of early and late growing season lateral N inputs on arctic soil and plant N pools and N<sub>2</sub>O fluxes**

Rasmussen, Laura Helene, Zhang, W., Ambus, Per Lennart, Michelsen, Anders, Jansson, P. E., Kitzler, B. & Elberling, Bo, 2021, In: Biogeochemistry. 157, p. 69–84 16 p.

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**The Influence of Grain Legume and Tillage Strategies on CO<sub>2</sub> and N<sub>2</sub>O Gas Exchange under Varied Environmental Conditions**

Hansen, E. M. Ø., Hauggaard-nielsen, H., Justes, E., Ambus, Per Lennart & Mikkelsen, T. N., 2021, In: Agriculture. 11, 5, 18 p., 464.

**Slope hydrology and permafrost: The effect of snowmelt N transport on downslope ecosystem**

Rasmussen, Laura Helene, Ambus, Per Lennart, Zhang, W., Jansson, P. E., Michelsen, Anders & Elberling, Bo, 1 May 2020. 2 p.

**A new dataset of soil carbon and nitrogen stocks and profiles from an instrumented Greenlandic fen designed to evaluate land-surface models**

Morel, X., Hansen, Birger, Delire, C., Ambus, Per Lennart, Mastepanov, M. & Decharme, B., 2020, In: Earth System Science Data. 12, 4, p. 2365-2380 16 p.

**Combined effects of glacial retreat and penguin activity on soil greenhouse gas fluxes on South Georgia, sub-Antarctica**

Wang, P., D'Imperio, Ludovica, Biersma, Elisabeth M., Ranniku, R., Xu, W., Tian, Q., Ambus, Per Lennart & Elberling, Bo, 2020, In: The Science of the Total Environment. 718, 135255.

**Nitrogen isotopes reveal high N retention in plants and soil of old Norse and Inuit deposits along a wet-dry arctic fjord transect in Greenland**

Andersen, E. A. S., Michelsen, Anders, Fenger-Nielsen, R., Hollesen, J., Ambus, Per Lennart & Elberling, Bo, 2020, In: Plant and Soil. 455, 1-2, p. 241-255 15 p.

**Accumulation of soil carbon under elevated CO<sub>2</sub> unaffected by warming and drought**

Dietzen, Christiana Amalie, Larsen, Klaus Steenberg, Ambus, Per Lennart, Arndal, M. F., Beier, Claus, Reinsch, S. & Schmidt, Inger Kappel, 2019, In: Geophysical Research Abstracts. 21, 1 p., EGU2019-5220.

**Accumulation of soil carbon under elevated CO<sub>2</sub> unaffected by warming and drought**

Dietzen, Christiana Amalie, Larsen, Klaus Steenberg, Ambus, Per Lennart, Michelsen, Anders, Arndal, M. F., Beier, Claus, Reinsch, S. & Schmidt, Inger Kappel, 2019, In: Global Change Biology. 25, 9, p. 2970-2977 8 p.

**Biochar application as a tool to decrease soil nitrogen losses (NH<sub>3</sub> volatilization, N<sub>2</sub>O emissions, and N leaching) from croplands: Options and mitigation strength in a global perspective**

Liu, Q., Liu, B., Zhang, Y., Hu, T., Lin, Z., Liu, G., Wang, X., Ma, J., Wang, H., Jin, H., Ambus, Per Lennart, Amonette, J. E. & Xie, Z., 2019, In: Global Change Biology. 25, 6, p. 2077-2093 17 p.

**Combining a Quantum Cascade Laser Spectrometer with an Automated Closed-Chamber System for delta  $\delta^{13}$  Measurements of Forest Soil, Tree Stem and Tree Root CO<sub>2</sub> Fluxes**

Brændholt, A., Ibrom, A., Ambus, Per Lennart, Larsen, Klaus Steenberg & Pilegaard, K., 2019, In: Forests. 10, 5

**Deepened winter snow significantly influences the availability and forms of nitrogen taken up by plants in High Arctic tundra**

Mörsdorf, M. A., Baggesen, N. S., Yoccoz, N. G., Michelsen, Anders, Elberling, Bo, Ambus, Per Lennart & Cooper, E. J., 2019, In: Soil Biology & Biochemistry. 135, p. 222-234 13 p.

**Sea animal activity controls CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emission hotspots on South Georgia, sub-Antarctica**

Wang, P., D'Imperio, Ludovica, Liu, B., Tian, Q., Jia, Z., Ambus, Per Lennart, Rasch, M. & Elberling, Bo, 2019, In: Soil Biology and Biochemistry. 132, p. 174-186 13 p.

**Context-dependent tree species effects on soil nitrogen transformations and related microbial functional genes**

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**How does biochar influence soil N cycle? A meta-analysis**

Liu, Q., Zhang, Y., Liu, B., Amonette, J. E., Lin, Z., Liu, G., Ambus, Per Lennart & Xie, Z., 2018, In: Plant and Soil. 426, 1-2, p. 211-225 15 p.

**Isotopic methods for non-destructive assessment of carbon dynamics in shrublands under long-term climate change manipulation**

Andresen, L. C., Domínguez, M. T., Reinsch, S., Smith, A. R., Schmidt, Inger Kappel, Ambus, Per Lennart, Beier, Claus, Boeckx, P., Bol, R., De Dato, G., Emmett, B. A., Estiarte, M., Garnett, M. H., Kröel-dulay, G., Mason, S. L., Nielsen, C. S., Peñuelas, J. & Tietema, A., 2018, In: *Methods in Ecology and Evolution*. 9, 4, p. 866-880 15 p.

**Minimum tillage mitigated soil N<sub>2</sub>O emissions and maximized crop yield in faba bean in a Mediterranean environment**

Volpi, I., Antichi, D., Ambus, Per Lennart, Bonari, E., Nasso, N. & Bosco, S., 2018, In: *Soil & Tillage Research*. 178, p. 11-21 11 p.

**Paddy soil drainage influences residue carbon contribution to methane emissions**

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**Postfire nitrogen balance of Mediterranean shrublands: Direct combustion losses versus gaseous and leaching losses from the postfire soil mineral nitrogen flush**

Dannenmann, M., Diaz-Pines, E., Kitzler, B., Karhu, K., Tejedor, J., Ambus, Per Lennart, Parra, A., Sanchez-Martin, L., Resco, V., Ramirez, D. A., Povoas-Guimaraes, L., Willibald, G., Gasche, R., Zechmeister-Boltenstern, S., Kraus, D., Castaldi, S., Vallejo, A., Rubio, A., Moreno, J. M. & Butterbach-Bahl, K., 2018, In: *Global Change Biology*. 24, 10, p. 4505-4520 16 p.

**Resistance of soil protein depolymerization rates to eight years of elevated CO<sub>2</sub>, warming, and summer drought in a temperate heathland**

Wild, B., Ambus, Per Lennart, Reinsch, S. & Richter, A., 2018, In: *Biogeochemistry*. 140, 3, p. 255-267 13 p.

**Activity of Type I Methanotrophs Dominates under High Methane Concentration: Methanotrophic Activity in Slurry Surface Crusts as Influenced by Methane, Oxygen, and Inorganic Nitrogen**

Duan, Y., Reinsch, S., Ambus, Per Lennart, Elsgaard, L. & Petersen, S. O., 2017, In: *Journal of Environmental Quality*. 46, 4, p. 767-775 9 p.

**Decrease in heathland soil labile organic carbon under future atmospheric and climatic conditions**

Thaysen, E. M., Reinsch, S., Larsen, Klaus Steenberg & Ambus, Per Lennart, 2017, In: *Biogeochemistry*. 133, 1, p. 17-36 20 p.

**Gas chromatography vs. quantum cascade laser-based N<sub>2</sub>O flux measurements using a novel chamber design**

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**Individual variation of persistent organic pollutants in relation to stable isotope ratios, sex, reproductive phase and oxidative status in Scopoli's shearwaters (*Calonectris diomedea*) from the Southern Mediterranean**

Costantini, D., Sebastiano, M., Mueller, M. S., Eulaers, I., Ambus, Per Lennart, Malarvannan, G., Covaci, A., Massa, B. & Dell'Omo, G., 2017, In: *Science of the Total Environment*. 598, p. 179-187 9 p.

**Linking rhizospheric CH<sub>4</sub> oxidation and net CH<sub>4</sub> emissions in an arctic wetland based on <sup>13</sup>CH<sub>4</sub> labeling of mesocosms**

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**Long-term and realistic global change manipulations had low impact on diversity of soil biota in temperate heathland**

Holmstrup, M., Damgaard, C., Schmidt, Inger Kappel, Arndal, M. F., Beier, Claus, Mikkelsen, T. N., Ambus, Per Lennart, Larsen, Klaus Steenberg, Pilegaard, K., Michelsen, Anders, Andresen, L. C., Haugwitz, M. S., Bergmark, L., Priemé, Anders, Zaitsev, A. S., Georgieva, S., Dam, M., Vestergård, M. & Christensen, Søren, 2017, In: *Scientific Reports*. 7, 11 p. , 41388.

**The first exposure assessment of legacy and unrestricted brominated flame retardants in predatory birds of Pakistan**  
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**Use of feathers to assess polychlorinated biphenyl and organochlorine pesticide exposure in top predatory bird species of Pakistan**

Abbasi, N. A., Eulaers, I., Jaspers, V. L. B., Chaudhry, M. J. I., Frantz, A., Ambus, Per Lennart, Covaci, A. & Malik, R. N., 1 Nov 2016, In: Science of the Total Environment. 569-570, p. 1408-1417

**Urea in Weaver Ant Feces: Quantification and Investigation of the Uptake and Translocation of Urea in *Coffea arabica***

Vidkjær, Nanna Hjort, Wollenweber, B., Jensen, K. V., Ambus, Per Lennart, Offenberg, J. & Fomsgaard, I. S., 1 Sep 2016, In: Journal of Plant Growth Regulation. 35, 3, p. 803-814 12 p.

**Productivity and carbon footprint of perennial grass-forage legume intercropping strategies with high or low nitrogen fertilizer input**

Hauggaard-Nielsen, H., Lachouani, P., Knudsen, M. T., Ambus, Per Lennart, Boelt, B. & Gislum, R., 15 Jan 2016, In: Science of the Total Environment. 541, p. 1339-1347

**Carbon footprint of rice production under biochar amendment - a case study in a Chinese rice cropping system**

Liu, Q., Liu, B., Ambus, Per Lennart, Zhang, Y., Hansen, V., Lin, Z., Shen, D., Liu, G., Bei, Q., Zhu, J., Wang, X., Ma, J., Lin, X., Yu, Y., Zhu, C. & Xie, Z., 1 Jan 2016, In: Global Change Biology. Bioenergy. 8, 1, p. 148-159 12 p.

**Corrigendum to "Productivity and carbon footprint of perennial grass-forage legume intercropping strategies with high or low nitrogen fertilizer input": [Sci. Total Environ. 541 (January 2016) pages 1339–1347]**

Hauggaard-Nielsen, H., Lachouani, P., Knudsen, M. T., Ambus, Per Lennart, Boelt, B. & Gislum, R., 2016, In: Science of the Total Environment. 557-558, p. 917-918 2 p.

**Enhanced priming of old, not new soil carbon at elevated atmospheric CO<sub>2</sub>**

Vestergård, M., Reinsch, S., Bengtson, P., Ambus, Per Lennart & Christensen, Søren, 2016, In: Soil Biology & Biochemistry. 100, p. 140-148 9 p.

**Fire increases the risk of higher soil N<sub>2</sub>O emissions from Mediterranean *Macchia* ecosystems**

Karhu, K., Dannenmann, M., Kitzler, B., Diaz-Pines, E., Tejedor, J., Ramirez, D. A., Parra, A., Resco de Dios, V., Moreno, J. M., Rubio, A., Guimaraes-Povoas, L., Zechmeister-Boitenstern, S., Butterbach-Bahl, K. & Ambus, Per Lennart, 1 Mar 2015, In: Soil Biology & Biochemistry. 82, p. 44-51 8 p.

**UV-induced N<sub>2</sub>O emission from plants**

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**Effects of green manure storage and incorporation methods on nitrogen release and N<sub>2</sub>O emissions after soil application**

Carter, M. S., Sorensen, P., Petersen, S. O., Ma, X. & Ambus, Per Lennart, 1 Nov 2014, In: Biology and Fertility of Soils. 50, 8, p. 1233-1246 14 p.

**Effects of lime and concrete waste on Vadose Zone carbon cycling**

Thaysen, E. M., Jessen, Søren, Postma, D., Jakobsen, R., Jacques, D., Ambus, Per Lennart, Laloy, E. & Jakobsen, I., Nov 2014, In: Vadose Zone Journal. 13, 11, 11 p.

**Combined climate factors alleviate changes in gross soil nitrogen dynamics in heathlands**

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**Collembola feeding habits and niche specialization in agricultural grasslands of different composition**

Sechi, V., D'Annibale, A., Ambus, Per Lennart, Sarossy, Z., Krogh, P. H., Eriksen, J. & Holmstrup, M., 1 Jul 2014, In: Soil Biology & Biochemistry. 74, p. 31-38 8 p.

### **Gas cleaning with hot char beds studied by stable isotopes**

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### **A decade of free-air CO<sub>2</sub> enrichment increased the carbon throughput in a grass-clover ecosystem but did not drastically change carbon allocation patterns**

Staddon, P. L., Reinsch, S., Olsson, P. A., Ambus, Per Lennart, Luescher, A. & Jakobsen, I., 1 Apr 2014, In: Functional Ecology. 28, 2, SI, p. 538-545 8 p.

### **Bacteria and fungi respond differently to multifactorial climate change in a temperate heathland, traced with <sup>13</sup>C-Glycine and FACE CO<sub>2</sub>**

Andresen, L. C., Dungait, J. A. J., Bol, R., Selsted, M. B., Ambus, Per Lennart & Michelsen, Anders, 2014, In: P L o S One. 9, 1, 9 p., e85070.

### **Biological <sup>12</sup>C-<sup>13</sup>C fractionation increases with increasing community-complexity in soil microcosms**

Yang, W., Magid, Jakob, Christensen, Søren, Rønn, Regin, Ambus, Per Lennart & Ekelund, Flemming, 2014, In: Soil Biology & Biochemistry. 69, p. 197-201 5 p.

### **Can current moisture responses predict soil CO<sub>2</sub> efflux under altered precipitation regimes? A synthesis of manipulation experiments**

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