Jordan P. Goodrich

CURRENT ROLE
Postdoc Research Scientist
Global Change Research Group
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EDUCATION

2015	PhD, Earth & Ocean Sciences, Univ. of Waikato, New Zealand
2010	MSc, Earth Science: Geochemical Systems, Univ. of New Hampshire
2008	BSc, Environmental Science: Ecosystems, Univ. of New Hampshire (cum laude)

OTHER TRAINING

2011	FluxNet measurements and advanced modeling course, Niwot Ridge, CO

POSITIONS HELD

2015-present	Postdoc Research Scientist	- San Diego State University
2010-2011	Research technician	- University of New Hampshire
2008	Summer research intern	- NASA GSFC
2007	Summer research intern	- University of New Hampshire

PUBLICATIONS

Submitted

Goodrich, J.P., Oechel, W., Moreaux, V., Gioli, B., Murphy, P., Burba, G., Zona, D., (in revision) Impact of different eddy covariance sensors, site set-up, and maintenance on the annual balance of CO_2 and fluxes of CH_4, latent heat (LE), and sensible heat in the harsh Arctic environment.

In preparation

Goodrich, J.P., Campbell, D.I., Schipper, L.A., Clearwater, M.J., (in prep.) Drought resilience allows a Southern Hemisphere bog to persist as a strong carbon sink.

Goodrich, J.P., Oechel, W.C., Gioli, B., Zona, D., (in prep) Controls on CO_2 and CH_4 fluxes from five tundra sites on the North Slope of Alaska over 3 years.

Kalhori, A.M., Gioli, B., Burba, G., Zona, D., Murphy, P., Goodrich, J.P., Oechel, W.C., (in prep) Long-term annual NEE and prediction of future emissions under climate change in an Arctic wet sedge tundra, Barrow, Alaska.

Published

Zona D., Gioli, B., Commane,R., Lindaas, J.O. W., Wofsy, S.C., Miller, C.E., Dinardo, S. J., Dengel, S., Sweeney, C., Karion, A., Chang, R.Y.-W., Henderson, J. M., Murphy, P., Goodrich, J.P., Moreaux, V., Liljedahl, A., Watts, J. D., Kimball, J.S., Lipson, D. A., Oechel, W.C. 2016. Cold season emissions dominate the Arctic tundra methane budget. Proceedings of the National Academy of Sciences. 113(1); 40-45.

Amesbury, M.J., Charman, D.J., Newnham, R.M., Loader, N., Goodrich, J.P., Royles, J., Campbell, D.I., Keller, E.D., Baisden, W.T., Roland, T.P., Gallego-Sala, A., 2015. Can Oxygen stable isotopes be used to track precipitation moisture source in vascular plant-dominated peatlands? *Earth and Planetary Science Letters*, 430: 149-159.

Amesbury, M.J., Charman, D.J., Newnham, R.M., Loader, N., Goodrich, J.P., Royles, J., Campbell, D.I., Roland, T.P., Gallego-Sala, A., 2015. Carbon stable isotopes as a paleoclimate proxy in vascular plant dominated peatlands. *Geochemica Et Cosmochimica Acta*. 164: 161-174.

Rutledge, S., Mudge, P.L., Campbell, D.I., Woodward, S.L., Goodrich, J.P., Wall, A.M., Kirschbaum, M.U.F., Schipper, L.A., 2015. Carbon balance of an intensively grazed temperate dairy pasture over four years. *Agricultural Ecosystems and Environment*, 206: 10-20.

Goodrich, J.P., Campbell, D.I., Roulet, N., Clearwater, M.J., Schipper, L.A., 2015. Regulation and magnitude of daily to annual methane fluxes from a Southern Hemisphere raised bog. *J. Geophys. Res.: Biogeosci.*, 120: 819-831.

Goodrich, J.P., Campbell, D.I., Schipper, L.A., Clearwater, M.J., Rutledge, S., 2015. High vapor pressure deficit constrains GPP and the light response of NEE at a southern hemisphere bog. *Agric. For. Meteorol.,* 203: 54-63.

Campbell, D.I., Smith, J., Goodrich, J.P., Wall, A.M., Schipper, L.A., 2014. Year-round growing conditions explains large CO_2 sink strength in a New Zealand raised peat bog. *Agric. For. Meteorol., 192-193, 59-68.*

Santoni, G.W., Lee, B.H., Goodrich, J.P., Varner, R.K., Crill, P.M., McManus, J.B., Nelson, D.D., Zahniser, M.S., Wofsy, S.C., 2012. Mass fluxes and isofluxes of methane (CH_4) at a New Hampshire fen measured by a continuous wave quantum cascade laser spectrometer. *J. Geophys. Res.*, 117 (D10), D10301.

Goodrich, J.P., Varner, R.K., Frolking, S., Duncan, B.N., Crill, P.M., 2011. High-frequency measurements of methane ebullition over a growing season at a temperate peatland site, *Geophys. Res. Lett.*, 38, L07404, doi: 10.1029/2011GL046915.

ACTIVE COLLABORATIONS

- Provision of data to the Soil Moisture Active Passive (SMAP) NASA mission
- Provision of data to the Airborne Microwave observatory of Subcanopy and Subsurface (AirMOSS) NASA mission

RESEARCH EXPERIENCE

- Servicing and repairing remote flux towers in Arctic Alaska, organizing data streams from Alaska (5 towers) and San Diego (3 towers) for processing, analysis, visualization, storage, and provision.
- Contributed to construction, installation, and long-term operation of an eddy covariance tower ($H_2O/CO_2/CH_4$) at a remote peatland site in New Zealand.
- Quantified temporal characteristics of CH_4 ebullition in a temperate peatland using automated chambers and determined the relative importance of this flux pathway to the total ecosystem CH_4 flux.
- Assessed issues and uncertainty in estimates of the global distribution of atmospheric CH_4 from AQUA/AIRS satellite retrievals and the Global Modelling Initiative's chemistry transport model output.
- Investigated the impact of high O_3 concentrations on the photosynthetic capacity of wetland plants using the leaf-level Li-Cor 6400 Portable Photosynthesis System.
- Worked for a graduate student culturing fungi and running samples on a gas chromatograph-electron capture detector (GC-ECD) for methyl halide emissions.

TECHNICAL & SPECIALISED SKILLS

- Advanced capability in Matlab and R scientific programming environments
- Advanced capability with EddyPro, eddy covariance flux processing application
- Intermediate capability with Campbell Scientific datalogger software and programming

PRESENTATIONS

Goodrich, J.P., Campbell, D.I., Schipper, L.A., Clearwater, M.J. (2014), Summer drought reduces both net CO_2 uptake and CH_4 emissions at Kopuatai bog. National Wetland Restoration Symposium, New Zealand (oral).

Goodrich, J.P., Campbell, D.I., Schipper, L.A., Clearwater, M.J. (2013), Summer drought leads to reduced net CO_2 uptake and CH_4 fluxes in a temperate New Zealand peatland. AGU Fall Meeting, San Francisco, CA, USA, Abstract B12A-02 (oral).

Goodrich, J.P., Campbell, D.I., Schipper, L.A., Clearwater, M.J. (2013), Summer drought leads to reduced net CO_2 uptake and CH_4 fluxes in a temperate New Zealand peatland. Waikato – Bay of Plenty Soils meeting, Hamilton, New Zealand (oral).

Goodrich, J.P. (2013), Summer drought leads to reduced net CO_2 uptake and CH_4 fluxes in a temperate New Zealand peatland. University of Waikato Graduate Research Conference, Hamilton, NZ (oral).

Goodrich, J.P., Campbell, D.I. (2012), Carbon exchange in a pristine New Zealand peat wetland. OxFlux meeting, Methven, NZ (oral).

Goodrich, J.P. (2012), CO_2 exchange in an undisturbed New Zealand peatland: The role of sky conditions. University of Waikato Graduate Research Conference, Hamilton, NZ (oral).

Goodrich, J.P., Varner, R.K., Frolking, S.E., Duncan, B.N., Crill, P.M. (2012), High frequency measurements of methane ebullition over a growing season at a temperate peatland site. New Zealand Ecological Society, Rotorua, NZ (oral).

Goodrich, J.P., Campbell, D.I., Schipper, L.A., Clearwater, M.J. (2011), Characterizing the carbon balance of undisturbed New Zealand peatlands. Waikato – Bay of Plenty Soils meeting, Hamilton, New Zealand (oral).

Goodrich, J.P., Varner, R.K., Frolking, S.E., Crill, P.M., Li, C. (2011), Episodic CH_4 emissions from a temperate fen. Ameriflux Science Meeting & 3rd NACP All-Investigators Meeting, Jan. 31-Feb. 4, New Orleans, LA, USA (poster).

Goodrich, J.P., Varner, R.K., Frolking, S.E., Duncan, B.N., Crill, P.M. (2010), Scales of temporal variability in episodic CH_4 emissions: from hours to seasons. *Eos Trans. AGU*, *91(52),* Fall Meet. Suppl., Abstract B11G-0437 (poster).

Goodrich, J.P., R.K. Varner, S. Frolking (2010), Observation of diel patterns and episodic events in wetland methane efflux using automated chambers. University of New Hampshire Graduate Research Conference (oral).

Goodrich, J. P., R.K. Varner, S.E. Frolking, E. Miranda, P.M. Crill (2010), Observation of episodic events in wetland methane efflux (ebullition) using automated chambers, Mer Bleue Annual Science Workshop Agenda, McGill University, Montreal, Quebec (oral).

Goodrich, J.P., R.K. Varner, S.E. Frolking, E. Miranda, P.M. Crill, (2009), Observation of diel patterns and episodic events in wetland methane efflux using automated chambers, *Eos Trans. AGU, 90*(52), Fall Meet. Suppl., Abstract A51N-06 (oral).

Goodrich, J.P., Duncan, B.N., Rodriguez, J., Varner, R.K., (2008), Assessing the uncertainty in the global distribution of atmospheric methane using AQUA/AIRS and the Global Modeling Initiative's CTM, *Eos Trans. AGU*, *89*(53), Fall Meet. Suppl., Abstract A21B-0135 (poster).

Goodrich, J.P., Phillips, S., Varner, R.K., (2008), Variability of atmospheric methane at Thompson Farm, University of New Hampshire Undergraduate Research Conference - Interdisciplinary Science and Engineering Symposium (oral).

Goodrich, J.P., S. Phillips, J. Bubier, P. Crill, and R.K. Varner, (2007), The effects of high ozone episodes on photosynthetic activity of temperate wetland plants, *Eos Trans. AGU, 88*(52), Fall Meet. Suppl., Abstract B33E-1677 (poster).

AWARDS & HONORS

- 2014 Univ. of Waikato Doctoral Scholarship (short-term)
- 2012 Best PhD oral presentation – Graduate Research Conference, U of Waikato
- 2011 PhD Scholarship, National Wetland Restoration Program, LandCare Research, NZ
- 2008 Graduate fellow, Research & Discover*
- 2007 Summer intern, Research & Discover

ACADEMIC SERVICE

Manuscript review: Journal of Geophysical Research – Biogeosciences (1); Agriculture, Ecosystems, and Environment (3); Nature Scientific Reports (1); Permafrost and Periglacial Processes (1).

TEACHING & MENTORING EXPERIENCE

Teaching assistant

- ERTH245: *Weather and Climate* - University of Waikato (2013 & 2014)

Lecturing

- Periodic guest lectures within the undergraduate level course, *Biostatistics* (BIO 215) – San Diego State University (2016).
- Guest lecturer within the graduate level course, *Theory and Principles in Ecology* (BIO 745) – San Diego State University (2016)
- Guest lecturer within the graduate level course, *Soils and greenhouse gases* (ERTH533) - University of Waikato (2012 - 2014)

Mentoring

- Supervised a PhD student from Mexico on a visiting scholar program to learn eddy covariance methods and data analysis techniques toward preparation of a written summary report to present to his host advisors at CIBNOR, La Paz, Mexico.
- Supported two international students traveling from Europe to Barrow, AK to learn field techniques and data analysis toward their independent research projects
- Supported an undergraduate summer research scholarship student in designing a field research study on light penetration and photodegradation within the *Empodisma robustum* canopy at Kopuatai bog; assisted her with basic Matlab skills for data analysis
- Supported two MSc students in aspects of their field and lab research, including various field sampling and Matlab data analyses

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