

LISA R. WELP
(Updated May 2018)

Earth, Atmospheric, and Planetary Sciences
Purdue University
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EDUCATION

California Institute of Technology, Pasadena, CA

Ph.D., Environmental Science and Engineering, Advisor: James Randerson 2006

M.S., Environmental Science and Engineering 2002

Indiana University, Bloomington, IN

B.S., Chemistry with High Honors and Geology Minor 2000

PROFESSIONAL APPOINTMENTS

Assistant Professor, Earth, Atmospheric, and Planetary Sciences, Purdue University 2015 – present

Assistant Project Scientist, Scripps Institution of Oceanography, UCSD 2012 – 2014

Postdoctoral Scholar, Scripps Institution of Oceanography, UCSD 2008 – 2012

Postdoctoral Research Associate & Lecturer, Yale University 2006 – 2008

Graduate Research Associate, California Institute of Technology 2000 – 2006

RESEARCH INTERESTS

I study the exchange of water and carbon between the land biosphere and the atmosphere. Grand challenge research questions motivating my work include: What is the tradeoff between CO₂ and water in a changing climate? How can we detect and predict decadal-scale ecosystem changes? How do vegetation changes affect CO₂ and water flux seasonality? What are the consequences for global and regional climate? Many of my research projects use stable isotopes to help isolate the influences of individual processes on the net fluxes, e.g. photosynthesis from net ecosystem CO₂ exchange or plant transpiration for total evapotranspiration. Another research theme is that most projects have leveraged the integration of fluxes by the atmosphere or a watershed to study regional to global-scale processes. Overall, my research aims to improve predictions of future vegetation-climate interactions.

FELLOWSHIPS & AWARDS

- Great Lakes Chief Scientist Training Cruise Award: ship time and travel expenses 2016
- BASIN young investigator travel grant: conference and lodging expenses 2011
- Outstanding poster contribution at the International Carbon Dioxide Conference 2009
- EPA Science to Achieve Results (STAR) Fellowship: tuition and stipend 2001 – 2004
- BASIN student travel grants: conference and lodging expenses 2002 – 2004
- Caltech Institute Fellowship: tuition and stipend 2000 – 2001

MEMBERSHIPS

American Geophysical Union (AGU), Association for Women in Science (AWIS), Earth Science Women's Network (ESWN), Biosphere-Atmosphere Stable Isotope Network (BASIN), Purdue Women in Science Program (WISP)

GRANTS

Current Research Support

1. 03/18-02/19: *Estimating watershed residence times in artificially-drained landscapes and relation to nutrient concentrations*, \$15,000, Indiana Water Resources Research Center, Welp (PI)
2. 09/17-09/18: *Helping Teachers and Hosting the Midwest Student Research Symposium*, \$20,000, Halliburton Foundation, Steve Smith (PI), Welp (Co-PI)

Completed Research Support

1. 12/15-08/16: *How has the declining number of oak trees in Indiana affected forest water use efficiency?* \$7,000, PCCRC Seed Grant, Welp (PI) with Kim Novick (Co-PI, IU) and Rick Meilan (Co-I, Purdue)
2. 02/11-02/14: *Recent trends and physiological constraints on northern extra-tropical ecosystems from atmospheric and satellite data*, \$588,787, NASA, Welp (Science PI) with Ralph Keeling (PI, SIO).

Declined Research Support

1. 08/17-07/18: *Quantifying the role of stored carbon pools in the seasonal and inter-annual growth of deciduous trees using stable isotope tracers*, \$17,645, Purdue Faculty Research Fellowship, Welp (PI) with Youmi Oh (PhD student) - Student was awarded a NASA fellowship and did not have time to work on this project.

STUDENTS SUPERVISED

Graduate Students

- Ms. Olivia Salmon, Chemistry, PhD started fall 2013
Co-advised with Paul Shepson
Bisland Dissertation Fellowship, 2017-2018
Purdue PCCRC graduate fellowship, 2014
- Ms. Youmi Oh, EAPS, PhD started fall 2016
EAPS Henry Silver graduate award for environmental geoscience, 2018
NASA NESSF Graduate Student Fellowship, 2017-2019
Andrews Purdue Graduate Fellowship, 2016-2017
Purdue PCCRC Graduate Fellowship, 2016-2017
- Ms. Alexandra Meyer, EAPS, PhD started fall 2016
EAPS Gerald Krockover K-12 outreach award, 2018
NSF GRFP Graduate Student Fellowship, 2017-2019
Purdue Doctoral Fellowship, 2016-2017
- Ms. Apurupa Gorthi, EAPS ESE, MS 2015-2017
Currently Research Associate, Council of Energy, Environment and Water, New Delhi, India

Undergraduate Students

- Ms. Emma Beck, Statistics (degree in progress) - SURF program
- Ms. Erin O'Connor, EAPS (degree in progress)
- Mr. Jared Foepfel, EAPS (degree in progress)
- Ms. Katrina Poling, EAPS (degree in progress)
- Ms. Mona Logan Eders, BS Chemistry 2017
- Mr. Bradley McGinnley, BS EAPS 2016

TEACHING EXPERIENCE

- EAPS 327: Climate, Science and Society, Purdue Great Issues course Spring 2018
 - Primary instructor, 78 students
 - Overall performance score 4.9 out of 5.0 (5 = highest)
- HONR 399: The Wabash, Honors research course Fall 2017

Lisa R. Welp

- Co-instructor with Greg Michalski
- 11 Honors students conducted independent research and wrote papers
- EAPS 327: Climate, Science and Society, Purdue Great Issues course Spring 2017
 - Primary instructor, 80 students
 - Overall performance score 4.9 out of 5.0 (5 = highest)
- EAPS 391/591: Biogeochemistry Fall 2016
 - Primary instructor, 7 students
 - Overall performance score 5.0 out of 5.0 (5 = highest)
- EAPS 327: Climate, Science and Society, Purdue Great Issues course Fall 2015, Spring 2016
 - Primary instructor, 70-80 students per semester
 - Overall performance score 4.8 out of 5.0 (5 = highest)
- Faculty Fellow, Instruction Matters Purdue Academic Course Transformation (IMPACT) Fall 2015
- Completed training in 'Effective Peer Instruction with Clickers', Center for the Integration of Research, Teaching and Learning, UCSD Summer 2014
- Co-instructor for 'Controversies at the interface of carbon and climate' at SIO/UCSD Spring 2013
 - Selected weekly readings, guided class discussion, and maintained the course webpage, 14 students, 1 meeting per week
 - Overall performance score 1.2 out of 5 (1 = highest)
- Completed training in 'Advanced Topics in Science Teaching', Yale University Spring 2008
- Lecturer at Yale University, 'A biological perspective of global change' Fall 2007
 - Primary instructor, designed lectures, guided class discussion, and maintained the course webpage, 12 students, 2 meetings per week
 - Overall performance score 1.9 out of 5 (1 = highest)

PROFESSIONAL SERVICE & SYNERGISTIC ACTIVITIES

- AGU Elizabeth Sulzman Award Selection Committee 2018 -
- National Ecological Observatory Network (NEON) Technical Working Group for Atmospheric Isotopes 2018-
- Referee for: Agricultural & Forest Meteorology, Atmospheric Chemistry and Physics, Atmospheric Measurement Techniques, Biogeosciences, Climate Dynamics, Geochimica et Cosmochimica Acta, Geophysical Research Letters, Global Biogeochemical Cycles, Global Change Biology, Hydrology and Earth System Sciences, Journal of Geophysical Research-Atmospheres, Journal of Geophysical Research-Biogeosciences, Journal of Hydrometeorology, Nature, Nature Communications, Nature Geoscience, New Phytologist, Plant, Cell & Environment, PLoS ONE, Rapid Communications in Mass Spectrometry, Remote Sensing, Tree Physiology, and Water Resources Research
- Panelist reviewer for: NASA/DOE (2016), NSF (2015), NOAA (2010)
- Ad-hock mail reviewer for: The Netherlands Organization for Scientific Research (2017), NSF Atmospheric Chemistry (2017), NSF DEB (2016), Swiss NSF (2016, 2017), US-Israel Binational Science Foundation (2015)
- Workshop participant, *Becoming an Effective Leader*, Torrey Pines Training Consortium 2014
- Session co-chair and OSPA liaison at the AGU Fall 2012 meeting, *Stable-Isotope Tracers in the Atmosphere: Insights Into Chemical, Physical, and Biological Cycling* 2012
- Participant at NSF-sponsored *MacroSystems Biology PI Meeting* 2012
- Workshop participant, *Women in Science and Technology Conference*, La Jolla, CA 2011
- Workshop participant, Atmospheric Science Collaborations and Enriching Networks (ASCENT), NSF-sponsored, Steamboat Springs, CO 2009
- Session co-chair at the AGU Fall 2008 meeting, *Isotope Tracers of Biosphere-Atmosphere Interactions: Advances in Measurements, Theory and Analysis* 2008
- Workshop participant, FORWARD to Professorship, NSF-sponsored, Washington, DC 2008

Lisa R. Welp

- Session co-chair at the AGU Fall 2006 meeting, *Using Stable Isotopes to Quantify Terrestrial Carbon Cycle Processes at Multiple Spatial and Temporal Scales* 2006
- Coordinator for the GNIP sampling station in Cherskii, Siberia 2004 – 2007
- Student participant at the *Novel Approaches to Carbon Management: Separation, Capture, Sequestration, and Conversion to Useful Products* NAS Workshop 2003
- Co-organized Caltech's Environmental Science & Engineering fall seminar series 2002
- Attended the SIRFER Stable Isotope Ecology summer course, Salt Lake City, UT 2001

OUTREACH & PUBLIC SERVICE

- GLOBE Midwest Student Research Symposium presenter and poster judge, summer 2017
- Earth Science Passport Day at Imagination Station volunteer, fall 2016
- Wabash Sampling Blitz collection station volunteer, spring 2015, fall 2016, spring 2018
- UCSD Founder's Day SIO booth planning, fall 2014
- Science fair mentor to Marshall Middle School student, fall 2013
- Career Day speaker, Forest Park High School, fall 2013
- Contributing author to the Keeling Curve 400 ppm website
- Volunteer judge for the National Ocean Science Bowl competition, Mar 3, 2012, La Jolla, CA
- Guest lecture at Escondido Charter High School, Nov 2011, Escondido, CA
- Volunteer judge for the National Ocean Science Bowl competition, Feb 26, 2011, La Jolla, CA
- Guest lecture at Escondido Charter High School, Oct 2010, Escondido, CA
- Volunteer judge for Odyssey of the Mind creative problem solving competition (IN, CA, CT)
- Concord Square Homeowners Association Board of Directors, 2012-2014

DEPARTMENT AND UNIVERSITY SERVICE

- ESE Graduate Committee, 2017 -
- EAPS Graduate Committee, 2016 -
- EAPS Safety Committee, 2016 -
- EAPS faculty search committee, Geochronology 2017 - 2018
- CoS Grade Appeals Committee, 2017-
- CoS Undergraduate Women in Science Program (WISP) guest panelist: *Establishing relationships with your professors*, 2017
- CoS undergraduate research club guest panelist, 2017
- Boiler Gold Rush faculty mentor, 2017

INVITED TALKS

- University of Illinois, Chicago – Earth and Environmental Sciences Oct 2017
- International Boreal Forest Research Association (IBFRA) *meeting canceled* 2017
- University of California Irvine – Earth System Science Oct 2014
- Purdue University – Earth, Atmospheric and Planetary Sciences Mar 2014
- University of Kansas – Department of Geography Jan 2014
- Indiana University – School of Public and Environmental Affairs Jan 2013
- San Diego State University – Department of Biology Jan 2013
- University of Southern California – Earth Sciences Department Oct 2012
- UCLA – Department of Atmospheric and Oceanic Sciences Jan 2012
- AGU Fall Meeting – Session title: Partitioning Evaporation, Transpiration and Deep Percolation in Vegetated Catchments Dec 2011
- Columbia University – Lamont-Doherty Earth Observatory May 2009
- Boston University – Department of Geography and Environment Feb 2009

Lisa R. Welp

- University of Vermont – The Rubenstein School of Environment Mar 2008
- University of North Carolina, Chapel Hill – Department of Geological Sciences Feb 2008
- Washington State University – School of Earth and Environmental Sciences Jan 2008

PEER REVIEWED PUBLICATIONS

19 publications, total citations ~ 1424, h-index 12

*Denotes advised student.

19. *He, Z., L. Lei, **L.R. Welp**, Z.C. Zeng, N. Bie, and L. Liu (2018) Detection of spatiotemporal extreme changes in atmospheric CO₂ concentration based on satellite observations, *Remote Sensing*, 10(6), 839, doi:10.3390/rs10060839.
18. Keeling, R.F., H.D. Graven, **L.R. Welp**, L. Resplandy, J. Bi, S.C. Piper, Y. Sun, A. Bollenbacher, and H.A.J. Meijer (2017) Atmospheric evidence for a global secular increase in carbon isotopic discrimination of land photosynthesis, *PNAS*, 114(39), 10361-10366, doi:10.1073/pnas.1619240114.
17. *Zhu, P., Q. Zhuang, P. Ciais, **L. Welp**, W. Li, and Q. Xin (2017) Elevated atmospheric CO₂ negatively impacts photosynthesis through radiative forcing and physiology-mediated climate feedback, *Geophysical Research Letters*, 44(4), 1956-1963, doi:10.1002/2016GL071733.
16. Trugman, A.T., N.J. Fenton, Y. Bergeron, X. Xu, **L.R. Welp**, and D. Medvigy (2016) Climate, soil organic layer, and nitrogen jointly drive forest development after fire in the North American boreal zone, *Journal of Advances in Modeling Earth Systems*, 8(3), 1180-1209, doi:10.1002/2015MS000576.
15. **Welp, L.R.**, P.K. Patra, C. Rodenbeck, R.R. Nemani, J. Bi, S.C. Piper, and R.F. Keeling (2016) Increasing summer net CO₂ uptake in high northern ecosystems inferred from atmospheric inversions and comparisons to remote-sensing NDVI, *Atmospheric Chemistry and Physics*, 16, 9047-9066, doi:10.5194/acp-16-9047-2016.
14. Griffis, T.J., J.D. Wood, J.M. Baker, X. Lee, K. Xiao, Z. Chen, **L.R. Welp**, N.M. Schultz, G. Gorski, M. Chen, J. Nieber (2016) Investigating the source, transport, and isotope composition of water vapor in the planetary boundary layer, *Atmospheric Chemistry and Physics*, 16, 5139-5157, doi:10.5194/acp-16-5139-2016.
13. Graven, H.D., R.F. Keeling, S.C. Piper, P.K. Patra, B.B. Stephens, S.C. Wofsy, **L.R. Welp**, C. Sweeney, P.P. Tans, J.J. Kelley, B.C. Daube, E.A. Kort, G.W. Santoni, and J.D. Bent (2013) Enhanced seasonal exchange of CO₂ by northern ecosystems since 1960, *Science*, 341 (6150), 1085-1089, doi:10.1126/science.1239207.
12. **Welp, L.R.**, R.F. Keeling, R.F. Weiss, W. Paplawsky, and S. Heckman (2013) Design and performance of a Nafion dryer for continuous operation at CO₂ and CH₄ air monitoring sites, *Atmospheric Measurement Techniques*, 6(5), 1217-1226, doi:10.5194/amt-6-1217-2013.
11. Huang, S., H. Liu, D. Dahal, S. Jin, **L.R. Welp**, J. Liu, S. Liu (2013) Modeling spatially explicit fire impact on gross primary production in Interior Alaska using satellite images coupled with eddy covariance, *Remote Sensing of Environment*, 135, 178-188, doi:10.1016/j.rse.2013.04.003.
10. **Welp, L.R.**, X. Lee, T.J. Griffis, X. Wen, W. Xiao, S. Li, X. Sun, Z. Hu, M. Val Martin, and J. Huang, (2012) A meta-analysis of water vapor deuterium-excess in the mid-latitude atmospheric surface layer, *Global Biogeochemical Cycles*, 26, GB3021, doi:10.1029/2011GB004246.
9. **Welp, L.R.**, R.F. Keeling, H.A.J. Meijer, A.F. Bollenbacher, S.C. Piper, K. Yoshimura, R.J. Francey, C.E. Allison, and M. Wahlen, (2011) Interannual variability in the oxygen isotopes of atmospheric CO₂ driven by El Niño, *Nature*, 477(7366), 579-582, doi:10.1038/nature10421.
8. Yi, C. et al. including **L.R. Welp**, (2010) Climate control of terrestrial carbon exchange across biomes and continents, *Environmental Research Letters*, 5, 034007, doi:10.1088/1748-9326/5/3/034007.
7. Xiao, W., X. Lee, T. Griffis, K. Kim, **L. Welp**, and Q. Yu, (2010) Comparing observed and modeled oxygen isotopic fluxes of CO₂ and H₂O over a soybean canopy, *Journal of Geophysical Research*, 115, G01004, doi:10.1029/2009JG001163.
6. Lee, X., T.J. Griffis, J.M. Baker, K.A. Billmark, K. Kim, and **L.R. Welp**, (2009) Canopy-scale kinetic fractionation of atmospheric carbon dioxide and water vapor isotopes, *Global Biogeochemical Cycles*, 23, GB1002, doi:10.1029/2008GB003331.
5. **Welp, L. R.**, X. Lee, K. Kim, T. Griffis, K. Bilmark, and J. Baker, (2008) δ¹⁸O of water vapor, evapotranspiration and the sites of leaf water evaporation in a soybean canopy, *Plant, Cell and Environment*, 31, 1214-1228, doi:10.1111/j.1365-3040.2008.01826.x. (Selected for cover image.)

4. **Welp, L. R.**, J.T. Randerson, and H. Liu, (2007) The sensitivity of carbon fluxes to spring warming and summer drought depends on plant functional type in boreal forest ecosystems, *Agricultural and Forest Meteorology*, *147*, 172-185, doi:10.1016/j.agrformet.2007.07.010. (Second most downloaded article, October – December 2007).
3. Randerson, J.T., H. Liu, M.G. Flanner, S.D. Chambers, Y. Jin, P.G. Hess, G. Pfister, M.C. Mack, K.K. Treseder, **L.R. Welp**, F.S. Chapin, J.W. Harden, M.L. Goulden, E. Lyons, J.C. Neff, E.A.G. Schuur, and C.S. Zender, (2006) The impact of boreal forest fire on climate warming, *Science*, *314*, 1130-1132, doi: 10.1126/science.1132075.
2. **Welp, L.R.**, J.T. Randerson, and H. Liu, (2006) Seasonal exchange of CO₂ and δ¹⁸O-CO₂ varies with postfire succession in boreal forest ecosystems, *Journal of Geophysical Research – Biogeosciences*, *111*, G03007, doi:10.1029/2005JG000126.
1. **Welp, L.R.**, J.T. Randerson, J.C. Finlay, S.P. Davydov, G.M. Zimova, A.I. Davydova, and S.A. Zimov, (2005) A high-resolution time series of oxygen isotopes from the Kolyma River: Implications for the seasonal dynamics of discharge and basin-scale water use, *Geophysical Research Letters*, *32*, L14401, doi:10.1029/2005GL022857.

MEETING ABSTRACTS

*Denotes advised student.

- Welp, L.R.**, L. Calle, H. Graven, B. Poulter (Dec 2017) Investigating the role of evergreen and deciduous forests in the increasing atmospheric CO₂ seasonal amplitude, Proceedings of the Fall Meeting of the American Geophysical Union, New Orleans, LA. (Talk)
- *Salmon, O.E., **L.R. Welp**, P.B. Shepson, B.H. Stirm (Dec 2017) Airborne observations of water vapor deuterium excess in the mid-latitude lower troposphere, Proceedings of the Fall Meeting of the American Geophysical Union, New Orleans, LA. (Talk)
- *Meyer, A., **L. Welp** (Dec 2017) Estimating spring condensation on the Great Lakes, Proceedings of the Fall Meeting of the American Geophysical Union, New Orleans, LA.
- Welp, L.R.**, A. Meyer, and T.J. Griffis (Feb 2017) In-situ observations of water vapor isotopes in near surface air over Lakes Superior and Michigan, Integrated Carbon and Water for Ecological Biogeochemical Synthesis (ICWEBS) workshop, Stevenson, WA. (Talk)
- *Meyer, A. and **L.R. Welp** (Feb 2017) Testing the water isotope effect of tubing materials and conditions, Integrated Carbon and Water for Ecological Biogeochemical Synthesis (ICWEBS) workshop, Stevenson, WA.
- Welp, L.R.**, A. Meyer, and T.J. Griffis (Dec 2016) In-situ observations of water vapor isotopes in near surface air over Lakes Superior and Michigan, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- *Oh, Y., **L. Welp**, K. Yi, J.T. Maxwell and K.A. Novick (Dec 2016) Species-specific responses of tree ring and leaf stable isotope signals in isohydric and anisohydric trees to drought, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Keeling, R.F., H.D. Graven, **L.R. Welp**, L. Resplandy, J. Bi, S.C. Piper, Y. Sun, A. Bollenbacher and H.A.J. Meijer (Dec 2016) Atmospheric evidence for a global secular increase in isotopic discrimination of land photosynthesis, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA. (Talk)
- Zhu, P., Q. Zhuang, D. McGuire, M. Heimann, B. Peng, **L.R. Welp** and C. Bernacchi (Dec 2016) Diminishing warming effects on terrestrial ecosystem net carbon uptake in northern high latitudes, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA. (Talk)
- Thiagarajan, N., B. Passey, **L.R. Welp**, R. Keeling, and J. Eiler (Jun 2016) Seasonal variations in clumped isotope and Δ¹⁷O of atmospheric CO₂ at La Jolla, CA, Goldschmidt Conference, Yokohama, Japan. (Talk)

- Welp, L.R.**, P.K. Patra*, C. Rodenbeck, R. Nemani, J. Bi, S.C. Piper, R.F. Keeling (Jun 2016) Increasing summer net CO₂ uptake in high northern ecosystems on land, Goldschmidt Conference, Yokohama, Japan. (Poster presented by P. Patra)
- Welp, L.R.**, H. Graven, R. Keeling, and J. Bi (Dec 2015) The impact of boreal deciduous and evergreen forests on atmospheric CO₂ seasonality, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Trugman, A, N. Fenton, Y. Bergeron, X. Xu, **L.R. Welp**, D. Medvigy (Dec 2015) Modeling forest development after fire disturbance: Climate, soil organic layer, and nitrogen jointly affect forest canopy species and long-term ecosystem carbon accumulation in the North American boreal forest, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Welp, L.R.**, S. C. Piper, H. Graven, A. Bollenbacher, H.A.J. Meijer, R. Keeling (Jan 2015) Trends in carbon isotope fractionation in atmospheric carbon dioxide constrain water use efficiency of northern ecosystems from the 1980s to 2010, North American Carbon Program Meeting, Washington, D.C.
- Welp, L.R.**, T. Lueker, J. Kim, P. Salameh, S. Walker, R.F. Keeling, R.F. Weiss, C. Sloop, W. Callahan, D. Bixler, and A. Long (Dec 2014) Long-term calibration strategy for the Earth Networks CO₂ and CH₄ sensor network in urban and background sites using the Picarro CRDS gas analyzer, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Lai, C-T., J.P. Rambo, **L.R. Welp**, K. Bible, and D.Y. Hollinger (Dec 2014) Comparing stable water isotope variation in atmospheric moisture observed over coastal water and forests, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Graven, H.D., R.F. Keeling, S.C. Piper, P.K. Patra, B.B. Stephens, S.C. Wofsy, **L.R. Welp**, C. Sweeney, P.P. Tans, J.J. Kelley, B.C. Daube, E.A. Kort, G. Santoni, J.D. Bent, R. Thomas, and I.C. Prentice (Dec 2014) Enhanced seasonal exchange of CO₂ by northern ecosystems – Observations and models, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Welp, L.R.**, S.C. Piper, H.D. Graven, A. Bollenbacher, H.A.J. Meijer, and R.F. Keeling (Dec 2013) Trends in carbon isotope fractionation in atmospheric carbon dioxide constrain water use efficiency of northern ecosystems from the 1980s to 2010, Fall Meeting of the American Geophysical Union, San Francisco, CA. (Talk)
- Welp, L.R.**, H.D. Graven, S.C. Piper, and R.F. Keeling (Oct 2013) Increasing seasonal CO₂ exchange in high northern latitudes, International Boreal Forest Association Meeting, Edmonton, Canada. (Talk)
- Welp, L.R.**, H.D. Graven, P. Patra, R. Nemani, S.C. Piper, and R.F. Keeling (Jun 2013) Increasing seasonal CO₂ exchange in high northern latitudes, International Carbon Dioxide Conference, Beijing, China.
- Welp, L.R.**, H.D. Graven, P. Patra, R. Nemani, S.C. Piper, and R.F. Keeling (Apr 2013) Increasing seasonal land-atmosphere CO₂ exchange as a results of unidentified large-scale changes in Arctic and boreal ecosystems, NASA Terrestrial Ecology Science Team Meeting, La Jolla, CA.
- Graven, H.D., S. Piper, P.K. Patra, C. Sweeney, **L.R. Welp**, B.B. Stephens, S.C. Wofsy, and R.F. Keeling (Dec 2012) Large-scale increase in the seasonal cycle of CO₂ in the Northern Hemisphere since 1960, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Keeling R.F., **L.R. Welp**, H. Graven, and S.C. Piper (Apr 2012) Constraints on land biospheric carbon cycling based on measurements of atmospheric CO₂ and its isotopic composition, DOE TES PI Meeting, Washington D.C.
- Welp L.R.**, X. Lee, T. Griffis, X. Wen, W. Xiao, S. Li, X. Sun, and Z. Hu (Dec 2011) A meta-analysis of deuterium-excess in water vapor in the atmospheric surface layer in mid-latitudes, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA. (Invited Talk)
- Welp, L.R.**, P. K. Patra, R. F. Keeling, R. R. Nemani, and S. C. Piper (Dec 2011) Long-term trends in Arctic and Boreal CO₂ uptake from 1986 to 2007 inferred from a time dependent inversion compared with satellite NDVI observations to identify likely regions of change, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Piper, S.C., R.F. Keeling, P.K. Patra, **L.R. Welp** (Dec 2011) Analysis of Trends in the Seasonal Cycle of Atmospheric CO₂ in the Northern Hemisphere from 1958 to 2010, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.

- Welp, L.R.**, P. K. Patra, R. F. Keeling, R. R. Nemani, and S. C. Piper (Oct 2011) Trends in annual and seasonal high northern latitude CO₂ fluxes from 1986 to 2007 inferred from a time dependent inversion compared with satellite NDVI observations to identify likely regions of change, NASA Carbon Cycle & Ecosystems Joint Science Workshop, Alexandria, VA. (Speed Talk and Poster)
- Welp, L.R.**, R.F. Keeling, H.A.J. Meijer, A. Bollenbacher, S.C. Piper, K. Yoshimura, R.J. Francey, C.E. Allison and M. Wahlen (May 2011) The isotopic composition of oxygen in atmospheric CO₂ and El Niño: a new constraint of global productivity, NOAA ESRL Global Monitoring Division (GMD) Annual Conference, Boulder, CO. (Talk)
- Welp, L.R.**, W. Paplawsky, R.F. Keeling, R.F. Weiss and S. Heckman (May 2011) A low-maintenance drying system for ambient air greenhouse gas monitoring, NOAA ESRL Global Monitoring Annual Conference, Boulder, CO.
- Welp, L.R.**, X. Lee, T.J. Griffis, X. Wen, S. Li, X. Sun and Z. Hu (Mar 2011) A meta-analysis of high-frequency deuterium-excess of water vapor measured at six stations. Proceedings of the BASIN meeting “The Roles of Stable Isotopes in Water Cycle Research”, Keystone, CO. (Talk)
- Welp, L.R.**, R.F. Keeling, H.A.J. Meijer, A. Bollenbacher, S.C. Piper, K. Yoshimura, R.J. Francey, C.E. Allison and M. Wahlen (Dec 2010) The isotopic composition of oxygen in atmospheric CO₂ and El Niño: a new constraint of global productivity, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA. (Talk)
- Welp, L.R.**, R.F. Keeling, H.A.J. Meijer, A.F. Bollenbacher, S.C. Piper and M. Wahlen (Oct 2009) The role of ENSO in interannual variability of oxygen isotope ratios of CO₂ from three decades of the global Scripps Institution of Oceanography (SIO) flask network. Proceedings of the International Carbon Dioxide Conference, Jena, Germany. (Outstanding Poster Award)
- Welp, L.R.** and X. Lee (Dec 2008) Variability in the hourly deuterium excess of water vapor near the ground, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA. (Talk)
- Welp, L.R.**, X. Lee, T.J. Griffis, K. Kim, K. Billmark and J. Baker (Dec 2007) Oxygen isotopes of water in evapotranspiration and at the sites of leaf evaporation in a soybean canopy, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA. (Talk)
- Welp, L.R.**, J.W. White, J.T. Randerson, P.P. Tans, C.J. Still, B.H. Vaughn, D.C. Noone, N.H. Buenning and W.J. Riley (Dec 2006) A decreasing seasonal cycle amplitude of δ¹⁸O-CO₂ as a metric of high latitude temperatures increases, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA. (Talk)
- Welp, L.R.**, X. Lee, T.J. Griffis, K. Kim, T. Bavin, K. Billmark and J. Baker (Dec 2006) Simultaneous Diurnal measurements of stable isotopes of water vapor and CO₂ exchange above a soybean ecosystem using high frequency laser spectroscopy, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Still, C., D. Noone, N. Buenning, J. Randerson, **L. Welp**, J. White, B. Vaughan and W. Riley (Dec 2006) What controls the global value of oxygen-18 in atmospheric CO₂?, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Welp, L.R.**, J.T. Randerson and H. Liu (Dec 2005) The sensitivity of carbon fluxes to spring warming and summer drought depends on plant functional type in boreal forest ecosystems, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Welp, L.R.**, J.T. Randerson, G.M. Zimova, A.I. Davydova, S.P. Davydov and S.A. Zimov (Dec 2004) Using stable isotopes to partition seasonal precipitation inputs in the Kolyma River: Implications for basin-scale water use, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.
- Noone, D., C. Still, W. Riley, **L. Welp**, J. Randerson (Dec 2004) Isotopic diagnosis of processes governing interannual variability of CO¹⁸O fluxes in the tropics, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.

- Welp, L.R.**, J.T. Randerson and W.J. Riley (Sep 2004) Sensitivity of the phase and amplitude of the seasonal cycle of atmospheric $\delta^{18}\text{O}-\text{CO}_2$ to C_i and model approach, Proceedings of the BASIN Meeting "Oxygen Isotopes as a Tracer Linking Global O_2 , CO_2 , and H_2O cycles", Point Reyes, CA.
- Welp, L.R.** and J.T. Randerson (May 2004) The impacts of stand age on seasonal exchange of $\delta^{18}\text{O}-\text{CO}_2$ in boreal forest ecosystems, Proceedings of the International Boreal Forest Association Meeting "Climate Disturbance Interactions in Boreal Forest Ecosystems", Fairbanks, AK.
- Welp, L.R.** and J.T. Randerson (Apr 2004) The impacts of stand age on seasonal exchange of $\delta^{18}\text{O}-\text{CO}_2$ in boreal forest ecosystems, Proceedings of the SIBAE-BASIN Meeting "Partitioning of fluxes between the biosphere and atmosphere across spatial scales", Interlaken, Switzerland.
- Welp, L.R.** and J.T. Randerson (Dec 2003) Disturbance-induced changes in the oxygen isotopic composition of atmospheric CO_2 at high northern latitudes, Proceedings of the Fall Meeting of the American Geophysical Union, San Francisco, CA.