

# Matthias Zeeman | Curriculum Vitæ

Garmisch-Partenkirchen – Germany

☎ +49 8821 183138 • ✉ matthias.zeeman@kit.edu  
🌐 <http://mzeeman.info> • Last update: November 15, 2018

## Experience

---

### Post Doc Fellow.....

**Karlsruhe Institute of Technology** **Garmisch-Partenkirchen, Germany**  
*Group of Prof. Dr. Stefan Emeis, IMK-IFU* *Dec 2017 – present*  
○ explore scale interactions and surface exchange in the atmospheric boundary layer • [30, 29]  
○ coordinate ScaleX: cross-scale, multi-disciplinary, intensive observation campaigns • [M6]

### Post Doc.....

**Karlsruhe Institute of Technology** **Garmisch-Partenkirchen, Germany**  
*Group of Prof. Dr. Stefan Emeis, IMK-IFU* *2016 – 2017*  
○ study Urban–Rural interactions, with focus on air quality in Stuttgart City in BMBF project [UC]<sup>2</sup>

### Post Doc.....

**Karlsruhe Institute of Technology** **Garmisch-Partenkirchen, Germany**  
*Group of Dr. Matthias Mauder, IMK-IFU* *2012 – 2016*  
○ investigate managed grassland functioning and productivity • [32, 31, 28–26, 22, 21, 19]  
○ study structure and motion in the atmosphere using (remote-) sensing networks • [24, 23]  
○ manage essential pre-Alpine observatory infrastructure and data (TERENO) • [25]

### Post Doc.....

**Oregon State University** **Corvallis OR, USA**  
*Lab of Prof. Dr. Christoph Thomas, CEOAS* *2011 – 2012 (6 mo.)*  
○ investigate near-surface turbulent structures in the atmospheric surface layer • [20, 17, 12] [M3]

### Post Doc Fellow.....

**Oregon State University** **Corvallis OR, USA**  
*Lab of Prof. Dr. Christoph Thomas, COAS* *2009 – 2011*  
○ study ecosystem–atmosphere exchange with novel flux analysis & stable isotopes • [16–14]

### Post Doc.....

**Paul Scherrer Institute** **Villingen, Switzerland**  
*Lab of Atmospheric Chemistry, Dr. Rolf Siegwolf* *2009 (3 mo.)*  
○ develop a calibration system for stable isotope laser spectroscopy

### Post Doc.....

**ETH Zurich** **Zurich, Switzerland**  
*Lab of Terrestrial Ecosystem Physiology, Prof. Dr. Alexander Knohl* *2009 (3 mo.)*  
○ evaluate novel stable isotope flux observations from a mixed mountain forest

Junior researcher.....  
**Vrije Universiteit Amsterdam** **Amsterdam, The Netherlands**  
*Group of Prof. Dr. Han Dolman* 2004

- o manage the Hostermeer peatlands experimental station (CarboEurope IP)
- o develop a Land-surface Experiments database (ESA mission candidate SPECTRA)

Junior researcher.....  
**Vrije Universiteit Amsterdam** **Amsterdam, The Netherlands**  
*Group of Prof. Dr. Han Dolman* 2003 (2 mo.)

- o maintain the Chokurdakh tundra experimental site (TCOS) and train on-site researchers

Internship.....  
**Vrije Universiteit Amsterdam** **Amsterdam, The Netherlands**  
*Group of Prof. Dr. Han Dolman* 2002 (9 mo.)

- o establish observation stations in taiga forest (Yakutsk, RUS), arctic tundra (Chokurdakh, RUS) and peatland (Horstermeer, NLD) and develop a rugged field data-recording system • [1]

## Education

---

**ETH Zurich** **Switzerland**  
*Dr.Sc. ETH Zurich* 2005 – 2008

**Vrije Universiteit Amsterdam** **The Netherlands**  
*M.Sc. Environmental Sciences* 1997 – 2003

## Doctoral thesis

---

**title:** Environmental processes affecting the carbon dioxide budget of grasslands along an elevational gradient in Switzerland

**supervisors:** Prof. Dr. Nina Buchmann, Dr. PD Werner Eugster & Dr. Roland Werner

**description:** An investigation of the sensitivity of managed grassland to land use and climatic drivers, informed by micrometeorology and stable isotope biogeochemistry • [18, 13, 11–2] [T1]

## Awards

---

**German Research Foundation (DFG)** **24 mo.**  
*Research grant (Sachbeihilfe Eigene Stelle)* 2016

**Swiss National Science Foundation (SNSF)** **6 mo.**  
*Research grant, extension (Prospective Researcher)* 2010

**BASIN**  
*Travel grant (SIBAE/BASIN conference, Ascona, Switzerland)* 2010

**ETH Zurich** **ETH Medal award**  
*Doctoral Thesis award, top 8%* 2009

**Swiss National Science Foundation (SNSF)** **12 mo.**  
*Research grant (Prospective Researcher)* 2009

**ETH Zurich** **6 mo.**  
*Research grant (Rectorate doctorate scholarship)* 2008

<b>Huber-Kudlich-Stiftung</b> <i>Travel grant (Joint European Stable Isotope User Meeting, Hyères, France)</i>	2008
<b>Huber-Kudlich-Stiftung</b> <i>Travel grant (SOIHS summer school, Palermo, Italy)</i>	2008
<b>ESF/SIBAE</b> <i>Travel grant (SIBAE spring school, Vienna, Austria)</i>	2007
<b>Huber-Kudlich-Stiftung</b> <i>Travel grant (AGU Fall Meeting, San Fransisco, USA)</i>	2007

## Teaching

---

<b>Lecturer</b> .....	
<b>R for Beginners</b> <i>IFU Programming Course, Garmisch-Partenkirchen, Germany</i>	5–6 May 2017
<b>Climatological measurement techniques</b> <i>KIT Course ‘Klimatologische Messverfahren’, Karlsruhe, Germany</i>	17–18 May 2016
<b>Modeling of Land Surface – Atmosphere Interactions</b> <i>MICMoR summer school, Garmisch-Partenkirchen, Germany</i>	16–26 Aug 2015
<b>Flux Measurement Fundamentals</b> <i>TU Munich Technical short course, Garmisch-Partenkirchen, Germany</i>	2012, 2014, 2015
<b>Academic advisory</b> .....	
PhD-student (KIT) on topic ‘boundary-layer dynamics’	Sep. 2015 – present
MSc-student (TU Munich) on topic ‘grassland dynamics’	May – Nov. 2015
BSc-student (KIT) on topic ‘farm methane emissions’	Nov. – Apr. 2016
BSc-student (KIT) on topic ‘spatial temperature observations’	May – Aug. 2016

## Synergistic activities

---

<b>Convener</b> .....	
<b>workshop:</b> ‘ScaleX’, 29–30 Mar 2017, Garmisch-Partenkirchen, Germany	
<b>workshop:</b> ‘Daily work with stable isotope spectroscopy instruments’, 12 Dec 2010, Berkeley, USA	
<b>sessions:</b> AGU Fall Meeting, 13–17 Dec 2010 & 5–9 Dec 2011, San Francisco, USA	
<b>Reviewer</b> .....	
<b>journals:</b> Agricultural and Forest Meteorology • Boundary-Layer Meteorology • Oecologia Journal of Hydrology • Atmospheric Measurement Techniques	
<b>Miscellaneous</b> .....	
<b>services:</b> FLUXNET contributor • FLUXNET Young Scientist Network coordinator (2009–2011)	
<b>affiliations:</b> American Geophysical Union • European Geosciences Union • FLUXNET	

## Other skills and abilities

---

**language:** English (fluent) • German (good) • Dutch (fluent)  
**computing:** Python • R • Matlab • Perl/RegEx • LabVIEW • NetCDF • PHP/SQL • XML/HTML/CSS

# Publications

---

## Refereed Journal Articles

According to the ISI Web of Sciences, the following contributions were cited 700+ times, on average 30 times per article, with an *h*-index of 13.

- [32] M. J. Zeeman, H. Shupe, C. Baessler, and N. K. Ruehr. "Productivity and vegetation structure of three differently managed temperate grasslands". In: *Agriculture, Ecosystems & Environment* 270-271 (Feb. 2019), pp. 129–148. DOI: 10.1016/j.agee.2018.10.003.
- [31] R. Kiese, B. Fersch, C. Baessler, C. Brosy, K. Butterbach-Bahl, C. Chwala, M. Dannenmann, J. Fu, R. Gasche, R. Grote, C. Jahn, J. Klatt, H. Kunstmann, M. Mauder, T. Rödiger, G. Smiatek, M. Soltani, R. Steinbrecher, I. Völksch, J. Werhahn, B. Wolf, M. Zeeman, and H. Schmid. "The TERENO Pre-Alpine Observatory: Integrating Meteorological, Hydrological, and Biogeochemical Measurements and Modeling". In: *Vadose Zone Journal* 17.1 (2018), p. 0. DOI: 10.2136/vzj2018.03.0060.
- [30] P. Zhao, A. Hammerle, M. Zeeman, and G. Wohlfahrt. "On the calculation of daytime CO<sub>2</sub> fluxes measured by automated closed transparent chambers". In: *Agricultural and Forest Meteorology* 263 (Dec. 2018), pp. 267–275. DOI: 10.1016/j.agrformet.2018.08.022.
- [29] C. Brenner, M. Zeeman, M. Bernhardt, and K. Schulz. "Estimation of evapotranspiration of temperate grassland based on high-resolution thermal and visible range imagery from unmanned aerial systems". In: *International Journal of Remote Sensing* (May 2018), pp. 1–34. DOI: 10.1080/01431161.2018.1471550.
- [28] L. Hörtnagl, M. Barthel, N. Buchmann, W. Eugster, K. Butterbach-Bahl, E. Díaz-Pinés, M. Zeeman, K. Klumpp, R. Kiese, M. Bahn, A. Hammerle, H. Lu, L. Ladreiter-Knauss, S. Burri, and L. Merbold. "Greenhouse gas fluxes over managed grasslands in Central Europe". In: *Global Change Biology* (Feb. 2018). DOI: 10.1111/gcb.14079.
- [27] C. Klein, C. Biernath, F. Heinlein, C. Thieme, A. K. Gilgen, M. Zeeman, and E. Priesack. "Vegetation Growth Models Improve Surface Layer Flux Simulations of a Temperate Grassland". In: *Vadose Zone Journal* 16.13 (Jan. 2018). DOI: 10.2136/vzj2017.03.0052.
- [26] M. Mauder, S. Genzel, J. Fu, R. Kiese, M. Soltani, R. Steinbrecher, M. Zeeman, T. Banerjee, F. De Roo, and H. Kunstmann. "Evaluation of energy balance closure adjustment methods by independent evapotranspiration estimates from lysimeters and hydrological simulations". In: *Hydrological Processes* 32.1 (Jan. 2018), pp. 39–50. DOI: 10.1002/hyp.11397.
- [25] M. Mauder and M. J. Zeeman. "Field intercomparison of prevailing sonic anemometers". In: *Atmospheric Measurement Techniques* 11.1 (Jan. 2018), pp. 249–263. DOI: 10.5194/amt-11-249-2018.
- [24] C. Brosy, K. Krampf, M. Zeeman, B. Wolf, W. Junkermann, K. Schäfer, S. Emeis, and H. Kunstmann. "Simultaneous multicopter-based air sampling and sensing of meteorological variables". In: *Atmospheric Measurement Techniques* 10.8 (Aug. 2017), pp. 2773–2784. DOI: 10.5194/amt-10-2773-2017.
- [23] B. Wolf, C. Chwala, B. Fersch, J. Garvelmann, W. Junkermann, M. J. Zeeman, A. Angerer, B. Adler, C. Beck, C. Brosy, P. Brugger, S. Emeis, M. Dannenmann, F. D. Roo, E. Diaz-Pines, E. Haas, M. Hagen, I. Hajnsek, J. Jacobeit, T. Jagdhuber, N. Kalthoff, R. Kiese, H. Kunstmann, O. Kosak, R. Krieg, C. Malchow, M. Mauder, R. Merz, C. Notarnicola, A. Philipp, W. Reif, S. Reineke, T. Rödiger, N. Ruehr, K. Schäfer, M. Schrön, A. Senatore, H. Shupe, I. Völksch, C. Wanninger, S. Zacharias, and H. P. Schmid. "The SCALEX Campaign: Scale-Crossing Land Surface and Boundary Layer Processes in the TERENO-preAlpine Observatory". In: *Bulletin of the American Meteorological Society* 98.6 (June 2017), pp. 1217–1234. DOI: 10.1175/bams-d-15-00277.1.
- [22] M. Zeeman, M. Mauder, R. Steinbrecher, K. Heidbach, E. Eckart, and H. Schmid. "Reduced snow cover affects productivity of upland temperate grasslands". In: *Agricultural and Forest Meteorology* 232 (Jan. 2017), pp. 514–526. DOI: 10.1016/j.agrformet.2016.09.002.

- [21] A. R. Desai, G. Wohlfahrt, M. J. Zeeman, G. Katata, W. Eugster, L. Montagnani, D. Gianelle, M. Mauder, and H.-P. Schmid. "Montane ecosystem productivity responds more to global circulation patterns than climatic trends". In: *Environmental Research Letters* 11.2 (Feb. 2016), p. 024013. doi: 10.1088/1748-9326/11/2/024013.
- [20] M. J. Zeeman, J. S. Selker, and C. K. Thomas. "Near-Surface Motion in the Nocturnal, Stable Boundary Layer Observed with Fibre-Optic Distributed Temperature Sensing". In: *Boundary-Layer Meteorology* 154.2 (Oct. 2015), pp. 189–205. doi: 10.1007/s10546-014-9972-9.
- [19] S. Fatichi, M. J. Zeeman, J. Fuhrer, and P. Burlando. "Ecohydrological effects of management on subalpine grasslands: From local to catchment scale". In: *Water Resources Research* 50.1 (Jan. 2014), pp. 148–164. doi: 10.1002/2013wr014535.
- [18] P. Michna, W. Eugster, R. V. Hiller, M. J. Zeeman, and H. Wanner. "Topoclimatological case-study of Alpine pastures near the Albula Pass in the eastern Swiss Alps". In: *Geographica Helvetica* 68.4 (Dec. 2013), pp. 249–263. doi: 10.5194/gh-68-249-2013.
- [17] L. Mahrt, C. Thomas, S. Richardson, N. Seaman, D. Stauffer, and M. Zeeman. "Non-stationary Generation of Weak Turbulence for Very Stable and Weak-Wind Conditions". In: *Boundary-Layer Meteorology* 147.2 (Nov. 2012), pp. 179–199. doi: 10.1007/s10546-012-9782-x.
- [16] C. Werner, H. Schnyder, M. Cuntz, C. Keitel, M. J. Zeeman, T. E. Dawson, F.-W. Badeck, E. Brugnoli, J. Ghashghaie, T. E. E. Grams, Z. E. Kayler, M. Lakatos, X. Lee, C. Máguas, J. Ogée, K. G. Rascher, R. T. W. Siegwolf, S. Unger, J. Welker, L. Wingate, and A. Gessler. "Progress and challenges in using stable isotopes to trace plant carbon and water relations across scales". In: *Biogeosciences* 9.8 (Aug. 2012), pp. 3083–3111. doi: 10.5194/bg-9-3083-2012.
- [15] M. J. Zeeman, W. Eugster, and C. K. Thomas. "Concurrency of Coherent Structures and Conditionally Sampled Daytime Sub-canopy Respiration". In: *Boundary-Layer Meteorology* 146.1 (June 2012), pp. 1–15. doi: 10.1007/s10546-012-9745-2.
- [14] M. J. Zeeman, K. Tu, and A. Knohl. "Continuous operation of spectroscopy instruments for stable isotope analysis". In: *Eos Trans. AGU* 92(46) (2011), p. 211. doi: 10.1029/2011E0250003.
- [13] R. Kindler, J. Siemens, K. Kaiser, D. C. Walmsley, C. Bernhofer, N. Buchmann, P. Cellier, W. Eugster, G. Gleixner, T. Grünwald, A. Heim, A. Ibrom, S. K. Jones, M. Jones, K. Klumpp, W. Kutsch, K. S. Larsen, S. Lehuger, B. Loubet, R. Mckenzie, E. Moors, B. Osborne, K. Pilegaard, C. Rebmann, M. Saunders, M. W. I. Schmidt, M. Schrumpf, J. Seyfferth, U. Skiba, J.-F. Soussana, M. A. Sutton, C. Tefs, B. Vowinkel, M. J. Zeeman, and M. Kaupenjohann. "Dissolved carbon leaching from soil is a crucial component of the net ecosystem carbon balance". In: *Global Change Biol.* 17.2 (2011), pp. 1167–1185. ISSN: 1365-2486. doi: 10.1111/j.1365-2486.2010.02282.x.
- [12] C. K. Thomas, A. M. Kennedy, J. S. Selker, A. Moretti, M. H. Schroth, A. R. Smoot, N. B. Tuffiaro, and M. J. Zeeman. "High-Resolution Fibre-Optic Temperature Sensing: A New Tool to Study the Two-Dimensional Structure of Atmospheric Surface-Layer Flow". In: *Boundary-Layer Meteorology* 142.2 (Nov. 2011), pp. 177–192. doi: 10.1007/s10546-011-9672-7.
- [11] M. J. Zeeman, R. Hiller, A. K. Gilgen, P. Michna, P. Plüss, N. Buchmann, and W. Eugster. "Management and climate impacts on net CO<sub>2</sub> fluxes and carbon budgets of three grasslands along an elevational gradient in Switzerland". In: *Agricultural and Forest Meteorology* 150.4 (Apr. 2010), pp. 519–530. doi: 10.1016/j.agrformet.2010.01.011.
- [10] J. Fritsche, G. Wohlfahrt, C. Ammann, M. Zeeman, A. Hammerle, D. Obrist, and C. Alewell. "Summertime elemental mercury exchange of temperate grasslands on an ecosystem-scale". In: *Atmospheric Chemistry and Physics* 8.24 (Dec. 2008), pp. 7709–7722. doi: 10.5194/acp-8-7709-2008.
- [9] M. J. Zeeman, R. A. Werner, W. Eugster, R. T. W. Siegwolf, G. Wehrle, J. Mohn, and N. Buchmann. "Optimization of automated gas sample collection and isotope ratio mass spectrometric analysis of  $\delta^{13}\text{C}$  of CO<sub>2</sub> in air". In: *Rapid Communications in Mass Spectrometry* 22.23 (Dec. 2008), pp. 3883–3892. doi: 10.1002/rcm.3772.

- [8] J. Mohn, M. Zeeman, R. Werner, W. Eugster, and L. Emmenegger. “Continuous field measurements of  $\delta^{13}\text{C}\text{-CO}_2$  and trace gases by FTIR spectroscopy”. In: *Isotopes in Environmental and Health Studies* 44.3 (Sept. 2008), pp. 241–251. doi: 10.1080/10256010802309731.
- [7] B. Tuzson, J. Mohn, M. Zeeman, R. Werner, W. Eugster, M. Zahniser, D. Nelson, J. McManus, and L. Emmenegger. “High precision and continuous field measurements of  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  in carbon dioxide with a cryogen-free QCLAS”. In: *Applied Physics B* 92.3 (June 2008), pp. 451–458. doi: 10.1007/s00340-008-3085-4.
- [6] J. Fritsche, D. Obrist, M. Zeeman, F. Conen, W. Eugster, and C. Alewell. “Elemental mercury fluxes over a sub-alpine grassland determined with two micrometeorological methods”. In: *Atmospheric Environment* 42.13 (Apr. 2008), pp. 2922–2933. doi: 10.1016/j.atmosenv.2007.12.055.
- [5] R. Hiller, M. J. Zeeman, and W. Eugster. “Eddy-Covariance Flux Measurements in the Complex Terrain of an Alpine Valley in Switzerland”. In: *Boundary-Layer Meteorology* 127.3 (Feb. 2008), pp. 449–467. doi: 10.1007/s10546-008-9267-0.
- [4] B. Tuzson, M. J. Zeeman, M. S. Zahniser, and L. Emmenegger. “Quantum cascade laser based spectrometer for in situ stable carbon dioxide isotope measurements”. In: *Infrared Physics & Technology* 51.3 (Jan. 2008), pp. 198–206.
- [3] W. Eugster, K. Zeyer, M. Zeeman, P. Michna, A. Zingg, N. Buchmann, and L. Emmenegger. “Methodical study of nitrous oxide eddy covariance measurements using quantum cascade laser spectrometry over a Swiss forest”. In: *Biogeosciences* 4.5 (Oct. 2007), pp. 927–939. doi: 10.5194/bg-4-927-2007.
- [2] W. Eugster and M. J. Zeeman. “Micrometeorological techniques to measure ecosystem-scale greenhouse gas fluxes for model validation and improvement”. In: *International Congress Series* 1293 (July 2006), pp. 66–75. doi: 10.1016/j.ics.2006.05.001.
- [1] M. K. van der Molen, M. J. Zeeman, J. Lebis, and A. Dolman. “EClog: A handheld eddy covariance logging system”. In: *Computers and Electronics in Agriculture* 51.1-2 (Apr. 2006), pp. 110–114. doi: 10.1016/j.compag.2005.12.002.

## Theses.....

- [T1] M. J. Zeeman. “Environmental processes affecting the carbon dioxide budget of grasslands along an elevational gradient in Switzerland.” 978-3-909386-87-1. PhD thesis. ETH Zurich, 2008. doi: 10.3929/ethz-a-005766109.

## Miscellaneous.....

- [M7] P. Brugger, F. D. Roo, K. Kröniger, E. Rotenberg, F. Tatarinov, D. Yakir, M. Zeeman, and M. Mauder. “Contrasting turbulent transport regimes explain cooling effect in a semi-arid forest compared to surrounding shrubland”. In: *Agricultural and Forest Meteorology* (submitted).
- [M6] M. J. Zeeman, ed. *ScaleX: scale-crossing intensive research campaigns*. Karlsruhe Institute of Technology. 2016–2018. URL: <https://scalex.imk-ifu.kit.edu>.
- [M5] A. Klosterhalfen, A. Graf, N. Brüggemann, C. Drüe, O. Esser, M. P. G. Dugo, G. Heinemann, C. M. J. Jacobs, M. Mauder, A. F. Moene, P. Ney, T. Pütz, C. Rebmann, M. R. Rodríguez, T. M. Scanlon, M. Schmidt, R. Steinbrecher, C. K. Thomas, V. Valler, M. J. Zeeman, and H. Vereecken. “Source Partitioning of H<sub>2</sub>O and CO<sub>2</sub> Fluxes Based on High Frequency Eddy Covariance Data: a Comparison between Study Sites”. In: *Biogeosciences Discussions* (Nov. 2018), pp. 1–30. doi: 10.5194/bg-2018-458.
- [M4] E. Ibraim, B. Wolf, E. Harris, R. Gasche, J. Wei, L. Yu, R. Kiese, S. Eggleston, K. Butterbach-Bahl, M. Zeeman, B. Tuzson, L. Emmenegger, J. Six, S. Henne, and J. Mohn. “Attribution of N<sub>2</sub>O sources in a grassland soil with laser spectroscopy based isotopocule analysis”. In: *Biogeosciences Discussions* (Oct. 2018), pp. 1–27. doi: 10.5194/bg-2018-426.
- [M3] M. J. Zeeman. *High-resolution air temperature observations near the surface using fiber-optic distributed temperature sensing*. ZENODO. 2013. URL: <http://dx.doi.org/10.5281/zenodo.7611>.

- [M2] S. Wolf, L. Kouteen, and M. Zeeman. "Growing the FLUXNET Community: The Young Scientists Network". In: *Fluxletter* 4.1 (Apr. 2011), pp. 4–5.
- [M1] M. J. Zeeman, B. Tuzson, L. Emmenegger, A. Knohl, N. Buchmann, and W. Eugster. "Conditional CO<sub>2</sub> flux analysis of a managed grassland with the aid of stable isotopes". In: *Biogeosciences Discussions* 6 (2009), pp. 3481–3510. doi: 10.5194/bgd-6-3481-2009.

## Conference Proceedings.....

- [C38] M. Zeeman, H. Shupe, C. Baessler, and N. Ruehr. "On the connectivity between management, species composition and productivity of temperate upland grasslands". In: *TERENO International Conference 2018 Contributions*. Oct. 10, 2018.
- [C37] M. Mauder, S. Genzel, J. Fu, R. Kiese, M. Soltani, R. Steinbrecher, M. Zeeman, T. Banerjee, F. D. Roo, and H. Kunstmann. "Evaluation of energy balance closure adjustment methods by independent evapotranspiration estimates from lysimeters and hydrological simulations". In: *TERENO International Conference 2018 Contributions*. Oct. 10, 2018.
- [C36] C. Hald, M. Mauder, P. Laux, M. Zeeman, and H. Kunstmann. "WRF-LES simulations of real episodes in complex terrain and comparison with height-resolving ground-based remote sensing data". In: *Geophysical Research Abstracts*. Apr. 2018.
- [C35] M. Kunz, J. V. Lavric, R. Gasche, C. Gerbig, R. H. Grant, F.-T. Koch, M. Schumacher, B. Wolf, and M. Zeeman. "Nocturnal boundary layer budgets of carbon dioxide enabled by unmanned aircraft". In: *Geophysical Research Abstracts*. Apr. 2018.
- [C34] M. Mohr, T. Laemmel, M. Maier, M. Zeeman, B. Longdoz, and D. Schindler. "Investigation of the spatial variability and possible origins of wind-induced air pressure fluctuations responsible for pressure pumping". In: *Geophysical Research Abstracts*. EGU2017-15734. 2017.
- [C33] C. Munkel, K. Schäfer, and M. J. Zeeman. "Investigating Impacts of the Wind Field and Unknown Flying Objects on High-Res Ceilometer Profiles during ScaleX 2016". In: *97th American Meteorological Society Annual Meeting*. 308878. 2017.
- [C32] A. Philipp, E. Petersen, A. Groos, P. Ferenci, S. Engerer, B. Fiedler, S. Emeis, K. Schäfer, C. Brosy, M. Zeeman, and J. Jacobeit. "Distributed sounding of the boundary layer using multiple unmanned aerial systems during the ScaleX campaign 2016". In: *Geophysical Research Abstracts*. Vol. 19. EGU2017-15183. 2017.
- [C31] C. Brosy, K. Krampf, S. Emeis, W. Junkermann, K. Schäfer, B. Wolf, M. Zeeman, and H. Kunstmann. "Methane source and sink localization with a hexacopter in the lowest planetary boundary layer: proof of concept and first results". In: *Book of Abstracts of the 4th Conference of the International Society for Atmospheric Research using Remotely-piloted Aircraft (ISARRA)*. 2016.
- [C30] T. Banerjee, M. J. Zeeman, F. D. Roo, P. Brugger, and M. Mauder. "Investigating the Interdependencies of the Energy Balance Closure and the Turbulent Kinetic Energy Budget". In: *AGU Fall Meeting Abstracts*. B11J-04. 2016.
- [C29] O. T. Denmead, L. Heng, and M. Zeeman. "Quantifying the Components of Evapotranspiration from Plant Communities, Soil Evaporation and Plant Transpiration, with Isotopes and Micrometeorology". In: *Geophysical Research Abstracts*. 2016.
- [C28] F. De Roo, M. Zeeman, P. Brugger, and M. Mauder. "The Dependence of Energy Budget Components on the surface Characteristics of a shallow pre-Alpine Valley". In: *22nd Symposium Boundary Layers and Turbulence*. 2016.
- [C27] L. Hoertnagl, M. Bahn, N. Buchmann, E. Dias-Pinez, W. Eugster, R. Kiese, K. Klumpp, L.-K. Thomas, H. Lu, G. Wohlfahrt, M. Zeeman, and L. Merbold. "The influence of management on GHG fluxes over Central European grasslands". In: *Geophysical Research Abstracts*. 2016.
- [C26] M. Kunz, J. V. Lavric, R. H. Grant, C. Gerbig, M. Heimann, J. E. Flatt, M. J. Zeeman, and B. Wolf. "Atmospheric Profiles of Carbon Dioxide Obtained with a UAS: Constraints on Square Kilometre Scale Carbon Budgets". In: *AGU Fall Meeting Abstracts*. NH13B-06. 2016.

- [C25] M. Mauder and M. Zeeman. "Field Intercomparison of Six Different Three-Dimensional Sonic Anemometers". In: *AGU Fall Meeting Abstracts*. A23B-0198. 2016.
- [C24] H. P. E. Schmid, M. J. Zeeman, M. Mauder, R. Steinbrecher, K. Heidbach, and E. Eckart. "Sensitivity of upland grasslands to management and climate forcing". In: *AGU Fall Meeting Abstracts*. B44A-01. 2016.
- [C23] K. Wolz, B. Adler, C. Brenner, F. D. Roo, S. Emeis, N. Kalthoff, M. Mauder, K. Schäfer, G. Wohlfahrt, P. Zhao, and M. J. Zeeman. "Multi-Scale Observation and Modelling of Energy and Matter Exchange in the Atmospheric Boundary-Layer (ScaleX Campaigns)". In: *AGU Fall Meeting Abstracts*. H32B-06. 2016.
- [C22] M. J. Zeeman, P. Brugger, and M. Mauder. "Evaluation of scan-patterns for a triple Doppler lidar setup". In: *Kurzfassungen der Meteorologentagung DACH*. DACH2016-81. 2016.
- [C21] M. J. Zeeman, T. Banerjee, D. Belusic, P. Brugger, M. Mauder, H. P. Schmid, and N. Vercauteren. "Combining in-situ and ground-based remote sensing observation: how to connect the dots?". In: *Kurzfassungen der Meteorologentagung DACH*. DACH2016-79. 2016.
- [C20] M. J. Zeeman, B. Adler, T. Banerjee, P. Brugger, F. D. Roo, S. Emeis, M. Mauder, K. Schaefer, H. P. Schmid, and B. Wolf. "Boundary layer dynamics in a small shallow valley near the Alps (ScaleX campaign)". In: *Kurzfassungen der Meteorologentagung DACH*. DACH2016-84. 2016.
- [C19] M. J. Zeeman, T. Banerjee, D. Belusic, P. Brugger, M. Mauder, and N. Vercauteren. "Analysis of Atmospheric Flow in Mountainous Terrain Using Multi-Scale Observations and Dimension-Reduction Techniques". In: *AGU Fall Meeting Abstracts*. A11R-05. 2016.
- [C18] K. Schäfer, M. Zeeman, C. Brosy, C. Munkel, B. Fersch, M. Mauder, and S. Emeis. "Methane distributions and transports in the nocturnal boundary layer at a rural station". In: *Remote Sensing of Clouds and the Atmosphere XXI*. Ed. by A. Comerón, E. I. Kassianov, and K. Schäfer. SPIE, Oct. 2016. DOI: 10.1117/12.2241110.
- [C17] M. J. Zeeman, B. Adler, T. Banerjee, P. Brugger, F. D. Roo, S. Emeis, M. Mauder, K. Schäfer, H. P. E. Schmid, and B. Wolf. "Boundary layer dynamics in a small shallow valley near the Alps (ScaleX campaign)". In: *AGU Fall Meeting Abstracts*. A41G-0135. Dec. 17, 2015.
- [C16] B. Wolf, C. Chwala, F. D. Roo, B. Fersch, J. Garvelmann, E. Haas, W. Junkermann, N. Ruehr, K. Schaefer, H. Vogelmann, M. Zeeman, A. Arneth, K. Butterbach-Bahl, M. Dannenmann, S. Emeis, R. Kiese, H. Kunstmann, M. Mauder, P. Suppan, R. Sussmann, and H.-P. Schmid. "The ScaleX experiment in the TERENO-prealpine observatory". In: *Book of Abstracts of the 31st International Conference on Alpine Meteorology*. Innsbruck, Austria, Aug. 31, 2015. Innsbruck, Austria, Aug. 21, 2015.
- [C15] O. T. Denmead, L. Heng, L. Mayr, M. Zeeman, and P. Cepuder. "Quantifying Soil Evaporation and Plant Transpiration from Plant Communities with Isotopes and Micrometeorology". In: *31st Conference on Agricultural and Forest Meteorology*. 2014.
- [C14] A. R. Desai, G. Wohlfahrt, M. J. Zeeman, G. Katata, M. Mauder, and H. P. Schmid. "Ecosystem Greenhouse Gas Fluxes Respond Directly to Weather Not Climate: A Case Study on the Relationship of Global Atmospheric Circulation, Foehn Frequency, and Winter Weather to Northern Alps Regional Grassland Phenology and Carbon Cycling". In: *AGU Fall Meeting Abstracts*. B41C-0046. 2014.
- [C13] H. P. Schmid, D. Dragoni, E. R. Brzostek, R. P. Phillips, A. F. Rahman, and M. Zeeman. "It is the timing of climatic extremes that determines their impact on carbon cycling". In: *31st Conference on Agricultural and Forest Meteorology*. 2014.
- [C12] M. J. Zeeman, C. K. Thomas, J. S. Selker, and M. Mauder. "Recent developments in the use of DTS to monitor atmospheric flows". In: *AGU Fall Meeting Abstracts*. NS41C-05. invited. 2014.
- [C11] M. J. Zeeman, J. S. Selker, and C. K. Thomas. "Near the Surface Air Temperature Dynamics from Distributed Temperature Sensing". In: *21st Symposium on Boundary Layers and Turbulence*. 2014.
- [C10] M. Zeeman, R. Steinbrecher, E. Eckart, K. Heidbach, and M. Mauder. "The influence of meteorological variability on the seasonal course of pre-Alpine managed grasslands". In: *TERENO International Conference 2014 Book of Abstracts*. 2014.



- [C9] S. Fatichi, M. Zeeman, J. Fuhrer, and P. Burlando. “Effects of subalpine grassland management on hydrology and vegetation productivity”. In: *Geophysical Research Abstracts*. May 1, 2014.
- [C8] M. J. Zeeman, C. K. Thomas, B. E. Law, S. Etzold, W. Eugster, and N. Buchmann. “Conditional Sampling of Sub-Canopy Respiration in Forests”. In: *AGU Fall Meeting Abstracts*. B23E-05. 2011.
- [C7] M. J. Zeeman, P. Sturm, S. Etzold, W. Eugster, N. Buchmann, A. Knohl, and C. K. Thomas. “A novel approach combining canopy flow analysis and stable isotopes to understand and quantify turbulent carbon exchange in forests”. In: *Annual Meeting Proceedings American Meteorological Society*. Amer. Meteorol. Soc. 2010.
- [C6] M. J. Zeeman, A. Knohl, P. Sturm, N. Buchmann, and C. K. Thomas. “Conditional flux analysis and stable isotopes”. In: *AGU Fall Meeting Abstracts*. B53C-0423. 2009.
- [C5] P. Sturm, M. Barthel, S. Etzold, W. Eugster, L. Gentsch, M. Zeeman, and A. Knohl. “Ecosystem Fluxes of Stable Isotopes in Carbon Dioxide and Water Vapor Above a Forest Measured by Laser Spectroscopy”. In: *AGU Fall Meeting Abstracts*. B23C-0446. 2008.
- [C4] B. Tuzson, J. Mohn, M. J. Zeeman, R. A. Werner, W. Eugster, and L. Emmenegger. “QCLAS: A compact isotopologue specific analyzer for atmospheric CO<sub>2</sub>”. In: *Geophysical Research Abstracts*. A0342. 2008.
- [C3] M. J. Zeeman, B. Tuzson, W. Eugster, R. A. Werner, N. Buchmann, and L. Emmenegger. “Grassland Stable Isotope Flux Measurements: Three Isotopomers of Carbon Dioxide Measured by QCL Spectroscopy”. In: *AGU Fall Meeting Abstracts*. B13B-1199. 2007.
- [C2] W. Eugster, M. Zeeman, R. Häsler, and N. Buchmann. “The ETH Flux Research Network (“Swiss Fluxnet”)”. In: *AGU Fall Meeting Abstracts*. B41G-05. 2006.
- [C1] M. J. Zeeman, J. Mohn, B. Tuzson, W. Eugster, R. A. Werner, L. Emmenegger, and N. Buchmann. “Stable carbon dioxide isotopes for partitioning grassland fluxes: a comparison of Mass Spectrometric and Spectroscopic (FTIR and QCL) techniques”. In: *AGU Fall Meeting Abstracts*. B41B-0190. 2006.

## Presentations.....

### Oral Presentations

- [P67] “On the connectivity between management, species composition and productivity of temperate upland grasslands”. TERENO International Conference 2018. Berlin, Germany, Oct. 10, 2018.
- [P66] “ScaleX: framework, organisation, data management and campaign planning for 2019”. Project meeting Helmholtz-Gemeinschaft MOSES AG Hitzewelle. Berlin, Germany, Oct. 8, 2018.
- [P64] “ScaleX: Multidisciplinary intensive campaigns in the TERENO–preAlpine observatory”. 10th TERENO Workshop. Garmisch-Partenkirchen, Germany, Sept. 29, 2017. [Invited](#).
- [P63] “StadtKlima Stuttgart: High resolution Urban windfield and Urban–Rural interactions (updated)”. 4th BMBF [UC]<sup>2</sup> B–3DO General Assembly. Stuttgart, Germany, Nov. 22, 2017.
- [P62] “StadtKlima Stuttgart: Observation Period 1”. 3th BMBF [UC]<sup>2</sup> B–3DO Stuttgart Workgroup Assembly. Stuttgart, Germany, Apr. 4, 2017.
- [P61] “StadtKlima Stuttgart: High resolution Urban windfield and Urban–Rural interactions”. 3th BMBF [UC]<sup>2</sup> B–3DO General Assembly. Hanover, Germany, June 19, 2017.
- [P60] “StadtKlima Stuttgart: Observation Period 1 & 2”. 4th BMBF [UC]<sup>2</sup> B–3DO Stuttgart Workgroup Assembly. Stuttgart, Germany, Nov. 22, 2017.
- [P59] “R for Beginners — Part III”. IFU Programming Course. Garmisch-Partenkirchen, Germany, Apr. 6, 2017.
- [P58] “The impact of complex terrain on biosphere–atmosphere exchange processes”. 3th ScaleX Workshop. Garmisch-Partenkirchen, Germany, Mar. 29, 2017.
- [P55] “The impact of complex terrain on biosphere–atmosphere exchange processes: what we learned from ScaleX 2015”. 2nd ScaleX Workshop. Garmisch-Partenkirchen, Germany, Feb. 10, 2016.

- [P54] “Multi-scale observation and modelling of energy and matter exchange in the atmospheric boundary-layer (ScaleX Campaigns)”. AGU Fall Meeting. San Francisco, USA, Dec. 14, 2016.
- [P53] “Analysis of atmospheric flow in mountainous terrain using multi-scale observations and dimension-reduction techniques”. AGU Fall Meeting. San Francisco, USA, Dec. 12, 2016.
- [P52] “Combining in-situ and ground-based remote sensing observation: how to connect the dots?”. Meteorologentagung DACH. Berlin, Germany, Mar. 17, 2016.
- [P51] “Sensitivity of upland grasslands to management and climate forcing”. Meteorologentagung DACH. Berlin, Germany, Mar. 17, 2016.
- [P45] “The ScaleX campaign: observations crossing scales in the TERENO preAlpine observatory”. 9th TERENO Workshop. Oberpfaffenhofen, Germany, Oct. 26, 2015.
- [P44] “Missing data techniques (GAP-filling)”. Short Course on “EC Flux Measurement Fundamentals”. Garmisch-Partenkirchen, Germany, July 31, 2015.
- [P43] “QA/QC – Flux Calculations, Adjustments, and Validity”. Short Course on “EC Flux Measurement Fundamentals”. Garmisch-Partenkirchen, Germany, July 30, 2015.
- [P41] “Recent developments in the use of DTS to monitor atmospheric flows”. AGU Fall Meeting. San Francisco, USA, Dec. 18, 2014. [Invited](#).
- [P40] “Near the surface air temperature dynamics from fiber-optic temperature sensing”. MICMoR Summer School. Garmisch-Partenkirchen, Germany, July 29, 2014.
- [P39] “Near the surface air temperature dynamics from fiber-optic temperature sensing”. AMS 21st Symposium on Boundary Layers and Turbulence. Leeds, UK, June 13, 2014.
- [P38] “Near the surface air temperature dynamics from fiber-optic temperature sensing”. FLAIR 2014 - Field Laser Applications in Industry and Research. Pratolino, Italy, May 5, 2014.
- [P34] “A second look at TERENO grassland data: towards a TERENO grassland comparison”. TERENO CT Atmosphere General Assembly. Würzburg, Germany, Jan. 20, 2014.
- [P33] “QA/QC: slow-response data”. TERENO CT Atmosphere General Assembly. Würzburg, Germany, Jan. 20, 2014.
- [P32] “QA/QC: gap-filling strategies and uncertainty”. TERENO CT Atmosphere General Assembly. Würzburg, Germany, Jan. 20, 2014.
- [P31] “High resolution temperature observations: a case study on weak-wind conditions near the surface”. KIT/IMK-IFU Institute Seminar. Garmisch-Partenkirchen, Germany, Dec. 13, 2013.
- [P30] “Can we distinguish anomalies in land fluxes from business as usual?”. ESA-iLEAPS Science Consultation Workshop. Munich, Germany, June 13, 2013.
- [P29] “A first look at TERENO grassland data”. TERENO CT Atmosphere General Assembly. Würzburg, Germany, Jan. 20, 2013.
- [P28] “Guest Lecture: Stable isotopes in Atmospheric Environmental Research”. Short Course on EC Flux Measurement Fundamentals. Garmisch-Partenkirchen, Germany, Aug. 3, 2012.
- [P27] “Research Career Pathways”. KIT/IMK-IFU PhD Seminar Series. Garmisch-Partenkirchen, Germany, July 5, 2012.
- [P26] “Turbulent exchange processes at the ecosystem scale”. KIT/IMK-IFU Division Meeting. Garmisch-Partenkirchen, Germany, June 21, 2012.
- [P25] “An experimentalist perspective on stable isotope spectroscopy”. Thermo-Fischer. Bremen, Germany, May 15, 2012.
- [P24] “Conditional sampling of sub-canopy respiration in forests”. AGU Fall Meeting. San Francisco, USA, Dec. 6, 2011.
- [P23] “Continuous field observations of stable isotope abundance (“Getting the data”)”. Workshop. UC Berkeley, USA, Dec. 12, 2010.

- [P22] “A novel approach combining canopy flow analysis and stable isotopes to understand and quantify turbulent carbon exchange in forests”. American Meteorological Society joint meeting. Keystone, CO, USA, Aug. 5, 2010. Presented by Christoph Thomas.
- [P21] “Stable isotopes and conditional flux analysis”. Conference “Stable Isotopes and Biogeochemical Cycles in Terrestrial Ecosystems”. Ascona, Switzerland, Mar. 23, 2010. [Invited](#).
- [P20] “Stable isotopes in water and carbon cycles”. Oregon State University “ATS-564 Course” Guest Lecture. Corvallis, USA, Nov. 16, 2009.
- [P19] “Conditional eddy flux & stable isotopes”. Paul Scherrer Institute “Atmospheric Chemistry Seminar”. Villigen, Switzerland, Oct. 10, 2009.
- [P18] “Environmental processes affecting the carbon dioxide budget of grasslands along an elevational gradient in Switzerland; a Swiss Fluxnet site comparison”. Swiss Fluxnet Workshop. Baden, Switzerland, Jan. 15, 2009.
- [P15] “Environmental processes affecting the carbon dioxide budget of grasslands along an elevational gradient in Switzerland”. Public PhD Defense. Zurich, Switzerland, Dec. 10, 2008.
- [P14] “Alpine grasslands – what happens to the ecosystem carbon exchange when conditions change”. Institute of Plant Sciences Colloquium. Zurich, Switzerland, Oct. 28, 2008.
- [P12] “Grassland greenhouse gas exchanges & stable isotopes flux partitioning”. SIBAE Spring School. Vienna, Austria, Apr. 5, 2007.
- [P11] “Quantification of Alpine grassland CO<sub>2</sub> budgets”. EGU General Assembly. Vienna, Austria, Apr. 18, 2007.
- [P10] “Effect of fall/winter warm phase 2006-2007”. The Joint Baden Workshop Series. Baden, Switzerland, Nov. 30, 2007.
- [P6] “Grassland greenhouse gas exchanges”. Seminar “Current Topics in Grassland Sciences”. Zurich, Switzerland, Oct. 30, 2006.
- [P5] “Grassland greenhouse gas exchanges in Switzerland”. Abisko Research Station Seminar. Abisko, Sweden, Sept. 25, 2006.
- [P3] “Environmental processes affecting the GHG budget of grasslands in an elevational transect in Switzerland”. Grassland Group Seminar. Zurich, Switzerland, May 30, 2005.

### Poster Presentations

- [P65] “Reduced snowcover affects productivity of upland temperate grasslands”. 10th TERENO Workshop. Garmisch-Partenkirchen, Germany, Sept. 29, 2017.
- [P57] “Zeeman’s ScaleX contributions: overview & status”. 3th ScaleX Workshop. Garmisch-Partenkirchen, Germany, Mar. 29, 2017.
- [P56] “ScaleX is in motion: 2015 – 2017”. 3th ScaleX Workshop. Garmisch-Partenkirchen, Germany, Mar. 29, 2017.
- [P50] “Field intercomparison of six different three-dimensional sonic anemometers”. AGU Fall Meeting. San Francisco, USA, Dec. 13, 2016.
- [P49] “Boundary layer dynamics in a small shallow valley near the Alps (ScaleX campaign)”. EGU General Assembly. Vienna, Austria, Apr. 2016. Presented by M. Mauder.
- [P48] “Boundary layer dynamics in a small shallow valley near the Alps (ScaleX campaign)”. Meteorologentagung DACH. Berlin, Germany, Mar. 17, 2016.
- [P47] “Evaluation of scan-patterns for a triple Doppler lidar setup”. Meteorologentagung DACH. Berlin, Germany, Mar. 17, 2016.
- [P46] “Boundary layer dynamics in a small shallow valley near the Alps (ScaleX campaign)”. AGU Fall Meeting. San Francisco, USA, Dec. 2016. Presented by M. Mauder.
- [P42] “Evaluation of scan-patterns for a triple Doppler lidar setup”. TERENO Workshop “Remote sensing and soil”. Oberpfaffenhofen, Germany, Oct. 26, 2015.

- [P37] "The influence of meteorological variability on the seasonal course of pre-Alpine managed grasslands". TERENO International Conference 2014. Bonn, Germany, Sept. 29, 2014.
- [P36] "The influence of meteorological variability on the seasonal course of pre-Alpine managed grasslands". 1st ICOS International Conference on Greenhouse Gases and Biogeochemical Cycles. Brussels, Belgium, Sept. 23, 2014. Presented by R. Steinbrecher.
- [P35] "Temperaturmessung mit Licht". KIT/IMK-IFU Tag der offenen Tür. Garmisch-Partenkirchen, Germany, July 18, 2014.
- [P17] "Conditional flux and stable isotopes". AGU Fall Meeting. San Fransisco, USA, Dec. 18, 2009.
- [P16] "Conditional flux and stable isotopes". International conference on "Atmospheric Transport and Chemistry in Forest Ecosystems" (IC EGER). Turnau, Germany, Oct. 5–8, 2009.
- [P13] "Grassland stable isotope fluxes of CO<sub>2</sub>". Joint European Stable Isotope User Meeting JESIUM. Presqûle de Giens, France, Aug. 31–Sept. 5, 2008.
- [P9] "Grassland stable isotope flux measurements: three isotopomers of carbon dioxide measured by QCL spectroscopy". AGU Fall Meeting. San Francisco, USA, Dec. 11, 2007.
- [P8] "Quantification of Alpine grassland CO<sub>2</sub> exchange". CarboEurope IP Meeting 2007. Poznan, Poland, Oct. 7–12, 2007.
- [P7] "Quantification of Alpine grassland CO<sub>2</sub> exchange". NCCR Climate Summer School 2007. Grindelwald, Switzerland, Aug. 26–31, 2007.
- [P4] "Using stable isotopes in flux partitioning of grassland systems: a comparison of isotope ratio mass spectrometry, FTIR and tuneable Quantum Cascade Laser approaches". Open Science Conference on the GHG Cycle in the Northern Hemisphere. Sissi-Lasshiti, Crete, Nov. 14–18, 2006.
- [P2] "Greenhouse gas exchange of grassland in an elevational transect". PSC Symposium on Plant Genome Evolution and Regulation. Zurich, Switzerland, Dec. 16, 2005.
- [P1] "Greenhouse gas exchange of grassland in an elevational transect". ETH Intitute of Plant Sciences PhD Symposium. Kappel am Albis, Switzerland, Oct. 20, 2005.