

Publications

Journal Publications (ISI Publications only)

Names of graduate/Ph.D. students and postdoctoral scientists in my group are underlined.

Researcher ID E-6095-2011, <https://orcid.org/0000-0003-0826-2980>

(Web of Science: 406 publications, 42'825 cit., avg. citation 106, h-index 88; 14.2.2024)

- J1. **Buchmann N**, Oren R, Gebauer G, Dietrich P, Schulze ED (1992) The use of stable isotopes in ecosystem research. First results of a field study with ¹⁵N. *Isotopenpraxis* 28: 51-59.
- J2. Oren R, Werk KS, **Buchmann N**, Zimmermann R (1993) Chlorophyll-nutrient relationships identify nutritionally caused decline in *Picea abies* stands. *Canadian Journal of Forest Research* 23: 1187-1195.
- J3. **Buchmann N**, Oren R, Zimmermann R (1995) Response of magnesium-deficient saplings in a young, open stand of *Picea abies* (L.) Karst. to elevated soil magnesium, nitrogen and carbon. *Environmental Pollution* 87: 31-43.
- J4. **Buchmann N**, Schulze ED, Gebauer G (1995) ¹⁵N ammonium and ¹⁵N nitrate uptake of a 15-year-old *Picea abies* plantation. *Oecologia* 102: 361-370.
- J5. **Buchmann N**, Brooks R, Rapp KD, Ehleringer JR (1996) Carbon isotope composition of C₄ grasses is influenced by light and water supply. *Plant, Cell and Environment* 19: 392-402.
- J6. **Buchmann N**, Gebauer G, Schulze ED (1996) Partitioning of ¹⁵N labeled ammonium and nitrate among soil, litter, below- and above-ground biomass of trees and understory in a 15-year-old *Picea abies* plantation. *Biogeochemistry* 33: 1-23.
- J7. **Buchmann N**, Kao WY, Ehleringer JR (1996) Carbon dioxide concentrations within forest canopies - Variation with time, stand structure, and vegetation type. *Global Change Biology* 2: 421-432.
- J8. Schulze ED, Mooney HA, Sala OE, Jobbagy E, **Buchmann N**, Bauer G, Canadell J, Jackson RB, Loreti J, Oesterheld M, Ehleringer JR (1996) Rooting depth, water availability, and vegetation cover along an aridity gradient in Patagonia. *Oecologia* 108: 503-511.
- J9. **Buchmann N**, Guehl JM, Barigah TS, Ehleringer JR (1997) Interseasonal comparison of CO₂ concentrations, isotopic composition, and carbon dynamics in an Amazonian rainforest (French Guiana). *Oecologia* 110: 120-131.
- J10. **Buchmann N**, Kao WY, Ehleringer JR (1997) Influence of stand structure on carbon-13 of vegetation, soils, and canopy air within deciduous and evergreen forests in Utah (USA). *Oecologia* 110: 109-119.
- J11. Brooks JR, Flanagan LB, **Buchmann N**, Ehleringer JR (1997) Carbon isotope composition of boreal plants: functional grouping of life forms. *Oecologia* 110: 301-311.
- J12. **Buchmann N**, Ehleringer JR (1998) CO₂ concentration profiles, and carbon and oxygen isotopes in C₃ and C₄ crop canopies. *Agricultural and Forest Meteorology* 89: 45-58.
- J13. **Buchmann N**, Hinckley TM, Ehleringer JR (1998) Carbon isotope dynamics in *Abies amabilis* stands in the Cascades. *Canadian Journal of Forest Research* 28: 808-819.
- J14. **Buchmann N**, Schulze ED (1999) Net CO₂ and H₂O fluxes of terrestrial ecosystems. *Global Biogeochemical Cycles* 13: 751-760.
Dataset is available: https://gcmd.nasa.gov/records/GCMD_fluxnet_buchmann.html
- J15. Ehleringer JR, **Buchmann N**, Flanagan LB (2000) Carbon and oxygen isotope ratios in below-ground carbon-cycle processes. *Ecological Applications* 10: 412-422.
- J16. Thuille A, **Buchmann N**, Schulze ED (2000) Carbon stocks and soil respiration rates during deforestation, grassland use and subsequent Norway spruce afforestation in the Southern Alps. *Tree Physiology* 20: 849-857.
- J17. **Buchmann N** (2000) Biotic and abiotic factors controlling soil respiration rates in *Picea abies* stands. *Soil Biology and Biochemistry* 32: 1625-1635.
- J18. Janssens IA, Lankreijer H, Matteucci G, Kowalski AS, **Buchmann N**, Epron D, Pilegaard K, Kutsch W, Longdoz B, Grünwald T, Montagnani L, Dore S, Rebmann C, Moors EJ, Grelle A, Rannik Ü, Morgenstern K, Oltchev S, Clement R, Guomundsson J, Minerbi S, Berbigier P, Ibrom A, Moncrieff J, Aubinet M, Bernhofer C, Jensen NO, Vesala T, Granier A, Schulze ED, Lindroth A, Dolman AJ, Jarvis PG, Ceulemans R, Valentini R (2001) Productivity overshadows temperature in determining soil and ecosystem respiration across European forests. *Global Change Biology* 7: 269-278.

- J19. Högberg P, Nordgren A, **Buchmann N**, Taylor AFS, Ekblad A, Högberg MN, Nyberg G, Ottosson-Löfvenius M, Read DJ (2001). Large-scale forest girdling shows that current photosynthesis drives soil respiration. *Nature* 411: 789-792.
Highlighted in Nature News and Views: FS Chapin and RW Ruess (2001) The roots of the matter. Selected and evaluated for Faculty of 1000 Biology, Oct. 2005
- J20. **Buchmann N**, Brooks JR, Ehleringer JR (2002) Predicting carbon isotope ratios of atmospheric CO₂ within forest canopies. *Functional Ecology* 16: 49-57.
- J21. Brooks JR, **Buchmann N**, Phillips S, Ehleringer B, Evans RD, Lott M, Martinelli LA, Pockman WT, Sandquist D, Sparks JP, Sperry L, Williams D, Ehleringer JR (2002) Heavy and light beer: a carbon isotope approach to detect C₄ carbon in beers of different origins, styles and prices. *Journal of Agricultural and Food Chemistry* 50: 6413-6418.
- J22. **Buchmann N** (2002) Plant ecophysiology and forest response to global change. *Tree Physiology* 22: 1177-1184.
- J23. Kaplan JO, Prentice IC, **Buchmann N** (2002) The stable carbon isotope composition of the terrestrial biospheres. Modeling at scales from the leaf to the globe. *Global Biogeochemical Cycles* 16: 1060.
- J24. Pataki DE, Ehleringer JR, Flanagan LB, Yakir D, Bowling DR, Still CJ, **Buchmann N**, Kaplan JO, Berry JA (2003) The application and interpretation of Keeling plots in terrestrial carbon cycle research. *Global Biogeochemical Cycles* 17: 1022.
- J25. Cornelissen JHC, Lavorel S, Garnier E, Díaz S, **Buchmann N**, Gurrich DE, Reich PB, ter Steege H, Morgan H, van der Heijden MGA, Pausas JG, Poorter H (2003) Handbook of protocols for standardised and easy measurement of plant functional traits worldwide. *Australian Journal of Botany* 51: 335-380.
- J26. Knohl A, Schulze ED, Kolle O, **Buchmann N** (2003). Large carbon uptake by an unmanaged old deciduous forest in Central Germany. *Agricultural and Forest Meteorology* 118: 151-167.
- J27. Hahn V, **Buchmann N** (2004). A new model for soil organic carbon turnover using bomb carbon. *Global Biogeochemical Cycles Vol 18, GB1019*.
- J28. Subke JA, Hahn V, Battipaglia G, Linder S, **Buchmann N**, Cotrufo MF (2004) Feedback interactions between needle litter decomposition and rhizosphere activity. *Oecologia* 139: 551-559.
- J29. Søe ARB, Giesemann A, Anderson TH, Weigel HJ, Buchmann N (2004) Soil respiration under elevated CO₂ and its partitioning into recently assimilated and older carbon sources. *Plant and Soil* 262: 85-94.
- J30. Knohl A, Werner RA, Brand WA, **Buchmann N** (2005). Short-term variations in $\delta^{13}\text{C}$ of ecosystem respiration reveals link between assimilation and respiration in a deciduous forest. *Oecologia* 142:70-82.
- J31. Kahmen A, Perner J, Audorff V, Weisser WW, **Buchmann N** (2005). Effects of plant diversity, community composition and environmental parameters on productivity in montane European grasslands. *Oecologia* 142: 606-615.
- J32. Roscher C, Temperton VM, Scherer-Lorenzen M, Schmitz M, Schumacher J, Schmid B, **Buchmann N**, Weisser WW, Schulze ED (2005) Overyielding in experimental grassland communities – irrespective of species pool or spatial scale. *Ecology Letters* 8: 419–429.
- J33. Roscher C, Temperton VM, Scherer-Lorenzen M, Schmitz M, Schumacher J, Schmid B, **Buchmann N**, Weisser WW, Schulze ED (2005) Errata: Overyielding in experimental grassland communities – irrespective of species pool or spatial scale. *Ecology Letters* 8: 576-577
- J34. Rebmann C, Göckede M, Foken Th, Aubinet M, Aurela M, Berbigier P, Bernhofer C, **Buchmann N**, Carrara A, Cescatti A, Ceulemans R, Clement R, Elbers JA, Granier A, Grünwald T, Guyon D, Havránková K, Heinesch B, Knohl A, Laurila T, Longdoz B, Marcolla B, Markkanen T, Miglietta F, Moncrieff J, Montagnani L, Moors E, Nardino M, Ourcival JM, Rambal S, Rannik Ü, Rotenberg E, Sedlak P, Unterhuber G, Vesala T, Yakir D (2005) Quality analysis applied on eddy covariance measurements at complex forest sites using footprint modelling. *Theor. Appl. Clim.* 80 (2-4): 121-141.
- J35. Perner J, Wytrykush C, Kahmen A, **Buchmann N**, Egerer I, Creutzburg S, Odat O, Audorff V, Weisser WW (2005) Effects of plant diversity, plant productivity and habitat parameters on arthropod abundance in montane European grasslands. *Ecography* 28: 429-442.

- J36. Hemming D, Yakir D, Ambus P, Aurela M, Besson C, Black K, **Buchmann N**, Burlett R, Cescatti A, Clement R, Gross P, Granier A, Gruenwald T, Havrankova K, Janous D, Janssens IA, Knohl A, Koestner B, Kowalski A, Laurila T, Mata C, Marcolla B, Matteucci G, Moncrieff J, Moors EJ, Osborne B, Pereira JS, Pihlatie M, Pilegaard K, Ponti F, Rosova Z, Rossi F, Scartazza A, Vesala T (2005) Pan-European $\delta^{13}\text{C}$ values of air and organic matter from forest ecosystems. *Global Change Biology* 11: 1065–1093.
- J37. Unsicker, SB, Renker C, Kahmen A, Spindler S, **Buchmann N**, Weisser WW (2005) Testing the efficiency of three ^{15}N -labeled nitrogen compounds for indirect labeling of grasshoppers via plants in the field. *Entomologia Experimentalis et Applicata* 116: 219–226.
- J38. Kahmen A, Perner J, **Buchmann N** (2005). Diversity-dependent productivity in semi-natural grasslands following climate perturbations. *Functional Ecology* 19: 594–601.
Highlighted in Nature News and Views: P.D. Moore (2005) Roots of stability.
- J39. Reichstein M, Falge E, Baldocchi D, Papale D, Valentini R, Aubinet M, Berbigier P, Bernhofer C, **Buchmann N**, Falk M, Gilmanov T, Granier A, Grünwald T, Havránková K, Janous D, Knohl A, Laurela T, Lohila A, Loustau D, Matteucci G, Meyers T, Miglietta F, Ourcival JM, Perrin D, Pumpanen J, Rambal S, Rotenberg E, Sanz M, Tenhunen J, Seufert G, Vaccari F, Vesala T, Yakir D (2005) On the separation of net ecosystem exchange into assimilation and ecosystem respiration: review and improved algorithm. *Global Change Biology* 11: 1–16.
Highly cited paper, according to Web of Science
- J40. Ciais P, Reichstein M, Viovy N, Granier A, Ogée J, Allard V, **Buchmann N**, Aubinet M, Bernhofer C, Carrara A, Chevallier F, De Noblet N, Friend A, Friedlingstein P, Grünwald T, Heinesch B, Keronen P, Knohl A, Krinner G, Loustau D, Manca G, Matteucci G, Miglietta F, Ourcival JM, Pilegaard K, Rambal S, Seufert G, Soussana JF, Sanz MJ, Schulze ED, Vesala T, Valentini R (2005) Europe-wide reduction in primary productivity caused by the heat and drought in 2003. *Nature* 437: 529-533.
Highlighted in Nature News and Views: D. Baldocchi (2005) The carbon cycle under stress. Selected and evaluated for Faculty of 1000 Biology, Oct. 2005
Highly cited paper, according to Web of Science
- J41. Knohl A, **Buchmann N** (2005) Partitioning of net CO_2 flux of a deciduous forest into respiration and assimilation using stable carbon isotopes. *Global Biogeochemical Cycles* 19, GB 4008.
- J42. Søe ARB, **Buchmann N** (2005) Spatial and temporal variations in soil respiration in relation to stand structure and soil parameters in an unmanaged beech forest. *Tree Physiology* 25: 1427-1436.
- J43. Providoli I, Bugmann H, Siegwolf R, **Buchmann N**, Schleppi P (2005) Flow of deposited inorganic N in two Gleysol-dominated mountain catchments traced with $^{15}\text{NO}_3^-$ and $^{15}\text{NH}_4^+$. *Biogeochemistry* 76: 453 – 475.
- J44. Göttlicher S, Knohl A, Wanek W, **Buchmann N**, Richter A (2006) Short term changes in carbon isotope composition of soluble carbohydrates and starch: from canopy leaves to the root system. *Rapid Communications in Mass Spectrometry* 20: 653–660.
- J45. Reithmaier C, Göckede T, Markkanen T, Knohl A, Churkina G, Rebmann C, **Buchmann N**, Foken T (2006) Use of remotely sensed land use classification for a better evaluation of micrometeorological flux measurement sites. *Theoretical and Applied Climatology* 84: 219–233.
- J46. Kahmen A, Renker C, Unsicker S, **Buchmann N** (2006) Niche complementarity for nitrogen use in grasslands - an explanation for the biodiversity and ecosystem functioning relationship in grasslands? *Ecology* 87: 1244–1255.
- J47. Hahn V, Högberg P, **Buchmann N** (2006) ^{14}C - a tool for separation of autotrophic and heterotrophic soil respiration. *Global Change Biology* 12: 972-982.
- J48. Providoli I, Bugmann H, Siegwolf R, **Buchmann N**, Schleppi P (2006) Pathways and dynamics of $^{15}\text{NO}_3^-$ and NH_4^+ applied in a mountain *Picea abies* forest and in a nearby meadow in central Switzerland. *Soil Biol. Biochem* 38: 1645-1657.
- J49. Högberg P, **Buchmann N**, Read DJ (2006) Comments on Yakov Kuzyakov's review 'Sources of CO_2 efflux from soil and review of partitioning methods'. *Soil Biol. Biochemistry* 38: 2997-2998.
- J50. Balvanera P, Pfisterer AB, **Buchmann N**, He JS, Nakashizuka T, Raffaelli D, Schmid B (2006) Quantifying the evidence for biodiversity effects on ecosystem functioning and services. *Ecology Letters* 9: 1146–1156

*Selected and evaluated for Faculty of 1000 Biology, May 2007
Highly cited paper, according to Web of Science*

- J51. Unsicker SB, Baer N, Kahmen A, Wagner M, **Buchmann N**, Weisser WW (2006) Invertebrate herbivory along a gradient of plant species diversity in extensively managed grasslands. *Oecologia* 150 (2): 233-246.
- J52. Barnard RL, de Bello F, Gilgen AK, **Buchmann N** (2006) The $\delta^{18}\text{O}$ of root crown water best reflects source water $\delta^{18}\text{O}$ in different types of herbaceous species. *Rapid Commun Mass Spectrom* 20: 3799–3802.
- J53. Temperton VM, Mwangi PN, Scherer-Lorenzen M, Schmid B, **Buchmann N** (2007) Positive interactions between nitrogen-fixing legumes and four different neighbouring species in a biodiversity experiment. *Oecologia* 151 (2): 190-205.
- J54. Granier A, Reichstein M, Bréda N, Janssens IA, Falge E, Ciais P, Grünwald T, Aubinet M, Berbigier P, Bernhofer C, **Buchmann N**, Facini O, Grassi G, Heinesch B, Ilvesniemi H, Keronen P, Knohl A, Köstner B, Lagergren F, Lindroth A, Longdoz B, Loustau D, Mateus J, Montagnani L, Nys C, Moors E, Papale D, Peiffer M, Pilegaard K, Pita G, Pumpanen J, Rambal S, Rebmann C, Rodrigues A, Seufert G, Tenhunen J, Vesala T, Wang Q (2007) Evidence for soil water control on carbon and water dynamics in European forests during the extremely dry year: 2003. *Agricultural Forest Meteorology* 143, 123–145.
- Highly cited paper, according to Web of Science*
- J55. Oelmann Y, Kreuziger Y, Temperton VM, **Buchmann N**, Roscher C, Schumacher J, Schulze ED, Weisser WW, Wilcke W (2007) Nitrogen and phosphorus budgets in experimental grasslands of variable diversity. *Journal of Environmental Quality* 36: 396-407.
- J56. Reichstein M, Ciais P, Papale D, Valentini R, Running S, Viovy N, Cramer W, Granier A, Ogée J, Allard V, Aubinet M, Bernhofer C, **Buchmann N**, Carrara A, Grünwald T, Heimann M, Heinesch B, Knohl A, Kutsch W, Loustau D, Manca G, Matteucci G, Miglietta F, Ourcival JM, Pilegaard K, Pumpanen J, Rambal S, Schaphoff S, Seufert G, Soussana JF, Sanz MJ, Vesala T, Zhao M (2007) Reduction of ecosystem productivity and respiration during the European summer 2003 climate anomaly: a joint flux tower, remote sensing and modeling analysis. *Global Change Biology* 13 (3): 634-651.
- Highly cited paper, according to Web of Science*
- J57. Barnard RL, Salmon Y, Kodama N, Sörgel K, Rost J, Rennenberg H, Gessler A, **Buchmann N** (2007) Evaporative enrichment and time-lags between $\delta^{18}\text{O}$ of leaf water and organic pools in a pine stand. *Plant, Cell and Environment* 30: 539–550.
- J58. Wagner M, Kahmen A, Schlumprecht H, Audorff V, Perner J, **Buchmann N**, Weisser WW (2007) Prediction of herbage yield in grasslands: How well do Ellenberg N-values perform? *Applied Vegetation Science* 10: 15-24.
- J59. Oelmann Y, Wilcke W, Temperton VM, **Buchmann N**, Roscher C, Schumacher J, Schulze ED, Weisser WW (2007) Soil and plant nitrogen pools as related to plant diversity in an experimental grassland. *Soil Science Society of America Journal* 71: 720-729.
- J60. Ekberg A, **Buchmann N**, Gleixner G (2007) Rhizospheric influence on soil respiration and decomposition in a temperate Norway spruce stand. *Soil Biology & Biochemistry* 39: 2103–2110.
- J61. Bassin S, Volk M, Suter M, **Buchmann N**, Fuhrer J (2007) Nitrogen deposition but not ozone affects productivity and community composition of sub-alpine grassland after three years of treatment. *New Phytologist* 175: 523–534.
- J62. Eugster W, Zeyer K, Zeeman M, Michna P, Zingg A, **Buchmann N**, Emmenegger L (2007) Methodical study of nitrous oxide eddy covariance measurements using quantum cascade laser spectrometry over a Swiss forest. *Biogeosciences Discussion* 4: 1167-1200.
- Eugster W, Zeyer K, Zeeman M, Michna P, Zingg A, **Buchmann N**, Emmenegger L (2007) Methodical study of nitrous oxide eddy covariance measurements using quantum cascade laser spectrometry over a Swiss forest. *Biogeosciences* 4: 927-939.
- J63. Knohl A, Søe ARB, Kutsch WL, Göckede M, **Buchmann N** (2008) Representative estimates of soil and ecosystem respiration in an old beech forest. *Plant and Soil* 302:189–202.
- J64. von Felten S, **Buchmann N**, Scherer-Lorenzen M (2008) Preferences for different nitrogen forms by coexisting plant species and soil microbes: comment. *Ecology* 89: 878-879.
- J65. Zeller B, Liu J, **Buchmann N**, Richter A (2008) Tree girdling increases soil N mineralization in two spruce stands. *Soil Biology and Biochemistry* 40: 1155-1166.

- J66. Murphy M, Balsler T, **Buchmann N**, Hahn V, Potvin C (2008) Linking tree biodiversity to belowground process in a young tropical plantation: impacts on soil CO₂ flux. *Forest Ecology and Management* 255: 2577-2588.
- J67. Tyljanakis JM, Rand TA, Kahmen A, Klein AM, **Buchmann N**, Perner J, Tschardt T (2008) Resource heterogeneity moderates the biodiversity-function relationship in real world ecosystems. *PLoS Biology* 6: 1-10.
Recommended by Faculty of 1000 Prime, July 2008
- J68. Kahmen A, Wanek W, **Buchmann N** (2008) Foliar $\delta^{15}\text{N}$ values of 20 different plant species indicate plant and ecosystem nitrogen dynamics along a temperate grassland gradient. *Oecologia* 156: 861-870.
- J69. Kahmen A, Wanek W, **Buchmann N** (2008) Foliar $\delta^{15}\text{N}$ values of 20 different plant species indicate plant and ecosystem nitrogen dynamics along a temperate grassland gradient. *Oecologia* 158: 371-371.
- J70. Kodama N, Barnard RL, Salmon Y, Weston C, Ferrio JP, Holst J, Werner RA, Saurer M, Rennenberg H, **Buchmann N**, Gessler A (2008) Temporal dynamics of the carbon isotope composition in a *Pinus sylvestris* stand – from newly assimilated organic carbon to respired CO₂. *Oecologia* 156: 737-750.
- J71. Steinbeiss S, Bessler H, Engels C, Temperton VM, **Buchmann N**, Roscher C, Kreuziger Y, Baade J, Habekost M, Gleixner G (2008) Plant biodiversity positively affects short-term soil carbon storage in experimental grasslands. *Global Change Biology* 14: 2937–2949.
- J72. Holst J, Barnard R, Brandes E, **Buchmann N**, Gessler A, Jaeger (2008) Impacts of summer water limitation on the carbon balance of a Scots pine forest in the southern upper Rhine plain. *Agric Forest Meteorology* 148:1815-1826.
- J73. Zeeman MJ, Werner RA, Eugster W, Siegwolf RTW, Wehrle G, Mohn J, **Buchmann N** (2008) Optimization of automated gas sample collection and IRMS analysis of $\delta^{13}\text{C}$ of CO₂ in air. *Rapid Commun Mass Spectrom* 22: 3883-3892.
- J74. Bassin S, Werner R, Sörgel K, Volk M, **Buchmann N**, Fuhrer J (2009) Effects of combined ozone and nitrogen deposition on the in situ properties of eleven key plant species of a subalpine pasture. *Oecologia* 158: 747–756.
- J75. Teuling AJ, Hirschi M, Ohmura A, Wild M, Reichstein M, Ciais P, **Buchmann N**, Ammann C, Montagnani L, Richardson AD, Wohlfahrt G, Seneviratne SI (2009) A regional perspective on trends in continental evaporation. *Geophysical Research Letters* 36, L02404.
- J76. Roscher C, Temperton VM, **Buchmann N**, Schulze ED (2009) Community assembly and biomass production in regularly and never weeded experimental grasslands. *Acta Oecologica* 35: 206-217
- J77. de Bello F, **Buchmann N**, Casals P, Lepš J, Sebastià MT (2009) Relating plant species and functional diversity to community $\delta^{13}\text{C}$ in NE Spain pastures. *Agriculture Ecosystems and Environment* 131: 303-307.
- J78. Bessler H, Temperton V, Roscher C, **Buchmann N**, Schmid B, Schulze ED, Weisser WW, Engels C (2009) Above-ground overyielding in experimental grassland mixtures is associated with reduced biomass partitioning to below-ground organs. *Ecology* 90: 1520-1530.
- J79. Beer C, Ciais P, Reichstein M, Baldocchi D, Law BE, Papale D, Soussana JF, Ammann C, **Buchmann N**, Frank D, Gianelle D, Janssens IA, Knohl A, Köstner B, Moors E, Rouspard O, Verbeeck H, Vesala T, Williams CA, Wohlfahrt G (2009) Temporal and among-site variability of inherent water-use efficiency at the ecosystem level. *Global Biogeochemical Cycles* Vol. 23, No. 2, GB2018.
- J80. Gessler A, Brandes E, **Buchmann N**, Helle G, Rennenberg H, Barnard R (2009) Tracing the carbon and oxygen isotope signals from newly assimilated sugars in the leaves to the tree ring archive. *Plant, Cell and Environment* 32: 780–795.
- J81. Eilmann B, Zweifel R, **Buchmann N**, Fonti P, Rigling A (2009) Drought-induced adaptation of the xylem in *Pinus sylvestris* and *Quercus pubescens*. *Tree Physiology* 29: 1011-1020.
- J82. Richter A, Wanek W, Werner RA, Ghashghaie J, Jäggi M, Gessler A, Brugnoli E, Hettmann E, Göttlicher SG, Salmon Y, Bathellier C, Kodama N, Nogués S, Søe A, Volders F, Sörgel K, Blöchl A, Siegwolf RTW, **Buchmann N**, Gleixner G (2009) Preparation of starch and soluble sugars of plant material for analysis of carbon isotope composition: a comparison of methods. *Rapid Communications in Mass Spectrometry* 23: 2476–2488.

- J83. Weigelt A, Weisser WW, **Buchmann N**, Scherer-Lorenzen M (2009) Biodiversity for multifunctional grasslands: equal productivity in high-diversity low-input and low-diversity high-input systems. *Biogeosciences Discussion* 6: 1-28.
Weigelt A, Weisser WW, **Buchmann N**, Scherer-Lorenzen M (2009) Biodiversity for multifunctional grasslands: equal productivity in high-diversity low-input and low-diversity high-input systems. *Biogeosciences* 6: 1695–1706.
- J84. von Felten S, **Buchmann N**, Hector A, Niklaus PA, Schmid B, Scherer-Lorenzen M (2009) Belowground nitrogen partitioning in experimental grassland plant communities of varying species richness. *Ecology* 90: 1389–1399.
- J85. Ahrends HE, Etzold S, Kutsch WL, Stoeckli R, Bruegger R, Jeanneret F, Wanner H, **Buchmann N**, Eugster W (2009) Tree phenology and carbon dioxide fluxes: use of digital photography for process-based interpretation at the ecosystem scale. *Climate Research* 39: 261–274
- J86. Ruehr NK, Offermann CA, Gessler A, Winkler BJ, Ferrio JP, **Buchmann N**, Barnard RL (2009) Drought effects on allocation of recent carbon: From beech leaves to soil CO₂ efflux. *New Phytologist* 184: 950-961.
- J87. Gilgen AK, **Buchmann N** (2009) Response of temperate grasslands at different altitudes to simulated summer drought differed but scaled with annual precipitation. *Biogeosciences Discussion* 6: 5217-5250.
Gilgen AK, **Buchmann N** (2009) Response of temperate grasslands at different altitudes to simulated summer drought differed but scaled with annual precipitation. *Biogeosciences* 6: 2525-2539.
Dataset is available: <http://dx.doi.org/10.5905/ethz-1002-2>
- J88. Marquard E, Weigelt A, Temperton VM, Roscher C, Schumacher J, **Buchmann N**, Fischer M, Weisser WW, Schmid B (2009) Plant species richness and functional composition drive overyielding in a 6-year grassland experiment. *Ecology* 90: 3290–3302.
- J89. Gilgen AK, Signarbieux C, Feller U, **Buchmann N** (2010) Competitive advantage of *Rumex obtusifolius* L. might increase in intensively managed temperate grasslands under drier climate. *Agriculture, Ecosystems and the Environment* 135: 15-23.
- J90. Schwalm C, Williams C, Schaefer K, Arneith A, Bonal D, **Buchmann N**, Chen J, Law B, Lindroth A, Luyssaert S, Reichstein M, Richardson A (2010) Assimilation exceeds respiration sensitivity to drought: A FLUXNET synthesis. *Global Change Biology* 16: 657-670.
- J91. Ruehr NK, **Buchmann N** (2010) Soil respiration fluxes in a temperate mixed forest: seasonality and temperature sensitivities differ among microbial and root-rhizosphere respiration. *Tree Physiology* 30: 165-176.
- J92. Hastings AF, Wattenbach M, Eugster W, Li C, **Buchmann N**, Smith P (2010) Uncertainty propagation in soil greenhouse gas emission models: An experiment using the DNDC model and at the Oensingen cropland site. *Agriculture, Ecosystems and Environment* 136: 97–110.
- J93. Joos O, Hagedorn F, Heim A, Gilgen AK, Schmidt MWI, Siegwolf RTW, **Buchmann N** (2009) Summer drought reduces total and litter-derived soil CO₂ effluxes in temperate grassland – clues from a ¹³C litter addition experiment. *Biogeosciences Discussion* 6: 11005–11034.
Joos O, Hagedorn F, Heim A, Gilgen AK, Schmidt MWI, Siegwolf RTW, **Buchmann N** (2010) Summer drought reduces total and litter-derived soil CO₂ effluxes in temperate grassland – clues from a ¹³C litter addition experiment. *Biogeosciences* 7: 1031–1041.
- J94. Ruehr NK, Knohl A, **Buchmann N** (2010) Environmental variables controlling soil respiration on diurnal, seasonal and annual time-scales in a mixed mountain forest in Switzerland. *Biogeochemistry* 98: 153-170.
- J95. Zeeman MJ, Hiller R, Gilgen AK, Michna P, Plüss P, **Buchmann N**, Eugster W (2010) Management, not climate, controls net CO₂ fluxes and carbon budgets of three grasslands along an elevational gradient in Switzerland. *Agric. Forest Meteorology* 150: 519–530.
- J96. Eilmann B, **Buchmann N**, Siegwolf R, Saurer M, Cherubini P, Rigling A (2010) Fast response of Scots pine to improved water availability reflected in tree-ring width and $\delta^{13}\text{C}$. *Plant, Cell and Environment* 33: 1351-1360.
- J97. Zweifel R, Eugster W, Etzold S, Dobbertin M, **Buchmann N**, Häsler R (2010) Link between continuous stem radius changes and net ecosystem productivity of a subalpine Norway spruce forest in the Swiss Alps. *New Phytologist* 187: 819-830.

- J98. Kayler K, Gessler G, **Buchmann N** (2010) What is the speed of link between above- and belowground processes? A comment on the article "The significance of phloem transport for the speed with which canopy photosynthesis and belowground respiration are linked" by Maurizio Mencuccini and Teemu Hölttä. *New Phytologist* 187: 885–888.
- J99. Etzold S, **Buchmann N**, Eugster W (2010) Contribution of advection to the carbon budget measured by eddy covariance at a steep mountain slope forest in Switzerland. *Biogeosciences Discussion* 7: 1633-1673.
- Etzold S, **Buchmann N**, Eugster W (2010) Contribution of advection to the carbon budget measured by eddy covariance at a steep mountain slope forest in Switzerland. *Biogeosciences* 7: 2461-2475.
- J100. Yi C, Ricciuto D, Li R, Wolbeck J, Xu X, Nilsson M, Aires L, Albertson JD, Ammann C, Arain MA, de Araujo AC, Aubinet M, Aurela M, Barcza Z, Barr A, Berbigier P, Beringer J, Bernhofer C, Black AT, Bolstad PV, Bosveld FC, Broadmeadow MSJ, **Buchmann N**, Burns SP, Cellier P, Chen J, Chen J, Ciais P, Clement R, Cook BD, Curtis PS, Dail DB, Dellwik E, Delpierre N, Desai AR, Dore S, Dragoni D, Drake BG, Dufrêne E, Dunn A, Elbers J, Eugster W, Falk M, Feigenwinter C, Flanagan LB, Foken T, Frank J, Fuhrer J, Gianelle D, Goldstein A, Goulden M, Granier A, Grünwald T, Gu L, Guo H, Hammerle A, Han S, Hanan NP, Haszpra L, Heinesch B, Helfter C, Hendriks D, Hutley LB, Ibrom A, Jacobs C, Johansson T, Jongen M, Katul G, Kiely G, Klumpp K, Knohl A, Kolb T, Kutsch WL, Lafleur P, Laurila T, Leuning R, Lindroth A, Liu H, Loubet B, Manca G, Marek M, Margolis HA, Martin TA, Massman WJ, Matamala R, Matteucci G, McCaughey H, Merbold L, Meyers T, Migliavacca M, Miglietta F, Misson L, Mölder M, Moncrieff J, Monson RK, Montagnani L, Montes-Helu M, Moureaux C, Mukelabai MM, Munger JM, Myklebust M, Nagy Z, Noormets A, Oechel W, Oren R, Pallardy SG, Paw U KT, Pereira JS, Pilegaard K, Pintér K, Pio C, Pita G, Powell TL, Rambal S, Randerson JT, von Randow C, Rebmann C, Rinne J, Rossi F, Roulet N, Ryel RJ, Sagerfors J, Saigusa N, Sanz MJ, Scarascia Mugnozza G, Schmid HP, Seufert G, Siqueira M, Soussana FJ, Starr G, Sutton MA, Tenhunen J, Tuba Z, Tuovinen JK, Valentini R, Vogel CS, Wang J, Wang S, Wang W, Welp LR, Wen X, Wharton S, Wilkinson M, Williams CA, Wohlfahrt G, Yamamoto S, Yu G, Zampedri R, Zhao B, Zhao X (2010) Climate control of terrestrial carbon exchange across biomes and continents. *Environmental Research Letters* 5: 034007.
- Paper received the Norbert Gerbier-MUMM International Award 2012 from WMO*
- J101. Proulx R, Wirth C, Voigt W, Weigelt A, Roscher C, Attinger S, Baade J, Barnard RL, **Buchmann N**, Buscot F, Eisenhauer N, Engels C, Fischer M, Gleixner G, Halle S, Hildebrandt A, Kowalski E, Kuu A, Lange M, Marquard E, Milcu A, Niklaus P, Oelmann Y, Rosenkranz S, Sabais A, Scherber C, Scherer-Lorenzen M, Scheu S, Schulze ED, Schumacher J, Schwichtenberg G, Soussana JF, Temperton VM, Tschardt T, Weisser WW, Wilcke W, Schmid B (2010) Diversity promotes temporal stability across levels of ecosystem organization in experimental grasslands. *PLoS ONE* 5(10): e13382.
- J102. Scherber C, Eisenhauer N, Weisser WW, Schmid B, Voigt W, Schulze ED, Roscher C, Weigelt A, Allan E, Bessler H, Bonkowski M, **Buchmann N**, Buscot F, Clement LW, Ebeling A, Engels C, Fischer M, Halle S, Kertscher I, Klein AM, Koller R, König S, Kowalski E, Kummer V, Kuu A, Lange M, Lauterbach D, Middelhoff C, Migunova VD, Milcu A, Müller R, Partsch S, Petermann JS, Renker C, Rottstock T, Sabais A, Scheu S, Schumacher J, Temperton VM, Tschardt T (2010) Bottom-up effects of plant diversity on biotic interactions in a biodiversity experiment. *Nature* 468: 553-556.
- Highly cited paper, according to Web of Science*
- J103. Endrulat T, Saurer M, **Buchmann N**, Brunner I (2010) Incorporation and remobilisation of ¹³C within the fine-root systems of individual *Abies alba* trees in a temperate coniferous stand. *Tree Physiology* 30: 1515–1527.
- J104. Weigelt A, Marquard E, Temperton VM, Roscher C, Scherber C, Mwangi PN, von Felten S, **Buchmann N**, Schmid B, Schulze ED, Weisser WW (2010) The Jena-Experiment: six years of data from a grassland biodiversity experiment. *Ecology* 91: 930
- Dataset is available: Ecological Archives E091-066*
- J105. Wattenbach M, Sus O, Vuichard N, Lehuger S, Gottschalk P, L. Li, Leip A, Williams M, Tormellieri E, Kutsch WL, **Buchmann N**, Eugster W, Dietiker D, Aubinet M, Ceschia E, Beziat P, Grünwald T, Hastings A, Osborne B, Ciais P, Cellier P, Smith P (2010) The carbon balance of European croplands: A cross-site comparison of simulation models. *Agriculture, Ecosystems and Environment* 139: 419-453.

- J106. Sus O, Williams M, Bernhofer C, Beziat P, **Buchmann N**, Ceschia E, Doherty R, Eugster W, Grünwald T, Kutsch W, Smith P, Wattenbach M (2010) A linked carbon cycle and crop developmental model: description and evaluation against measurements of carbon fluxes and carbon stocks at several European agricultural sites. *Agriculture, Ecosystems and Environment* 139: 402-418.
- J107. Dietiker D, **Buchmann N**, Eugster W (2010) Testing the ability of the DNDC model to predict CO₂ and water vapour fluxes of a Swiss cropland site. *Agriculture, Ecosystems and Environment* 139: 396-401.
- J108. Ceschia E, Béziat P, Dejoux JF, Aubinet M, Bernhofer C, Bodson B, **Buchmann N**, Carrara A, Cellier P, Di Tomasi P, Elbers JA, Eugster W, Grünwald T, Jacob CMJ, Jans WWP, Jones M, Kutsch W, Lanigan G, Magliulo E, Marloie O, Moors EJ, Moureaux C, Olioso A, Osborne B, Sanz MJ, Saunders M, Smith P, Soegaard H, Wattenbach M (2010) Management effects on net ecosystem carbon and GHG budgets at European crop sites. *Agriculture, Ecosystems and Environment* 139: 363-383.
- J109. Eugster W, Moffat A, Ceschia E, Aubinet M, Ammann C, Osborne B, Davis PA, Smith P, Jacobs C, Moors E, Le Dantec V, Béziat P, Saunders M, Jans W, Grünwald T, Rebmann C, Kutsch W, Czerný R, Janouš D, Moureaux C, Dufranne D, Carrara A, Magliulo E, di Tommasi P, Olesen JE, Schelde K, Olioso A, Bernhofer C, Cellier P, Larmanou E, Loubet B, Wattenbach M, Marloie O, Sanz MJ, Soegaard H, **Buchmann N** (2010) Management effects on European cropland respiration. *Agriculture, Ecosystems and Environment* 139: 346-362.
- J110. Kutsch WL, Aubinet M, **Buchmann N**, Smith P, Osborne B, Eugster W, Wattenbach M, Schrupf M, Schulze ED, Tormellieri E, Ceschia E, Bernhofer C, Beziat P, Carrara A., Di Tommasi P, Grünwald T, Jones M, Magiulo V, Marloie O, Moureaux C, Olioso A, Sanz MJ, Saunders M, Søgaard H, Ziegler W (2010) The net biome production of full crop rotations in Europe. *Agriculture, Ecosystems and Environment* 139: 336-345.
- J111. Moors EJ, Jacobs C, Jans W, Supit I, Kutsch WL, Bernhofer C, Béziat P, **Buchmann N**, Carrara A, Ceschia E, Elbers J, Eugster W, Kruijt B, Loubet B, Magliulo E, Moureaux C, Olioso A, Saunders M, Soegaard H (2010) Variability in carbon exchange of European croplands. *Agriculture, Ecosystems and Environment* 139: 325-335.
- J112. Smith P, Lanigan G, Kutsch WL, **Buchmann N**, Eugster W, Aubinet M, Ceschia E, Béziat P, Yeluripati JB, Osborne B, Moors EJ, Brut A, Wattenbach M, Saunders M, Jones M (2010) Measurements necessary for assessing the net ecosystem carbon budget of croplands. *Agriculture, Ecosystems and the Environment* 139: 302-315.
- J113. Gubsch M, **Buchmann N**, Schmid B, Schulze ED, Lipowsky A, Roscher C (2011) Differential effects of plant diversity on functional trait variation of grass species. *Annals of Botany* 107: 157-169.
- J114. Kindler R, Siemens J, Kaiser K, Walmsley DC, Bernhofer C, **Buchmann N**, Cellier P, Eugster W, Gleixner G, Grünwald T, Heim A, Ibrom A, Jones SK, Jones M, Klumpp K, Kutsch W, Steenberg Larsen K, Lehuger S, Loubet B, McKenzie R, Moors E, Osborne B, Pilegaard K, Rebmann C, Anna Saunders M, Schmidt MWI, Schrupf M, Seyfferth J, Skiba U, Soussana JF, Sutton MA, Tefs C, Vowinkel B, Zeeman MJ, Kaupenjohann M (2011) Dissolved carbon leaching from soil is a crucial component of the net ecosystem carbon balance. *Global Change Biology* 17: 1167-1185.
- Highly cited paper, according to Web of Science*
- J115. Salmon Y, Barnard R, **Buchmann N** (2011) Ontogeny and leaf gas exchange mediate the carbon isotopic signature of herbaceous plants. *Plant, Cell and Environment* 34: 465-479.
- J116. Roscher C, Schmid B, **Buchmann N**, Schulze ED (2011) Legume species differ in the responses of their functional traits to plant diversity. *Oecologia* 165:437-52.
- J117. Roscher C, Thein S, Weigelt A, Temperton VM, **Buchmann N**, Schulze ED (2011) N₂ fixation and performance of 12 legume species in a 6-year grassland biodiversity experiment. *Plant and Soil* 341:333-348.
- J118. Hartmann AA, **Buchmann N**, Niklaus PA (2011) A study of soil methane sink regulation in two grasslands exposed to drought and N fertilization. *Plant and Soil* 342: 265-275.
- J119. Roscher C, Scherer-Lorenzen M, Schumacher J, Temperton VM, **Buchmann N**, Schulze ED (2011) Plant resource-use characteristics as predictors for species contribution to community biomass in experimental grasslands. *Perspectives in Plant Ecology, Evolution and Systematics* 13: 1-13.

- J120. Gubsch M, Roscher C, Gleixner G, Habekost M, Lipowsky A, Schmid B, Schulze ED, Steinbeiss S, **Buchmann N** (2011) Foliar and soil $\delta^{15}\text{N}$ values reveal increased nitrogen partitioning among species in diverse grassland communities. *Plant, Cell and Environment* 34: 895-908.
- J121. Eilmann B, Zweifel R, **Buchmann N**, Graf Pannatier E, Rigling A (2011) Drought alters timing, quantity, and quality of wood formation in Scots pine. *Journal of Experimental Botany* 62: 2763–2771.
- J122. Potvin C, Mancilla L, **Buchmann N**, Monteza J, Moore T, Murphy M, Oelmann Y, Scherer-Lorenzen M, Turner B, Wilcke W, Wolf S (2011) An ecosystem approach to biodiversity effects: Carbon pools in a tropical tree plantation. *Forest Ecology and Management* 261: 1614-1624.
- J123. Oelmann Y, **Buchmann N**, Gleixner G, Habekost M, Roscher C, Rosenkranz S, Schulze ED, Steinbeiss S, Temperton VM, Weigelt A, Weisser WW, Wilcke W (2011) Plant diversity effects on aboveground and belowground N pools in temperate grassland ecosystems: Development in the first five years after establishment. *Global Biogeochemical Cycles* 25, GB2014.
- J124. Werner AW, **Buchmann N**, Siegwolf RTW, Kornexl BE, Gessler A (2011) Metabolic fluxes, carbon isotope fractionation and respiration – lessons to be learned from biochemistry. *New Phytologist* 191: 10-15.
- J125. Stiehl-Braun PA, Hartmann AA, Kandeler E, **Buchmann N**, Niklaus PA (2011) Interactive effects of drought and N fertilisation on the spatial distribution of methane assimilation in grassland soils. *Global Change Biology* 17: 2629–2639.
- J126. Wolf S, Eugster W, Potvin C, **Buchmann N** (2011) Strong seasonal variations in net ecosystem CO_2 exchange of a tropical pasture and afforestation in Panama. *Agricultural and Forest Meteorology* 151: 1139–1151.
- J127. Wolf S, Eugster W, Potvin C, Turner BL, **Buchmann N** (2011) Carbon sequestration potential of tropical pasture compared with afforestation in Panama. *Global Change Biology* 17: 2763–2780.
- J128. Etzold S, Ruehr NK, Zweifel R, Dobbertin M, Zingg A, Pluess P, Häsler R, Eugster W, **Buchmann N** (2011) The carbon balance of two contrasting mountain forest ecosystems in Switzerland: similar annual trends, but seasonal differences. *Ecosystems* 14: 1289–1309.
- J129. Wolf S, Eugster W, Majorek S, **Buchmann N** (2011) Afforestation of tropical pasture only marginally affects ecosystem-scale evapotranspiration. *Ecosystems* 14: 1264-1275.
- J130. Paschke M, McNamara P, Frischknecht P, **Buchmann N** (2011) Wissenschaftliches Schreiben in den Pflanzenwissenschaften am Zurich-Basel Plant Science Center: Implementierung fachintegrierter, stufenspezifischer Lernziele für das Schreiben vom Bachelor zum Doktorat. Schreiben 1-8.
- J131. Brüggemann N, Gessler A, Kayler Z, Keel SG, Badeck F, Barthel M, Boeckx P, **Buchmann N**, Brugnoli E, Esperschütz J, Gavrichkova O, Ghashghaie J, Gomez-Casanovas N, Keitel C, Knohl A, Kuptz D, Palacio S, Salmon Y, Uchida Y, Bahn M (2011) Carbon allocation and carbon isotope fluxes in the plant–soil–atmosphere continuum: a review. *Biogeosciences Discussion* 8: 3619–3695.
- Brüggemann N, Gessler A, Kayler Z, Keel SG, Badeck F, Barthel M, Boeckx P, **Buchmann N**, Brugnoli E, Esperschütz J, Gavrichkova O, Ghashghaie J, Gomez-Casanovas N, Keitel C, Knohl A, Kuptz D, Palacio S, Salmon Y, Uchida Y, Bahn M (2011) Carbon allocation and carbon isotope fluxes in the plant–soil–atmosphere continuum: a review. *Biogeosciences* 8: 3457–3489.
- J132. Bahn M, **Buchmann N**, Knohl A (2012) Stable Isotopes and Biogeochemical Cycles in Terrestrial Ecosystems. *Biogeosciences* 9: 3979–3981.
- J133. Wortman E, Tomaszewski T, Waldner P, Schleppei P, Thimonier A, Eugster W, **Buchmann N**, Sievering H (2012) Atmospheric nitrogen deposition and canopy retention influences on photosynthetic performance at two high nitrogen deposition Swiss forests. *Tellus B* 64, 17216.
- J134. Niu S, Luo Y, Fei S, Yuan W, Zhang Z, Schimel D, Amiro B, Ammann C, Altaf Arain M, Arneth A, Aubinet M, Barr A, Beringer J, Bernhofer C, Black AT, **Buchmann N**, Cescatti A, Chen J, Kenneth P, Davis J, Dellwik E, Desai AR, Dolman H, Drake BK, Francois L, Gianelle D, Goldstein A, Gu L, Helfter C, Hirano T, Hollinger DY, Janssens I, Jones M, Kiely G, Kolb TE, Kutsch WL, Lafleur P, Law BE, Litvak M, Loustau D, Marek M, Matteucci G, Martin TA, Montagnani L, Moors E, Munger JW, Noormets A, Oechel W, Olejnik J, Papale D, Paw U KT, Pilegaard K, Rambal S, Raschi A, Richardson AD, Saleska S, Scott R, Seufert G, Spano D, Stoy P, Sutton MA, Vesala T, Wofsy S, Wohlfahrt G, Yakir D, Yang B (2012) Thermal Optimality of Net Ecosystem Exchange of Carbon Dioxide. *New Phytologist* 194: 775–783.

- J135. Roscher C, Schumacher J, Gubsch M, Lipowsky A, Weigelt A, **Buchmann N**, Schmid, Schulze ED (2012) Using plant functional traits to explain diversity-productivity relationships. PLoS ONE 7, e36760.
Article among the top 10% most cited PLoS ONE articles
- J136. Epron D, Bahn M, Derrien D, Lattanzi F, Pumpanen J, Gessler A, Hogberg A, Dannoura M, Gerant D, Maillard P, **Buchmann N** (2012). Pulse-labelling trees to study carbon allocation dynamics: a review of methods, current knowledge and future prospects. Tree Physiology 32: 776-798.
Highly cited paper, according to Web of Science
- J137. Williams C, Reichstein M, **Buchmann N**, Baldocchi D, Beer C, Schwalm C, Wohlfahrt G, Hasler N, Bernhofer C, Foken T, Papale D, Schymanski S, Schaefer K (2012) Climate and vegetation controls on the surface water balance: synthesis of evapotranspiration measured across a global network of flux towers. Water Resources Research 48, W06523.
- J138. Bessler H, Oelmann Y, Roscher C, **Buchmann N**, Scherer-Lorenzen M, Schulze ED, Temperton VM, Wilcke W, Engels C (2012) Nitrogen uptake by grassland communities: contribution of N₂ fixation, facilitation, complementarity, and species dominance. Plant and Soil 358:301–322.
- J139. von Felten S, Niklaus PA, Scherer-Lorenzen M, Hector A, **Buchmann N** (2012) Do grassland plant communities profit from N partitioning by soil depth? Ecology 93: 2386–2396.
- J140. Gattinger A, Muller A, Haeni M, Skinner C, Fliessbach A, **Buchmann N**, Mäder P, Stolze M, Smith P, El-Hage Scialabba N, Niggli U (2012) Enhanced top soil carbon stocks under organic farming - A global meta-analysis. PNAS 109: 18226–18231.
Dataset is available as supplement to the article: <http://www.pnas.org/content/109/44/18226>
Highly cited paper, according to Web of Science
- J141. Spiegel JK, Aemisegger F, Scholl M, Winhold FG, Collett J, Lee T, van Pinxteren D, Mertes S, Tilgner A, Herrmann H, Werner RA, **Buchmann N**, Eugster W (2012) Stable water isotopologue ratios in fog and cloud droplets are not size-dependent. Atmos. Chem. Phys. Discuss. 12, 12663–12684.
Spiegel JK, Aemisegger F, Scholl M, Winhold FG, Collett J, Lee T, van Pinxteren D, Mertes S, Tilgner A, Herrmann H, Werner RA, **Buchmann N**, Eugster W (2012) Stable water isotopologue ratios in fog and cloud droplets are not size-dependent. Atmos. Chem. Phys. 12: 9855–9863.
- J142. Spiegel JK, Aemisegger F, Scholl M, Winhold FG, Collett J, Lee T, van Pinxteren D, Mertes S, Tilgner A, Herrmann H, Werner RA, **Buchmann N**, Eugster W (2012) Temporal evolution of stable water isotopologues in cloud droplets during HCCT-2010. Atmos. Chem. Phys. Discuss. 12: 15139-15175.
Spiegel JK, Aemisegger F, Scholl M, Winhold FG, Collett J, Lee T, van Pinxteren D, Mertes S, Tilgner A, Herrmann H, Werner RA, **Buchmann N**, Eugster W (2012) Temporal evolution of stable water isotopologues in cloud droplets during HCCT-2010. Atmos. Chem. Phys. 12: 11679–11694.
- J143. Finger R, Gilgen AK, Prechsl UE, **Buchmann N** (2013) An economic assessment of drought effects on three grassland systems in Switzerland. Regional Environmental Change 2: 365-374.
- J144. Streit K, Rinne KT, Hagedorn F, Dawes MA, Saurer M, Hoch G, Werner RA, **Buchmann N**, Siegwolf RTW (2013) Tracing carbon allocation in *Larix decidua* exposed to elevated CO₂ and soil warming at the alpine tree line using compound-specific stable isotope analysis. New Phytologist 197: 838–849.
- J145. Etzold S, Zweifel R, Ruehr N, Eugster W, **Buchmann N** (2013) Long-term stem CO₂ concentration measurements in Norway spruce in relation to biotic and abiotic factors. New Phytologist 197: 1171-1184.
- J146. Allan E, Weisser WW, Fischer M, Schulze ED, Weigelt A, Roscher C, Baade J, Barnard R, Beßler H, **Buchmann N**, Ebeling A, Eisenhauer N, Engels C, Fergus A, Gleixner G, Gubsch M, Halle S, Klein AM, Kertscher I, Kuul A, Lange M, LeRoux X, Meyer S, Migunova VD, Milcu A, Niklaus P, Oelmann Y, Pašalić E, Petermann J, Poly F, Rottstock T, Sabais A, Scherber C, Scherer-Lorenzen M, Scheu S, Steinbeiss S, Schwichtenberg G, Temperton V, Tscharncke T, Voigt W, Wilcke W, Wirth C, Schmid B (2013) A comparison of the strength of biodiversity effects across multiple functions. Oecologia 173: 223-237.
- J147. Pérez-Harguindeguy N, Díaz S, Garnier E, Lavorel S, Poorter H, Jaureguiberry P, Bret-Harte MS, Cornwell WK, Craine JM, Gurvich DE, Urcelay C, Veneklaas EJ, Reich PB, Poorter L, Wright IJ, Ray P, Enrico L, Pausas JG, de Vos AC, **Buchmann N**, Funes G, Quétier AF, Hodgson JG, Thompson K, Morgan HD, ter Steege H, van der Heijden MGA, Sack L, Blonder B, Poschlod P,

Vaieretti V, Conti G, Staver AC, Aquino S, Cornelissen JHC (2013) New handbook for standardised measurement of plant functional traits worldwide. *Australian Journal of Botany* 61: 167-234.

Also available online: *Nucleo DiverSus* (<http://www.nucleodiversus.org>) and *Prometheus wiki* (http://prometheuswiki.publish.csiro.au/tiki-custom_home.php)

Now also available in Spanish: http://www.publish.csiro.au/bt/acc/BT12225/BT12225_ST.pdf

Highly cited paper, according to Web of Science

- J148. Gattinger A, Muller A, Haeni M, Skinner C, Fliessbach A, **Buchmann N**, Mäder P, Stolze M, Smith P, El-Hage Scialabba N, Niggli U (2013) Response to the Letter to the Editor by Leifeld et al. *PNAS* 110: E985.
- J149. Roscher C, Fergus AJF, Petermann JS, **Buchmann N**, Schmid B, Schulze ED (2013) What happens if a biodiversity experiment is not weeded? *Basic and Applied Ecology* 14: 187–198.
- J150. Roscher C, Schumacher J, Lipowsky A, Gubsch M, Weigelt A, Pompe S, Kolle O, **Buchmann N**, Schmid B, Schulze ED (2013) A functional trait-based approach to understand community assembly and diversity-productivity relationships over 7 years in experimental grasslands. *Perspectives in Plant Ecology, Evolution and Systematics* 15: 139–149.
- J151. Wolf S, Eugster W, Ammann C, Häni M, Zielis S, Hiller R, Stieger J, Imer D, Merbold L, **Buchmann N** (2013) Contrasting response of grassland *versus* forest carbon and water fluxes to spring drought in Switzerland. *Environmental Research Letters* 8: 035007.
- J152. Imer D, Merbold L, Eugster W, **Buchmann N** (2013) Temporal and spatial variations of soil CO₂, CH₄ and N₂O fluxes at three differently managed grasslands. *Biogeosciences Discussion* 10: 2635-2673.
- Imer D, Merbold L, Eugster W, **Buchmann N** (2013) Temporal and spatial variations of soil CO₂, CH₄ and N₂O fluxes at three differently managed grasslands. *Biogeosciences* 10: 5931-5945.
- J153. Reichstein M, Bahn M, Ciais P, Frank D, Mahecha MD, Seneviratne SI, Zscheischler J, Beer C, **Buchmann N**, Frank D, Papale D, Rammig A, Smith P, Thonicke K, van der Velde M, Vicca S, Walz A, Wattenbach M (2013) Climate extremes and the carbon cycle. *Nature* 500: 287-295.
- Highly cited paper, according to Web of Science*
- J154. Wolf S, Eugster W, Ammann C, Häni M, Zielis S, Hiller R, Stieger J, Imer D, Merbold L, **Buchmann N** (2014) Contrasting response of grassland *versus* forest carbon and water fluxes to spring drought in Switzerland. *Environmental Research Letters* 9: 089501.
- J155. Streit K, Siegwolf RTW, Hagedorn F, Schaub M, **Buchmann N** (2014) Lack of photosynthetic or stomatal regulation after nine years of elevated [CO₂] and four years of soil warming in two conifer species at the alpine tree line. *Plant, Cell and Environment* 37: 315–326.
- J156. Streit K, Hagedorn F, Hiltbrunner D, Portmann M, Saurer M, **Buchmann N**, Wild B, Richter A, Siegwolf RTW (2014) Soil warming alters microbial substrate use in alpine soils. *Global Change Biology* 20: 1327–1338.
- J157. Haynes AG, Schütz M, **Buchmann N**, Page-Dumroese DS, Busse MD, Risch AC (2014) Linkages between grazing history and herbivore exclusion on decomposition rates in mineral soils of subalpine grasslands. *Plant and Soil* 374: 579–591.
- J158. Klein T, Yakir D, **Buchmann N**, Grünzweig JM (2014) Towards an advanced assessment of the hydrological vulnerability of forests to climate change-induced drought. *New Phytologist* 201: 712–716.
- J159. Churakova OV (Sidorova), Eugster W, Etzold S, Cherubini P, Zielis S, Saurer M, Siegwolf R, **Buchmann N** (2014) Increasing relevance of spring temperatures for Norway spruce trees in Davos, Switzerland, after the 1950s. *Trees* 28: 183–191.
- J160. Gentsch L, Sturm P, Hammerle A, Siegwolf R, Wingate L, Ogeé J, Baur T, Plüss P, Barthel M, **Buchmann N**, Knohl A (2014) Carbon isotope discrimination during branch photosynthesis of *Fagus sylvatica*: Field measurements using laser spectrometry. *Journal of Experimental Botany* 65: 1481–1496.
- J161. Linden A, Heinonsalo J, **Buchmann N**, Oinonen M, Sonninen E, Hilasvuori E, Pumpanen J (2014) Contrasting effects of increased carbon input on boreal SOM decomposition with and without presence of living root system of *P. sylvestris*. *Plant and Soil* 377: 145-158.

- J162. Milcu A, Roscher C, Gessler A, Bachmann D, Gockele A, Guderle M, Landais D, Piel C, Escape C, Devidal S, Ravel O, **Buchmann N**, Gleixner G, Hildebrandt A, Roy J (2014) Functional diversity of leaf nitrogen concentration drives grassland carbon fluxes. *Ecology Letters* 17: 435–444.
- J163. Burri S, Sturm P, Prechsl UE, Knohl A, **Buchmann N** (2013) The impact of extreme summer drought on the short-term carbon coupling of photosynthesis to soil CO₂ efflux in a temperate grassland. *Biogeosciences Discussions* 10: 11671–11704.
Burri S, Sturm P, Prechsl UE, Knohl A, **Buchmann N** (2014) The impact of extreme summer drought on the short-term carbon coupling of photosynthesis to soil CO₂ efflux in a temperate grassland. *Biogeosciences* 11: 961–975.
- J164. Burri S, Sturm P, Baur T, Barthel M, Knohl A, **Buchmann N** (2014) The effect of physical back-diffusion of ¹³CO₂ tracer on the coupling between photosynthesis and soil CO₂ efflux in grassland. *Isotopes in Environmental and Health Studies* 50: 497–513.
- J165. Burri S, Sturm P, Baur T, Barthel M, Knohl A, **Buchmann N** (2014) The effect of physical back-diffusion of ¹³CO₂ tracer on the coupling between photosynthesis and soil CO₂ efflux in grassland - Corrigendum. *Isotopes in Environmental and Health Studies* 50: 514–515.
- J166. Merbold L, Eugster W, Stieger J, Zahniser M, Nelson D, **Buchmann N** (2014) Greenhouse gas budget (CO₂, CH₄ and N₂O) of intensively managed grassland following restoration. *Global Change Biology* 20: 1913–1928.
- J167. Prechsl UE, Gilgen AK, Kahmen A, **Buchmann N** (2014) Reliability and quality of water isotope data collected with a low budget precipitation collector. *Rapid Commun Mass Spectrom.* 28: 879–885.
- J168. Hoekstra NJ, Finn JA, **Buchmann N**, Gockele A, Landert L, Prill N, Scherer-Lorenzen M, Lüscher A (2014) Methodological tests of the use of trace elements as tracers to assess root activity. *Plant and Soil* 380: 265–283.
- J169. Verma M, Friedl MA, Richardson AD, Kiely G, Cescatti A, Law BE, Wohlfahrt G, Gielen B, Rouspard O, Moors EJ, Toscano P, Vaccari FP, Gianelle D, Bohrer G, Varlagin A, **Buchmann N**, van Gorsel E, Montagnani L, Propastin P (2013) Remote sensing of annual terrestrial gross primary productivity from MODIS: an assessment using the FLUXNET La Thuile dataset. *Biogeosciences Discussions* 10: 1–43.
Verma M, Friedl MA, Richardson AD, Kiely G, Cescatti A, Law BE, Wohlfahrt G, Gielen B, Rouspard O, Moors EJ, Toscano P, Vaccari FP, Gianelle D, Bohrer G, Varlagin A, **Buchmann N**, van Gorsel E, Montagnani L, Propastin P (2014) Remote sensing of annual terrestrial gross primary productivity from MODIS: an assessment using the FLUXNET La Thuile dataset. *Biogeosciences* 11: 2185–2200.
- J170. Hiller RV, Bretscher D, DelSontro T, Diem T, Eugster W, Henneberger R, Hobi S, Hodson E, Imer D, Kreuzer M, Künzle T, Merbold L, Niklaus PA, Rihm B, Schellenberger A, Schroth MH, Schubert CJ, Siegrist H, Stieger J, **Buchmann N**, Brunner D (2013) Anthropogenic and natural methane fluxes in Switzerland synthesized within a spatially-explicit inventory. *Biogeosciences Discussions* 10: 15181–15224.
Hiller RV, Bretscher D, DelSontro T, Diem T, Eugster W, Henneberger R, Hobi S, Hodson E, Imer D, Kreuzer M, Künzle T, Merbold L, Niklaus PA, Rihm B, Schellenberger A, Schroth MH, Schubert CJ, Siegrist H, Stieger J, **Buchmann N**, Brunner D (2014) Anthropogenic and natural methane fluxes in Switzerland synthesized within a spatially-explicit inventory. *Biogeosciences* 11: 1941–1960.
Dataset is available: <http://doi.pangaea.de/10.1594/PANGAEA.828262>
- J171. Salmon Y, Barnard R, **Buchmann N** (2014) Physiological controls of the isotopic time lag between leaf assimilation and soil CO₂ efflux. *Functional Plant Biology* 41: 850–859.
- J172. Zielis S, Etzold S, Zweifel R, Eugster W, Haeni M, **Buchmann N** (2013) Forest NEP is significantly driven by previous year's weather. *Biogeosciences Discussion* 10: 15587–15611.
Zielis S, Etzold S, Zweifel R, Eugster W, Haeni M, **Buchmann N** (2014) NEP of a Swiss subalpine forest is significantly driven not only by current but also by previous year's weather. *Biogeosciences* 11: 1627–1635.
- J173. Guanter L, Zhang Y, Jung M, Joiner J, Voigt M, Berry JA, Frankenberg C, Huete A, Zarco-Tejada P, Lee J-E, Moran S, Ponce-Campos G, Beer C, Camps-Valls G, **Buchmann N**, Gianelle D, Klumpp K, Cescatti A, Baker JM, Griffis TJ (2014) Global and time-resolved monitoring of crop photosynthesis with chlorophyll fluorescence. *PNAS* 111: E1327–E1333.

Hot paper, according to Web of Science

Highly cited paper, according to Web of Science

- J174. Tomlinson GG, Siegwolf RTW, **Buchmann N**, Schleppei P, Waldner P, Weber P (2014) The mobility of nitrogen across tree-rings of Norway spruce (*Picea abies* L.) and the effect of extraction method on tree-ring $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$. *Rapid Commun Mass Spectrom* 28: 1258–1264.
- J175. Spiegel JK, **Buchmann N**, Mayol-Bracero OL, Cuadra-Rodriguez LA, Valle Diaz CJ, Prather KA, Mertes S, Eugster W (2014) Do cloud properties in a Puerto Rican tropical montane cloud forest depend on occurrence of long-range transported African dust? *Pure and Applied Geophysics* 9: 2443-2459.
- J176. Hiller RV, Neiningger B, Brunner D, Gerbig C, Bretscher D, Künzle T, **Buchmann N**, Eugster W (2014) Aircraft based CH_4 flux estimates for validation of emissions from an agriculturally dominated area in Switzerland. *Journal of Geophysical Research - Atmospheres* 8: 4874–4887.
- J177. Bamberger I, Stieger J, Eugster W, **Buchmann N** (2014) Spatial variability of methane: Attributing atmospheric concentrations to emissions. *Environmental Pollution* 190: 65-74.
- J178. Gentsch L, Hammerle A, Sturm P, Wingate L, Ogeé J, Siegwolf R, Barthel M, Plüss P, Baur T, **Buchmann N**, Knohl A (2014) Carbon isotope discrimination during branch photosynthesis of *Fagus sylvatica*: A Bayesian modeling approach. *Plant, Cell & Environment* 37: 1516–1535.
- J179. Guanter L, Zhang Y, Jung M, Joiner J, Voigt M, Berry JA, Frankenberg C, Huete A, Zarco-Tejada P, Lee J-E, Moran S, Ponce-Campos G, Beer C, Camps-Valls G, **Buchmann N**, Gianelle D, Klumpp K, Cescatti A, Baker JM, Griffis TJ (2014) Response to Magnani et al. - Linking large-scale chlorophyll fluorescence observations with cropland gross primary production. *PNAS* 111: E2511.
- J180. Vicca S, Bahn M, Estiarte M, Alberti G, Ambus P, Arain A, Beier C, Bentley LP, Borken W, **Buchmann N**, Collins SL, Costa ACL, de Dato G, Dukes JS, Escobar C, Fay P, Guidolotti G, Hanson PJ, Kahmen A, Kröel-Dulay G, Ladreiter-Knauss T, Larsen KS, Lellei-Kovacs E, Lebrija-Trejos E, Maestre FT, Marhan S, Marshall M, Meir P, Miao Y, Muhr J, Niklaus PA, Ogaya R, Peñuelas J, Poll C, Rustad LE, Savage K, Schindlbacher A, Schmidt IK, Smith AR, Sotta ED, Suseela V, Tietema A, van Gestel N, van Loon EE, van Straaten O, Vargas R, Wan S, Weber U, Janssens IA (2014) Can current moisture responses predict soil respiration under altered precipitation regimes? A synthesis of manipulation experiments. *Biogeosciences Discussions* 11: 853–899.
- Vicca S, Bahn M, Estiarte M, Alberti G, Ambus P, Arain A, Beier C, Bentley LP, Borken W, **Buchmann N**, Collins SL, Costa ACL, de Dato G, Dukes JS, Escobar C, Fay P, Guidolotti G, Hanson PJ, Kahmen A, Kröel-Dulay G, Ladreiter-Knauss T, Larsen KS, Lellei-Kovacs E, Lebrija-Trejos E, Maestre FT, Marhan S, Marshall M, Meir P, Miao Y, Muhr J, Niklaus PA, Ogaya R, Peñuelas J, Poll C, Rustad LE, Savage K, Schindlbacher A, Schmidt IK, Smith AR, Sotta ED, Suseela V, Tietema A, van Gestel N, van Loon EE, van Straaten O, Vargas R, Wan S, Weber U, Janssens IA (2014) Can current moisture responses predict soil respiration under altered precipitation regimes? A synthesis of manipulation experiments. *Biogeosciences* 11: 2991–3013.
- Vicca S, Bahn M, Estiarte M, Alberti G, Ambus P, Arain A, Beier C, Bentley LP, Borken W, **Buchmann N**, Collins SL, Costa ACL, de Dato G, Dukes JS, Escobar C, Fay P, Guidolotti G, Hanson PJ, Kahmen A, Kröel-Dulay G, Ladreiter-Knauss T, Larsen KS, Lellei-Kovacs E, Lebrija-Trejos E, Maestre FT, Marhan S, Marshall M, Meir P, Miao Y, Muhr J, Niklaus PA, Ogaya R, Peñuelas J, Poll C, Rustad LE, Savage K, Schindlbacher A, Schmidt IK, Smith AR, Sotta ED, Suseela V, Tietema A, van Gestel N, van Loon EE, van Straaten O, Vargas R, Wan S, Weber U, Janssens IA (2014) Can current moisture responses predict soil respiration under altered precipitation regimes? A synthesis of manipulation experiments - Corrigendum. *Biogeosciences* 11: 3307–3308.
- J181. Barthel M, Sturm P, Hammerle A, **Buchmann N**, Gentsch L, Siegwolf R, Knohl A (2014) A soil H_2^{18}O labeling reveals the effect of drought on C^{18}O fluxes to the atmosphere. *J. Exp. Botany* 65: 5783–5793.
- J182. Guillod BP, Orlowsky B, Miralles D, Teuling AJ, Blanken P, **Buchmann N**, Ciais P, Ek M, Findell KL, Gentile P, Lintner B, Scott R, Van den Hurk B, Seneviratne SI (2013) Land surface controls on afternoon precipitation diagnosed from observational data: Uncertainties, confounding factors and the possible role of vegetation interception. *Atmos. Chem. Phys. Discussions* 13: 29137–29201.

- Guilod BP, Orlowsky B, Miralles D, Teuling AJ, Blanken P, **Buchmann N**, Ciais P, Ek M, Findell KL, Gentile P, Lintner B, Scott R, Van den Hurk B, Seneviratne SI (2014) Land surface controls on afternoon precipitation diagnosed from observational data: Uncertainties, confounding factors and the possible role of vegetation interception. *Atmos. Chem. Phys.* 14: 8343–8367.
- J183. Feichtinger L, Eilmann B, **Buchmann N**, Rigling A (2014) Growth adjustments of conifers to drought and to century-long irrigation in a xeric environment. *Forest Ecology and Management* 334: 96–105.
- J184. Prechsl UE, Burri S, Gilgen AK, Kahmen A, **Buchmann N** (2015) No shift to deeper water uptake depth in response to summer drought of two lowland and sub-alpine C3 grasslands in Switzerland. *Oecologia* 177: 97–111.
- J185. Lipowsky A, Roscher C, Schumacher J, Michalski SG, Gubsch M, **Buchmann N**, Schulze ED, Schmid B (2015) Plasticity of functional traits of forb species in response to biodiversity. *Perspectives in Plant Ecology, Evolution and Systematics* 17: 66–77.
- J186. Feichtinger L, Eilmann B, **Buchmann N**, Rigling A (2015) Trait-specific responses of Scots pine to irrigation at different temporal scales. *Tree Physiology* 35: 160–171.
- J187. Wright AJ, Ebeling A, de Kroon H, Roscher C, Weigelt A, **Buchmann N**, Buchmann T, Fischer C, Hacker N, Hildebrandt A, Leimer S, Mommer L, Oelmann Y, Scheu S, Steinauer K, Strecker T, Weisser W, Wilcke W, Eisenhauer N (2015) Flooding disturbances increase resource availability and productivity, but reduce stability in diverse plant communities. *Nature Communications* 6: 6092.
- J188. Bachmann D, Gockele A, Ravenek JM, Roscher C, Strecker T, Weigelt A, **Buchmann N** (2015) No evidence of complementary water use along a plant species richness gradient. *PLoS ONE* 10(1): e0116367.
Among the top 10% most cited PLOS ONE papers published in 2015
- J189. Blessing CH, Barthel M, **Buchmann N** (2015) Bias in estimated online leaf carbon discrimination due to woody tissues. *Isotopes in Environmental and Health Studies* 51: 109–123.
- J190. Finger R, **Buchmann N** (2015) An ecological economic assessment of risk-reducing effects of species diversity in managed grasslands. *Ecological Economics* 110: 89–97.
- J191. Xia J, Luo Y, Niu S, Ciais P, Janssens I, Chen J, Ammann C, Blanken PD, Cescatti A, Bonal D, **Buchmann N**, Curtis PS, Chen S, Dong J, Flanagan LB, Frankenberg C, Georgiadis T, Gough CM, Hui D, Kiely G, Li J, Lund M, Magliulo V, Marcolla B, Merbold L, Montagnani L, Moors E, Olesen JE, Piao S, Raschi A, Rouspard O, Suyker A, Urbaniak M, Vaccari F, Varlagi A, Vesala T, Wilkinson M, Weng E, Wohlfahrt G, Yan L (2015) Joint control of terrestrial gross primary productivity by plant phenology and physiology. *PNAS* 112: 2788–2793.
Highly cited paper, according to Web of Science
- J192. Blessing CH, Werner RA, Siegwolf R, **Buchmann N** (2015) Allocation dynamics of recently fixed carbon in beech saplings in response to increased temperatures and drought. *Tree Physiology* 35: 585–98.
- J193. Roden J, Kahmen A, **Buchmann N**, Siegwolf R (2015) The enigma of effective pathlength for ¹⁸O enrichment in leaf water of conifers. *Plant, Cell and Environment* 38: 2551–2565.
- J194. Lehmann MM, Rinne KT, Blessing C, Siegwolf RTW, **Buchmann N**, Werner RA (2015) Malate as main carbon source of leaf dark-respired CO₂ across different environmental conditions in potato plants. *Journal of Experimental Botany* 19: 5769–5781.
- J195. Frank D, Reichstein M, Bahn M, Thonicke K, Frank D, Mahecha M, Smith P, van der Velde M, Vicca S, Babst F, Beer C, **Buchmann N**, Canadell JG, Ciais P, Cramer W, Ibrom A, Miglietta F, Poulter B, Rammig A, Seneviratne SI, Walz A, Wattenbach M, Zavala MA, Zeischler J (2015) Effects of climate extremes on the terrestrial carbon cycle: concepts, processes and potential future impacts. *Global Change Biology* 21: 2861–2880.
One of 2015's and 2017's 15 most-downloaded paper in GCB.
Highly cited paper, according to Web of Science
- J196. Damm A, Guanter L, Paul-Limoges E, van der Tol C, Hueni A, **Buchmann N**, Eugster W, Ammann C, Schaepman ME (2015) Far-red sun-induced chlorophyll fluorescence shows ecosystem-specific relationships to gross primary production: An assessment based on observational and modeling approaches. *Remote Sensing Environment* 166: 91–105.
Highly cited paper, according to Web of Science

- J197. Pflug EE, Siegwolf R, **Buchmann N**, Dobbertin M, Kuster TM, Günthardt-Goerg MS, Arend M (2015) Growth cessation uncouples isotopic signals in leaves and tree rings of drought-exposed oak trees. *Tree Physiology* 35: 1095–1105.
- J198. D'Odorico P, Gonsamo A, Gough CM, Bohrer G, Morison J, Wilkinson M, Hanson PJ, Gianelle D, Fuentes JD, **Buchmann N** (2015) The match and mismatch between photosynthesis and land surface phenology of deciduous forests. *Agricultural and Forest Meteorology* 214-215: 25-38.
- J199. Stieger J, Bamberger I, **Buchmann N**, Eugster W (2015) Validation of farm-scale methane emissions using nocturnal boundary layer budgets. *Atmos. Chem. Phys. Discuss.* 15, 21765-21802.
Stieger J, Bamberger I, **Buchmann N**, Eugster W (2015) Validation of farm-scale methane emissions using nocturnal boundary layer budgets. *Atmos. Chem. Phys.* 15: 14055–14069.
- J200. Tomlinson G, **Buchmann N**, Siegwolf R, Weber P, Thimonier A, Graf Pannatier E, Schmitt M, Schaub M, Waldner P (2016) Can tree-ring $\delta^{15}\text{N}$ be used as a proxy for foliar $\delta^{15}\text{N}$ in European beech and Norway spruce? *Trees* 30: 627–638.
- J201. Milcu A, Eugster W, Bachmann D, Guderle M, Roscher C, Gockele A, Landais D, Ravel O, Gessler A, Lange M, Ebeling A, Weisser WW, Roy J, Hildebrandt, **Buchmann N** (2016) Plant functional diversity increases grassland productivity-related water vapor fluxes: an Ecotron and modeling approach. *Ecology* 97: 2044–2054.
- J202. Adams MA, Turnbull TL, Sprent JI, **Buchmann N** (2016) Legumes are different: leaf nitrogen, photosynthesis and water use efficiency. *PNAS* 113:4098–4103.
<http://www.pnas.org/content/113/15/4098.full.pdf?with-ds=yes>
Dataset is available as supplement to the article.
- J203. Salmon Y, **Buchmann N**, Barnard RL (2016) Effects of ontogeny on $\delta^{13}\text{C}$ of plant- and soil-respired CO_2 and on respiratory carbon fractionation in C_3 herbaceous species. *PLoS ONE* 11(3): e0151583.
- J204. Frossard E, **Buchmann N**, Bünemann EK, Kiba DI, Lompo F, Oberson A, Tamburini F, Traoré OYA (2015) Soil properties and not inputs control carbon, nitrogen, phosphorus ratios in cropped soils in the long-term. *SOIL Discussions* 2: 995-1038.
Frossard E, **Buchmann N**, Bünemann EK, Kiba DI, Lompo F, Oberson A, Tamburini F, Traoré OYA (2016) Soil properties and not inputs control carbon, nitrogen, phosphorus ratios in cropped soils in the long-term. *SOIL* 2: 83–99.
- J205. Pérez-Harguindeguy N, Díaz S, Garnier E, Lavorel S, Poorter H, Jaureguiberry P, Bret-Harte MS, Cornwell WK, Craine JM, Gurvich DE, Urcelay C, Veneklaas EJ, Reich PB, Poorter L, Wright IJ, Ray P, Enrico L, Pausas JG, de Vos AC, **Buchmann N**, Funes G, Quétier AF, Hodgson JG, Thompson K, Morgan HD, ter Steege H, van der Heijden MGA, Sack L, Blonder B, Poschlod P, Vaieretti V, Conti G, Staver AC, Aquino S, Cornelissen JHC (2016) Corrigendum: New handbook for standardised measurement of plant functional traits worldwide. *Australian Journal of Botany* 64: 715-716.
- J206. Zweifel R, Haeni M, **Buchmann N**, Eugster W (2016) Are trees able to grow in periods of stem shrinkage? *New Phytologist* 211: 839–849.
Dataset is available: <https://doi.pangaea.de/10.1594/PANGAEA.859148>
- J207. Niklaus PA, Le Roux X, Poly F, **Buchmann N**, Scherer-Lorenzen M, Weigelt A, Barnard RL (2016) Plant species diversity affects soil-atmosphere fluxes of methane and nitrous oxide. *Oecologia* 181:919–930.
- J208. Hofer D, Suter M, Haughey E, Finn JA, Hoekstra NJ, **Buchmann N**, Lüscher A (2016) Yield of temperate forage grassland species is either largely resistant or resilient to experimental summer drought. *Journal of Applied Ecology* 53: 1023–1034.
- J209. Lehmann MM, Wegener F, Barthel M, Maurino V, Siegwolf RTW, **Buchmann N**, Werner C, Werner RA (2016) Metabolic fate of the carboxyl groups of malate and pyruvate and their influence on $\delta^{13}\text{C}$ of leaf-respired CO_2 during light enhanced dark respiration. *Frontiers in Plant Science* 7: 739.
- J210. Husse S, Huguenin-Elie O, **Buchmann N**, Lüscher A (2016) Larger yields of mixtures than monocultures of cultivated grassland species match with asynchrony in shoot growth among species but not with increased light interception. *Field Crops Research* 194: 1-11.

- J211. Endrulat T, **Buchmann N**, Brunner I (2016) Carbon allocation into different fine-root classes of young *Abies alba* trees is affected more by phenology than by simulated browsing. *PLoS ONE* 11(4): e0154687.
- J212 Brinkmann N, Eugster W, Zweifel R, **Buchmann N**, Kahmen A (2016) Temperate tree species show identical response in tree water deficit but different sensitivities in sap flow to summer soil dryings. *Tree Physiology* 36: 1508–1519.
- J213. Risi C, Ogée J, Bony S, Bariac T, Raz-Yaseef N, Wingate L, Welker J, Knohl A, Kurz-Besson C, Leclerc M, Zhang G, **Buchmann N**, Santrucek J, Hronkova M, David T, Peylin P, Guglielmo F (2016) The water isotopic version of the land-surface model ORCHIDEE: Implementation, evaluation, sensitivity to hydrological parameters. *Hydrology Current Research* 7: 258.
- J214. Meyer ST, Ebeling A, Eisenhauer N, Hertzog L, Hillebrand H, Milcu A, Pompe S, Abbas M, Bessler H, **Buchmann N**, de Luca E, Engels C, Fischer M, Gleixner G, Hudewenz A, Klein AM, de Kroon H, Leimer S, Loranger H, Marquard E, Mommer L, Oelmann Y, Ravenek J, Roscher C, Rottstock T, Scherber C, Scherer-Lorenzen M, Scheu S, Schmid B, Schulze ED, Staudler A, Strecker T, Temperton V, Tschardt T, Vogel A, Voigt W, Weigelt A, Wilcke W, Weisser WW (2016) Effects of biodiversity strengthen over time as ecosystem functioning declines at low and increases at high biodiversity. *Ecosphere* 7(12):e01619.
- J215. Blessing CH, Barthel M, Gentsch L, **Buchmann N** (2016) Strong coupling of shoot assimilation and soil respiration during drought and recovery periods in beech as indicated by natural abundance $\delta^{13}\text{C}$ measurements. *Frontiers in Plant Science* 7: 1710.
- J216. Haeni M, Zweifel R, Eugster W, Gessler A, Zielis S, Carrara A, Knohl A, Havránková K, Herbst M, Ibrom A, Lagergren F, Marek M, Matteucci G, Moors E, Olejnik J, Pavelka M, Pilegaard K, Pita G, Rodrigues A, Sanz MJ, Schelhaas MJ, Urbaniak M, Valentini R, Vesala T, Wu J, **Buchmann N** (2017) Winter respiratory C losses provide explanatory power for net ecosystem productivity. *Journal of Geophysical Research – Biogeosciences* 122: 243-260.
- J217. Hofer D, Suter M, **Buchmann N**, Lüscher A (2017) Nitrogen status of functionally different forage species explains resistance to severe drought and post-drought overcompensation. *Agriculture, Ecosystems and Environment* 236: 312-322.
- J218. Bamberger I, Oney B, Brunner D, Henne S, Leuenberger M, **Buchmann N**, Eugster W (2017) Observations of atmospheric methane and carbon dioxide mixing ratios: Tall tower or mountain top stations? *Boundary-Layer Meteorology* 163: 135-159.
- J219. Gonsamo A, D'Odorico P, Chen JM, Wu C, **Buchmann N** (2017) Changes in vegetation phenology are not reflected in atmospheric CO_2 and $^{13}\text{C}/^{12}\text{C}$ seasonality. *Global Change Biology* 23: 4029–4044.
- J220. Walter A, Finger F, Huber R, **Buchmann N** (2017) Smart farming is key to developing sustainable agriculture. *PNAS* 114: 6148-6150.
- J221. Zhang Z, Zhang R, Cescatti A, Wohlfahrt G, **Buchmann N**, Zhu J, Chen G, Moyano F, Pumpanen J, Hirano T, Takagi K, Merbold L (2017) Effect of climate warming on the annual terrestrial net ecosystem CO_2 exchange globally in the boreal and temperate regions. *Scientific Reports* 7: 3108.
- J222. Feichtinger LM, Siegwolf R, Gessler A, **Buchmann N**, Lévesque M, Rigling A (2017) Plasticity in gas-exchange physiology of mature Scots pine and European larch drive short- and long-term adjustments to changes in water availability. *Plant, Cell & Environment* 40: 1972 –1983.
- J223. Braun D, Damm A, Paul-Limoges E, Revall A, **Buchmann N**, Petchey OL, Hein L, Schaepman ME (2017) From instantaneous to continuous: Using imaging spectroscopy and in situ data to map two productivity-related ecosystem services. *Ecological Indicators* 82: 409-419.
- J224. Weisser W, Roscher C, Meyer ST, Ebeling A, Luo G, Allan E, Beßler H, Barnard R, **Buchmann N**, Buscot F, Engels C, Fischer C, Fischer M, Gessler A, Gleixner G, Halle S, Hildebrandt A, Hillebrand H, De Kroon H, Lange M, Leimer S, Le Roux X, Milcu A, Mommer L, Niklaus P, Oelmann Y, Proulx R, Scherber C, Scherer-Lorenzen M, Scheu S, Tschardt T, Wachendorf M, Wagg C, Weigelt A, Wilcke WW, Schulze ED, Schmid B, Eisenhauer N (2017) Biodiversity effects on ecosystem functioning in a 15-year grassland experiment: patterns, mechanisms, and open questions. *Basic and Applied Ecology* 23: 1-73.

Most cited paper of Basic and Applied Ecology in 2017
Highly cited paper, according to Web of Science

- J225. Yao Y, Liang S, Li X, Zhang Y, Chen J, Jia K, Zhang X, Fisher JB, Wang X, Zhang L, Xu J, Shao C, Posse G, Li Y, Magliulo V, Varlagin A, Moors EJ, Boike J, Macfarlane C, Kato T, **Buchmann N**, Billesbach DP, Beringer J, Wolf S, Papuga SA, Wohlfahrt G, Montagnani L, Ardö J, Paul-Limoges E, Emmel C, Hörtnagl L, Sachs T, Gruening C, Gioli B, López-Ballesteros A, Steinbrecher R, Gielen B (2017) Estimation of high-resolution terrestrial evapotranspiration from Landsat data using a simple Taylor skill fusion method. *Journal of Hydrology* 553: 508-526.
- J226. Paul-Limoges E, Wolf S, Eugster W, Hörtnagl L, **Buchmann N** (2017) Below canopy contributions to ecosystem CO₂ fluxes in a temperate mixed forest in Switzerland. *Agricultural and Forest Meteorology* 247: 582-596.
- J227. Husse S, Lüscher A, **Buchmann N**, Hoekstra N, Huguenin-Elie O (2017) Effects of mixing forage species contrasting in vertical and temporal nutrient capture on nutrient yields and fertilizer recovery in productive grasslands. *Plant and Soil* 420: 505-521.
- J228. Hofer D, Suter M, **Buchmann N**, Lüscher A (2017) Severe water deficit restricts biomass production of *Lolium perenne* L. and *Trifolium repens* L. and causes foliar nitrogen but not carbohydrate limitation. *Plant and Soil* 421: 367-380.
- J229. Wagg C, Ebeling A, Roscher C, Ravenek J, Bachmann D, Eisenhauer N, Mommer L, **Buchmann N**, Hillebrand H, Schmid B, Weisser W (2017) Functional trait dissimilarity drives both species complementarity and competitive disparity. *Functional Ecology* 31: 2320-2329.
- J230. Eugster E, Emmel C, Wolf S, **Buchmann N**, McFadden JP, Whiteman CD (2017) Effects of vernal equinox solar eclipse on temperature and wind direction in Switzerland. *Atmospheric Chemistry and Physics Discussion*. <https://doi.org/10.5194/acp-2017-321>
Eugster E, Emmel C, Wolf S, **Buchmann N**, McFadden JP, Whiteman CD (2017). Effects of vernal equinox solar eclipse on temperature and wind direction in Switzerland. *Atmospheric Chemistry and Physics* 17: 14887-14904.
- J231. Guderle M, Bachmann D, Milcu A, Gockele A, Bechmann M, Fischer C, Roscher C, Landais D, Ravel O, Devidal S, Roy J, Gessler A, **Buchmann N**, Hildebrandt A (2018) Dynamic niche partitioning in root water uptake facilitates efficient water use in more diverse plant communities. *Functional Ecology* 32: 214-227.
- J232. Meyer ST, Ptacnik R, Hillebrand H, Bessler H, **Buchmann N**, Ebeling A, Eisenhauer N, Engels C, Fischer M, Halle S, Klein AM, Oelmann Y, Roscher C, Rottstock T, Scherber C, Scheu S, Schmid B, Schulze ED, Temperton V, Tschardt T, Voigt W, Weigelt A, Wilcke W, Weisser WW (2018) Biodiversity-multifunctionality relationships depend on identity and number of measured functions. *Nature Ecology & Evolution* 2: 44-49.
- J233. Adams MA, Buckley TN, Salter W, **Buchmann N**, Blessing C, Turnbull TL (2018) Contrasting responses of crop legumes and cereals to nitrogen availability. *New Phytologist* 217: 1475-1483.
- J234. Bachmann D, Roscher C, **Buchmann N** (2018) How do leaf trait values change spatially and temporally with light availability in a grassland diversity experiment? *Oikos* 127: 935-948.
- J235. Milcu A, Puga-Freitas R, Ellison AM, Blouin M, Scheu S, Girin T, Freschet GT, Rose L, Scherer-Lorenzen M, Barot S, Lata JC, Cesarz S, Eisenhauer N, Gigon A, Weigelt A, Hansart A, Greiner A, Pando A, Gessler A, Grignani C, Assandri D, Gleixner G, Le Galliard JF, Urban-Mead K, Zavattaro L, Müller MEH, Lange M, Lukac M, Bonkowski M, Mannerheim N, **Buchmann N**, Butenschoen O, Rotter P, Seyhun R, Devidal S, Kayler Z, Roy J (2018) Genotypic variability enhances the reproducibility of an ecological study. *Nature Ecology & Evolution* 2: 279-287.
Dataset is available via Pangaea: <https://doi.org/10.1594/PANGAEA.880980>
- J236. Roscher C, Gubsch M, Lipowsky A, Schumacher J, Weigelt A, **Buchmann N**, Schulze ED, Schmid B (2018) Trait means, trait plasticity and trait differences to other species jointly explain species performances in grasslands of varying diversity. *Oikos* 127: 855-865.
- J237. Hörtnagl L, Barthel M, **Buchmann N**, Eugster W, Butterbach-Bahl K, Díaz-Pinés E, Zeeman M, Klumpp K, Kiese R, Burri S, Bahn M, Hammerle A, Ladreiter-Knauss T, Lu H, Merbold L (2018) Greenhouse gas fluxes over managed grasslands in Central Europe. *Global Change Biology* 24:1843-1872.
One of the top 25 most downloaded articles of Global Change Biology in 2018
- J238. von Buttlar J, Zscheischler J, Rammig A, Sippel S, Reichstein M, Knohl A, Jung M, Menzer O, Arain A, **Buchmann N**, Cescatti A, Geinelle D, Jakobs C, Kiely G, Law B, Lindroth A, Magliulo V, Margolis H, McCaughey H, Merbold L, Migliavacca M, Montagnani L, Oechel W, Pavelka M, Peichl M, Rambal S, Raschi A, Scott RL, Vaccari FP, van Gorsel E, Varlagin A, Wohlfahrt G,

- Mahecha MD (2017) Impacts of droughts and extreme temperature events on gross primary production and ecosystem respiration: a systematic assessment across ecosystems and climate zones. *Biogeosciences Discussion* <https://www.biogeosciences-discuss.net/bg-2017-393/>
- von Buttlar J, Zscheischler J, Rammig A, Sippel S, Reichstein M, Knohl A, Jung M, Menzer O, Arain A, **Buchmann N**, Cescatti A, Geinelle D, Jakobs C, Kiely G, Law B, Lindroth A, Magliulo V, Margolis H, McCaughey H, Merbold L, Migliavacca M, Montagnani L, Oechel W, Pavelka M, Peichl M, Rambal S, Raschi A, Scott RL, Vaccari FP, van Gorsel E, Varlagin A, Wohlfahrt G, Mahecha MD (2018) Impacts of droughts and extreme temperature events on gross primary production and ecosystem respiration: a systematic assessment across ecosystems and climate zones. *Biogeosciences* 15, 1293–1318.
- J239. Roscher C, Temperton VM, Scherer-Lorenzen M, Schmitz M, Schumacher J, Schmid B, **Buchmann N**, Weisser WW, Schulze ED (2018) Corrigendum: Overyielding in experimental grassland communities – irrespective of species pool or spatial scale. *Ecology Letters* 21: 943-943.
- J240. Jesch A, Barry K, Ravenek J, Bachmann D, Strecker T, Weigelt A, Roscher C, Gessler A, Mommer L, de Kroon H, **Buchmann N**, Scherer-Lorenzen M (2018) Belowground resource partitioning alone cannot explain the biodiversity-ecosystem function relationship: A field test using multiple tracers. *Journal of Ecology* 106: 2002-2018.
- J241. Pflug EE, **Buchmann N**, Siegwolf RTW, Schaub M, Rigling A, Arend M (2018) Resilient leaf physiological response of European beech (*Fagus sylvatica* L.) to summer drought and drought release. *Frontiers in Plant Science* 9: 187.
- J242. Roscher C, Schumacher J, Gubsch M, Lipowsky A, Weigelt A, **Buchmann N**, Schmid B, Schulze ED (2018) Origin context of trait data matters for predictions of community performance in a grassland biodiversity experiment. *Ecology* 99: 1214-1226.
- J243. Adams MA, **Buchmann N**, Sprent J, Buckley TN, Turnbull TL (2018) Crops, nitrogen and water: are legumes friend, foe or misunderstood ally? *Trends in Plant Science* 23: 539-550.
- J244. Cornwell WK, Wright I, Turner J, Maire V, Barbour M, Cernusak L, Dawson T, Ellsworth D, Farquhar G, Griffiths H, Keitel C, Knohl A, Reich P, Williams DG, Bhaskar R, Cornelissen J, Richards A, Schmidt S, Valladares F, Körner C, Schulze ED, **Buchmann N**, Santiago L (2018) Climate and soils together regulate photosynthetic carbon isotope discrimination within C-3 plants worldwide. *Global Ecology and Biogeography* 7: 1056–1067.
Dataset is available at <https://zenodo.org/record/569501#.W9jQgExFw2w>
- J245. Brinkmann N, Seeger S, Weiler M, **Buchmann N**, Eugster W, Kahmen A (2018) Employing stable isotopes to determine the residence times of soil water and the temporal origin of water taken up by *Fagus sylvatica* and *Picea abies* in a temperate forest. *New Phytologist* 219: 1300-1313.
- J246. Liu Y, Ding Z, Bachofen C, Lou Y, Jiang M, Tang X, Lu X, **Buchmann N** (2018) The effect of saline-alkaline and water stresses on water use efficiency and standing biomass of *Phragmites australis* and *Bolboschoenus planiculmis*. *Science to the Total Environment* 644: 207-216.
- J247. Roscher C, Schumacher J, Gubsch M, Lipowsky A, Weigelt A, **Buchmann N**, Schulze ED, Schmid B (2018) Interspecific trait differences rather than intraspecific trait variation increase the extent and filling of community trait space with increasing plant diversity in experimental grasslands. *Perspectives in Plant Ecology, Evolution and Systematics* 33: 42-50.
- J248. Roscher C, Lipowsky A, Gubsch M, Schumacher J, Schmid B, **Buchmann N**, Schulze ED (2018) Functional groups differ in trait means, but not in trait plasticity to species richness in local grassland communities. *Ecology* 99: 2295–2307.
- J249. Craven D, Eisenhauer N, Pearse WD, Hautier Y, Roscher C, Isbell F, Bahn M, Beierkuhnlein C, Bonisch G, **Buchmann N**, Byun C, Catford JA, Cerabolini BEL, Cornelissen JHC, Craine JM, De Luca E, Ebeling A, Griffin JN, Hector A, Hines J, Jentsch A, Kattge J, Kreyling J, Lanta V, Lemoine N, Meyer ST, Minden V, Onipchenko V, Polley HW, Reich PB, van Ruijven J, Schamp B, Smith MD, Soudzilovskaia NA, Tilman D, Weigelt A, Wilsey B, Manning P (2018) Multiple facets of biodiversity drive the diversity-stability relationship. *Nature Ecology & Evolution* 2: 1579-1587.
- J250. Emmel C, Winkler A, Hörtnagl L, Revell A, Ammann C, D'Odorico P, **Buchmann N**, Eugster W (2018) Integrated management of a Swiss cropland is not sufficient to preserve its soil carbon pool in the long-term. *Biogeosciences Discussion* <https://doi.org/10.5194/bg-2018-205>

- Emmel C, Winkler A, Hörtnagl L, Revill A, Ammann C, D'Odorico P, **Buchmann N**, Eugster W (2018) Integrated management of a Swiss cropland is not sufficient to preserve its soil carbon pool in the long-term. *Biogeosciences* 15: 5377-5393.
- J251. Franz D, Acosta M, Altimir N, Arriga N, Aubinet M, Aurela M, Arrouays D, Ayres E, López-Ballesteros A, Barbaste M, Berveiller D, Boukir H, Brown T, Brümmer C, **Buchmann N**, Burba G, Carrara A, Cescatti A, Ceschia E, Clement R, Cremonese E, Crill P, Dařenová E, Dengel S, D'Odorico P, Fleck S, Fratini G, Fuß R, Gielen B, Gogo S, Grace J, Graf A, Gross P, Grünwald T, Haapanala S, Hehn M, Heinesch B, Heiskanen J, Herbst M, Hörtnagl L, Ibrom A, Jolivet C, Joly J, Jones M, Kiese R, Klemedtsson L, Kljun N, Klumpp K, Kolari P, Kolle O, Kowalski A, Kutsch W, Laurila T, de Ligne A, Linder S, Lindroth A, Lohila A, Longdoz B, Mammarella I, Manise T, Marañón Jiménez S, Matteucci G, Mauder M, McDermitt DK, Meier P, Merbold L, Mereu S, Metzger C, Metzger S, Migliavacca M, Mölder M, Montagnani L, Moureaux C, Nelson D, Nemitz E, Nicolini G, Nilsson MB, Op de Beeck M, Osborne B, Ottosson Löfvenius M, Pavelka M, Peichl M, Peltola O, Pihlatie M, Pitacco A, Pokorny R, Pumpanen J, Ratié C, Rebmann C, Roland M, Sabbatini S, Saby NPA, Saunders M, Schmid HP, Schrupf M, Sedlák P, Serrano Ortiz P, Siebicke L, Šigut L, Silvennoinen H, Simioni G, Skiba U, Sonnentag O, Soulé P, Steinbrecher R, Tallec T, Thimonier A, Tuittila ES, Tuovinen JP, Vestin P, Vincke C, Vitale D, Waldner P, Weslien P, Wingate L, Wohlfahrt G, Zahniser M, Vesala T (2018) Towards long-term standardised carbon and greenhouse gas observations for monitoring Europe's terrestrial ecosystems. *International Agrophysics* 32: 439-455.
- J252. Käslin F, Baur T, Meier P, Koller P, **Buchmann N**, D'Odorico P, Eugster W (2018) Novel twig sampling method by unmanned aerial vehicle (UAV). *Frontiers In Forests and Global Change* 1:2.
- J253. Fuchs K, Hörtnagl L, **Buchmann N**, Eugster W, Snow V, Merbold L (2018) Management matters: testing a mitigation strategy for nitrous oxide emissions using legumes on intensively managed grassland. *Biogeosciences Discussion* <https://doi.org/10.5194/bg-2018-192>
Fuchs K, Hörtnagl L, **Buchmann N**, Eugster W, Snow V, Merbold L (2018) Management matters: testing a mitigation strategy for nitrous oxide emissions using legumes on intensively managed grassland. *Biogeosciences* 15: 5519-5543.
- J254. Paul-Limoges E, Damm A, Hueni A, Liebisch F, Eugster W, Schaepman ME, **Buchmann N** (2018) Effect of environmental conditions on sun-induced fluorescence in a mixed forest and a cropland. *Remote Sensing Environment* 219: 310-323.
- J255. Gielen B, Acosta M, Altimi N, **Buchmann N**, Cescatti A, Ceschia E, Fleck S, Hörtnagl L, Klumpp K, Kolari P, Lohila A, Loustau D, Marañón-Jimenez S, Manise T, Matteucci G, Merbold L, Metzger C, Moureaux C, Montagnani L, Nilsson MB, Osborne B, Papale D, Pavelka M, Saunders M, Simioni G, Soudani K, Sonnentag O, Tallec T, Tuittila ES, Peichl M, Pokorny R, Vincke C, Wohlfahrt G (2018) Ancillary vegetation measurements at ICOS ecosystem stations. *International Agrophysics* 32: 645-664.
- J256. Besnard S, Carvalhais N, Arain AM, Black A, de Bruin S, **Buchmann N**, Cescatti A, Chen J, Clevers JGPW, Desai AR, Gough CM, Havrankova K, Herold M, Hörtnagl L, Jung M, Knohl A, Kruit B, Krupkova L, Law B, Lindroth A, Noormets A, Rouspard O, Steinbrecher R, Varlagin A, Vincke C, Reichstein M (2018) Quantifying the effect of forest age in annual net forest carbon balance. *Environmental Research Letters* 13: 124018.
- J257. Burri S, Niklaus PA, **Buchmann N**, Kahmen A (2018) Effects of plant productivity and species richness on the drought response of soil respiration in temperate grasslands. *PLoS ONE* 13(12): e0209031.
- J258. Grant M, Shreck A, **Buchmann N** (2018) Tackling food system challenges through experiential education: criteria for optimal course design. *Gaia* 27: 169-175.
- J259. Brinkmann N, Eugster W, **Buchmann N**, Kahmen A (2019) Species-specific differences in water uptake depth of mature temperate trees vary with water availability in the soil. *Plant Biology* 21: 71-81.
One of top 10% most-downloaded papers 2018/2019 as well as 2019/2020 in Plant Biology.
- J260. D'Odorico P, Emmel C, Revill A, Liebisch F, Eugster W, **Buchmann N** (2019) Vertical patterns of photosynthesis and related leaf traits in two contrasting agricultural crops. *Functional Plant Biology* 46: 213-227.
- J261. Stieger J, Bamberger I, Siegwolf RTW, **Buchmann N**, Eugster W (2019) Source partitioning of atmospheric methane using carbon isotopes in the Reuss Valley, Switzerland. *Isotopes in Environmental & Health Studies* 55: 1-24.

- J262. Roscher C, Karlowsky S, Milcu A, Gessler A, Bachmann D, Jesch A, Lange M, Mellado-Vázquez P, Strecker T, Landais D, Ravel O, **Buchmann N**, Roy J, Gleixner G (2019) Functional composition has stronger impact than species richness on carbon gain and allocation in experimental grasslands. *PLoS One* 14(1): e0204715J257.
- J263. Besnard S, Carvalhais N, Brede B, Clevers JGPW, Dutrieux LP, Gans F, Jung M, Reichstein M, Arain A, Black A, **Buchmann N**, Chen J, Kosugi Y, Knohl A, Law BE, Paul-Limoges E, Lohila A, Merbold L, Roupsard O, Valentini R, Wolf S, Zhang X (2019) Memory effects of climate and vegetation affecting net ecosystem CO₂ fluxes in global forests. *PLoS One* 14(2): e0211510.
One of the top 10% most cited PLOS ONE papers published in 2019.
- J264. Revill A, Emmel C, D'Odorico P, **Buchmann N**, Hörtnagl L, Eugster W (2019) Estimating cropland carbon fluxes: a process-based model evaluation at a Swiss crop-rotation site. *Field Crops Research* 234: 95-106.
- J265. Schuldt A, Ebeling A, Kunz M, Staab M, Guimarães-Steinicke C, Bachmann D, **Buchmann N**, Durka W, Fichtner A, Fornoff F, Härdtle W, Hertzog L, Klein AM, Roscher C, Schaller J, von Oheimb G, Weigelt A, Weisser W, Wirth C, Zhang J, Bruelheide H, Eisenhauer N (2019) Multiple plant diversity components drive consumer communities across ecosystems. *Nature Communications* 10: 1460.
- J266. Mannerheim N, Werner RA, **Buchmann N** (2019) Measurement precision and accuracy of high artificial enrichment ¹⁵N and ¹³C tracer samples. *Rapid Communications in Mass Spectrometry* 33: 1153-1163.
- J267. Peaucelle M, Bacour C, Ciais P, Vuichard N, Kuppel S, Penuelas J, Belelli Marchesini L, Blanken PD, **Buchmann N**, Chen J, Delpierre N, Desai AR, Dufrêne E, Gianelle D, Gimeno-Colera C, Gruening C, Helfter C, Hörtnagl L, Ibrom A, Joffre R, Kato T, Kolb T, Law B, Lindroth A, Mammarella I, Merbold L, Minerbi S, Montagnani L, Šigut L, Sutton M, Varlagin A, Vesala T, Wohlfahrt G, Wolf S, Yakir D, Viovy N (2019) Covariations between plant functional traits emerge from constraining parameterization of a terrestrial biosphere model with in situ GPP estimates. *Global Ecology and Biogeography* 28: 1351–1365.
- J268. Herzog C, Hartmann M, Frey B, Stierli B, Rumpel C, **Buchmann N**, Brunner I (2019) Microbial succession on decomposing root litter in a drought-prone Scots pine forest. *ISME Journal* 13: 2346-2362.
- J269. Temperton VM, **Buchmann N**, Buisson E, Durigan G, Kazmierczak L, Perring MP, de Sá Dechoum M, Veldman JW, Overbeck GE (2019) Step back from the forest and step up to the Bonn Challenge: How a broad ecological perspective can promote successful landscape restoration. *Restoration Ecology* 27: 705-719.
One of top 10% most-downloaded papers 2018/2019 and 2019/2020 in Restoration Ecology.
- J270. Grant M, Gilgen AK, **Buchmann N** (2019) The rich picture method: a simple tool for reflective teaching and learning on sustainable food systems. *Sustainability* 11: 4815.
- J271. Eisenhauer N, Schielzeth H, Barnes A, Barry K, Bonn A, Brose U, Bruelheide H, **Buchmann N**, Buscot F, Ebeling A, Ferlian O, Freschet GT, Gilling DP, Hättenschwiler S, Hillebrand H, Hines J, Isbell F, Koller-France E, König-Ries B, de Kroon H, Meyer ST, Milcu A, Nock CA, Petermann JS, Roscher C, Scherber C, Scherer-Lorenzen M, Schmid B, Schnitzer SA, Tschardt T, Türke M, van Dam NM, van der Plas F, Vogel A, Wagg C, Wardle DA, Weigelt A, Weisser WW, Wirth C, Jochum M (2019) A multitrophic perspective on biodiversity–ecosystem functioning research. *Advances in Ecological Research* 61: 1-54.
- J272. Manning P, Loos J, Barnes AD, Batàry P, Bianchi FJJA, **Buchmann N**, De Deyn GB, Ebeling A, Eisenhauer N, Fischer M, Fründ J, Grass I, Isselstein J, Jochum M, Klein AM, Klingenberg EOF, Landis DA, Lepš J, Lindborg R, Meyer ST, Temperton V, Westphal C, Tschardt T (2019) Transferring biodiversity-ecosystem function research to the management of 'real-world' ecosystems. *Advances in Ecological Research* 61: 323-356.
- J273. LeClerc S, Huber R, **Buchmann N**, Gosal A, Hörtnagl L, Huguenin-Elie O, Jeanneret P, Lüscher A, Schneider M, Finger R (2019) Assessment of spatial variability of multiple ecosystem services in grasslands of different intensities. *Journal of Environmental Management* 251: 109372.
- J274. Veldman JW, Aleman JC, Alvarado ST, Anderson TM, Archibald S, Bond WJ, Boutton TW, **Buchmann N**, Buisson E, Canadell JG, de Sá Dechoum M, Diaz-Toribio MH, Durigan G, Ewel JJ, Wilson Fernandes G, Fidelis A, Fleischman F, Good SP, Griffith DM, Hermann JM, Hoffmann WA, Le Stradic S, Lehmann CER, Mahy G, Nerlekar AN, Nippert JB, Noss RF, Osborne CP, Overbeck GE, Parr CL, Pausas JG, Pennington RT, Perring MP, Putz FE, Ratnam R, Sankaran

- M, Schmidt IB, Schmitt CB, Silveira FAO, Staver AC, Stevens N, Still C, Strömberg CAE, Temperton VM, Varner M, Zaloumis NP (2019) Comment on “The global tree restoration potential”. *Science* 366: 6463, eaay7976.
- J275. Csilléry K, Ovaskainen O, Sperisen C, **Buchmann N**, Widmer A, Gugerli F (2020) Adaptation to local climate in a multi-trait space: evidence from silver fir (*Abies alba* Mill.) populations across a heterogeneous environment. *Heredity* 124: 77-92
- J276. Oren I, Mannerheim N, Dumbur R, Fangmeier A, **Buchmann N**, Grünzweig JM (2020) Patterns and dynamics of canopy-root coupling in tropical tree saplings vary with light intensity but not with root depth. *New Phytologist* 225: 727-739.
- J277. Schaub S, Lüscher A, **Buchmann N**, Finger F (2020) Economic benefits from plant species diversity in intensively managed grasslands. *Ecological Economics* 168: 106488.
- J278. Barry KE, van Ruijven J, Mommer L, Bai Y, Beierkuhnlein C, **Buchmann N**, de Kroon H, Ebeling A, Eisenhauer N, Guimaraes-Steinicke C, Hildebrandt A, Isbell F, Milcu A, Neßhöver C, Reich P, Roscher C, Sauheitl L, Scherer-Lorenzen M, Schmid B, Tilman GD, von Felten S, Weigelt A (2020) Limited evidence for spatial resource partitioning across temperate grassland biodiversity experiments. *Ecology* 101, e02905.
- One of top 10% most-downloaded papers 2018/2019 in Ecology.*
- J279. Buzhdygan O Y, Meyer ST, Weisser WW, Eisenhauer N, Ebeling A, Borrett SR, **Buchmann N**, Cortois R, De Deyn G, de Kroon H, Gleixner G, Hertzog L, Hines J, Lange M, Mommer L, Ravenek J, Scherber C, Scherer-Lorenzen M, Scheu S, Schmid B, Steinauer K, Strecker T, Tietjen B, Vogel A, Weigelt A, Petermann JS (2020) Biodiversity increases multitrophic energy use efficiency, flow, and storage in grasslands. *Nature Ecology & Evolution* 4: 393–405.
- J280. Kattge J, Bönsch G, Díaz S, ... **Buchmann N**, ... in total 729 authors (2020). TRY plant trait database – Enhanced coverage and open access. *Global Change Biology* 26: 119–188. <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14904>
Highly cited paper, according to Web of Science; Hot paper, according to Web of Science
- J281. Schaub S, Finger R, Leiber F, Probst S, Kreuzer M, Weigelt A, **Buchmann N**, Scherer-Lorenzen M (2020) Plant diversity effects on forage quality, yield and revenues of semi-natural grasslands. *Nature Communications* 11: 768.
- J282. Fuchs K, Merbold L, **Buchmann N**, Bretscher D, Brill L, Decock C, Fitton N, Topp CFE, Klumpp K, Lieffering M, Martin R, Newton PCD, Rees RM, Rolinski S, Smith P, Snow V (2020) Multi-model evaluation of nitrous oxide emissions from an intensively managed grassland. *Journal of Geophysical Research – Biogeosciences* 125, e2019JG005261.
- J283. Bachofen C, D'Odorico P, **Buchmann N** (2020) Light and VPD gradients drive foliar nitrogen partitioning and photosynthesis in the canopy of European beech and silver fir. *Oecologia* 192: 323–339.
- J284. Mannerheim N, Blessing CH, Oren I, Grünzweig JM, Bachofen C, **Buchmann N** (2020) Carbon allocation to the root system of tropical tree *Ceiba pentandra* using ¹³C pulse-labelling in an aeroponic facility. *Tree Physiology* 40: 350-366.
- J285. Trotsiuk V, Hartig F, Cailleret M, Babst F, Forrester DI, Baltensweiler A, **Buchmann N**, Bugmann H, Gessler A, Gharun M, Minunno F, Rigling A, Rohner B, Stillhard J, Thuerig E, Waldner P, Ferretti M, Eugster W, Schaub M (2020) Assessing the response of forest productivity to climate extremes in Switzerland using model-data fusion. *Global Change Biology* 26: 2463–2476.
- J286. Flechard CR, Ibrom A, Skiba UM, de Vries W, van Oijen M, Cameron DR, Dise NB, Korhonen JFC, **Buchmann N**, Legout A, Simpson D, Sanz MJ, Aubinet M, Loustau D, Montagnani L, Neiryneck J, Janssens IA, Pihlatie M, Kiese R, Siemens J, Francez AJ, Augustin J, Varlagin A, Olejnik J, Juszczak R, Aurela M, Chojnicki BH, Dämmgen U, Djuricic V, Drewer J, Eugster W, Fauvel Y, Fowler D, Frumau A, Granier A, Gross P, Hamon Y, Helfter C, Hensen A, Horváth L, Kitzler B, Kruijt B, Kutsch WL, Lobo-do-Vale R, Lohila A, Longdoz B, Marek MV, Matteucci G, Mitasinkova M, Moreaux V, Neftel A, Ourcival JM, Pilegaard K, Pita G, Sanz F, Schjoerring JK, Sebastià MT, Sim Tang Y, Uggerud H, van Dijk N, Vesala T, Vidic S, Vincke C, Weidinger T, Zechmeister-Boltenstern S, Butterbach-Bahl K, Nemitz E, Mark A (2019) Carbon/nitrogen interactions in European forests and semi-natural vegetation. Part I: Fluxes and budgets of carbon, nitrogen and greenhouse gases from ecosystem monitoring and modelling. *Biogeosciences Discussion* <https://doi.org/10.5194/bg-2019-333>
- Flechard CR, Ibrom A, Skiba UM, de Vries W, van Oijen M, Cameron DR, Dise NB, Korhonen JFC, **Buchmann N**, Legout A, Simpson D, Sanz MJ, Aubinet M, Loustau D, Montagnani L,

- Neiryneck J, Janssens IA, Pihlatie M, Kiese R, Siemens J, Francez AJ, Augustin J, Varlagin A, Olejnik J, Juszczak R, Aurela M, Berveiller D, Chojnicki BH, Dämmgen U, Delpierre N, Djuricic V, Drewer J, Dufrêne E, Eugster W, Fauvel Y, Fowler D, Frumau A, Granier A, Gross P, Hamon Y, Helfter C, Hensen A, Horváth L, Kitzler B, Kruijt B, Kutsch WL, Lobo-do-Vale R, Lohila A, Longdoz B, Marek MV, Matteucci G, Mitosinkova M, Moreaux V, Neftel A, Ourcival JM, Pilegaard K, Pita G, Sanz F, Schjoerring JK, Sebastià MT, Sim Tang Y, Uggerud H, Urbaniak M, van Dijk N, Vesala T, Vidic S, Vincke C, Weidinger T, Zechmeister-Boltenstern S, Butterbach-Bahl K, Nemitz E, Mark A (2020) Carbon/nitrogen interactions in European forests and semi-natural vegetation. Part I: Fluxes and budgets of carbon, nitrogen and greenhouse gases from ecosystem monitoring and modelling. *Biogeosciences* 17: 1583–1620.
- J287. Flechard CR, van Oijen M, Cameron DR, de Vries W, Ibrom A, **Buchmann N**, Dise NB, Janssens IA, Neiryneck J, Montagnani L, Varlagin A, Loustau D, Legout A, Ziemblinska K, Aubinet M, Aurela M, Chojnicki BH, Drewer J, Eugster W, Francez AJ, Juszczak R, Kitzler B, Kutsch WL, Lohila A, Longdoz B, Matteucci G, Moreaux V, Neftel A, Olejnik J, Sanz F, Siemens J, Vesala T, Vincke C, Nemitz E, Zechmeister-Boltenstern S, Butterbach-Bahl K, Skiba UM, Mark A (2019) Carbon/nitrogen interactions in European forests and semi-natural vegetation. Part II: Untangling climatic, edaphic, management and nitrogen deposition effects on carbon sequestration potentials. *Biogeosciences Discussion* <https://doi.org/10.5194/bg-2019-335>.
- Flechard CR, van Oijen M, Cameron DR, de Vries W, Ibrom A, **Buchmann N**, Dise NB, Janssens IA, Neiryneck J, Montagnani L, Varlagin A, Loustau D, Legout A, Ziemblinska K, Aubinet M, Aurela M, Chojnicki BH, Drewer J, Eugster W, Francez AJ, Juszczak R, Kitzler B, Kutsch WL, Lohila A, Longdoz B, Matteucci G, Moreaux V, Neftel A, Olejnik J, Sanz F, Siemens J, Vesala T, Vincke C, Nemitz E, Zechmeister-Boltenstern S, Butterbach-Bahl K, Skiba UM, Mark A (2020) Carbon/nitrogen interactions in European forests and semi-natural vegetation. Part II: Untangling climatic, edaphic, management and nitrogen deposition effects on carbon sequestration potentials. *Biogeosciences* 17: 1621–1654.
- J288. Klaus VH, Whittingham MJ, Báldi A, Eggers S, Francksen RM, Hiron M, Lellei-Kovács E, Rhymer CM, **Buchmann N** (2020) Do biodiversity-ecosystem functioning experiments inform stakeholders how to simultaneously conserve biodiversity and increase ecosystem service provisioning? *Biological Conservation* 245: 108552.
- J289. Gharun M, Hörtnagl L, Paul-Limoges E, Ghiasi S, Feigenwinter I, Burri S, Marquardt K, Etzold S, Zweifel R, Eugster W, **Buchmann N** (2020) Physiological response of Swiss ecosystems to 2018 drought across plant types and elevation. *Philosophical Transactions of the Royal Society B* 375: 20190521.
- J290. Lembrechts JJ, Aalto J, Ashcroft MB, De Frenne P, Kopecký M, Lenoir J, Luoto M, Maclean IMD, Rouspard O, Fuentes-Lillo E, García RA, Pellissier L, Pitteloud C, Alatalo JM, Smith SW, Björk RG, Muffler L, Cesarz S, Gottschall , Ratier Backes A, Okello J, Urban J, Plichta R, Svátek M, Phartyal SS, Sonja Wipf S, Eisenhauer N, Puşcaş M, Turtureanu PD, Varlagin A, Dimarco RD, Jump AS, Randall K, Dorrepaal E, Larson K, Walz J, Vitale L, Svoboda M, Finger Higgens R, Halbritter AH, Curasi RS, Klupar I, Koontz A, Pearse WD, Simpson E, Stemkovski M, Jessen Graae B, Vedel Sørensen M, Høye TT, Fernández Calzado MR, Lorite J, Carbognani M, Tomaselli M, Forte TGW, Petraglia A, Haesen S, Somers B, Van Meerbeek K, Björkman MP, Hylander K, Merinero S, Gharun M, **Buchmann N**, Dolezal J, Matula R, Thomas AD, Bailey JJ, Ghosh D, Kazakis G, Angel de Pablo M, Kemppinen J, Niittynen P, Rew L, Seipel T, Larson C, Speed JDM, Ardö J, Cannone N, Guglielmin M, Malfasi F, Bader MY, Canessa R, Stanisci A, Kreyling J, Schmeddes J, Teuber L, Aschero V, Čiliak M, Máliš F, De Smedt P, Govaert S, Meeussen C, Vangansbeke P, Gigauri K, Lamprecht A, Pauli H, Steinbauer K, Winkler M, Ueyama M, Nuñez MA, Ursu TM, Haider S, Wedegärtner REM, Smiljanic S, Trouillier M, Wilmking M, Altman J, Brůna J, Hederová L, Macek M, Man M, Wild J, Vittoz P, Pärtel M, Barančok P, Kanka R, Kollár J, Palaj A, Barros A, Mazzolari AC, Bauters M, Boeckx P, Alonso JLB, Zong S, Di Cecco V, Sitková Z, Tielbörger K, van den Brink L, Weigel R, Homeier J, Dahlberg CJ, Medinets S, Medinets V, De Boeck HJ, Portillo-Estrada M, Verryckct LT, Milbau A, Daskalova GN, Thomas HJD, Myers-Smith IH, Blonder B, Stephan JG, Descombes P, Zellweger F, Frei ER, Heinesch B, Andrews C, Dick J, Siebicke L, Rocha A, Senior RA, Rixen C, Jimenez JJ, Boike J, Pauchard A, Scholten T, Scheffers B, Klinges D, Basham EW, Zhang J, Zhang Z, Géron C, Fazlioglu F, Candan O, Sallo Bravo J, Hrbacek F, Laska K, Cremonese E, Haase P, Moyano FE, Rossi C, Nijs I (2020) SoilTemp: a global database of near-surface temperature. *Global Change Biology* 26:6616–6629.

- J291. Csilléry K, **Buchmann N**, Fady B (2020) Adaptation to drought is coupled with slow growth, but independent from phenology in marginal silver fir (*Abies alba* Mill.) populations.. *Evolutionary Applications* 13: 2357–2376.
- J292. Jochum M, Fischer M, Isbell F, Roscher C, van der Plas F, Boch S, Boenisch G, **Buchmann N**, Catford J, Cavender-Bares J, Ebeling A, Eisenhauer N, Gleixner G, Hölzel N, Kattge J, Klaus VH, Kleinebecker T, Lange M, Le Provost G, Meyer ST, Molina-Venegas R, Mommer L, Oelmann Y, Penone C, Prati D, Reich PB, Rindisbacher A, Schäfer D, Scheu S, Schmid B, Tilman D, Tschardtke T, Vogel A, Wagg C, Weigelt A, Weisser WW, Wilcke W, Manning P (2020) The results of biodiversity-ecosystem functioning experiments are realistic. *Nature Ecology & Evolution* 4: 1485–1494.
- J293. Pastorello GZ, **Buchmann N**, Eugster W, Feigenwinter I, Gharun M, Hörtnagl L,, Maier R, Merbold L,, Paul-Limoges E, in total 288 coauthors (2020) The FLUXNET2015 dataset and the ONEFlux processing pipeline for eddy covariance data. *Scientific Data* 7: 225. <https://doi.org/10.1038/s41597-020-0534-3>
Highly cited paper, according to Web of Science
- J294. Merbold L, Decock C, Eugster W, Fuchs K, Wolf B, **Buchmann N**, Hörtnagl L (2020) Memory effects on greenhouse gas emissions (CO₂, N₂O and CH₄) following grassland restoration? *Biogeosciences Discussions* <https://doi.org/10.5194/bg-2020-141>.
Merbold L, Decock C, Eugster W, Fuchs K, Wolf B, **Buchmann N**, Hörtnagl L (2021) Are there memory effects on greenhouse gas emissions (CO₂, N₂O and CH₄) following grassland restoration? *Biogeosciences* 18: 1481–1498.
- J295. Xiao M, Yu Z, Kong D, Gu X, Mammarella I, Montagnani L, Altaf Arain M, Merbold L, Magliulo V, Lohila A, **Buchmann N**, Wolf S, Gharun M, Hörtnagl L, Beringer J, Gioli B (2020) Stomatal response to decreased relative humidity constrains the acceleration of terrestrial evapotranspiration in a warming climate. *Environ. Res. Lett.* 15: 094066.
- J296. Emmel C, D’Odorico P, Reville A, Hörtnagl L, Ammann C, **Buchmann N**, Eugster W (2020) Canopy photosynthesis of six major arable crops is enhanced under diffuse light due to canopy structure. *Global Change Biology* 26: 5164-5177.
- J297. van der Plas F, Schröder-Georg T, Weigelt A, Barry K, Meyer S, Alzate A, Barnard RL, **Buchmann N**, de Kroon H, Ebeling A, Eisenhauer N, Engel C, Fischer M, Gleixner G, Hildebrandt A, Koller-France E, Leimer S, Milcu A, Mommer L, Niklaus PA, Oelmann Y, Roscher C, Scherber C, Scherer-Lorenzen M, Scheu S, Schmid B, Schulze ED, Vemperton V, Tschardtke T, Voigt W, Weisser W, Wilcke W, Wirth C (2020) Plant traits are poor predictors of long-term ecosystem functioning. *Nature Ecology & Evolution* 4: 1602–1611.
- J298. Fu Z, Ciais P, Bastos A, Stoy P, Yan H, Green J, Wang B, Knohl A, Šigut L, Gharun M, Cuntz M, Arriga N, Roland M, Peichl M, Migliavacca M, Cremonese E, Varlagin A, Vincke C, Gourlez de la Motte L, Fares S, **Buchmann N**, El-Madany TS, Magliulo E, Brümmer C, Huang Y, Léonard J, Bornet F, Koebsch F (2020) Sensitivity of gross primary productivity to climatic drivers during the summer drought of 2018 in Europe. *Philosophical Transactions of the Royal Society B B* 375: 20190747.
- J299. Graf A, Klosterhalfen A, Arriga N, Bernhofer C, Bogena H, Bornet F, Brüggemann N, Brümmer C, **Buchmann N**, Chi J, Chipeaux C, Cremonese E, Cuntz M, Dušek J, El-Madany TS, Fares S, Fischer M, Foltynova L, Gielen B, Gottschalk P, Gharun M, Ghiasi S, Grünwald T, Heinemann G, Heinesch B, Heliasz M, Holst J, Hörtnagl L, Ibrom A, Ingwersen J, Jurasinski G, Klatt J, Knohl A, Koebsch F, Konopka J, Korkiakoski M, Kowalska N, Kremer P, Kruijt B, Lafont S, Léonard J, De Ligne A, Longdoz B, Loustau D, Magliulo V, Mammarella I, Manca G, Mauder M, Migliavacca M, Mölder M, Ney P, Nilsson M, Neiryneck J, Paul-Limoges E, Peichl M, Pitacco A, Poyda A, Rebmann C, Roland M, Sachs T, Schmidt M, Siebicke L, Schrader F, Šigut L, Tuittila ES, Varlagin A, Vendrame N, Vincke C, Völksch I, Wille C, Weber S, Wizeemann HD, Zeeman M, Vereecken H (2020) Altered energy partitioning across terrestrial ecosystems in the European drought year 2018. *Philosophical Transactions of the Royal Society B* 375: 20190524.
- J300. Bond-Lamberty B, Christianson DS, Malhotra A, Pennington SC, Sihi D, AghaKouchak A, Anjileli H, Arain MA, Armesto JJ, Ashraf S, Ataka M, Baldocchi D, Black TA, **Buchmann N**, Carbone MS, Chang SH, Crill P, Curtis PS, Davidson EA, Desai AR, Drake J, El-Madany TS, Gavazzi M, Görres CM, Gough CM, Goulden M, Gregg J, Gutiérrez del Arroyo O, He JH, Hirano T, Hoppole A, Hughes H, Järveoja J, Jassal R, Jian J, Kan H, Kaye J, Kominami Y, Liang N, Lipson D, Macdonald C, Maseyk K, Mathes K, Mauritz M, Mayes MA, McNulty S, Miao G, Migliavacca M, Miller S, Miniati CF, Nietz JG, Nilsson MB, Noormets A, Norouzi H, O’Connell CS, Osborne B, Oyonarte C, Pang

- Z, Peichl M, Pendall E, Perez-Quezada JF, Phillips CL, Phillips RP, Raich JW, Renchon AA, Ruehr NK, Sánchez-Cañete EP, Saunders M, Savage KE, Schrumpf M, Scott RL, Seibt U, Silver WL, Sun W, Szutu D, Takagi K, Takagi M, Teramoto M, Tjoelker MG, Trumbore S, Ueyama M, Vargas R, Varner RK, Verfaillie J, Vogel C, Wang J, Winston G, Wood TE, Wu J, Wutzler T, Zeng J, Zha T, Zhang Q, Zou J (2020) COSORE: A community database for continuous soil respiration and other soil-atmosphere greenhouse gas flux data. *Global Change Biology* 26: 7268-7283.
- J301. Fuchs K, Merbold L, **Buchmann N**, Bellocchi G, Bindi M, Brilli L, Conant RT, Dorich CD, Ehrhardt F, Fitton N, Grace P, Klumpp K, Liebig M, Lieffering M, Martin R, Newton PCD, Rees RM, Recous S, Smith P, Soussana JF, Topp CFE, Snow V (2020) Evaluating the potential of legumes to mitigate N₂O emissions from permanent grassland using process-based models. *Global Biogeochemical Cycles* 34: e2020GB006561.
- J302. Keller S, Güdel K, Gyalog T, **Buchmann N** (2020) PubliFarm – Agrarforschung zu Biodiversität und Klimawandel erlebbar machen. PubliFarm – Making agricultural research on biodiversity and climate change tangible. *GAIA* 29: 189-194.
- J303. Kronenberg L, Yates S, Ghiasi S, Roth L, Friedli M, Ruckle M, Werner RA, Tschurr F, Binggeli M, **Buchmann N**, Studer B, Walter A (2021) Rethinking temperature effects on leaf growth, gene expression and metabolism: Diel variation matters. *Plant, Cell and Environment* 44: 2262–2276.
- J304. Liu Y, Bachofen C, Lou J, Ding Z, Jiang M, Lü X, **Buchmann N** (2021) Tuberization and above-ground biomass production of *Bolboschoenus planiculmis* increase with temperatures and show a pronounced K supply optimum. *J Plant Ecology* 14: 337-347
- J305. Resch MC, Schütz M, **Buchmann N**, Frey B, Graf U, vd Putten WH, Zimmermann S, Risch AC (2021) Evaluating long-term success in grassland restoration - an ecosystem multifunctionality approach. *Ecological Applications* 31, e02271.
- J306. Ghiasi S, Lehmann M, Badeck F, Ghashghaie J, Hänsch R, Meinen R, Streb S, Hüdig M, Ruckle M, Carrera D, Siegwolf R, **Buchmann N**, Werner R (2021) Nitrate and ammonium supply influence $\delta^{13}\text{C}$ of respiratory substrates and CO₂ emissions from tobacco leaves. *Isotopes in Environmental and Health Studies* 57: 11-34
- J307. Guimaraes-Steinicke C, Weigelt A, Proulx R, Lanners T, Eisenhauer N, Duque Lazo J, Reu B, Roscher C, Wagg C, **Buchmann N**, Wirth C (2021) Biodiversity facets affect community surface temperature via 3D canopy structure in grassland communities. *Journal of Ecology* 109:1969–1985.
- J308. Schaub S, Finger R, Leiber F, Probst S, Kreuzer M, Weigelt A, **Buchmann N**, Scherer-Lorenzen M (2021) Reply to 'Results from a biodiversity experiment fail to represent economic performance of semi-natural grasslands. *Nature Communications* 12: 2124.
- J309. Sun Q, Gilgen A, Signarbieux C, Klaus V, **Buchmann N** (2021) Cropping systems alter hydraulic traits of barley but not pea grown in mixture. *Plant, Cell and Environment* 44: 2912–2924.
- J310. Lin S, Li J, Liu Q, Gioli B, Paul-Limoges E, **Buchmann N**, Gharun M, Hörtnagl L, Foltýnová L, Dušek J, Li L, Yuan W (2021) Improved global estimations of gross primary productivity of natural vegetation types by incorporating plant functional type. *International Journal of Applied Earth Observations and Geoinformation* 100: 102328.
- J311. Li Y, Aemisegger F, Riedl A, **Buchmann N**, Eugster W (2020) The role of dew and radiation fog inputs in the local water cycling of a temperate grassland in Central Europe. *Hydrology and Earth System Sciences Discussions*: <https://doi.org/10.5194/hess-2020-493>.
Li Y, Aemisegger F, Riedl A, **Buchmann N**, Eugster W (2021) The role of dew and radiation fog inputs in the local water cycling of a temperate grassland during dry spells in Central Europe. *Hydrology and Earth System Sciences* 25: 2617–2648.
- J312. Harper AB, Williams KE, McGuire PC, Duran Rojas MC, Hemming D, Verhoef A, Huntingford C, Rowland L, Marthews T, Breder Eller C, Mathison C, Nobrega RLB, Gedney N, Vidale PL, Otu-Larbi F, Pandey D, Garrigues S, Wright A, Slevin D, De Kauwe MG, Blyth E, Árdó J, Black A, Bonal D, **Buchmann N**, Burban B, Fuchs K, de Grandcourt A, Mammarella I, Merbold L, Montagnani L, Nouvellon Y, Restrepo-Coupe N, Wohlfahrt G (2021) Improvement of modelling plant responses to low soil moisture in JULESvn4.9 and evaluation against flux tower measurements. *Geoscientific Model Development* 14: 3269–3294.
- J313. Delwiche KB, Knox SH, Malhotra A, Fluet-Chouinard E, McNicol G, Feron S, Ouyang Z, Papale D, Trotta C, Canfora E, Cheah YW, Christianson D, Alberto MCR, Alekseychik P, Aurela M, Baldocchi D, Bansal S, Billesbach DP, Bohrer G, Bracho R, **Buchmann N**, Campbell DI, Celis G,

Chen J, Chen W, Chu H, Dalmagro HI, Dengel S, Desai AR, Detto M, Dolman H, Eichelmann E, Euskirchen E, Famulari D, Friborg T, Fuchs K, Goeckede M, Gogo S, Gondwe MJ, Goodrich JP, Gottschalk P, Graham SL, Heimann M, Helbig M, Helfter C, Hemes KS, Hirano T, Hollinger D, Hörtnagl L, Iwata H, Jacotot A, Jansen J, Jurasinski G, Kang M, Kasak K, King J, Klatt J, Koebisch F, Krauss KW, Lai DYF, Mammarella I, Manca G, Beilelli Marchesini L, Hatala Matthes J, Maximon T, Merbold L, Mitra B, Morin TH, Nemitz E, Nilsson MB, Niu S, Oechel WC, Oikawa PY, Ono K, Peichi M, Peltola O, Reba ML, Richardson AD, Riley W, Runkle BRK, Ryu Y, Sachs T, Sakabe A, Rey Sanchez C, Schuur EA, Schäfer KVR, Sonnentag O, Sparks JP, Stuart-Haëntjens E, Sturtevant C, Sullivan RC, Szutu DJ, Thom JE, Torn MS, Tuittila ES, Turner J, Ueyama M, Valach AC, Vargas R, Varlagin A, Vazquez-Lule A, Verfaillie JG, Vesala T, Vourlitis GL, Ward EJ, Wille C, Wohlfahrt G, Wong GX, Zhang Z, Zona D, Windham-Myers L, Poulter B, Jackson RB (2021) FLUXNET-CH4: A global, multi-ecosystem dataset and analysis of methane seasonality from freshwater wetlands. *Earth System Science Data Discussions*, <https://doi.org/10.5194/essd-2020-307>.

Delwiche KB, Knox SH, Malhotra A, Fluet-Chouinard E, McNicol G, Feron S, Ouyang Z, Papale D, Trotta C, Canfora E, Cheah YW, Christianson D, Alberto MCR, Alekseychik P, Aurela M, Baldocchi D, Bansal S, Billesbach DP, Bohrer G, Bracho R, **Buchmann N**, Campbell DI, Celis G, Chen J, Chen W, Chu H, Dalmagro HI, Dengel S, Desai AR, Detto M, Dolman H, Eichelmann E, Euskirchen E, Famulari D, Friborg T, Fuchs K, Goeckede M, Gogo S, Gondwe MJ, Goodrich JP, Gottschalk P, Graham SL, Heimann M, Helbig M, Helfter C, Hemes KS, Hirano T, Hollinger D, Hörtnagl L, Iwata H, Jacotot A, Jansen J, Jurasinski G, Kang M, Kasak K, King J, Klatt J, Koebisch F, Krauss KW, Lai DYF, Mammarella I, Manca G, Beilelli Marchesini L, Hatala Matthes J, Maximon T, Merbold L, Mitra B, Morin TH, Nemitz E, Nilsson MB, Niu S, Oechel WC, Oikawa PY, Ono K, Peichi M, Peltola O, Reba ML, Richardson AD, Riley W, Runkle BRK, Ryu Y, Sachs T, Sakabe A, Rey Sanchez C, Schuur EA, Schäfer KVR, Sonnentag O, Sparks JP, Stuart-Haëntjens E, Sturtevant C, Sullivan RC, Szutu DJ, Thom JE, Torn MS, Tuittila ES, Turner J, Ueyama M, Valach AC, Vargas R, Varlagin A, Vazquez-Lule A, Verfaillie JG, Vesala T, Vourlitis GL, Ward EJ, Wille C, Wohlfahrt G, Wong GX, Zhang Z, Zona D, Windham-Myers L, Poulter B, Jackson RB (2021) FLUXNET-CH4: A global, multi-ecosystem dataset and analysis of methane seasonality from freshwater wetlands. *Earth System Science Data* 13: 3607–3689.

Data available: <https://fluxnet.org/data/fluxnet-ch4-community-product/>

- J314. Trotsiuk V, Babst F, Grossiord C, Gessler A, Forrester DI, **Buchmann N**, Schaub M, Eugster W (2021) Tree growth in Switzerland is increasingly constrained by rising evaporative demand. *J Ecology* 109: 2981–2990.
- J315. Zweifel R, Sterck F, Braun S, **Buchmann N**, Eugster W, Gessler A, Häni M, Peters R, Walthert L, Wilhelm M, Ziemińska K, Etzold S (2021) Why trees grow in the dark. *New Phytologist* 231: 2174–2185.
- One of the most read articles from 2020 and 2021 in New Phytologist.*
- J316. Didion-Gency M, Bachofen C, **Buchmann N**, Gessler A, Morin X, Vicente E, Vollenweider P, Grossiord C (2021) Interactive effects of tree species mixture and climate on foliar and woody trait variation in *Fagus sylvatica* L. *Functional Ecology* 35: 2397–2408.
- J317. Schaub S, Klaus VH, **Buchmann N**, Steiner V, Finger R (2021) The costs of diversity: higher prices for more diverse grassland seed mixtures. *Environmental Research Letters* 16: 094011.
- J318. Migliavacca M, Musavi T, Mahecha MD, Nelson JA, Knauer J, Baldocchi DD, Perez-Priego O, Anderson K, Bahn M, Black AT, Blanken PD, Bonal D, **Buchmann N**, Caldararu S, Carrara A, Cescatti A, Chen J, Cleverly J, Cremonese E, Desai AK, El-Madany TS, Filippa G, Forkel M, Galvagno M, Gough CM, Goeckede M, Ibrom A, Ikawa H, Janssens I, Jung M, Kattge J, Keenan TF, Knohl A, Kobayashi H, Kraemer G, Law BE, Liddell MJ, Ma X, Mammarella I, Martini D, MacFarlane C, Matteucci G, Montagnani L, Pabon-Moreno DE, Panigada C, Papale D, Pendall E, Penuelas J, Phillips RP, Reich PB, Rossini M, Scott RL, Gebhardt MM, Stahl C, Wohlfahrt G, Wolf S, Wright IJ, Yakir D, Zaehle S, Reichstein M (2021) On the key dimensions of terrestrial ecosystem multifunctionality. *Nature* 598: 468–472.
- J319. Haesen S, Lembrechts JJ, De Frenne P, Aalto J, Ashcroft MB, Kopecký M, Lenoir J, Luoto M, Maclean I, Nijs I, Niittynen P, van den Hoogen J, Arriga N, Brúna J, **Buchmann N**, Čiliak M, Collalti A, De Lombaerde E, Gharun M, Goded I, Govaert S, Greiser C, Grelle A, Gruening C, Hederová L, Hylander K, Kreyling J, Kruijt B, Macek M, Máliš F, Man M, Manca G, Matula R, Meeussen C, Minerbi S, Montagnani L, Muffle L, Ogaya R, Penuelas J, Plichta R, Portillo-Estrada M, Schmeddes J, Shekhar A, Spicher F, Ujházyová M, Vangansbeke P, Weigel R, Wild J, Van

- Meerbeek K (2021) ForestTemp – Sub-canopy microclimate temperatures of European forests. *Global Change Biology* 27: 6307-6319.
- J320. Gharun M, Klesse S, Tomlinson G, Waldner P, Rihm B, Siegwolf R, **Buchmann N** (2021) Effect of nitrogen deposition on centennial forest water-use efficiency. *Environmental Research Letters* 16: 114036.
- J321. Richter F, Jan P, El Beni N, Lüscher A, **Buchmann N**, Klaus VH (2021) A guide to assessing and valuing ecosystem services in grasslands. *Ecosystem Services* 52: 101376.
- J322. Zweifel R, Etzold S, Basler D, Bischoff R, Braun S, **Buchmann N**, Conedera M, Fonti P, Gessler A, Haeni M, Hoch G, Kahmen A, Köchli R, Maeder M, Nievergelt D, Peter M, Peters RL, Schaub M, Trotsiuk V, Walthert L, Wilhelm M, Eugster W (2021) TreeNet - The biological drought and growth indicator network. *Frontiers Forest Global Change* 4: 776905.
- J323. Zhou H, Shao J, Liu H, Du Z, Zhou L, Liu R, Bernhofer C, Grünwald T, Dušek J, Montagnani L, Tagesson T, Black TA, Jassal R, Woodgate W, Biraud S, Varlagin A, Mammarella I, Gharun M, Shekhar A, **Buchmann N**, Manco A, Magliulo E, Billesbach D, Silberstein RP, Ohta T, Yu G, Chen Z, Zhang Y, Zhou X (2021). Relative importance of climatic variables, soil properties and plant traits to spatial variability in net CO₂ exchange across global forests and grasslands. *Agricultural and Forest Meteorology* 307: 108506.
- J324. Heiskanen J, Brümmer C, **Buchmann N**, Calfapietra C, Chen H, Gielen B, Gkritzalis T, Hammer S, Hartman S, Herbst M, Janssens IA, Jordan A, Juurola E, Karstens U, Kasurinen V, Kruijt B, Lankreijer H, Levin I, Linderson ML, Loustau D, Merbold L, Lund Myhre C, Papale D, Pavelka M, Pilegaard K, Ramonet M, Rebmann C, Rinne J, Rivier L, Saltikoff E, Sanders R, Steinbacher M, Steinhoff T, Watson A, Vermeulen AT, Vesala T, Vítková G, Kutsch W (2022) The Integrated Carbon Observation System in Europe. *Bulletin of the American Meteorological Society* 103: E855–E872.
- J325. Schuler P, Cormier MA, Werner RA, **Buchmann N**, Gessler A, Vitali V, Saurer M, Lehmann MM (2022) A high temperature water vapor equilibration method to determine non-exchangeable hydrogen isotope ratios in sugar, starch, and cellulose. *Plant, Cell and Environment* 45: 12-22.
- J326. Etzold S, Sterck F, Bose AK, Braun S, **Buchmann N**, Eugster W, Gessler A, Kahmen A, Peters RL, Vitasse Y, Walthert L, Ziemińska K, Zweifel R (2022) Number of growth days and not timing of the growth period determines radial stem growth of temperate trees. *Ecology Letters* 25: 427–439.
- One of the most downloaded articles in 2021 in Ecology Letters.*
- J327. Csilléry K, **Buchmann N**, Brendel O, Gessler A, Glauser A, Kupferschmid AD (2022) Recovery of silver fir (*Abies alba* Mill.) seedlings from ungulate browsing mirrors soil nitrogen availability. *Tree Physiology* 42: 273–288.
- J328. Resch M, Schutz M, Ochoa-Hueso R, **Buchmann N**, Frey B, Graf U, van der Putten W, Zimmermann S, Risch A (2022) Long-term recovery of above-and belowground interactions in restored grasslands after topsoil removal and seed addition. *J Applied Ecology* 59: 2299-2308.
- J329. Liu Y, Bachofen C, Wittwer R, Silva Duarte G, Sun Q, Klaus VH, **Buchmann N** (2022) Using PhenoCams to track crop phenology and explain the effects of different cropping systems on yields. *Agricultural Systems* 195: 103306.
- J330. Bachofen C, Hülsmann L, Revill A, **Buchmann N**, D'Odorico P (2022) Accounting for foliar nitrogen allocation to photosynthetic processes improves estimates of net CO₂ exchange of forests. *Agricultural Forest Meteorology* 314: 108771.
- J331. Oren I, Mannerheim N, Fangmeier A, **Buchmann N**, Grünzweig JM (2022) Lack of daily coupling between total root respiration and shoot carbon dynamics in large tropical tree saplings. *Tree Physiology* 42: 958–970.
- J332. Rogger J, Hörtnagl L, **Buchmann N**, Eugster W (2022) Carbon dioxide fluxes of a mountain grassland: drivers, anomalies and annual budgets. *Agricultural and Forest Meteorology* 314: 108801.
- J333. Fu Z, Ciais P, Makowski D, Bastos A, Stoy P, Ibrom A, Knohl A, Migliavacca M, Cuntz M, Šigut L, Peichl M, Loustau D, El-Madany T, **Buchmann N**, Gharun M, Janssens I, Markwitz C, Grünwald T, Rebmann C, Mölder M (2022) Uncovering the critical soil moisture thresholds of plant water stress for European ecosystems. *Global Change Biology* 28: 2111–2123.

- J334. Lembrechts JJ, van den Hoogen J, **Buchmann N**, Eugster W, Feigenwinter I, Gharun M,, Hörtnagl L, ... Maier R, Shekhar A, in total 403 coauthors (2022) Global maps of soil temperature. *Global Change Biology* 28: 3110-3144.
- J335. Riedl A, Li Y, **Buchmann N**, Eugster W (2021) High accuracy weighing micro-lysimeter system for long-term measurements of non-rainfall water inputs to grasslands. *Hydrology and Earth System Sciences Discussions*, <https://doi.org/10.5194/hess-2021-317>.
Riedl A, Li Y, Eugster J, **Buchmann N**, Eugster W (2022) Technical note: High-accuracy weighing micro-lysimeter system for long-term measurements of non-rainfall water inputs to grasslands. *Hydrology and Earth System Sciences* 26: 91–116.
- J336. Schils RLM, Bufe C, Rhymer C, Francksen RM, Klaus VH, Abdalla M, Milazzo F, Lellei-Kovács E, ten Berge H, Bertora C, Chodkiewicz A, Dămățircă C, Feigenwinter I, Fernández-Rebollo P, Ghiasi S, Hejduk S, Hiron M, Janicka M, Pellaton R, Smith K, Thorman R, Vanwallegem T, Williams J, Zavattaro L, Kampen J, Derkx R, Smith P, Whittingham MJ, **Buchmann N**, Newell Price P (2022) Permanent grasslands in Europe: land use change and intensification decrease their multifunctionality. *Agriculture, Ecosystems and Environment* 330: 107891.
Data available: <https://doi.org/10.4121/17888573>
- J337. Huber R, Le'Clech S, **Buchmann N**, Finger R (2022) Spatial heterogeneity and the economic value of grassland ecosystem services. *Scientific Reports* 12: 4194.
- J338. Sun Q, Klaus VH, Wittwer R, Liu Y, van der Heijden MGA, Gilgen AKG, **Buchmann N** (2021) Water uptake patterns of pea and barley responded to drought but not to cropping systems. *Biogeosciences Discussion*, <https://doi.org/10.5194/bg-2021-217>.
Sun Q, Klaus VH, Wittwer R, Liu Y, van der Heijden MGA, Gilgen AKG, **Buchmann N** (2022) Water uptake patterns of pea and barley responded to drought but not to cropping systems. *Biogeosciences* 19: 1853–1869.
- J339. Merz QN, Walter A, Maier R, Hörtnagl L, **Buchmann N**, Kirchgessner N, Aasen H (2022) Relationship of leaf elongation rate of young wheat leaves, gross primary productivity and environmental variables in the field with hourly and daily temporal resolution. *Agricultural and Forest Meteorology* 320: 108902.
- J340. Tanner E, **Buchmann N**, Eugster W (2022) Agricultural ammonia dry deposition and total nitrogen deposition to a Swiss mire. *Agriculture, Ecosystems and Environment* 336: 108009.
- J341. Wang YR, **Buchmann N**, Hessen DO, Stordal F, Erisman JW, Vollsnes AV, Andersen T, Dolman AJ (2022) Disentangling effects of natural and anthropogenic drivers on forest net ecosystem production. *Science of the Total Environment* 839: 156326.
- J342. Liu Y, Silva Duarte Gicele, Sun Q, Gilgen AKG, Wittwer R, an der Heijden MGA, **Buchmann N**, Klaus VH (2022) Severe drought rather than cropping system determines litter decomposition in arable systems. *Agriculture, Ecosystems and Environment* 338: 108078.
- J343. Didion-Gency M, Gessler A, **Buchmann N**, Gisler J, Schaub M, Grossiord C (2022) Impact of warmer and drier conditions on tree photosynthetic properties and the role of species interactions. *New Phytologist* 236: 547–560.
- J344. Paul-Limoges E, Revill A, Maier R, **Buchmann N**, Damm A (2022) Insights for the partitioning of ecosystem evaporation and transpiration in short-statured croplands. *Journal of Geophysical Research - Biogeosciences* 127, e2021JG006760.
- J345. Maier R, Hörtnagl L, **Buchmann N** (2022) Greenhouse gas fluxes (CO₂, N₂O and CH₄) of pea and maize during two cropping seasons: drivers, budgets, and emission factors for nitrous oxide. *Science of the Total Environment* 849, 157541.
- J346. dos Reis Martins M, N MCPálová M, Ammann C, **Buchmann N**, Calanca P, Flechard CR, Hartman MD, Krauss M, Le Roy P, Mäder P, Maier R, Morvan T, Nicolardot B, Skinner C, Six J, Keel SG (2022) Modeling N₂O emissions of complex cropland management in Western Europe using DayCent: performance and scope for improvement. *European Journal of Agronomy* 141, 126613.
- J347. Shekhar A, **Buchmann N**, Gharun M (2022) How well do recently reconstructed solar-induced fluorescence datasets model gross primary productivity? *Remote Sensing Environment* 283: 113282.
- J348. Perroy RL, Meier M, Collier E, Hughes MA, Brill E, Sullivan T, Baur T, **Buchmann N**, Keith LM. (2022) Aerial branch sampling to detect forest pathogens. *Drones* 6: 275.

- J349. Wagg C, Roscher C, Weigelt A, Vogel A, Ebeling A, de Luca E, Roeder A, Kleinspehn C, Temperton VM, Meyer ST, Scherer-Lorenzen M, **Buchmann N**, Fischer M, Weisser WW, Eisenhauer N, Schmid B (2022) Biodiversity–stability relationships strengthen over time in a long-term grassland experiment. *Nature Communications* 13, 7752.
- J350. van der Plas F, Schröder-Georg T, Weigelt A, Barry K, Meyer S, Alzate A, Barnard RL, **Buchmann N**, de Kroon H, Ebeling A, Eisenhauer N, Engels C, Fischer M, Gleixner G, Hildebrandt A, Koller-France E, Leimer S, Milcu A, Mommer L, Niklaus PA, Oelmann Y, Roscher C, Scherber C, Scherer-Lorenzen M, Scheu S, Schmid B, Schulze ED, Temperton V, Tschardt T, Voigt W, Weisser W, Wilcke W, Wirth C (2023) Reply to: Plant traits alone are good predictors of ecosystem properties when used carefully. *Nature Ecology & Evolution* 7: 335-336.
- J351. Li Y, Riedl A, Eugster W, **Buchmann N**, Cernusak L, Lehmann MM, Werner RA, Aemisegger F (2023) The role of radiative cooling and leaf wetting in air–leaf water exchange during dew and radiation fog events in a temperate grassland. *Agricultural and Forest Meteorology* 328: 109256.
- J352. Zweifel R, Pappas C, Peters RL, Babst F, Balanzategui D, Basler D, Bastos A, Beloiu M, **Buchmann N**, Bose AK, Braun S, Damm A, D’Odorico P, Eitel JUH, Etzold S, Fonti P, Rouholahnejad Freund E, Gessler A, Haeni M, Hoch G, Kahmen A, Körner C, Krejza J, Krumm F, Leuchner M, Leuschner C, Lukovic M, Martínez-Vilalta J, Matula R, Meesenburg H, Meir P, Plichta R, Poyatos R, Rohner B, Ruehr N, Salomón RL, Scharnweber T, Schaub M, Steger DN, Steppe K, Still C, Stojanović M, Trotsiuk V, Vitasse Y, von Arx G, Wilmking M, Zahnd C, Sterck F (2023) Networking the forest infrastructure towards near real-time monitoring – a white paper. *Science of the Total Environment* 872: 162167.
- J353. Li Y, Eugster W, Riedl A, Westerhuis S, **Buchmann N**, Aemisegger F (2023) Identifying key stages of radiation fog evolution using water vapor isotopes. *Agricultural and Forest Meteorology* 334: 109430.
- J354. Schuler P, Vitali V, Saurer M, Gessler A, **Buchmann N**, Lehmann MM (2023) Hydrogen isotope fractionation in carbohydrates of leaves and xylem tissues follows distinct phylogenetic patterns: a common garden experiment with 73 tree and shrub species. *New Phytologist* 239: 547-561.
- J355. Peters RL, Steppe K, Pappas C, Zweifel R, Babst F, Dietrich L, von Arx G, Poyatos R, Fonti MV, Fonti P, Grossiord C, Gharun M, **Buchmann N**, Steger D, Kahmen A (2023) Stomatal regulation in mature trees is optimized for allowing stem rehydration at night. *New Phytologist* 239: 533-546.
- J356. Gomasasca U, Migliavacca M, Kattge J, Nelson JA, Niinemets Ü, Wirth C, Cescatti A, Bahn M, Nair R, Acosta ATR, Arain MA, Beloiu M, Black TA, Bruun HH, Bucher SF, **Buchmann N**, Carrara A, Chaeho B, Conte A, da Silva AC, Duveiller G, Fares S, Ibrom A, Knohl A, Komac B, Limousin JM, Lusk CH, Mahecha M, Martini D, Minden V, Montagnani L, Mori A, Onda Y, Peñuelas J, Perez-Priego O, Poschlod P, Powell TL, Reich PB, Šigut L, van Bodegom PM, Walther S, Wohlfahrt G, Wright IJ, Reichstein M (2023) Leaf-level coordination principles propagate to the ecosystem scale. *Nature Communications* 14: 3948.
- J357. Li Y, Eugster W, Riedl A, Lehmann MM, Aemisegger F, **Buchmann N** (2023) Dew benefits on alpine grasslands are negated by combined heatwave and drought stresses. *Frontiers in Plant Science* 14: 1136037.
- J358. Shekhar A, Hörtnagl L, **Buchmann N**, Gharun M (2023). Long-term changes in forest response to extreme atmospheric dryness. *Global Change Biology* 29:5379–5396.
- J359. Eitel JUH, Basler D, Braun S, **Buchmann N**, D’Odorico P, Etzold S, Gessler A, Griffin KL, Krejza J, Luo Y, Maguire AJ, Mukund PR, Vitasse Y, Walthert L, Zweifel R (2023) Towards monitoring stem growth phenology from space with high resolution satellite data. *Agricultural and Forest Meteorology* 339: 109549.
- J360. Abdalla M, Feigenwinter I, Richards M, Vetter SH, Wohlfahrt G, Skiba U, Pintér K, Nagy Z, Hejduk S, **Buchmann N**, Newell-Price P, Smith P (2023) Evaluation of the ECOSSE model for estimating soil respiration from eight European permanent grassland sites. *Agronomy* 13: 1734.
- J361. Wittwer RA, Klaus VH, Oliveira ME, Sun Q, Liu Y, Gilgen AK, **Buchmann N**, van der Heijden Marcel GA (2023) Limited capability of organic farming and conservation tillage to enhance agroecosystem resilience to severe drought. *Agricultural Systems* 211: 103721.
- J362. Feigenwinter I, Hörtnagl L, Zeeman M, Eugster W, Fuchs K, Merbold L, **Buchmann N** (2023) Large inter-annual variation in carbon sink strength of a permanent grassland over 16 years: Impacts of management practices and climate. *Agricultural and Forest Meteorology* 340: 109613.

- J363. Feigenwinter I, Hörtnagl L, **Buchmann N** (2023) N₂O and CH₄ fluxes from intensively managed grassland: The importance of biological and environmental drivers vs. management. *Science of the Total Environment* 903: 166389.
- J364. Xie M, Ma X, Wang Y, Li C, Shi H, Yuan X, Hellwich O, Chen C, Zhang W, Zhang C, Ling Q, Gao R, Zhang Y, Ochege FU, Frankl A, De Maeyer P, **Buchmann N**, Feigenwinter I, Olesen JE, Juszczak R, Jacotot A, Korrensalo A, Pitacco A, Varlagin A, Shekhar A, Lohila A, De Ligne A, Carrara A, Brut A, Kruijt B, Loubet B, Heinesch B, Chojnicki B, Helfter C, Vincke C, Shao C, Bernhofer C, Brümmer C, Wille C, Tuittila ES, Nemitz E, Meggio F, Dong G, Lanigan GJ, Niedrist G, Wohlfahrt G, Zhou G, Goded I, Gruenwald T, Olejnik J, Jansen J, Neiryneck J, Tuovinen JP, Zhang J, Klumpp K, Pilegaard K, Šigut L, Klemedtsson L, Tezza L, Hörtnagl L, Urbaniak M, Roland M, Schmidt M, Sutton MA, Hehn M, Saunders M, Mauder M, Aurela M, Korhonen M, Du M, Vendrame N, Kowalska N, Leahy PG, Alekseychik P, Shi P, Weslien P, Chen S, Fares S, Friberg T, Talles T, Kato T, Sachs T, Maximov T, Morra di Cella U, Moderow U, Li Y, He Y, Kosugi Y, Luo G (2023) Monitoring of carbon-water fluxes at Eurasian meteorological stations using random forest and remote sensing. *Scientific Data* 10: 587.
- J365. Haesen S, Lembrechts JJ, De Frenne P, Lenoir J, Aalto J, Ashcroft MB, Kopecký M, Luoto M, Maclean I, Nijs I, Niittynen P, van den Hoogen J, Arriga N, Brúna J, **Buchmann N**, Čiliak M, Collalti A, De Lombaerde E, Descombes P, Gharun M, Goded I, Govaert S, Greiser C, Grelle A, Gruening C, Hederová L, Hylander K, Kreyling J, Kruijt B, Macek M, Máliš F, Man M, Manca G, Matula R, Meeussen C, Merinero S, Minerbi S, Montagnani L, Muffler L, Ogaya R, Penuelas J, Plichta R, Portillo-Estrada M, Schmeddes J, Shekhar A, Spicher F, Ujházyová M, Vangansbeke P, Weigel R, Wild J, Zellweger F, Van Meerbeek K (2023) ForestClim – Bioclimatic variables for microclimate temperatures of European forests. *Global Change Biology* 29: 2886-2892.
- J366. Tang ACI, Flechard C, Arriga N, Papale D, Stoy PC, **Buchmann N**, Cuntz M, Douros J, Fares S, Knohl A, Šigut L, Simioni G, Timmermans R, Grünwald T, Ibrom A, Loubet B, Mammarella I, Belleli Marchesini L, Nilsson M, Peichl M, Rebmann C, Schmidt M, Bernhofer C, Berveiller D, Cremonese E, El-Madany TS, Gharun M, Gianelle D, Hörtnagl L, Roland M, Varlagin A, Fu Z, Heinesch B, Janssens IA, Kowalska N, Dušek J, Gerosa G, Mölder M, Tuittila ES, Loustau D. Detection and attribution of an anomaly in terrestrial photosynthesis in Europe during the COVID-19 lockdown. *Science of the Total Environment* 903: 166149.
- J367. Andreatta D, Bachofen C, Klaus V, Dalponte M, **Buchmann N** (2023) Extracting flowering phenology from grassland species mixtures using time-lapse cameras. *Remote Sensing Environment* 298: 113835.
- J368. Gou R, **Buchmann N**, Chi J, Luo Y, Mo L, Shekhar A, Feigenwinter I, Hörtnagl L, Lu W, Cui X, Meng Y, Song S, Zhang C, Ye S, Ding Y, Lin G, Chen Y, Liang J, Guo J, Peng H, Lin G (2023) Temporal variations of carbon and water fluxes in a subtropical mangrove forest: insights from a decade-long eddy covariance measurement. *Agricultural and Forest Meteorology* 343: 109764.
- J369. Hartmann M, Herzog C, Brunner I, Stierli B, Meyer F, **Buchmann N**, Frey B (2023) Long-term mitigation of drought changes the functional potential and life-strategies of the forest soil microbiome involved in organic matter decomposition. *Frontiers in Microbiology* 14: 1267270.
- J370. Klaus V, Jehle A, Richter F, **Buchmann N**, Knop E, Lüscher G (2023) Additive effects of two agri-environmental schemes on plant diversity but not on productivity indicators in permanent grasslands in Switzerland. *Journal of Environmental Management* 348: 119416.
- J371. Papale D, Heiskanen J, Brümmer C, **Buchmann N**, Calfapietra C, Carrara A, Chen H, Gielen B, Gkritzalis T, Hammer S, Hartman S, Herbst M, Janssens IA, Jordan A, Juurola E, Karstens U, Kasurinen V, Kruijt B, Lankreijer H, Levin I, Linderson ML, Loustau D, Merbold L, Lund Myhre C, Pavelka M, Pilegaard K, Ramonet M, Rebmann C, Rinne J, Rivier L, Saltikoff E, Sanders R, Steinbacher M, Steinhoff T, Watson A, Vermeulen AT, Vesala T, Vítková G, Kutsch W (2023) Standards and Open Access are the ICOS Pillars. Reply to "Comments on 'The Integrated Carbon Observation System in Europe'" *Bulletin of the American Meteorological Society* 104: 953–955.
- J372. Gessler A, Schaub M, Bose A, Trotsiuk V, Schwärzel K, Valbuena R, Chirici G, **Buchmann N** (2024) Finding the balance between open access to forest data while safeguarding the integrity of National Forest Inventory derived information. *New Phytologist* 242: 344–346.
- J373. Didion-Gency M, Vitasse Y, **Buchmann N**, Gessler A, Gisler J, Schaub M, Grossiord C (2024) Chronic warming and dry soils limit carbon uptake and growth despite a longer growing season in beech and oak. *Plant Physiology* 194: 741-757

- J374. Shekhar A, Hörtnagl L, Paul-Limoges E, Etzold S, Zweifel R, **Buchmann N**, Gharun M (2024) Contrasting impact of extreme soil and atmospheric dryness on functioning of trees and forests. *Science of the Total Environment* 916: 169931
- J375. Bazzi H, Ciais P, Abbessi E, Makowski D, Santaren D, Ceschia E, Brut A, Tallec T, **Buchmann N**, Maier R, Acosta M, Loubet B, Buysse P, Léonard J, Bornet F, Fayad I, Lian J, Baghdadi N, Segura Barrero R, Brümmer C, Schmidt M, Heinesch B, Mauder M, Gruenwald T (2024) Assimilating Sentinel-2 Data in a Modified Vegetation Photosynthesis and Respiration Model (VPRM) to Improve the Simulation of Croplands CO₂ Fluxes in Europe. *International Journal of Applied Earth Observation and Geoinformation* 127: 103666
- J376. Shekhar A, **Buchmann N**, Humphrey V, Gharun M (2024) More than three-fold increase in compound soil and air dryness across Europe by the end of 21st century. *Weather and Climate Extremes* 44: 100666
- J377. Krebs L, Burri S, Feigenwinter I, Gharun M, Meier P, **Buchmann N** (2023) Forest-floor greenhouse gas fluxes in a subalpine spruce forest: Continuous multi-year measurements, drivers, and budgets. *EGUsphere* <https://doi.org/10.5194/egusphere-2023-1852>.
Krebs L, Burri S, Feigenwinter I, Gharun M, Meier P, **Buchmann N** (2024) Forest-floor respiration, N₂O and CH₄ fluxes in a subalpine spruce forest: Drivers and annual budgets. *Biogeosciences* 21: 2005–2028.
- J378. Richter F, Suter M, Lüscher A, **Buchmann N**, El Benni N, Feola-Conz R, Hartmann M, Jan P, Klaus VH (2024) Effects of management practices on the ecosystem service multifunctionality of temperate grasslands. *Nature Communications* 15: 3829.
- J379. Sun Q, Gilgen AK, Wittwer R, von Arx G, van der Heijden MGA, Klaus VH, **Buchmann N** (2024) Drought effects on trait space of winter wheat are independent of land management. *New Phytologist* (in press)

Books

- B1. WBGU German Advisory Council on Global Change (2007) *Welt im Wandel – Sicherheitsrisiko Klimawandel*. Hauptgutachten. Springer-Verlag, 268 p.
- B2. WBGU German Advisory Council on Global Change (2008) *Climate change as a security risk*. EarthScan, 248 p.
- B3. WBGU German Advisory Council on Global Change (2008) *Welt im Wandel – Zukunftsfähige Bioenergie und nachhaltige Landnutzung*. Hauptgutachten. WBGU Eigenverlag, 388 p.
- B4. WBGU German Advisory Council on Global Change (2009) *Future Bioenergy and Sustainable Land Use*. EarthScan, 400 p.
- B5. Schulze ED, Beck E, **Buchmann N**, Clemens S, Müller-Hohenstein K, Scherer-Lorenzen M (2019) *Plant Ecology*. 2nd edition. Springer. pp 928.
Open access: <https://link.springer.com/book/10.1007/978-3-662-56233-8>

Book Chapters

- C1. **Buchmann N**, Gebauer G, Oren R, Schulze ED (1993) ¹⁵N-application to a 12-year-old Norway spruce plantation in the Fichtelgebirge, NE-Bavaria, FRG - Pathways and Dynamics. *In: Experimental manipulations of biota and biogeochemical cycling in ecosystems*. L Rasmussen, T Brydges, P Mathy (Eds), pp 173-181.
- C2. Kao WY, **Buchmann N**, Ehleringer JR (1994) Temporal variations in C-13/C-12 and CO₂ in an aspen forest. *In: Peng CI, Chou CH (Eds) Biodiversity and Terrestrial Ecosystems*. Institute of Botany Academia Sinica Monograph Series 14: 333-341.
- C3. Buchmann N, Brooks JR, Flanagan LB, Ehleringer JR (1998) Carbon isotope discrimination of terrestrial ecosystems. *In: H Griffiths, D Robinson, P Van Gardingen (Eds) Stable Isotopes and The Integration of Biological, Ecological and Geochemical Processes*. BIOS Scientific Publishers Ltd, Oxford. pp 203-221.
- C4. Gebauer G, Zeller B, Schmidt G, May C, **Buchmann N**, Colin-Belgrand M, Dambrine E, Martin F, Schulze ED, Bottner P (2000) The fate of ¹⁵N-labelled nitrogen inputs to coniferous and broad-

- leaved forests. *In*: ED Schulze (Ed.) Carbon and nitrogen cycling in European forest eco-systems. Ecological Studies, vol. 142, Springer-Verlag, 144-170.
- C5. Matteucci G, Dore S, Stivanello S, Rebmann C, **Buchmann N** (2000) Soil respiration in beech and spruce forests in Europe: trends, controlling factors, annual budgets and implications for the ecosystem carbon balance. *In*: ED Schulze (Ed.) Carbon and nitrogen cycling in European forest ecosystems. Ecological Studies, vol. 142, Springer-Verlag, 217-236.
- C6. **Buchmann N**, Kaplan JO (2001) Carbon isotope discrimination of terrestrial ecosystems – how well do observed and modeled results match? *In*: ED Schulze, M Heimann, S Harrison, E Holland, J Lloyd, IC Prentice und DS Schimel (Ed.) Global Biogeochemical Cycles in the Climate System. Academic Press, 253-266.
- C7. Hooper D, **Buchmann N**, Degrange V, Díaz SM, Gessner MO, Grime P, Hulot F, Mermillod-Blondin F, van Peer L, Roy J, Symstad A, Solan M, Spehn E (2002) Species diversity, functional diversity and ecosystem functioning. *In*: M Loreau, S Naeem, P Inchausti (Eds.) Biodiversity and ecosystem functioning: a current synthesis, Oxford University Press, 195-208.
- C8. Lankreijer H, Janssens IA, **Buchmann N**, Longdoz B, Epron D, Dore S (2003) Measurement of soil respiration. *In*: R Valentini (Ed.) Fluxes of carbon, water and energy of European forests. Ecological Studies, vol 163, Springer-Verlag, 37-54.
- C9. Janssens IA, Dore S, Epron D, Lankreijer H, **Buchmann N**, Longdoz B, Brossaud J, Montagnani L (2003) Climatic influences on seasonal and spatial differences in soil CO₂ efflux. *In*: R Valentini (Ed.) Fluxes of carbon, water and energy of European forests. Ecological Studies, vol 163, Springer-Verlag, 233-253.
- C10. **Buchmann N**, Bonal D, Barigah TS, Guehl JM, Ehleringer JR (2004) Insights in the carbon dynamics of tropical primary rainforests using stable carbon isotope analyses. *In*: Gourlet-Fleury S, Guehl JM, Laroussinie O (Eds.) Ecology and management of a neotropical rainforest. Elsevier, 95-113.
- C11. Wichura B, Ruppert J, Delany AC, **Buchmann N**, Foken T (2004) Structure of carbon dioxide exchange processes above a spruce forest. *In*: Matzner E (Ed.) Biogeochemistry of Forested Catchments in a Changing Environment. Ecological Studies, vol 172, Springer-Verlag, 161-176.
- C12. Subke JA, **Buchmann N**, Tenhunen J (2004) Soil CO₂ fluxes in spruce forests: Temporal and spatial variation, and environmental controls. *In*: Matzner E (Ed.) Biogeochemistry of Forested Catchments in a Changing Environment. Ecological Studies, vol 172, Springer-Verlag, 127-141.
- C13. de Bello F, **Buchmann N**, Sebastia MT (2006) Effects of climate and grazing on leaf attributes at the community-level. *In*: Lloveras J, Gonzalez-Rodriguez A, Vazquez-Yanez O, et al. (Eds) Sustainable grassland productivity. p 826-828.
- C14. Kahmen A, **Buchmann N** (2007) Addressing the functional value of biodiversity for ecosystem functioning using stable isotopes. *In*: Dawson T, Siegwolf RTW (Eds.) Stable Isotopes as Indicators of Ecological Change, Elsevier, 347-359.
- C15. Gilgen AK, **Buchmann N** (2008). Effects of summer drought on temperate grassland performance. Grassland Sciences in Europe 13. *In*: Hopkins A, Gustafsson T, Bertilsson J, Dalin G, Dilsdotter-Linde N, Spörndly E (Eds.) Biodiversity and animal feed. Future challenges for grassland production. p 913-915.
- C16. Lüscher A, **Buchmann N**, Huguenin-Elie O, Nyfeler D, Suter M, Weigelt A, Frossard E, Scherer-Lorenzen M (2008) Grundlagen effizienter Raufutterproduktion mit Mischbeständen - Effiziente Nutzung von Grünland als Ressource für die Milch- und Fleischproduktion. *In*: Thomet P, Menzi H, Isselstein J (Eds.) Mitteilungen der Arbeitsgemeinschaft Grünland und Futterbau, vol 9, 7-20.
- C17. Paschke M, McNamara P, Frischknecht P, **Buchmann N** (2010) Die onlinebasierten Schreibplattformen „Wissenschaftliches Schreiben, WiSch“ (Bachelorlevel) und „Scientific Writing Practice, SkriPS“ (Masterlevel). Vermittlung wissenschaftlicher Schreibkompetenz in der Fachdisziplin. *In*: Mandel S, Rutishauser M, Seiler Schiedt E (Eds.): E-Learning 2010. Digitale Medien für Lehre und Forschung. Waxmann: Münster. P. 50-60.
- C18. **Buchmann N** (2011) Greenhouse gas emissions from European grasslands and mitigation options. *In*: LeMaire G, Hodgson J, Chabbi A (Eds.) Grassland Productivity and Ecosystem Services. CAB International, p. 92-100.
- C19. **Buchmann N** (2011) Welternährungssystem – Wissenschaft in komplexer Verantwortung. *In*: Bartosch U, Liffin G, Braun R, Neuneck G (Eds.) Verantwortung von Wissenschaft und Forschung

- in einer globalisierten Welt: Forschen - Erkennen – Handeln. LIT-Verlag Dr. W. Hopf, Berlin, p. 133-146.
- C20. Paschke M, **Buchmann N** (2012) Verantwortungsvolles Handeln in der Wissenschaft – Vermittlung durch Blended-Learning, Rollenspiel und Cognitive Apprenticeship. *In: Csanyi G, Reichl F, Steiner A (Eds.) Digitale Medien, Werkzeuge für exzellente Forschung und Lehre. Waxmann Verlag, Münster, Germany. Vol. 61: 232-234.*
- C21. Husse S, Huguenin-Elie O, **Buchmann N**, Lüscher A (2013) Effects of mixing species on light interception of intensively managed swards. *In: Helgadottir A, Hopkins A (Eds.) The Role of Grasslands in a Green Future: Threats and Perspectives in Less Favoured Areas. p 177-179.*
- C22. Hofer D, Suter M, Hoekstra NJ, Haughey E, Eickhoff B, Finn JA, **Buchmann N**, Lüscher A (2014) Important differences in yield responses to simulated drought among four species and across three sites. *In: Hopkins A, Collins RP, Fraser MD, King VR, Lloyd DC, Moorby JM, Robson PRH (Eds.) EGF at 50: The future of European grasslands. p 166-168.*
- C23. Husse S, Huguenin-Elie O, **Buchmann N**, Lüscher A (2014) Nitrogen capture in mixed swards benefits from temporal complementarity among species. *In: Hopkins A, Collins RP, Fraser MD, King VR, Lloyd DC, Moorby JM, Robson PRH (Eds.) EGF at 50: The Future of European Grasslands. p 722-724.*
- C24. Huguenin-Elie O, Husse S, **Buchmann N**, Lüscher A (2016) Mixtures provided similar benefits to nitrogen yield under grazing and under mowing. *In: Hoglind M, Bakken AK, Hovstad KA, Kallioniemi E, Riley H, Steinshamm H, Ostrem L (Eds.) The multiple roles of grassland in the European bioeconomy. p 609-611.*
- C25. **Buchmann N**, Fuchs K, Feigenwinter I, Gilgen AK (2019) Multifunctionality of permanent grasslands: ecosystem services and resilience to climate change. *In: Huguenin-Elie O, Studer O, Kolliker R, Reheul D, Probo M, Barre P, Feuerstein U, Roldan-Ruiz I, Mariotte P, Hopkins A (Eds.) Improving sown grasslands through breeding and management. p 19-26.*
- C26. Klaus VH, Gilgen AK, Lüscher A, **Buchmann N** (2019) Can we deduce general management recommendations from biodiversity-ecosystem functioning research in grasslands? *In: Huguenin-Elie O, Studer O, Kolliker R, Reheul D, Probo M, Barre P, Feuerstein U, Roldan-Ruiz I, Mariotte P, Hopkins A (Eds.) Improving sown grasslands through breeding and management. p 63-65.*
- C27. Tonn B, Bausson C, Ten Berge H, **Buchmann N**, Bufe C, Eggers S, Fernández Rebollo P, Forster-Brown C, Hiron M, Klaus VH, Korevaar H, Lellei-Kovács E, Lombardi G, Markovic B, Ravetto Enri DS, Schils RLM, Stypinski P, Newell Price P (2020) A typology for European permanent grasslands. *Proceedings of the 28th General Meeting of the European Grassland Federation Vol. 25: 412 - 414*
- C28. Schils RLM, Newell Price JP, Klaus VH, Tonn B, Hejduk S, Stypinski P, Hiron M, Fernández P, Ravetto Enri S, Lellei-Kovacs E, Annett N, Markovic B, Lively F, ten Berge H, Smith K, Forster-Brown C, Jones M, **Buchmann N**, Janicka M, Fernandez J, Rankin J, McConnell D, Aubry A, Korevaar H (2020) European permanent grasslands mainly threatened by abandonment, heat and drought, and conversion to temporary grassland. *Proceedings of the 28th General Meeting of the European Grassland Federation Vol. 25: 553 – 555*
- C29. Klaus VH, Richter F, **Buchmann N**, Pierrick J, El Benni N, Lüscher A (2020) Effects of organic farming on ecosystem services and multifunctionality in Switzerland: the ServiceGrass project. *Proceedings of the 28th General Meeting of the European Grassland Federation Vol. 25: 505 – 507*
- C30. Richter F, Lüscher A, El Benni N, Jan P, **Buchmann N**, Klaus VH (2022) Provisioning ecosystem services of fertilized meadows and pastures differ in their response to organic management. *Proceedings of the 29th General Meeting of the European Grassland Federation, Grassland Science in Europe Vol. 27: 262-264*
- C31. Klaus VH, Richter R, Reichmuth C, Jan P, El Benni N, **Buchmann N**, Lüscher A (2022) How professional stakeholders perceive the current and future relevance of grassland ecosystem services in Switzerland. *Proceedings of the 29th General Meeting of the European Grassland Federation, Grassland Science in Europe Vol. 27: 198-200*
- C32. Klaus VH, Newell Price P, Bufe C, Caraes C, Chodkiewicz A, Feigenwinter I, Hejduk S, Klopčič M, Báldi A, Lellei-Kovács E, Lively F, Lombardi G, Markovic M, Milazzo F, Oenema J, Rankin J, Ravetto Enri S, Rhymer CM, Schils RLM, Stypiński P, Tonn B, Vanwallegghem T, Whittingham MJ, **Buchmann N** (2022) Ecosystem service research in grasslands at 31 experimental farms,

- networks and demonstration platforms across Europe. Proceedings of the 29th General Meeting of the European Grassland Federation, *Grassland Science in Europe* Vol. 27: 195-197
- C33. Tonn B, Ten Berge H, Bufe C, **Buchmann N**, Eggers S, Fernández Rebollo P, Klaus VH, Lellei-Kovács E, Lombardi G, Ravetto Enri S, Stypinski P, Newell Price JP (2022) Are we talking about the same thing? Stakeholder perspectives on grassland management intensity. Proceedings of the 29th General Meeting of the European Grassland Federation, *Grassland Science in Europe* Vol. 27: 47-49
- C34. Schils RLM, Bufe C, Rhymer C, Francksen R, Klaus VH, Abdalla M, Milazzo F, Lellei-Kovács E, Ten Berge H, Bertora C, Chodkiewicz A, Dămățircă C, Feigenwinter J, Fernández-Rebollo P, Ghiasi S, Hejduk S, Hiron M, Janicka M, Pellaton R, Smith K, Thorman R, Vanwalleggem T, Williams J, Zavattaro L, Kampen J, Derkx R, Smith P, Whittingham MJ, **Buchmann N**, Newell Price P (2022) Delivery of ecosystem services from permanent grasslands in Europe: a systematic review. Proceedings of the 29th General Meeting of the European Grassland Federation, *Grassland Science in Europe* Vol. 27: 274-276
- C35. Ravetto Enri S, Bausson C, ten Berge H, Hiron M, Jones M, Klaus VH, **Buchmann N**, Lellei-Kovács E, Rankin J, Fernández-Rebollo P, Schils R, Tonn B, Lombardi G, Newell Price P (2022) Variability of European farming systems relying on permanent grasslands across biogeographic regions. Proceedings of the 29th General Meeting of the European Grassland Federation, *Grassland Science in Europe* Vol. 27: 35-37
- C36. **Buchmann N** (2024) Digital research data for open science: The long path from collection to reuse. [Plant Science News 45: 9](#).

Monographs

- M1. Buchmann N (1989) Der Stickstoff- und Magnesiumhaushalt junger Fichten (*Picea abies* (L.) Karst.) im Freiland in Reaktion auf externe Versorgung. Masters Thesis. University of Bayreuth, Department of Plant Ecology. 79 pages.
- M2. Buchmann N (1993) Wege und Umsetzungen von ¹⁵N-Ammonium und ¹⁵N-Nitrat in einem Fichtenjungbestand (*Picea abies* (L.) Karst.). Ph.D. Thesis. University of Bayreuth, Department of Plant Ecology. Bayreuther Forum Ökologie, vol. 2, 246 pages.
- M3. Buchmann N (1999) Die ¹³C-Signatur des CO₂-Austausches zwischen Boden, Vegetation und Atmosphäre. Cumulative Habilitation Thesis. University of Bayreuth. 52 pages.

Other Publications (excluding project reports)

- P1. **Buchmann N** (1993) Nitrogen transformations in a 12-year-old spruce stand in the Fichtelgebirge, NE-Bavaria, Germany - A study with ¹⁵N. *Isotopenpraxis* 29: 101.
- P2. **Buchmann N**, Schulze ED (1993) ¹⁵N-Anreicherung in Freilandfichten - Aufnahme, Verteilung und Variationsursachen. *Isotopenpraxis* 29: 101.
- P3. Schmidt G, May C, **Buchmann N**, Gebauer G, Schulze ED (1997) Aufnahme von Ammonium und Nitrat bei Waldbäumen. *In: Terrestrische und ökosystemare Forschung in Deutschland - Stand und Ausblick*. H Mühle, S Eichler (Eds). UFZ Report, vol 5, pp 50-51 (ISSN 0948-9452).
- P4. Heimann M, Weber C, Duinker JC, Körtzinger A, Mintrop L, **Buchmann N**, Schulze ED, Hein M, Bondeau A, Cramer W, Lindner M, Esser G (1999) Natürliche Senken und Quellen des atmosphärischen Kohlendioxids: Stand des Wissens und Optionen des Handelns. Report of the Max-Planck-Institute for Meteorology, Hamburg, vol 287 (ISSN 0937-1060).
- P5. Wichura B, **Buchmann N**, Foken Th, Mangold A, Heinz G (2000) Pools und Flüsse des stabilen Kohlenstoffisotops ¹³C zwischen Boden, Vegetation und Atmosphäre in verschiedenen Pflanzengemeinschaften des Fichtelgebirges. *Bayreuther Forum Ökologie* 78: 109-130 (ISSN 0944-4122).
- P6. Wichura B, **Buchmann N**, Foken Th (2000) Fluxes of the stable carbon isotope ¹³C above a spruce forest measured by hyperbolic relaxed eddy accumulation method. *American Meteorological Society, Boston* 2000, 559-562.
- P7. Kahmen A, Weisser W, **Buchmann N** (2001) BIOLOG – Jena: a new biodiversity project. *Verhandlungen der Gesellschaft für Ökologie* 31: 30.

- P8. Krause R, **Buchmann N**, Churkina G, Freibauer A (2002) Development of a database for climate research in environmental communication in the information society. Pillmann W., Tochtermann K. (Eds.), International Society for Environmental Protection, Vienna, ISBN 3-9500036-8-1.
- P9. Wichura B, **Buchmann N**, Foken T (2002) Carbon dioxide exchange characteristics above a spruce forest. American Meteorological Society, 63-64.
- P10. **Buchmann N** (2002) A.F.W. Schimper: from the "oecology of plant distribution" to the "functional ecology of terrestrial ecosystems". Trends in Ecology and Evolution 17: 106-107.
- P11. **Buchmann N** (2002) A.F.W. Schimper: from the "oecology of plant distribution" to the "functional ecology of terrestrial ecosystems". Endeavour 26: 3-4.
- P12. **Buchmann N**, Knohl A, Hahn V, Sørensen A, Kahmen A, Temperton V (2003). Stoffkreisläufe und Biodiversität in terrestrischen Ökosystemen. In: Jahrbuch 2003 der Max-Planck-Gesellschaft. K.G. Saur Verlag, München. CD-ROM.
- P13. Smith P, Ambus P, Amézquita MC, Andrén O, Arrouays D, Ball B, Boeckx P, Brüning C, **Buchmann N**, Buendia L, Cellier P, Cernusca A, Clifton-Brown J, Dämmgen U, Ewert F, Favoino E, Fiorelli JL, Flechard C, Freibauer A, Hacıoğlu S, Harrison R, Hiederer R, Janssens I, Jayet PA, Jouany JP, Jungkunst H, Karlsson T, Kuikman P, Lagreid M, Leffelaar PA, Leip A, Loiseau P, Milford C, Neftel A, Oenema O, Ogle S, Olesen JE, Perälä P, Pesmajoglou S, Petersen SO, Pilegaard K, Raschi A, Regina K, Rounsevell M, Saletos S, Schils RLM, Seguin B, Sezzi E, Soussana JF, Stefani P, Stengel P, van Amstel A, Van Cleemput O, van Putten B, van Wesemael B, Verhagen A, Viovy N, Vuichard N, Weigel HJ, Weiske A, Willers HC (2004) CarboEurope GHG: Greenhouse gas emissions from European croplands. CarboEurope GHG, University of Tuscia, Viterbo, Italy.
- P14. Soussana JF, Saletos S, Smith P, Ambus P, Amézquita MC, Andrén O, Arrouays D, Ball B, Boeckx P, Brüning C, **Buchmann N**, Buendia L, Cellier P, Cernusca A, Clifton-Brown J, Dämmgen U, Ewert F, Fiorelli JL, Flechard C, Freibauer A, Fuhrer J, Harrison R, Hensen A, Hiederer R, Janssens I, Jayet PA, Jones M, Jouany JP, Jungkunst H, Kuikman P, Lagreid M, Leffelaar PA, Leip A, Loiseau P, Martin C, Milford C, Neftel A, Oenema O, Ogle S, Olesen JE, Pesmajoglou S, Petersen SO, Pilegaard K, Raschi A, Rees B, Schils RLM, Sezzi E, Stefani P, Sutton M, van Amstel A, Van Cleemput O, van Putten B, van Wesemael B, Verhagen J, Viovy N, Vuichard N, Weigel HJ, Weiske A, Willers HC, Tuba Z (2004) Greenhouse gas emissions from European grasslands. CarboEurope GHG – Specific Study Number 3, University of Tuscia, Viterbo, Italy.
- P15. Fischlin A, **Buchmann N** (2004) Biologische Kohlenstoffkreisläufe – Leistungsfähige Biosphäre. ETH-Bulletin 293: 10–13.
- P16. WBGU Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (2005). Keine Entwicklung ohne Umweltschutz: Empfehlungen zum Millennium+5-Gipfel. Politikpapier 4: 1-20.
- P17. WBGU German Advisory Council on Global Change (2005). Development needs Environmental Protection: Recommendations for the Millennium + 5 Summit. Policy Paper 4: 1-20.
- P18. Global Land Project (2005) Science Plan and Implementation Strategy. IGBP Report No. 53/IHDP Report No. 19. 64 pages.
- P19. Pfisterer AB, Balvanera P, **Buchmann N**, He JS, Nakashizuka T, Raffaelli D, Schmid B (2005). The Role of Biodiversity for Ecosystem Services: Current Knowledge. Swiss Biodiversity Forum, Bern.
- P20. **Buchmann N** (2006) Die Zukunft der Natur. Politische Ökologie 99: 46-48.
- P21. WBGU German Advisory Council on Global Change (2006) Die Zukunft der Meer – zu warm, zu hoch, zu sauer. Sondergutachten. 114 p.
- P22. **Buchmann N**, Engelen E-M, Schmidgen H (2006) Lokales Messen, globales Denken: Praktiken der Repräsentation in der Ökologie. Paragana: 3, 91-106.
- P23. WBGU German Advisory Council on Global Change (2006) The future oceans – Warming up, rising high, turning sour. Special Report. 110 p.
- P24. WBGU Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (2007). Neue Impulse für die Klimapolitik: Chancen der deutschen Doppelpresidentschaft nutzen. Politikpapier 5: 1-20.
- P25. WBGU German Advisory Council on Global Change (2007). New impetus for climate policy: making the most of Germany's dual presidency. Policy Paper 5: 1-20.

- P26. OcCC (2007) Klimaänderung und die Schweiz 2050. 164 pages.
- P27. **Buchmann N** (2007) Biodiversität als Versicherung. Artenreiche Wiesen trotz dem Klimawandel. Hotspot Biodiversität und Klimawandel vol. 16, 16.
- P28. **Buchmann N** (2007) Desertification. In: Gardner M, Nicklas U (Eds.) Desertification: a security threat. Convention Project to Combat Desertification (GTZ), 47: 12-17
- P29. Zeeman MJ, Tuzson B, Emmenegger L, Knohl A, **Buchmann N**, Eugster W (2009) Conditional CO₂ flux analysis of a managed grassland with the aid of stable isotopes. Biogeosciences Discussion 6: 3481-3910.
- P30. Wolf S, Eugster W, **Buchmann N** (2009) What happens with the carbon? Newsletter of Smithsonian Tropical Research Institute, 13.11.2009.
- P31. Salmon Y, **Buchmann N**, Barnard R (2011) Response of $\delta^{13}\text{C}$ in plant and soil respiration to a water pulse. Biogeosciences Discussion 8: 4493–4527.
- P32. Amrhein N, Apel K, Baginsky S, **Buchmann N**, Geisler M, Keller F, Körner C, Martinoia E, Merbold L, Müller C, Schmid B, Paschke M (2011) PLANT RESPONSE TO STRESS. Zurich-Basel Plant Science Center (PSC) (eds.). Textbook as part of the online course 'Plant Response to Stress' (PRESS) DOI: 10.3929/ethz-a-009779047.
- P33. Last L, **Buchmann N**, Gilgen AK, Grant M, Shreck A (2015) Foresight Study: Research for a Sustainable Swiss Food System. Commissioned by Federal Office for Agriculture. 144 pages.
- P34. Stamp P, **Buchmann N**, Frossard E, Lehmann B, Nösberger J, Walter A (2015) OBITUARY – Professor U. Ravi Sangakkara. Journal of Agricultural Science 153: 3–5.
- P35. **Buchmann N**, Keller S, Schläpfer J, Rapo C, Faller P, Paschke M, Dahinden M (2018) PSC Discovery Workshops: Forschungsheft 1 *Klimawandel*. Zurich-Basel Plant Science Center. <https://doi.org/10.3929/ethz-b-000368677>
- P36. Faller P, Schläpfer J, Schumacher R, Dahinden M, **Buchmann N** (2019) PSC Discovery Workshops: Lerneinheit 1 *Klimawandel*. Zurich-Basel Plant Science Center.
- P37. Kommission Niedersachsen 2030 (2021) Niedersachsen 2030 – Potenziale und Perspektiven. Gutachten für die Landesregierung Niedersachsen. 75 pages. [Arbeitsergebnisse | Portal Niedersachsen](#)
- P38. **Buchmann N** (2022). Changes in the Landscape. In: Schädler L, Blue Links, Verlag für Moderne Kunst, Wien. 312 pages
- P39. Gharun M, Shekhar A, Hörtnagl L, Krebs L, Arriga N, Migliavacca M, Roland M, Gielen B, Montagnani L, Tomelleri E, Šigut L, Peichl M, Zhao P, Schmidt M, Grünwald T, Korkiakoski M, Lohila A, **Buchmann N** (2024) Divergent response of evergreen needle-leaf forests in Europe to the 2020 warm winter. EGUsphere 2023-2964 <https://egusphere.copernicus.org/preprints/2024/egusphere-2023-2964/>
- P40. Nelson JA, Walther S, Gans F, Kraft B, Weber U, Novick K, **Buchmann N**, Migliavacca M, Wohlfahrt G, Šigut L, Ibrom A, Papale D, Göckede M, Duveiller G, Knohl A, Hörtnagl L, Scott RL, Zhang W, Hamdi ZM, Reichstein M, Aranda-Barranco S, Ardö J, Op de Beeck M, Billdesbach D, Bowling D, Bracho R, Brümmer C, Camps-Valls G, Chen S, Cleverly JR, Desai A, Dong G, El-Madany TS, Euskirchen ES, Feigenwinter I, Galvagno M, Gerosa GA, Gielen B, Goslee I, Goslee S, Gough CM, Heinesch B, Ichii K, Jackowicz-Korczynski MA, Klosterhalfen A, Knox S, Kobayashi H, Kohonen KM, Korkiakoski M, Mammarella I, Gharun M, Marzuoli R, Matamala R, Metzger S, Montagnani L, Nicolini G, O'Halloran T, Ourcival JM, Peichl M, Pendall E, Ruiz Reverter B, Roland M, Sabbatini S, Sachs T, Schmidt M, Schwalm CR, Shekhar A, Silberstein R, Silveira ML, Spano D, Tagesson T, Tramontana G, Trotta C, Turco F, Vesala T, Vincke C, Vitale D, Vivoni ER, Wang Y, Woodgate W, Yopez EA, Zhang J, Zona D, Jung M. X-BASE: the first terrestrial carbon and water flux products from an extended data-driven scaling framework, FLUXCOM-X. EGUsphere-2024-165 <https://egusphere.copernicus.org/preprints/2024/egusphere-2024-165/>
- P41. Gharun M, Shekhar A, Xiao J, Li X, **Buchmann N**. Effect of the 2022 summer drought across forest types in Europe. EGUsphere 2024-423 <https://doi.org/10.5194/egusphere-2024-423>
- P42. Scapucci L, Shekhar A, Aranda-Barranco S, Bolshakova A, Hörtnagl L, Gharun M, **Buchmann N**. Compound soil and atmospheric drought events and CO₂ fluxes of a mixed deciduous forest: Occurrence, impact, and temporal contribution of main drivers. EGUsphere 2024-459 https://editor.copernicus.org/EGUsphere/ms_records/egusphere-2024-459