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Research Interests

Earth System Science, Global Biogeochemical Cycles, Soils in the Earth System, Systemic Risks, Climate Extremes and their Impacts on Ecosystems and Societies, Application of Artificial Intelligence/Machine Learning to Spatiotemporal Dynamics and for Early Warning

Academic and professional career

- 10/2022- Amazon Scholar (AWS AIRE DeepEarth, A. Smola/ M. Li).
- 01/2022- Founding director ELLIS Unit Jena.
- 2021 (Jan/Feb) Guest professor at University Innsbruck, Austria.
- 2014- Founding co-director of the Michael-Stifel-Center Jena for Data-driven and Simulation Science, Friedrich-Schiller-University of Jena (re-elected 2018).
- 07/2014- Professor for Global Geoecology at the Friedrich Schiller University Jena.
- 2014- Managing Director, Max-Planck-Institute for Biogeochemistry, Jena (rotating)
- 07/2012- Director, Department Biogeochemical Integration, Max-Planck-Institute for Biogeochemistry, Jena.
- 2006-2012 Max Planck Research Group Leader at Max-Planck-Institute for Biogeochemistry, Jena, Biogeochemical Model-Data-Integration Group.
- 2004–2006 EU-Marie-Curie research fellow at Forest Ecology Lab, Department of Forest Science and Environment, University of Tuscia, Italy.
- 2001–2003 Graduate Research Assistant, teaching and internal co-ordination of the Terrestrial Process Integration Group at Department of Plant Ecology, University of Bayreuth (BMBF Project GLOWA-Danube, EU Projects CarboData and CarboEuroflux).
- 1998–2001 Graduate Research Assistant, Department of Plant Ecology, University of Bayreuth (EU research projects MEDEFU, and VOCAMOD).
- 1998–2001 PhD study; Thesis: *'Drought effects on ecosystem carbon and water exchange in three Mediterranean forest ecosystems – a combined top-down and bottom-up analysis'* (summa cum laude), University of Bayreuth.
- 1992–1998 Diploma studies in Landscape Ecology, Institute of Landscape Ecology, University of Münster; Thesis: *'Microbial biomass and carbon mineralisation in the alpine forest-tundra ecotone at Stillberg (Davos, Switzerland)'* (with distinction).

Awards/Distinctions/Fellowships

2020	Gottfried Wilhelm Leibniz Prize 2020
2019-	ERC Synergy Grant USMILE Understanding and Modelling the Earth System with Machine Learning
2018	American Geophysical Union Piers J. Sellers Global Environmental Change Mid-Career Award
2014-2022	Highly cited researcher Environmental Sciences, 2017-2021 Geosciences, additionally 2016 and 2018 in Agriculture Sciences, Thomson Reuters, USA/Canada
2013	Max-Planck Research Award (by Alexander-von-Humboldt foundation)
2010	Jim Gray (Microsoft) seed award for excellence in e-science
2009	Essential Science Indicators “Hot paper” (by Sciencewatch) for Moffat, Papale, Reichstein et al., 2007)
2008	ERC Starting Grant QUASOM
2008	“Rising star in Environment & Ecology” (Classified by essential science indicators - Sciencewatch)
2005, 2007	CARBOEUROPE best young scientist paper award for
2008	(1) Reichstein et al. (2005), Glob.Ch. Biol. 11, 1424-1439 (2) Owen, Tenhunen, Reichstein et al. (2007), Glob. Ch. Biol. 13:734-760 (3) Wutzler and Reichstein (2008), Biogeosciences 5:749-759.
2005	Marie-Curie Intra-European fellowship INTERMODE

Leadership, Committees and Memberships

2022	Member of the Selection Committee for the Award of the Alexander von Humboldt Professorship
2021-	Chair Steering Committee <i>Knowledge Action Network on Emergent Risks and Extreme Events</i> (a Future Earth, IRDR, WCRP and WWRP initiative)
2021-	Founding Director ELLIS Unit Jena „Machine Learning for Earth and Climate Sciences“ (jointly with Prof. J. Denzler)
2020-	Member of the UNDRR-ISC Expert Review Group for the Development of a New Global Disaster Risk Reduction Research Agenda
2020-	Member of the Strategic Advisory Board of the research field Earth and Environment, Helmholtz Association of German Research Centres
2020-	Advisory board member of the Cluster of Excellence “Machine Learning: New Perspectives for Science“, University of Tübingen, Germany
2020-	Scientific Advisory Committee member of the Helmholtz Artificial Intelligence Cooperation Unit (HAICU)
2019-	Co-Spokesperson NFDI4Earth (Nationale Forschungsdateninfrastrukturen)
2019-	Member of the Thuringian State Science Committee (Landeswissenschaftskonferenz)
2019-	Member of the German Committee Future Earth
2018-2021	Chair Development Team <i>Knowledge Action Network on Emergent Risks and Extreme Events</i> (Future Earth, IRDR, WCRP and WWRP initiative)
2018	Founding interim-development team member of WRCR-IRDR-Future Earth Knowledge Action Network on Extreme Events and Emergent Risks

2017-2019	Spokesperson of DFG-Future-Earth AG Gesellschaftliche Resilienz und Klimaextreme (Societal Resilience and Climate Extremes)
2016-2020	Spokesperson of iDIV for the Max-Planck-Society Institutes
2016-2020	Scientific Advisory board for ICOS (Integrated Carbon Observation System)
2015-2019	Coordinator H2020 Project BACI: Detecting changes in essential ecosystem and biodiversity properties – towards a Biosphere Atmosphere Change Index (together with group leader Dr. Miguel Mahecha)
2014-	Member of the Specialized Panel of Scientific Experts pursuant to the Environmental Rules at the Permanent Court of Arbitration, The Hague, The Netherlands (2020 renewal for 6 yrs)
2014-	Member of the Climate Panel of the State of Thuringia (Reporting to Ministry of Environment), re-confirmed 2019
2014-2016	Lead scientist of the Future Earth Cluster Initiative Extreme Events and Environments from climate to Society (E ³ S)
2012	Lead author IPCC special report on Climate Extremes (SREX), WG I.
2009-2013	Coordinator FP7 Project CARBO-Extreme
2008-2014	iLEAPS/IGBP Scientific Steering Committee member
2007-	FLUXNET Synthesis Steering Committee
2005-	PI and/or work package leader EU and ESA projects CARBOAFRICA; CARBONES, CIRCE, COMBINE, CLIMAFRICA, E-SHAPE, GHG-EUROPE, Land Surface Temperature CCI, MIND; national representative of COST actions Biosphere-atmosphere interaction (lead by T. Vesala), and Stable isotopes in biosphere research (lead by N. Buchmann)

Editorial Board Member

One Earth (2019-), Global Sustainability (2018-), Agricultural and Forest Meteorology, Global Change Biology (2008–2018), Carbon Management (2010-2018)

Organisation of scientific meetings

2005-	Regular (co-)convener of AGU and EGU sessions on carbon cycle, eco-hydrology, extreme events, systemic risks and societal resilience, remote sensing applications, soils and climate informatics.
2007-	Hosted and or (co-)organized numerous international workshops in the context of FLUXNET, E ³ S, EU FP6, FP7 and H2020 projects and others.

Ongoing funding

DLR Project *DUKE* (2022-2023), ELLIS Unit Jena *Machine Learning for Earth and Climate Sciences* (2021-2026) incl. CZS Junior Research Group (2022-2027); Open Earth Monitor (2022-2026), HK2023 VolkswagenStiftung: *Herrenhausen Conference* Climate crisis and systemic risks: Lessons Learned from Covid-19 (2022-2023), H2020 *DeepCube* (2021-2023), H2020 *Myriad-EU* (2021-2025), H2020 *XAIDA* (2021-2025), DFG *NFDI4Earth* (2021-2026), H2020 *USMILE* (2020-2026); DLR *Project Office BIOMASS* (2020-2023); DFG center iDIV: *German Centre for Integrative Biodiversity Research Halle-Jena-Leipzig*; PI, since 2013.

Recent funding

DFG SUBSOM (2017-2021); VolkswagenStiftung: *Herrenhausen Conference Extreme Events – building climate resilient societies*, scientific lead (2018-2021); ESA *Land Surface Temperature CCI project* (2018-2021); DFG SUBSOM *The forgotten part of carbon cycling: Organic matter storage and turnover in subsoils* co-PI (2017-2021); DKN Future Earth Working Group *Societal resilience and climate extremes* (2017-2019); EU H2020 *Detecting changes in essential ecosystem and biodiversity properties – towards a Biosphere Atmosphere Change Index: BACI* (2015-2019); ESA *GlobBiomass*; PI 2015-2019; NIBIO MOCABORS: *Moisture dynamics and carbon sequestration in boreal soils* PI since (2017-2019).

Supervision and co-supervision of PhD Theses (selection)

Benson (ongoing) *Deep learning and hybrid modeling of global vegetation and hydrology*.

El Ghawi (ongoing) *Hybrid machine-learning based modelling of biosphere-atmosphere interactions*.

Kariyathan (ongoing) *Biogeochemical insights from multi-tracer atmospheric flask data*.

Linscheid (ongoing) *Ecological process understanding across time scales*.

Pallandt-Vermeulen (ongoing) *Modelling the role of soil moisture dynamics on soil organic matter decomposition*.

Paulus (ongoing) *Land - atmosphere interactions in seasonally dry systems using lysimeter data*.

Requena (ongoing) *Deep learning approaches for analyzing spatio-temporal memory effects in Earth System data*.

Schall (ongoing) *Detection and anticipation of climate extremes and their impacts with machine learning*.

Upton (ongoing) *Machine-learning based estimation of ecosystem CO₂ fluxes constrained by atmospheric and ecosystem observations*.

Denissen (2022) *Mapping terrestrial evaporation regimes – a data-driven analysis of land-atmosphere interactions under climate change*.

Kraft (2022) *Deep learning and hybrid modeling of global vegetation and hydrology*.

Trautmann (2022) *Understanding global water storage variations using model-data integration*.

Ahrens (2021) *Reconciling turnover models of roots and soil organic carbon with radiocarbon measurements*. Gottfried Wilhelm Leibniz Universität, Hannover.

Nelson (2021) *Ecosystem Transpiration from Eddy Covariance*. Friedrich-Schiller-Universität, Jena

Krämer (2020) *Developing an Earth System State Indicator*, University of Valencia, Spain.

Boese (2018) *Semi-Empirical Water-Use Efficiency Models from Local to Global Scale*, Friedrich-Schiller-Universität, Jena.

Knauer (2018) *Integrating observations and models to understand ecophysiological controls on terrestrial water-carbon coupling*, University of Freiburg.

Forkel (2015) *Controls on Global Greening, Phenology and the Enhanced Seasonal CO₂ Amplitude: Integrating Decadal Satellite Observations and Global Ecosystem Models*, Friedrich-Schiller-Universität, Jena, (Bernd Rendel Prize.)

Braakhekke (2014) *Mechanistic modelling of the vertical soil organic matter profile*, Univ., Wageningen.

Zscheischler (2014) *A global analysis of extreme events and consequences for the terrestrial carbon cycle*, Eidgenössische Technische Hochschule, Institut für Atmosphäre und Klima, Zürich (Otto-Hahn Medal 2015, and Wladimir-Köppen Prize 2016).

Görner (2011) *Improving data-oriented light use efficiency models of gross primary productivity with remotely sensed spectral indices*, Friedrich-Schiller-Universität, Jena.

Carvalhais (2010) *Iberian Peninsula ecosystem carbon fluxes; a model-data integration study*; Dissertação, Univ. Lisboa.

- Lasslop (2010) *Model-data fusion for terrestrial biogeochemical models with carbon and water cycle observations*, Univ. Hamburg.
- Mahecha (2009) *Ecosystem-atmosphere exchanges on multiple time scales*, Zürich ETH, Zürich (ETH Medal).

Supervision and co-supervision of Master, Diploma, and BSc Theses (selection)

- Thomas (2012) *Reproducing FAPAR dynamics of Africa, based on climate, land use, and soil data using random forest*, Friedrich-Schiller-Universität, Diplom-Geographie, Jena.
- Ahrens (2011) *Constraining a simple soil organic carbon model with 14C data*, Univ., Bayreuth.
- Angermüller (2009) *Influence of driving forces and ecosystem parameters on carbon uptake from weekly to interannual time scales*, Diplom-Geoökologie, Univ., Bayreuth.
- Fürst (2009) *Characterizing global spatiotemporal patterns of the fraction of absorbed photosynthetically active radiation*, Diplom-Geoökologie, Univ., Bayreuth.
- Milbradt (2008) *Exploration von MODIS-Zeitreihen zur Veränderungsanalyse im Zeitraum 2000-2007 am Beispiel des Land Surface Temperature Emissivity Produktes*. Friedrich-Schiller-Universität, Diplom-Geographie, Jena.
- Kuglitsch (2007) *Determinanten der Wassernutzungseffizienz in Europa und deren Veränderung bei verschiedenen Klimaszenarien*, Diplom-Geographie, Univ., Wien.
- Vollrath (2007) *Die Analyse der Vegetationsproduktivität im Krüger Nationalpark, Südafrika anhand von Eddy-Kovarianz- und Fernerkundungsdaten*. Friedrich-Schiller-Universität, BSc Geographie, Jena.

Teaching (selected courses)

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| 2021 | Course on „Model-data integration for natural sciences“, University Innsbruck, Austria. |
| 2012- | Integration of Remote Sensing, in-situ observation and modelling, Friedrich-Schiller-University Jena, Germany. |
| 2011- | Applied statistics & data analysis, Overview course on Global Biogeochemical Cycles: Global Water Cycle; IMPRS Global Biogeochemical Cycles; MPI-BGC/FSU-Jena, Germany. |
| 2006- | Integration of remote sensing, ecosystem observation and modelling (lecture, seminar and tutorial); Master Degree Geoinformatics, FSU Jena, Germany. |
| 2002 | Computing for Biologists, University of Bayreuth, Germany. |
| 2001-2004 | Ecological field practical course, University of Bayreuth, Germany. |
| 2001-2003 | Ecophysiological modelling, regional ecological excursions for geocologists and biologists, University of Bayreuth, Germany. |

Full publication list Markus Reichstein (without EGU/AGU conference abstracts)

Peer reviewed journals (incl. papers in discussion in peer reviewed journals and conferences)

2023

- EIGHawi, R.; Kraft, B.; Reimers, C.; **Reichstein, M.**; Körner, M.; Gentine, P.; Winkler, A. J., 2023. Hybrid modeling of evapotranspiration: inferring stomatal and aerodynamic resistances using combined physics-based and machine learning. *Environmental Research* 18, 034039. <https://iopscience.iop.org/article/10.1088/1748-9326/acbbe0>
- Vautard, R.; van Oldenborgh, G. J.; Bonnet, R.; Li, S.; Robin, Y.; Kew, S.; Philip, S.; Soubeyroux, J. M.; Dubuisson, B.; Viovy, N.; **Reichstein, M.**; Otto, F.; Garcia de Cortazar-Atauri, I.; 2023. Human influence on growing-period frosts like in early April 2021 in central France. *Nat. Hazards Earth Syst. Sci.* 23(3): 1045-1058. <https://nhess.copernicus.org/articles/23/1045/2023/>
- Zhang, W.; Jung, M.; Migliavacca, M.; Poyatos, R.; Miralles, D. G.; El-Madany, T. S.; Galvagno, M.; Carrara, A.; Arriga, N.; Ibrom, A.; Mammarella, I.; Papale, D.; Cleverly, J. R.; Liddell, M.; Wohlfahrt, G.; Markwitz, C.; Mauder, M.; Paul-Limoges, E.; Schmidt, M.; Wolf, S.; Brümmer, C.; Arain, M. A.; Fares, S.; Kato, T.; Ardö, J.; Oechel, W.; Hanson, C.; Korkiakoski, M.; Biraud, S.; Steinbrecher, R.; Billesbach, D.; Montagnani, L.; Woodgate, W.; Shao, C.; Carvalhais, N.; **Reichstein, M.**; Nelson, J. A., 2022. The effect of relative humidity on eddy covariance latent heat flux measurements and its implication for partitioning into transpiration and evaporation. *Agricultural and Forest Meteorology* 330, 109305.

2022

- Cortes-Andres, J., Camps-Valls, G., Sippel, S., Szekely, E., Sejdinovic, D., Diaz, E., Perez-Suay, A., Li, Z., Mahecha, M., **Reichstein, M.**, 2022. Physics-aware nonparametric regression models for Earth data analysis. *Environmental Research Letters*, 17(5), Article 054034. <https://doi.org/10.1088/1748-9326/ac6762>
- Denissen, J. M. C., Teuling, A. J., Pitman, A. J., Koirala, S., Migliavacca, M., Li, W. T., **Reichstein, M.**, Winkler, A. J., Zhan, C. H., Orth, R., 2022. Widespread shift from ecosystem energy to water limitation with climate change. *Nature Climate Change*, 12(7), 677-+. <https://doi.org/10.1038/s41558-022-01403-8>
- Fan, N., **Reichstein, M.**, Koirala, S., Mahecha, M., Ahrens, B., Carvalhais, N., 2022 Global apparent temperature sensitivity of terrestrial carbon turnover modulated by hydrometeorological factors. *Nat. Geosci.* 15, 989–994 (2022). <https://doi.org/10.1038/s41561-022-01074-2>
- Harris, E., Yu, L., Wang, Y. P., Mohn, J., Henne, S., Bai, E., Barthel, M., Bauters, M., Boeckx, P., Dorich, C., Farrell, M., Krummel, P. B., Loh, Z. M., **Reichstein, M.**, Six, J., Steinbacher, M., Wells, N. S., Bahn, M., and Rayner, P.: Warming and redistribution of nitrogen inputs drive an increase in terrestrial nitrous oxide emission factor, *Nat Commun*, 13, 4310, 10.1038/s41467-022-32001-z, 2022.
- Joswig, J., Wirth, C., Schuman, M. C., Kattge, J., Reu, B., Wright, I. J., Sippel, S. D., Rüger, N., Richter, R., Schaepman, M. E., van Bodegom, P. M., Cornelissen, J. H. C., Díaz, S., Hattigh, W. N., Kramer, K., Lens, F., Niinemets, Ü., Reich, P. B., **Reichstein, M.**, Römermann, C., Schrod, F., Anand, M., Bahn, M., Byun, C., Campetella, G., Cerabolini, B. E. L., Craine, J. M., Gonzalez-Melo, A., Gutiérrez, A. G., He, T., Higuchi, P., Jactel, H., Kraft, N. J. B., Minden, V., Onipchenko, V., Peñuelas, J., Pillar, V. D., Sosinski, É., Soudzilovskaia, N. A., Weiher, E., Mahecha, M. D., 2022. Climatic and soil factors explain the two-dimensional spectrum of global plant trait variation. *Nature Ecology & Evolution*, 6, 36-50. doi:10.1038/s41559-021-01616-8
- Kraft, B., Jung, M., Korner, M., Koirala, S., **Reichstein, M.**, 2022. Towards hybrid modeling of the global hydrological cycle. *Hydrology and Earth System Sciences*, 26(6), 1579-1614. <https://doi.org/10.5194/hess-26-1579-2022>
- Kucuk, C., Koirala, S., Carvalhais, N., Miralles, D. G., **Reichstein, M.**, Jung, M., 2022. Characterizing the Response of Vegetation Cover to Water Limitation in Africa Using Geostationary Satellites. *Journal of Advances in Modeling Earth Systems*, 14(3), Article e2021MS002730. <https://doi.org/10.1029/2021ms002730>
- Kucuk, C., Koirala, S., Carvalhais, N., Miralles, D. G., **Reichstein, M.**, Jung, M., 2022. Observation-based assessment of secondary water effects on seasonal vegetation decay across Africa. *Frontiers in Big Data*, 5, Article 967477. <https://doi.org/10.3389/fdata.2022.967477>
- Lee, H. T., Jung, M., Carvalhais, N., Trautmann, T., Kraft, B., **Reichstein, M.**, Forkel, M., Koirala, S., 2022. Diagnosing modeling errors of global terrestrial water storage interannual variability,

- Hydrol. Earth Syst. Sci. Disc. (HESSD), 10.5194/hess-2022-284.
- Li, N., Sippel, S., Winkler, A. J., Mahecha, M. D., **Reichstein, M.**, Bastos, A., 2022. Interannual global carbon cycle variations linked to atmospheric circulation variability. *Earth System Dynamics*, 13(4), 1505-1533. <https://doi.org/10.5194/esd-13-1505-2022>
- Li, W. T., Migliavacca, M., Forkel, M., Denissen, J. M. C., **Reichstein, M.**, Yang, H., Duveiller, G., Weber, U., Orth, R., 2022. Widespread increasing vegetation sensitivity to soil moisture. *Nature Communications*, 13(1), Article 3959. <https://doi.org/10.1038/s41467-022-31667-9>
- Luo, Y. P., Pacheco-Labrador, J., Richardson, A. D., Seyednasrollah, B., Perez-Priego, O., Gonzalez-Cascon, R., Martin, M. P., Moreno, G., Nair, R., Wutzler, T., Bucher, S. F., Carrara, A., Cremones, E., El-Madany, T. S., Filippa, G., Galvagno, M., Hammer, T., Ma, X. L., Martini, D., Zhang, Q., **Reichstein, M.**, Menzel, A., Roemermann, C., Migliavacca, M., 2022. Evergreen broadleaf greenness and its relationship with leaf flushing, aging, and water fluxes. *Agricultural and Forest Meteorology*, 323, Article 109060. <https://doi.org/10.1016/j.agrformet.2022.109060>
- Martini, D., Sakowska, K., Wohlfahrt, G., Pacheco-Labrador, J., van der Tol, C., Porcar-Castell, A., Magney, T. S., Carrara, A., Colombo, R., El-Madany, T. S., Gonzalez-Cascon, R., Martin, M. P., Julitta, T., Moreno, G., Rascher, U., **Reichstein, M.**, Rossini, M., & Migliavacca, M., 2022. Heatwave breaks down the linearity between sun-induced fluorescence and gross primary production. *New Phytologist*, 233(6), 2415-2428. <https://doi.org/10.1111/nph.17920>
- Mehrabi, Z., Ignaciuk, A., Levers, C., Delzeit, R., Braich, G., Bajaj, K., Amo-Aidoo, A., Anderson, W., Balgah, R. A., Benton, T. G., Chari, M. M., Ellis, E. C., Gahi, N. Z., Gaupp, F., Garibaldi, L. A., Gerber, J. S., Godde, C. M., Grass, I., Heimann, T., Hiron, M., Hoogenboom, G., Jain, M., James, D., Makowski, D., Masamha, B., Meng, S. S., Monprapussorn, S., Mueller, D., Nelson, A., Newlands, N. K., Noack, F., Oronje, M., Raymond, C., **Reichstein, M.**, Rieseberg, L. H., Rodriguez-Llanes, J. M., Rosenstock, T., Rowhani, P., Sarhadi, A., Seppelt, R., Sidhu, B. S., Snapp, S., Soma, T., Sparks, A. H., Teh, L., Tigchelaar, M., Vogel, M. M., West, P. C., Wittman, H., You, L. Z., 2022. Research priorities for global food security Nair, R., Strube, M., Hertel, M., Kolle, O., **Reichstein, M.**, Migliavacca, M., 2022. Go wide to go deep: Affordable, replicable robotic minirhizotron sampling for phenology studies, *bioRxiv*, 10.1101/2022.01.06.475082.
- O, S., Bastos, A., **Reichstein, M.**, Li, W. T., Denissen, J., Graefen, H., & Orth, R., 2022. The Role of Climate and Vegetation in Regulating Drought-Heat Extremes. *Journal of Climate*, 35(17), 5677-5685. <https://doi.org/10.1175/jcli-d-21-0675.1>
- Orth, R., Sungmin, O., Zscheischler, J., Mahecha, M. D., **Reichstein, M.**, 2022. Contrasting biophysical and societal impacts of hydro-meteorological extremes. *Environmental Research Letters*, 17(1), Article 014044. <https://doi.org/10.1088/1748-9326/ac4139>
- Pabon-Moreno, D. E., Migliavacca, M., **Reichstein, M.**, Mahecha, M. D., 2022. On the Potential of Sentinel-2 for Estimating Gross Primary Production. *Ieee Transactions on Geoscience and Remote Sensing*, 60, Article 4409412. <https://doi.org/10.1109/tgrs.2022.3152272>
- Pallandt, M., Ahrens, B., Koirala, S., Lange, H., **Reichstein, M.**, Schrumppf, M., Zaehle, S., 2022. Vertically Divergent Responses of SOC Decomposition to Soil Moisture in a Changing Climate. *Journal of Geophysical Research-Biogeosciences*, 127(2), Article e2021JG006684. <https://doi.org/10.1029/2021jg006684>
- Paulus, S. J., El-Madany, T. S., Orth, R., Hildebrandt, A., Wutzler, T., Carrara, A., Moreno, G., Perez-Priego, O., Kolle, O., **Reichstein, M.**, Migliavacca, M., 2022. Resolving seasonal and diel dynamics of non-rainfall water inputs in a Mediterranean ecosystem using lysimeters. *Hydrology and Earth System Sciences*, 26(23), 6263-6287. <https://doi.org/10.5194/hess-26-6263-2022>
- Ruiz-Vasquez, M., Sungmin, S., Brenning, A., Koster, R. D., Balsamo, G., Weber, U., Arduini, G., Bastos, A., **Reichstein, M.**, Orth, R., 2022. Exploring the relationship between temperature forecast errors and Earth system variables. *Earth System Dynamics*, 13(4), 1451-1471. <https://doi.org/10.5194/esd-13-1451-2022>
- Wang, S., Yang, H., Koirala, S., Forkel, M., **Reichstein, M.**, Carvalhais, N., 2022. Understanding disturbance regimes from patterns in biomass and primary productivity. *10.1002/essoar.10512199.2*.
- Ward, P. J., Daniell, J., Duncan, M., Dunne, A., Hananel, C., Hochrainer-Stigler, S., Tijssen, A., Torresan, S., Ciurean, R., Gill, J. C., Sillmann, J., Couasnon, A., Koks, E., Padron-Fumero, N., Tatman, S., Lund, M. T., Adesiyun, A., Aerts, J., Alabaster, A., Bulder, B., Torres, C. C., Critto, A., Hernandez-Martin, R., Machado, M., Mysiak, J., Orth, R., Antolin, I. P., Petrescu, E. C., **Reichstein, M.**, Tiggeloven, T., Van Loon, A. F., Pham, H. V., de Ruiter, M. C., 2022. Invited perspectives: A research agenda towards disaster risk management pathways in multi-(hazard-)risk assessment. *Natural Hazards and Earth System Sciences*, 22(4), 1487-1497. <https://doi.org/10.5194/nhess-22-1487-2022>
- Yu, X., Orth, R., **Reichstein, M.**, Bahn, M., Klosterhalfen, A., Knohl, A., Koebsch, F., Migliavacca, M., Mund, M., Nelson, J. A., Stocker, B. D., Walther, S., & Bastos, A., 2022. Contrasting drought

legacy effects on gross primary productivity in a mixed versus pure beech forest. *Biogeosciences*, 19(17), 4315-4329. <https://doi.org/10.5194/bg-19-4315-2022>

Zhan, C. H., Orth, R., Migliavacca, M., Zaehle, S., **Reichstein, M.**, Engel, J., Rammig, A., & Winkler, A. J., 2022. Emergence of the physiological effects of elevated CO₂ on land-atmosphere exchange of carbon and water. *Global Change Biology*, 28(24), 7313-7326. <https://doi.org/10.1111/gcb.16397>

2021

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