

Lebenslauf

Prof. Dr. Markus Reichstein

Geboren: 25.09.1972 in Kiel

Familienstand: verheiratet, 4 Kinder

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Forschungsinteressen

Erdsystemwissenschaft, Anwendung künstlicher Intelligenz/maschinenellen Lernens mit Systemmodellierung, Globale Biogeochemische Kreisläufe, Böden im Erdsystem, Klimaextreme und Gesellschaftliche Resilienz

Wissenschaftlicher Werdegang

- 2021 (Jan/Feb) Gastprofessor an der Universität Innsbruck, Österreich.
seit 2014 Gründungsdirektor am Michael-Stifel-Center Jena for Data-driven and Simulation Science, Friedrich-Schiller-Universität Jena (Wiederwahl 2018).
seit 07/2014 Professor für Globale Geoökologie, Friedrich-Schiller-Universität Jena.
seit 07/2012 Direktor Abteilung Biogeochemische Integration, Max-Planck-Institut für Biogeochemie, Jena.
- 2014-2016 und
2018-2020 Geschäftsführender Direktor Max-Planck-Institut für Biogeochemie, Jena.
2006-2012 Max Planck Forschungsgruppenleiter am Max-Planck-Institut für Biogeochemie, Jena, Gruppe Biogeochemische Modell-Daten-Integration.
- 2004–2006 EU-Marie-Curie Research Fellow am Forest Ecology Lab, Department of Forest Science and Environment, Universität Tuscia, Italien.
- 2001–2003 Wissenschaftlicher Mitarbeiter, Lehre und interne Koordination der Gruppe Terrestrial Process Integration, Abteilung Pflanzenökologie, Universität Bayreuth (BMBF Projekt GLOWA-Danube, EU Projekte CarboData und CarboEuroflux).
- 1998–2001 Wissenschaftlicher Mitarbeiter, Abteilung Pflanzenökologie Universität Bayreuth (EU Forschungsprojekte MEDEFU und VOCAMOD).
- 1998–2001 Doktorand; Doktorarbeit: *'Drought effects on ecosystem carbon and water exchange in three Mediterranean forest ecosystems – a combined top-down and bottom-up analysis'* (summa cum laude), Universität Bayreuth.
- 1992–1998 Diplom-Landschaftsökologie, Institut für Landschaftsökologie Universität Münster; Diplomarbeit: *'Microbial biomass and carbon mineralisation in the alpine forest-tundra ecotone at Stillberg (Davos, Schweiz)'* (mit Auszeichnung).

Preise und Auszeichnungen

2020	Gottfried Wilhelm Leibniz Preis 2020
2019	ERC Synergy Grant USMILE, Understanding and Modelling the Earth System with Machine Learning
2018	Preisträger des Jahres 2018 für den Piers J. Sellers Mid-Career Award der Amerikanischen Geophysikalischen Vereinigung (AGU), Sektion Globale Umweltveränderungen
2014-2021	Highly cited researcher in Umweltwissenschaften, ebenso 2016 und 2018 Agrarwissenschaften, 2017-2021 Geowissenschaften Thomson Reuters, USA/Canada
2013	Max-Planck-Forschungspreis der Alexander von Humboldt-Stiftung und der Max-Planck-Gesellschaft
2010	Jim Gray (Microsoft) Seed Award für hervorragende Leistungen im Bereich E-Science
2009	Essential Science Indicators “Hot paper” (von Sciencewatch) für 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, 2008	CARBOEUROPE Preis für beste Nachwuchswissenschaftler-Veröffentlichung (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 Forschungsstipendium INTERMODE

Leitungs- und Beratungstätigkeiten

seit 2021	Direktor ELLIS Unit Jena „Machine Learning for Earth and Climate Sciences“
seit 2020	Mitglied der ISC-UNDRR Expert Review Group für die Entwicklung einer neuen Forschungsagenda zur globalen Katastrophenvorsorge
seit 2020	Mitglied des Strategie-Beirates für den Forschungsbereich Erde und Umwelt der Helmholtz-Gemeinschaft
seit 2020	Mitglied wissenschaftliches Beratergremium Exzellenzcluster „Machine Learning: New Perspectives for Science“, Universität Tübingen
seit 2020	Mitglied des wissenschaftlichen Beratergremiums Helmholtz Artificial Intelligence Cooperation Unit (HAICU)
seit 2019	Beiratsmitglied Nationale Forschungsdateninfrastrukturen (NFDIEarth)
seit 2019	Mitglied der Landeswissenschaftskonferenz des Landes Thüringen
seit 2019	Mitglied des Deutschen Komitees für Nachhaltigkeitsforschung in Future Earth
seit 2018	Leitung Steuerungsteam <i>Knowledge Action Network on Emergent Risks and Extreme Events</i> (Future Earth, IRDR, WCRP und WWRP Initiative)
2017-2019	Sprecher der DFG-Future-Earth Arbeitsgruppe Gesellschaftliche Resilienz und Klimaextreme
2016-2020	Sprecher in iDIV für die Institute der Max-Planck-Gesellschaft

2016-2020	Mitglied des wissenschaftlichen Beratergremiums für ICOS (Integrated Carbon Observation System)
2015-2019	Koordinator H2020 Projekt BACI: Detecting changes in essential ecosystem and biodiversity properties – towards a Biosphere Atmosphere Change Index (zusammen mit MPI-BGC Gruppenleiter Dr. Miguel Mahecha)
2015-2017	Gründungsdirektor Michael-Stifel-Center Jena for Data-driven and Simulation Science, Friedrich-Schiller-Universität Jena (MD: Prof. J. Denzler)
seit 2014	Experte am Ständigen Schiedshof für Streitigkeiten in Bezug auf Fragen der natürlichen Lebensgrundlagen und der Umwelt, Den Haag, Niederlande. (Verlängerung in 2020)
seit 2014	Mitglied des Klimarates des Landes Thüringen
2014-2016	Wissenschaftliche Leitung der Future Earth Cluster Initiative Extreme Events and Environments from climate to Society (E ³ S)
2012	Hauptautor des IPCC-Sonderberichts über Klimaextreme (SREX), WG I.
2009-2013	Koordinator EU FP7 Projekt CARBO-Extreme
2008-2014	Mitglied des wissenschaftlichen Beratergremiums von iLEAPS/IGBP
seit 2007	Mitglied des wissenschaftlichen Beratergremiums von FLUXNET Synthesis
seit 2005	Leitender Wissenschaftler in EU und ESA Projekten CARBOAFRICA; CARBONES, CIRCE, COMBINE, CLIMAFRICA, E-SHAPE, GHG-EUROPE, Land Surface Temperature CCI, MIND; COST actions Biosphere-atmosphere interaction (lead by T. Vesala), und Stable isotopes in biosphere research (lead by N. Buchmann)

Mitglied Redaktionsgremien

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

Organisation von wissenschaftlichen Tagungen

Seit 2005 Ausrichtung von AGU- und EGU-Veranstaltungen zu Kohlenstoffkreislauf, Öko-Hydrologie, Fernerkundungsanwendungen, Böden, Klimainformatik.

Seit 2007 Ausrichtung zahlreicher internationaler Workshops im Rahmen von FLUXNET, E3S, EU FP6, FP7 und H2020 Projekten.

Aktuell geförderte Projekte

ELLIS Unit Jena „Machine Learning for Earth and Climate Sciences“ (2021-2026); H2020 *DeepCube* (2021-2023), H2020 *Myriad-EU* (2021-2025), H2020 *XAIDA* (2021-2025), H2020 *USMILE* (2020-2026); DLR *Project Office BIOMASS* (2020-2023); H2020 *E-SHAPE EuroGEOSS Showcases: Applications Powered by Europe* (2019-2023); VolkswagenStiftung: *Herrenhausen Conference Extreme Events – building climate resilient societies*, scientific lead (2018-2021); DFG *SUBSOM* (2017-2021); DFG center iDIV: *German Centre for Integrative Biodiversity Research Halle-Jena-Leipzig*; PI, since 2013.

Abgeschlossene Projektförderungen

ESA *Land Surface Temperature CCI project* (2018-2021); 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 2017-2019); DFG SUBSOM The forgotten part of carbon cycling: Organic matter storage and turnover in subsoils co-PI (2017-2019).

Betreuung von Doktorarbeiten (Auswahl)

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

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

Kraft (aktuell) *Modelling ecosystem fluxes and states from Earth observation with recurrent neural nets.*

Linscheid (aktuell) *Ecological process understanding across time scales*

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

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

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

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

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

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.* Universität 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, Chemisch-Geowissenschaftliche Fakultät, 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).

Betreuung von Master-, Diplom- und Bachelor Arbeiten (Auswahl)

- 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.

Lehre (ausgewählte Kurse)

- 2021 Kurs "Modell-Daten-Integration für Naturwissenschaften", Universität Innsbruck, Österreich.
- 2012- Integration of Remote Sensing, in-situ observation and modelling, Friedrich-Schiller Universität Jena.
- 2011- Applied statistics & data analysis, Overview course on Global Biogeochemical Cycles: Global Water Cycle; IMPRS Global Biogeochemical Cycles; MPI-BGC/FSU-Jena.
- seit 2006 Integration von Fernerkundung, Ökosystembeobachtung und Ökosystemmodellierung (Vorlesung, Seminar und Übung; Master Studiengang Geoinformatik); Friedrich-Schiller-Universität Jena.
- 2002 EDV für Biologen (Universität Bayreuth).
- 2001-2004 Ökologisches Feldpraktikum für Biologen und Geoökologen (Universität Bayreuth).
- 2001-2003 Ökophysiologische Modellierung, regionale ökologische Exkursionen für Geoökologen und Biologen (Universität Bayreuth).

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

Peer reviewed journals

2021

- Bastos, A., Orth, R., **Reichstein, M.**, Ciais, P., Viovy, N., Zaehle, S., Anthoni, P., Arneth, A., Gentine, P., Joetzier, E., Lienert, S., Loughran, T., McGuire, P.C., O, S., Pongratz, J., Sitch, S., 2021. Vulnerability of European ecosystems to two compound dry and hot summers in 2018 and 2019. *Earth System Dynamics* 12, 1015 - 1035. doi: 10.5194/esd-12-1015-2021
- Callaghan, M., Schleussner, C.-F., Nath, S., Lejeune, Q., Knutson, T.R., **Reichstein, M.**, Hansen, G., Theokritoff, E., Andrijevic, M., Brecha, R.J., Hegarty, M., Jones, C., Lee, K., Lucas, A., van Maanen, N., Menke, I., Pfliegerer, P., Yesil, B., Minx, J.C., 2021. Machine-learning-based evidence and attribution mapping of 100,000 climate impact studies. *Nature Climate Change*. doi: 10.1038/s41558-021-01168-6
- Camps-Valls, G., Campos-Taberner, M., Moreno-Martínez, Á., Walther, S., Duveiller, G., Cescatti, A., Mahecha, M.D., Muñoz-Mari, J., García-Haro, F.J., Guanter, L., Jung, M., Gamon, J.A., **Reichstein, M.**, Running, S.W., 2021. A unified vegetation index for quantifying the terrestrial biosphere. *Science Advances* 7. doi: 10.1126/sciadv.abc7447
- Cortés, J., Mahecha, M.D., **Reichstein, M.**, Myneni, R.B., Chen, C., Brenning, A., 2021. Where are global vegetation greening and browning trends significant? *Geophysical Research Letters* 48. doi: 10.1029/2020gl091496
- El-Madany, T.S., **Reichstein, M.**, Carrara, A., Martín, M.P., Moreno, G., Gonzalez-Cascon, R., Peñuelas, J., Ellsworth, D.S., Burchard-Levine, V., Hammer, T.W., Knauer, J., Knauer, J., Kolle, O., Luo, Y., Pacheco-Labrador, J., Nelson, J.A., Perez-Priego, O., Rolo, V., Wutzler, T., Migliavacca, M., 2021. How nitrogen and phosphorus availability change water use efficiency in a Mediterranean savanna ecosystem. *Journal of Geophysical Research: Biogeosciences* 126. doi: 10.1029/2020jg006005
- Estupinan-Suarez, L.M., Gans, F., Brenning, A., Gutierrez-Velez, V.H., Londono, M.C., Pabon-Moreno, D.E., Poveda, G., **Reichstein, M.**, Reu, B., Sierra, C., Weber, U., Mahecha, M.D., 2021. A regional earth system data lab for understanding ecosystem dynamics: An example from tropical South America. *Frontiers in Earth Science* 9. doi: 10.3389/feart.2021.613395
- Flach, M., Brenning, A., Gans, F., **Reichstein, M.**, Sippel, S., Mahecha, M.D., 2021. Vegetation modulates the impact of climate extremes on gross primary production. *Biogeosciences* 18, 39 - 53. doi: 10.5194/bg-18-39-2021
- Gampe, D., Zscheischler, J., **Reichstein, M.**, O'Sullivan, M., Smith, W.K., Sitch, S., Buermann, W., 2021. Increasing impact of warm droughts on northern ecosystem productivity over recent decades. *Nature Climate Change* 11, 772 - 779. doi: 10.1038/s41558-021-01112-8
- Humphrey, V., Berg, A., Ciais, P., Gentine, P., Jung, M., **Reichstein, M.**, Seneviratne, S.I., Frankenberg, C., 2021. Soil moisture–atmosphere feedback dominates land carbon uptake variability. *Nature* 592, 65 - 69. doi: 10.1038/s41586-021-03325-5
- Krich, C., Migliavacca, M., Miralles, D.G., Kraemer, G., El-Madany, T.S., **Reichstein, M.**, Runge, J., Mahecha, M.D., 2021. Functional convergence of biosphere-atmosphere interactions in response to meteorological conditions. *Biogeosciences* 18, 2379 - 2404. doi: 10.5194/bg-18-2379-2021
- Küçük, Ç., Koirala, S., Carvalhais, N., Miralles, D., **Reichstein, M.**, Jung, M., 2021. Characterising the response of vegetation cover to water limitation in Africa using geostationary satellites. *Earth and Space Science Open Archive (ESSOAr)*. doi: 10.1002/essoar.10504964.2
- Li, W., Migliavacca, M., Forkel, M., Walther, S., **Reichstein, M.**, Orth, R., 2021. Revisiting global vegetation controls using multi-layer soil moisture. *Geophysical Research Letters* 48. doi: 10.1029/2021gl092856
- Migliavacca, M., Musavi, T., Mahecha, M.D., Nelson, J.A., Knauer, J., Baldocchi, D.D., Perez-Priego, O., Christiansen, R., Peters, J., Anderson, K., Bahn, M., Black, T.A., Blanken, P.D., Bonal, D., Buchmann, N., Caldararu, S., Carrara, A., Carvalhais, N., Cescatti, A., Chen, J., Cleverly, J., Cremonese, E., Desai, A.R., El-Madany, T.S., Farella, M.M., Fernández-Martínez, M., Filippa, G., Forkel, M., Galvagno, M., Gomasasca, U., Gough, C.M., Göckede, M., Ibrom, A., Ikawa, H., Janssens, I.A., Jung, M., Kattge, J., Keenan, T.F., Knohl, A., Kobayashi, H., Kraemer, G., Law, B.E., Liddell, M.J., Ma, X., Mammarella, I., Martini, D., Macfarlane, C., Matteucci, G., Montagnani, L., Pabon-Moreno, D.E., Panigada, C., Papale, D., Pendall, E., Penuelas, J., Phillips, R.P., Reich, P.B., Rossini, M., Rotenberg, E., Scott, R.L., Stahl, C., Weber, U., Wohlfahrt, G., Wolf, S., Wright, I.J., Yakir, D., Zaehle, S., **Reichstein, M.**, 2021. The three major axes of terrestrial ecosystem function. *Nature* 598, 468 - 472. doi: 10.1038/s41586-021-03939-

- Pacheco-Labrador, J., El-Madany, T.S., van der Tol, C., Martin, M.P., Gonzalez-Cascon, R., Perez-Priego, O., Guan, J., Moreno, G., Carrara, A., **Reichstein, M.**, Migliavacca, M., 2021. senSCOPE: Modeling mixed canopies combining green and brown senesced leaves. Evaluation in a Mediterranean Grassland. *Remote Sensing of Environment* 257. doi: 10.1016/j.rse.2021.112352
- Reichstein, M.**, Riede, F., Frank, D., 2021. More floods, fires and cyclones — plan for domino effects on sustainability goals. *Nature* 592, 347 - 349. doi: 10.1038/d41586-021-00927-x
- Trifunov, V.T., Shadaydeh, M., Runge, J., **Reichstein, M.**, Denzler, J., contributor: Member IEEE, 2021. A data-driven approach to partitioning net ecosystem exchange using a deep state space model. *IEEE Access* 9, 107873 - 107882. doi: 10.1109/access.2021.3101129

2020

- Ahrens, B., Guggenberger, G., Rethemeyer, J., John, S., Marschner, B., Heinze, S., Angst, G., Mueller, C.W., Kogel-Knabner, I., Leuschner, C., Hertel, D., Bachmann, J., **Reichstein, M.**, Schrumpf, M., 2020. Combination of energy limitation and sorption capacity explains ¹⁴C depth gradients. *Soil Biology and Biochemistry* 148. doi: 10.1016/j.soilbio.2020.107912
- Al-Yaari, A., Ciais, J.-P.W.P., **Reichstein, M.**, Ballantyne, A., Ogée, J., Ducharne, A., Swenson, J.J., Frappart, F., Fan, L., Wingate, L., Li, X., Hufkens, K., Knapp, A.K., 2020. Asymmetric responses of ecosystem productivity to rainfall anomalies vary inversely with mean annual rainfall over the conterminous United States. *Global Change Biology* 26, 6959 - 6973. doi: 10.1111/gcb.15345
- Bastos, A., Ciais, P., Friedlingstein, P., Sitch, S., Pongratz, J., Fan, L., Wigneron, J.P., Weber, U., **Reichstein, M.**, Fu, Z., Anthoni, P., Arneth, A., Haverd, V., Jain, A.K., Joetzjer, E., Knauer, J., Lienert, S., Loughran, T., McGuire, P.C., Tian, H., Viovy, N., Zaehle, S., 2020. Direct and seasonal legacy effects of the 2018 heat wave and drought on European ecosystem productivity. *Science Advances* 6. doi: 10.1126/sciadv.aba2724
- Bastos, A., Fu, Z., Ciais, P., Friedlingstein, P., Sitch, S., Pongratz, J., Weber, U., **Reichstein, M.**, Anthoni, P., Arneth, A., Haverd, V., Jain, A., Joetzjer, E., Knauer, J., Lienert, S., Loughran, T., McGuire, P.C., Obermeier, W., Padrón, R.S., Shi, H., Tian, H., Viovy, N., Zaehle, S., 2020. Impacts of extreme summers on European ecosystems: a comparative analysis of 2003, 2010 and 2018. *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences* 375. doi: 10.1098/rstb.2019.0507
- Cortés, J., Mahecha, M.D., **Reichstein, M.**, Brenning, A., 2020. Accounting for multiple testing in the analysis of spatio-temporal environmental data. *Environmental and Ecological Statistics* 27, 293 - 318. doi: 10.1007/s10651-020-00446-4
- Denissen, J.M.C., Teuling, A.J., **Reichstein, M.**, Orth, R., 2020. Critical soil moisture derived from satellite observations over Europe. *Journal of Geophysical Research: Atmospheres* 125. doi: 10.1029/2019jd031672
- Diffenbaugh, N.S., Field, C.B., Appel, E.A., Azevedo, I.L., Baldocchi, D.D., Burke, M., Burney, J.A., Ciais, P., Davis, S.J., Fiore, A.M., Fletcher, S.M., Hertel, T.W., Horton, D.E., Hsiang, S.M., Jackson, R.B., Jin, X., Levi, M., Lobell, D.B., McKinley, G.A., Moore, F.C., Montgomery, A., Nadeau, K.C., Pataki, D.E., Randerson, J.T., **Reichstein, M.**, Schnell, J.L., Seneviratne, S.I., Singh, D., Steiner, A.L., Wong-Parodi, G., 2020. The COVID-19 lockdowns: a window into the Earth System. *Nature Reviews Earth & Environment* 1, 470 - 481. doi: 10.1038/s43017-020-0079-1
- El-Madany, T.S., Carrara, A., Martín, M.P., Moreno, G., Kolle, O., Pacheco-Labrador, J., Weber, U., Wutzler, T., **Reichstein, M.**, Migliavacca, M., 2020. Drought and heatwave impacts on semi-arid ecosystems' carbon fluxes along a precipitation gradient. *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences* 375. doi: 10.1098/rstb.2019.0519
- Fan, N., Koirala, S., **Reichstein, M.**, Thurner, M., Avitabile, V., Santoro, M., Ahrens, B., Weber, U., Carvalhais, N., 2020. Apparent ecosystem carbon turnover time: uncertainties and robust features. *Earth System Science Data* 12, 2517 - 2536. doi: 10.5194/essd-12-2517-2020
- Jung, M., Schwalm, C., Migliavacca, M., Walther, S., Camps-Valls, G., Koirala, S., Anthoni, P., Besnard, S., Bodesheim, P., Carvalhais, N., Chevallier, F., Gans, F., Goll, D.S., Haverd, V., Koehler, P., Ichii, K., Jain, A.K., Liu, J., Lombardozzi, D., Nabel, J.E.M.S., Nelson, J.A., O'Sullivan, M., Pallandt, M., Papale, D., Peters, W., Pongratz, J., Rödenbeck, C., Sitch, S., Tramontana, G., Walker, A., Weber, U., **Reichstein, M.**, 2020. Scaling carbon fluxes from eddy covariance sites to globe: synthesis and evaluation of the FLUXCOM approach. *Biogeosciences* 17, 1343 - 1365. doi: 10.5194/bg-17-1343-2020
- Knauer, J., Zaehle, S., De Kauwe, M.G., Haverd, V., **Reichstein, M.**, Sun, Y., 2020. Mesophyll conductance in land surface models: effects on photosynthesis and transpiration. *The Plant Journal* 101, 858 - 873. doi: 10.1111/tbj.14587

- Kraemer, G., Camps-Valls, G., **Reichstein, M.**, Mahecha, M.D., 2020. Summarizing the state of the terrestrial biosphere in few dimensions. *Biogeosciences* 17, 2397 - 2424. doi: 10.5194/bg-17-2397-2020
- Kraemer, G., **Reichstein, M.**, Camps-Valls, G., Smits, J., Mahecha, M.D., 2020. The low dimensionality of development. *Social Indicators Research* 150, 999 - 1020. doi: 10.1007/s11205-020-02349-0
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