**Lebenslauf**



**Prof. Dr. Markus Reichstein**

Geboren: 25.09.1972 in Kiel

Familienstand: verheiratet, 4 Kinder

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 Abteilung Biogeochemische Integration

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 ORCID ID: [0000-0001-5736-1112](https://orcid.org/0000-0001-5736-1112); Publons Researcher ID: [A-7494-2011](http://www.researcherid.com/rid/A-7494-2011)

**Forschungsinteressen**

Erdsystemwissenschaft, Globale Biogeochemische Kreisläufe, Böden im Erdsystem, Systemische Risiken, Klimaextreme und deren Auswirkungen auf Ökosysteme und Gesellschaften, Anwendung künstlicher Intelligenz/maschinenellen Lernens auf raumzeitliche Dynamik und für Frühwarnung

**Wissenschaftlicher und beruflicher Werdegang**

10/2022- Amazon Scholar (AWS AIRE DeepEarth, A. Smola/ M. Li)

01/2022- Gründungsdirektor ELLIS Unit Jena

2021 (Jan/Feb) Gastprofessor an der Universität Innsbruck, Österreich.

2014- Gründungsdirektor am Michael-Stifel-Center Jena for Data-driven and Simulation Science, Friedrich-Schiller-Universität Jena (Wiederwahl 2018).

07/2014- Professor für Globale Geoökologie, Friedrich-Schiller-Universität Jena.

2014- Geschäftsführender Direktor MPI für Biogeochemie, Jena (rotierend)

07/2012- Direktor Abteilung Biogeochemische Integration, 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

1998–2001 Wissenschaftlicher Mitarbeiter, Abteilung Pflanzenökologie Universität Bayreuth

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

2014-2023 Highly cited researcher in Geowissenschaften 2017-2023, Umweltwissenschaften 2014-2021, ebenso 2016 und 2018 in Agrarwissenschaften, Thomson Reuters, USA/Canada

2013 Max-Planck-Forschungspreis der Alexander von Humboldt-Stiftung und der Max-Planck-Gesellschaft

2010 Jim Gray (Mircosoft) 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, CARBOEUROPE Preis *best young scientist paper award* für

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 Forschungsstipendium INTERMODE

**Leitungs- und Beratungstätigkeiten**

2024- Vorstandsmitglied Deutsches Klima-Konsortium e.V. (DKK)

2022- Mitglied des Auswahlausschusses zur Vergabe der Alexander von Humboldt -Professur

2021-2024 Leitung Lenkungsausschuss *Knowledge Action Network on Emergent Risks and Extreme Events* (Future Earth, IRDR, WCRP und WWRP Initiative)

2020- Mitglied des Strategie-Beirates für den Forschungsbereich Erde und Umwelt der Helmholtz-Gemeinschaft

2020- Mitglied wissenschaftliches Beratergremium Exzellenzcluster „Machine Learning: New Perspectives for Science“, Universität Tübingen

2020- Mitglied des wissenschaftlichen Beratergremiums Helmholtz Artificial Intelligence Cooperation Unit (HAICU)

2019- Co-Sprecher Nationale Forschungsdateninfrastrukturen (NFDI4Earth)

2019- Mitglied der Landeswissenschaftskonferenz des Landes Thüringen

2019- Mitglied des Deutschen Kommittees für Nachhaltigkeitsforschung in Future Earth

2018-2021 Leitung Steuerungsteam *Knowledge Action Network on Emergent Risks and Extreme Events* (Future Earth, IRDR, WCRP und WWRP Initiative)

2018 Gründungsmitglied des Interim-Steuerungsteams WRCP-IRDR-Future Earth Knowledge Action Network on Extreme Events and Emergent Risks

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)

2014- Experte am Ständigen Schiedshof für Streitigkeiten in Bezug auf Fragen der natürlichen Lebensgrundlagen und der Umwelt, Den Haag, Niederlande. (Verlängerung in 2020)

2014- Mitglied des Klimarates des Landes Thüringen

2014-2016 Wissenschaftliche Leitung der Future Earth Cluster Initiative Extreme Events and Environments from climate to Society (E3S)

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

2007-2015 Mitglied des wissenschaftlichen Beratergremiums von FLUXNET Synthesis

**Mitglied Redaktionsgremien**

One Earth (2019-), Global Sustainability (2018-2023), Agricultural and Forest Meteorology, Global Change Biology (2008–2018), Carbon Management (2010-2018), Journal of Geophysical Research – Machine Learning and Computation (2023-)

**Organisation von wissenschaftlichen Tagungen**

2005- Ausrichtung von AGU- und EGU-Veranstaltungen zu Kohlenstoffkreislauf, Extremereignissen, Systemische Risiken, Gesellschaftliche Resilienz, Öko-Hydrologie, Fernerkundungsanwendungen, Böden, Klimainformatik.

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

**Aktuell geförderte Projekte (Auswahl)**

AI4PEX, (2024-2027), ELIAS (2023-2027), [Max-Planck Caltech Carnegie Columbia (MC³) Center 4 Earth](https://mc-3.org) (2023-2027), 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 (2022-2024), H2020 *Myriad-EU* (2021-2025), H2020 *XAIDA* (2021-2025), DFG *NFDI4Earth* (2021-2026), H2020 *USMILE* (2020-2026); DLR *Project Office BIOMASS* (2020-2024); DFG center iDIV: *German Centre for Integrative Biodiversity Research* Halle-Jena-Leipzig; PI, since 2013.

**Abgeschlossene Projektförderungen (Auswahl)**

H2020 *DeepCube* (2021-2023), DLR Project *DUKE* (2022-2023), 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)*.

**Betreuung von Doktorarbeiten (Auswahl)**

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

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

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

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

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

[Upton](https://www.bgc-jena.mpg.de/bgi/index.php/People/SamuelUpton) (aktuell) Machine-learning based estimation of ecosystem CO2 fluxes constrained by atmospheric and ecosystem observations.

Cortés (2024) *Novel approaches to spatio-temporal trend detection in environmental data*. Dissertation, Friedrich Schiller University Jena.

**Pallandt-Vermeulen (2024)** *Modelling the role of temperature and soil moisture on soil organic carbon decomposition***.**

Denissen (2022) *Mapping terrestrial evaporation regimes – a data-driven analysis of land-atmosphereinteractions 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*. 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.

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

***2024***

Benson, Vitus, Claire Robin, Christian Requena-Mesa, Lazaro Alonso, Nuno Carvalhais, José Cortés, Zhihan Gao, Nora Linscheid, Mélanie Weynants, and **Markus Reichstein**. "Multi-modal Learning for Geospatial Vegetation Forecasting." In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, pp. 27788-27799. 2024.

Bogdanovich, E., Brenning, A., **Reichstein, M.**, DePolt, K., Guenther, L., Frank, D., and Orth, R.: Official heat warnings miss situations with a detectable societal heat response in European countries International Journal of Disaster Risk Reduction 100, 10.1016/j.ijdrr.2023.104206, 2024.

Cohrs, K.-H., Varando, G., Camps-Valls, G., Carvalhais, N., and **Reichstein, M.**: Double machine learning for causal hybrid modeling - applications in the earth sciences, 10.48550/arXiv.2402.13332, 2024.

Dechant, B.; Kattge, J.; Pavlick, R.; Schneider, F. D.; Sabatini, F. M.; Moreno-Martínez, A.; Butler, E. E.; van Bodegom, P. M.; Vallicrosa, H.; Kattenborn, T.; Boonman, C. C. F.; Madani, N.; Wright, I. J.; Dong, N.; Feilhauer, H.; Penuelas, J.; Sardans, J.; Aguirre-Gutierrez, J.; Reich, P. B.; Leitao, P. J.; Cavender-Bares, J.; Myers-Smith, I. H.; Duran, S. M.; Croft, H.; Prentice, I. C.; Huth, A.; Rebel, K.; Zaehle, S.; Símov, I.; Díaz, S.; **Reichstein, M**.; Schiller, C.; Bruelheide, H.; Mahecha, M.; Wirth, C.; Malhi, Y.; Townsend, P. A.: Intercomparison of global foliar trait maps reveals fundamental differences and limitations of upscaling approaches. Remote Sensing of Environment 311, 114276, 10.1016/j.rse.2024.114276, 2024.

[Denissen, J. M. C.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons247010); Teuling, A. J.; [Koirala, S.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons134634); **Reichstein, M**.; Balsamo, G.; Vogel, M. M.; [Yu, X.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons273210); [Orth, R.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons217638): Intensified future heat extremes linked with increasing ecosystem water limitation. Earth System Dynamics 15 (3), pp. 717 – 734, 10.5194/esd-15-717-2024, 2024.

Estupinan-Suarez, L. M., Mahecha, M. D., Brenning, A., Kraemer, G., Poveda, G., **Reichstein, M.**, and Sierra, C.: Spatial patterns of vegetation activity related to ENSO in Northern South America, Journal of Geophysical Research: Biogeosciences, 129, 10.1029/2022jg007344, 2024.

Eyring, V.; Gentine, P.; Camps-Valls, G.; Lawrence, D. M.; **Reichstein, M**.: AI-empowered next-generation multiscale climate modelling for mitigation and adaptation. Nature Geoscience 17, pp. 963 – 971, 10.1038/s41561-024-01527-w, 2024.

Han, B., Zhang, S., Shi, X., and **Reichstein, M.**: Bridging remote sensors with multisensor geospatial foundation models, 10.48550/arXiv.2404.01260, 2024.

Jiang, S.; Sweet, L.-b.; [Blougouras, G.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons300292); Brenning, A.; Li, W.; **Reichstein, M.**; Denzler, J.; Shangguan, W.; Yu, G.; [Huang, F.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons300294) [et al.](https://www.bgc-jena.mpg.de/publication-search/4783247?page=1&person=persons62524): How interpretable machine learning can benefit process understanding in the geosciences. Earth's Future 12 (7), e2024EF004540, 2024.

Jung, M., Nelson, J. A., Migliavacca, M., El-Madany, T. S., Papale, D., **Reichstein, M.**, Walther, S., and Wutzler, T.: Technical note: Flagging inconsistencies in flux tower data, Biogeosciences, 21, 1827 - 1846, 10.5194/bg-21-1827-2024, 2024.

[Li, N.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons302064); Sippel, S.; [Linscheid, N.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons242634); [Rödenbeck, C.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons62529); [Winkler, A.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons206006); **Reichstein, M**.; Mahecha, M. D.; [Bastos, A.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons248176): Enhanced global carbon cycle sensitivity to tropical temperature linked to internal climate variability. Science Advances 10 (39), eadl6155, [10.1126/sciadv.adl6155](https://doi.org/10.1126/sciadv.adl6155), 2024.

[Li, W.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons251235); [Duveiller, G.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons265238); Wieneke, S.; Forkel, M.; Gentine, P.; **Reichstein, M**.; Niu, S.; Migliavacca, M.; [Orth, R.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons217638): Regulation of the global carbon and water cycles through vegetation structural and physiological dynamics. Environmental Research Letters 19 (7), 073008, 10.1088/1748-9326/ad5858, 2024.

Liu, G., Migliavacca, M., Reimers, C., Kraft, B., **Reichstein, M.**, Richardson, A., Wingate, L., Delpierre, N., Yang, H., and Winkler, A.: DeepPhenoMem V1.0: Deep learning modelling of canopy greenness dynamics accounting for multi-variate meteorological memory effects on vegetation phenology, 10.5194/egusphere-2024-464, 2024.

Mahecha, M. D.; [Bastos, A.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons248176); Bohn, F.; Eisenhauer, N.; Feilhauer, H.; Hickler, T.; Kalesse-Los, H.; Migliavacca, M.; Otto, F. E. L.; Peng, J.; Tegen, I.; Weigelt, A.; Wendisch, M.; Wirth, C.; Al-Halbouni, D.; Deneke, H. M.; Doktor, D.; Dunker, S.; [Duveiller, G.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons265238); Ehrlich, A.; Foth, A.; García-García, A.; Guerra, C. A.; Guimarães-Steinicke, C.; [Hartmann, H.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons62400); Henning, S.; Herrmann, H.; Ji, C.; Kattenborn, T.; Kolleck, N.; Kretschmer, M.; Kühn, I.; Luttkus, M. L.; Maahn, M.; Mönks, M.; Mora, K.; Pöhlker, M.; **Reichstein, M**.; Rüger, N.; Sánchez-Parra, B.; Schäfer, M.; Sippel, S.; Tesche, M.; Wehner, B.; Wieneke, S.; [Winkler, A.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons206006); Wolf, S.; [Zaehle, S.](https://www.bgc-jena.mpg.de/publication-search/4783247?person=%2Fpersons%2Fresource%2Fpersons62612); Zscheischler, J.; Quaas, J.: Biodiversity and climate extremes: known interactions and research gaps. Earth's Future 12 (6), e2023EF003963, 2024.

Nair, R.; Luo, Y.; El-Madany, T. S.; Rolo, V.; Pacheco-Labrador, J.; Caldararu, S.; Morris, K. A.; Schrumpf, M.; Carrara, A.; Moreno, G.; **Reichstein, M**.; Migliavacca, M.: Nitrogen availability and summer drought, but not N:P imbalance, drive carbon use efficiency of a Mediterranean tree-grass ecosystem. Global Change Biology 30 (9), e17486, 10.1111/gcb.17486, 2024.

Nelson, J. A., 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, R. L., Zhang, W., Hamdi, Z. M., **Reichstein, M.**, Aranda-Barranco, S., Ardö, J., de Beeck, M. O., Billdesbach, D., Bowling, D., Bracho, R., Brümmer, C., Camps-Valls, G., Chen, S., Cleverly, J. R., Desai, A., Dong, G., El-Madany, T. S., Euskirchen, E. S., Feigenwinter, I., Galvagno, M., Gerosa, G., Gielen, B., Goded, I., Goslee, S., Gough, C. M., Heinesch, B., Ichii, K., Jackowicz-Korczynski, M. A., Klosterhalfen, A., Knox, S., Kobayashi, H., Kohonen, K.-M., Korkiakoski, M., Mammarella, I., Mana, G., Marzuoli, R., Matamala, R., Metzger, S., Montagnani, L., Nicolini, G., O'Halloran, T., Ourcival, J.-M., Peichl, M., Pendall, E., Reverter, B. R., Roland, M., Sabbatini, S., Sachs, T., Schmidt, M., Schwalm, C. R., Shekhar, A., Silberstein, R., Silveira, M. L., Spano, D., Tagesson, T., Tramontana, G., Trotta, C., Turco, F., Vesala, T., Vincke, C., Vitale, D., Vivoni, E. R., Wang, Y., Woodgate, W., Yepez, E. A., Zhang, J., Zona, D., and Jung, M.: X-BASE: the first terrestrial carbon and water flux products from an extended data-driven scaling framework, FLUXCOM-X, 10.5194/egusphere-2024-165, 2024.

Paulus, S., Orth, R., Lee, S.-C., Hildebrandt, A., Jung, M., Nelson, J. A., El-Madany, T. S., Carrara, A., Moreno, G., Mauder, M., Groh, J., Graf, A., **Reichstein, M.**, and Migliavacca, M.: Interpretability of negative latent heat fluxes from eddy covariance measurements in dry conditions. Biogeosciences 21 (8), pp. 2051 – 2085, 10.5194/bg-21-2051-2024, 2024.

Poehls, J., Silva, L. A., Koirala, S., Carvalhais, N., and **Reichstein, M.**: Downscaling soil moisture to sub-km resolutions with simple machine learning ensembles, 10.2139/ssrn.4743411, 2024.

**Reichstein, M.**, Benson, V., Camps-Valls, G., Boran, H., Fearnley, C., Kornhuber, K., Rahaman, N., Schöllkopf, B., Tárraga, J. M., Vinuesa, R., Blunk, J., Dall, K., Denzler, J., Frank, D., Martini, G., Nganga, N., and Robinson, D. M.: Early warning of complex climate risk with integrated artificial intelligence2693-5015, 10.21203/rs.3.rs-4248340/v1, 2024.

Song, W.; Jiang, S.; Camps-Valls, G.; Williams, M.; Zhang, L.; **Reichstein, M**.; Vereecken, H.; He, L.; Hu, X.; Shi, L.: Towards data-driven discovery of governing equations in geosciences. Communications Earth & Environment 5, 589, 10.1038/s43247-024-01760-6, 2024.

Stevens, B., Adami, S., Ali, T., Anzt, H., Aslan, Z., Attinger, S., Bäck, J., Baehr, J., Bauer, P., Bernier, N., Bishop, B., Bockelmann, H., Bony, S., Brasseur, G., Bresch, D. N., Breyer, S., Brunet, G., Buttigieg, P. L., Cao, J., Castet, C., Cheng, Y., Dey Choudhury, A., Coen, D., Crewell, S., Dabholkar, A., Dai, Q., Doblas-Reyes, F., Durran, D., El Gaidi, A., Ewen, C., Exarchou, E., Eyring, V., Falkinhoff, F., Farrell, D., Forster, P. M., Frassoni, A., Frauen, C., Fuhrer, O., Gani, S., Gerber, E., Goldfarb, D., Grieger, J., Gruber, N., Hazeleger, W., Herken, R., Hewitt, C., Hoefler, T., Hsu, H.-H., Jacob, D., Jahn, A., Jakob, C., Jung, T., Kadow, C., Kang, I.-S., Kang, S., Kashinath, K., Kleinen-von Königslöw, K., Klocke, D., Kloenne, U., Klöwer, M., Kodama, C., Kollet, S., Kölling, T., Kontkanen, J., Kopp, S., Koran, M., Kulmala, M., Lappalainen, H., Latifi, F., Lawrence, B., Lee, J. Y., Lejeun, Q., Lessig, C., Li, C., Lippert, T., Luterbacher, J., Manninen, P., Marotzke, J., Matsouoka, S., Merchant, C., Messmer, P., Michel, G., Michielsen, K., Miyakawa, T., Müller, J., Munir, R., Narayanasetti, S., Ndiaye, O., Nobre, C., Oberg, A., Oki, R., Özkan-Haller, T., Palmer, T., Posey, S., Prein, A., Primus, O., Pritchard, M., Pullen, J., Putrasahan, D., Quaas, J., Raghavan, K., Ramaswamy, V., Rapp, M., Rauser, F., **Reichstein, M.**, Revi, A., Saluja, S., Satoh, M., Schemann, V., Schemm, S., Schnadt Poberaj, C., Schulthess, T., Senior, C., Shukla, J., Singh, M., Slingo, J., Sobel, A., Solman, S., Spitzer, J., Stier, P., Stocker, T., Strock, S., Su, H., Taalas, P., Taylor, J., Tegtmeier, S., Teutsch, G., Tompkins, A., Ulbrich, U., Vidale, P.-L., Wu, C.-M., Xu, H., Zaki, N., Zanna, L., Zhou, T., and Ziemen, F.: Earth Virtualization Engines (EVE), Earth System Science Data, 16, 2113 - 2122, 10.5194/essd-16-2113-2024, 2024.

Tao, F., Houlton, B. Z., Frey, S. D., Lehmann, J., Manzoni, S., Huang, Y., Jiang, L., Mishra, U., Hungate, B. A., Schmidt, M. W. I., **Reichstein, M.**, Carvalhais, N., Ciais, P., Wang, Y.-P., Ahrens, B., Hugelius, G., Hocking, T. D., Lu, X., Shi, Z., Viatkin, K., Vargas, R., Yigini, Y., Omuto, C., Malik, A. A., Peralta, G., Cuevas-Corona, R., Paolo, L. E. D., Luotto, I., Liao, C., Liang, Y.-S., Saynes, V. S., Huang, X., and Luo, Y.: Reply to: Contribution of carbon inputs to soil carbon accumulation cannot be neglected, Nature 627, pp. E4 - E6. 10.1101/2023.08.20.552557, 2024.

Upton, S., **Reichstein, M.**, Gans, F., Peters, W., Kraft, B., and Bastos, A.: Constraining biospheric carbon dioxide fluxes by combined top-down and bottom-up approaches, Atmospheric Chemistry and Physics 24 (4), pp. 2555 – 2582, 10.5194/acp-24-2555-2024, 2024..

Wang, S.; Yang, H.; Koirala, S.; Forkel, M.; **Reichstein, M.**; Carvalhais, N.: Understanding disturbance regimes from patterns in modeled forest biomass. Journal of Advances in Modeling Earth Systems 16 (6), e2023MS004099, 10.1029/2023MS004099, 2024.

Winkler, A.; Myneni, R.; Reimers, C.; **Reichstein, M**.; Brovkin, V.: Carbon system state determines warming potential of emissions. PLOS ONE 19 (8), e0306128, 10.1371/journal.pone.0306128, 2024.

Xie, J.; Liu, X.; Jasechko, S.; Berghuijs, W. R.; Wang, K.; Liu, C.; **Reichstein, M**.; Jung, M.; Koirala, S.: Majority of global river flow sustained by groundwater. Nature Geoscience 17, pp. 770 – 777, 10.1038/s41561-024-01483-5, 2024.

Zhan, C., Orth, R., Yang, H., **Reichstein, M.**, Zaehle, S., De Kauwe, M. G., Rammig, A., and Winkler, A.: Estimating the CO2 fertilization effect on extratropical forest productivity from Flux-tower observations. Journal of Geophysical Research: Biogeosciences 129 (6), e2023JG007910, 2024.

Zhang, W., Nelson, J. A., Miralles, D. G., Mauder, M., Migliavacca, M., Poyatos, R., **Reichstein, M.**, and Jung, M.: A new post-hoc method to reduce the energy imbalance in eddy covariance measurements, Geophys Res Lett, 51, 10.1029/2023gl107084, 2024.

***2023***

Bastos, A., Sippel, S., Frank, D., Mahecha, M. D., Zaehle, S., Zscheischler, J., and **Reichstein, M.**: A joint framework for studying compound ecoclimatic events, Nature Reviews Earth & Environment, 10.1038/s43017-023-00410-3, 2023.

Benson, V., Requena Mesa, C., Robin, C., Alonso, L., Cortes, J., Gao, Z., Linscheid, N., Weynants, M., and **Reichstein, M.**: Forecasting localized weather impacts on vegetation as seen from space with meteo-guided video prediction, 10.48550/arXiv.2303.16198, 2023.

Bogdanovich, E., Guenther, L., **Reichstein, M.**, Frank, D., Ruhrmann, G., Brenning, A., Denissen, J. M. C., and Orth, R.: Societal attention to heat waves can indicate public health impacts, Weather, Climate, and Society, 15, 557 - 569, 10.1175/wcas-d-22-0147.1, 2023.

DePolt, K., Ward, P. J., de Ruiter, M., Bogdanovich, E., **Reichstein, M.**, Frank, D., and Orth, R.: Quantifying impact-relevant heatwave durations, 10.22541/essoar.168500314.44289092/v1, 2023.

[ElGhawi, R.](https://www.bgc-jena.mpg.de/publication-search/5368127?person=%2Fpersons%2Fresource%2Fpersons277739); [Kraft, B.](https://www.bgc-jena.mpg.de/publication-search/5368127?person=%2Fpersons%2Fresource%2Fpersons240731); Reimers, C.; [**Reichstein, M.**](https://www.bgc-jena.mpg.de/publication-search/5368127?person=%2Fpersons%2Fresource%2Fpersons62524); Körner, M.; Gentine, P.; [Winkler, A. J.](https://www.bgc-jena.mpg.de/publication-search/5368127?person=%2Fpersons%2Fresource%2Fpersons206006), 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

Garcia-Garcia, A., Cuesta-Valero, F. J., Miralles, D. G., Mahecha, M. D., Quaas, J., **Reichstein, M.**, Zscheischler, J., and Peng, J.: Soil heat extremes can outpace air temperature extremes. *Nat. Clim. Chang.* **13**, 1237–1241 (2023). https://doi.org/10.1038/s41558-023-01812-3, 2023.

Gomarasca, U., Migliavacca, M., Kattge, J., Nelson, J. A., Niinemets, Ü., Wirth, C., Cescatti, A., Bahn, M., Nair, R., Acosta, A., Arain, A., Beloiu, M., Black, T., Bruun, H. H., Bucher, F., Buchmann, N., Carrara, A., Byun, C., Conte, A., da Silva, A., Duveiller, G., Fares, S., Ibrom, A., Knohl, A., Komac, B., Limousin, J., Lusk, C., Mahecha, M., Martini, D., Minden, V., Montagnani, L., Mori, A., Onoda, Y., Penuelas, J., Perez-Priego, O., Poschlod, P., Powell, T., Reich, P., Šigut, L., van Bodegom, P., Walther, S., Wohlfahrt, G., Wright, I., and **Reichstein, M.**: Leaf-level coordination principles propagate to the ecosystem scale, 10.21203/rs.3.rs-2394473/v1, 2023.

Kariyathan, T., Bastos, A., Marshall, J., Peters, W., Tans, P., and **Reichstein, M.**: Reducing errors on estimates of the carbon uptake period based on time series of atmospheric CO2 Atmospheric Measurement Techniques, 16, 3299 - 3312, 10.5194/amt-16-3299-2023, 2023.

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, Diagnosing modeling errors in global terrestrial water storage interannual variability. Hydrology and Earth System Sciences 27 (7), pp. 1531 – 1563, 10.5194/hess-27-1531-2023, 2023.

Li, L., Wang, J., Franklin, M., Yin, Q., Wu, J., Camps-Valls, G., Zhu, Z., Wang, C., Ge, Y., and **Reichstein, M.**: Improving air quality assessment using physics-inspired deep graph learning, npj Climate and Atmospheric Science, 6, 10.1038/s41612-023-00475-3, 2023.

Li, W., Pacheco-Labrador, J., Migliavacca, M., Miralles, D., Hoek van Dijke, A. J., **Reichstein, M.**, Forkel, M., Zhang, W., Frankenberg, C., Panwar, A., Zhang, Q., Weber, U., Gentine, P., and Orth, R.: Widespread and complex drought effects on vegetation physiology inferred from space, Nature Communications, 14, 10.1038/s41467-023-40226-9, 2023.

Li, W., **Reichstein, M.**, O, S., May, C., Destouni, G., Migliavacca, M., Kraft, B., Weber, U., and Orth, R.: Contrasting drought propagation into the terrestrial water cycle between dry and wet regions, Earth's Future, 11, 10.1029/2022ef003441, 2023.

Mahecha, M. D., Bastos, A., Bohn, F., Eisenhauer, N., Feilhauer, H., Hickler, T., Kalesse-Los, H., Migliavacca, M., Otto, F. E. L., Peng, J., Tegen, I., Weigelt, A., Wendisch, M., Wirth, C., Al-Halbouni, D., Deneke, H. M., Doktor, D., Dunker, S., Ehrlich, A., Foth, A., García-García, A., Guerra, C. A., Guimarães-Steinicke, C., Hartmann, H., Henning, S., Herrmann, H., Ji, C., Kattenborn, T., Kolleck, N., Kretschmer, M., Kühn, I., Luttkus, M. L., Maahn, M., Mönks, M., Mora, K., Pöhlker, M., **Reichstein, M.**, Rüger, N., Sánchez-Parra, B., Schäfer, M., Sippel, S., Tesche, M., Wehner, B., Wieneke, S., Winkler, A., Wolf, S., Zaehle, S., Zscheischler, J., and Quaas, J.: Biodiversity and climate extremes: known interactions and research gaps, 10.22541/essoar.169462031.19744802/v1, 2023.

Nair, R., Luo, Y., El-Madany, T. S., Rolo, V., Pacheco-Labrador, J., Caldararu, S., Morris, K. A., Schrumpf, M., Carrara, A., Moreno, G., **Reichstein, M.**, and Migliavacca, M.: Nitrogen availability and summer drought, but not N:P imbalance drive carbon use efficiency of a mediterranean tree-grass ecosystem, 10.5194/egusphere-2023-2434, 2023.

Ruiz-Vásquez, M., O, S., Arduini, G., Boussetta, S., Brenning, A., Bastos, A., Koirala, S., Balsamo, G., **Reichstein, M.**, and Orth, R.: Impact of updating vegetation information on land surface model performance, 10.22541/essoar.168182273.38487150/v1, 2023.

Tao, F., Feng, Huang, Y., Hungate, B. A., Manzoni, S., Frey, S. D., Schmidt, M. W. I., **Reichstein, M.**, Carvalhais, N., Ciais, P., Jiang, L., Lehmann, J., Wang, Y.-P., Houlton, B. Z., Ahrens, B., Mishra, U., Hugelius, G., Hocking, T. D., Lu, X., Shi, Z., Viatkin, K., Vargas, R., Yigini, Y., Omuto, C., Malik, A. A., Peralta, G., Cuevas-Corona, R., Di Paolo, L. E., Luotto, I., Liao, C., Liang, Y.-S., Saynes, V. S., Huang, X., and Luo, Y.: Microbial carbon use efficiency promotes global soil carbon storage, Nature, 618, 981 - 985, 10.1038/s41586-023-06042-3, 2023.

Voigt, H., Carvalhais, N., Meuschke, M., **Reichstein, M.**, Zarrie, S., and Lawonn, K.: VIST5: An adaptive, retrieval-augmented language model for visualization-oriented dialog, The 2023 Conference on Empirical Methods in Natural Language Processing, Singapure, 70 - 81, 10.18653/v1/2023.emnlp-demo.5,

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.](https://www.bgc-jena.mpg.de/publication-search/4955530?person=%2Fpersons%2Fresource%2Fpersons286193); [Jung, M.](https://www.bgc-jena.mpg.de/publication-search/4955530?person=%2Fpersons%2Fresource%2Fpersons62425); [Migliavacca, M.](https://www.bgc-jena.mpg.de/publication-search/4955530?person=%2Fpersons%2Fresource%2Fpersons62486); Poyatos, R.; Miralles, D. G.; [El-Madany, T. S.](https://www.bgc-jena.mpg.de/publication-search/4955530?person=%2Fpersons%2Fresource%2Fpersons189169); 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.](https://www.bgc-jena.mpg.de/publication-search/4955530?person=%2Fpersons%2Fresource%2Fpersons62352); [**Reichstein, M.**](https://www.bgc-jena.mpg.de/publication-search/4955530?person=%2Fpersons%2Fresource%2Fpersons62524); [Nelson, J. A.](https://www.bgc-jena.mpg.de/publication-search/4955530?person=%2Fpersons%2Fresource%2Fpersons211261), 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.](https://www.bgc-jena.mpg.de/functionalbiogeography/index.php/People/JuliaJoswig), 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., Hattingh, W. N., Kramer, K., Lens, F., Niinemets, Ü., Reich, P. B., [**Reichstein, M.**](https://www.bgc-jena.mpg.de/bgi/index.php/People/MarkusReichstein), Römermann, C., Schrodt, 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, Ê., 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](http://dx.doi.org/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

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., Hirons, 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, repicable 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.**, Schrumpf, 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***

Bastos, A., Orth, R., **Reichstein, M.**, Ciais, P., Viovy, N., Zaehle, S., Anthoni, P., Arneth, A., Gentine, P., Joetzjer, 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., Pfleiderer, 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-Marí, 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

Linscheid, N., Mahecha, M. D., Rammig, A., Carvalhais, N., Gans, F., Nelson, J. A., Walther, S., Weber, U., **Reichstein, M.** 2021. Time–scale dependent relations between Earth Observation based proxies of vegetation productivity. Geophysical Research Letters, 48(24): e2021GL093285. doi:10.1029/2021GL093285.

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., Gomarasca, 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/s41586-021-03939-9

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/tpj.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

Kraft, B., Jung, M., Körner, M., **Reichstein, M.**, 2020. Hybrid modeling: Fusion of a deep approach and physics-based model for global hydrological modeling. The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences XLIII-B2-2020, 1537 - 1544. doi: 10.5194/isprs-archives-XLIII-B2-2020-1537-2020

Lehmann, J., Hansel, C.M., Kaiser, C., Kleber, M., Maher, K., Manzoni, S., Nunan, N., **Reichstein, M.**, Schimel, J.P., Torn, M.S., Wieder, W.R., Kögel-Knabner, I., 2020. Persistence of soil organic carbon caused by functional complexity. Nature Geoscience 13, 529 - 534. doi: 10.1038/s41561-020-0612-3

Linscheid, N., Estupinan-Suarez, L.M., Brenning, A., Carvalhais, N., Cremer, F., Gans, F., Rammig, A., **Reichstein, M.**, Sierra, C., Mahecha, M.D., 2020. Towards a global understanding of vegetation–climate dynamicsat multiple timescales. Biogeosciences 17, 945 - 962. doi: 10.5194/bg-17-945-2020

Liu, J., Ma, X., Duan, Z., Jiang, J., **Reichstein, M.**, Jung, M., 2020. Impact of temporal precipitation variability on ecosystem productivity. Wiley Interdisciplinary Reviews Water 7. doi: 10.1002/wat2.1481

Luo, Y., El-Madany, T.S., Ma, X., Nair, R.K.F., Jung, M., Weber, U., Filippa, G., Bucher, S.F., Moreno, G., Cremonese, E., Carrara, A., Gonzalez‐Cascon, R., Escudero, Y.C., Galvagno, M., Pacheco-Labrador, J., Martín, M.P., Perez‐Priego, O., **Reichstein, M.**, Richardson, A.D., Menzel, A., Römermann, C., Migliavacca, M., 2020. Nutrients and water availability constrain the seasonality of vegetation activity in a Mediterranean ecosystem. Global Change Biology 26, 4379 - 4400. doi: 10.1111/gcb.15138

Mahecha, M.D., Gans, F., Brandt, G., Christiansen, R., Cornell, S.E., Fomferra, N., Kraemer, G., Peters, J., Bodesheim, P., Camps-Valls, G., Donges, J.F., Dorigo, W., Estupiñan-Suarez, L., Gutierrez-Velez, V.H., Gutwin, M., Jung, M., Londoño, M.C., Miralles, D.G., Papastefanou, P., **Reichstein, M.**, 2020. Earth system data cubes unravel global multivariate dynamics. Earth System Dynamics 11, 201 - 234. doi: 10.5194/esd-11-201-2020

Nelson, J.A., Pérez‐Priego, O., Zhou, S., Poyatos, R., Zhang, Y., Blanken, P.D., Gimeno, T.E., Wohlfahrt, G., Desai, A.R., Gioli, B., Limousin, J.M., Bonal, D., Paul‐Limoges, E., Scott, R.L., Varlagin, A., Fuchs, K., Montagnani, L., Wolf, S., Delpierre, N., Berveiller, D., Gharun, M., Marchesini, L.B., Gianelle, D., Šigut, L., Mammarella, I., Siebicke, L., Black, T.A., Knohl, A., Hörtnagl, L., Magliulo, V., Besnard, S., Weber, U., Carvalhais, N., Migliavacca, M., **Reichstein, M.**, Jung, M., 2020. Ecosystem transpiration and evaporation: Insights from three water flux partitioning methods across FLUXNET sites. Global Change Biology 26, 6916 - 6930. doi: 10.1111/gcb.15314

Orth, R., Destouni, G., Jung, M., **Reichstein, M.**, 2020. Large-scale biospheric drought response intensifies linearly with drought duration in arid regions. Biogeosciences 17, 2647 - 2656. doi: 10.5194/bg-17-2647-2020

Pabon-Moreno, D.E., Musavi, T., Migliavacca, M., **Reichstein, M.**, Römermann, C., Mahecha, M.D., 2020. Ecosystem physio-phenology revealed using circular statistics. Biogeosciences 17, 3991 - 4006. doi: 10.5194/bg-17-3991-2020

Samuel, S., Shadaydeh, M., Böcker, S., Brügmann, B., Bucher, S.F., Deckert, V., Denzler, J., Dittrich, P., von Eggeling, F., Güllmar, D., Guntinas-Lichius, O., König-Ries, B., Löffler, F., Maicher, L., Marz, M., Migliavacca, M., Reichenbach, J.R., **Reichstein, M.**, Römermann, C., Wittig, A., 2020. A virtual “Werkstatt” for digitization in the sciences. Research Ideas and Outcomes 6. doi: 10.3897/rio.6.e54106

Schlund, M., Eyring, V., Camps‐Valls, G., Friedlingstein, P., Gentine, P., **Reichstein, M.**, 2020. Constraining uncertainty in projected gross primary production with machine learning. Journal of Geophysical Research: Biogeosciences 125. doi: 10.1029/2019jg005619

Thonicke, K., Bahn, M., Lavorel, S., Bardgett, R.D., Erb, K., Giamberini, M., **Reichstein, M.**, Vollan, B., Rammig, A., 2020. Advancing the understanding of adaptive capacity of social‐ecological systems to absorb climate extremes. Earth's Future 8, 1 - 13. doi: 10.1029/2019ef001221

Tramontana, G., Migliavacca, M., Jung, M., **Reichstein, M.**, Keenan, T.F., Camps‐Valls, G., Ogee, J., Verrelst, J., Papale, D., 2020. Partitioning net carbon dioxide fluxes into photosynthesis and respiration using neural networks. Global Change Biology 26, 5235 - 5253. doi: 10.1111/gcb.15203

Besnard, S., Carvalhais, N., Arain, M.A., Black, A., Brede, B., Buchmann, N., Chen, J., Clevers, J.G.P.W., Dutrieux, L.P., Gans, F., Herold, M., Jung, M., Kosugi, Y., Knohl, A., Law, B.E., Paul-Limoges, E.n., Lohila, A., Merbold, L., Roupsard, O., Valentini, R., Wolf, S., Zhang, X., **Reichstein, M.**, 2019. Memory effects of climate and vegetation affecting net ecosystem CO2 fluxes in global forests. PLoS One 14. doi: 10.1371/journal.pone.0211510

***2019***

Boese, S., Jung, M., Carvalhais, N., Teuling, A.J., **Reichstein, M.**, 2019. Carbon–water flux coupling under progressive drought. Biogeosciences 16, 2557 - 2572. doi: 10.5194/bg-16-2557-2019

Camps-Valls, G., Sejdinovic, D., Runge, J., **Reichstein, M.**, 2019. A perspective on Gaussian processes for Earth observation. National Science Review 6, 616 - 618. doi: 10.1093/nsr/nwz028

Jung, M., Koirala, S., Weber, U., Ichii, K., Gans, F., Camps-Valls, G., Papale, D., Schwalm, C., Tramontana, G., **Reichstein, M.**, 2019. The FLUXCOM ensemble of global land-atmosphere energy fluxes. Scientific Data 6. doi: 10.1038/s41597-019-0076-8

Kayler, Z.E., Premke, K., Gessler, A., Gessner, M.O., Griebler, C., Hilt, S., Klemedtsson, L., Kuzyakov, Y., **Reichstein, M.**, Siemens, J., Totsche, K.-U., Tranvik, L., Wagner, A., Weitere, M., Grossart, H.-P., 2019. Integrating aquatic and terrestrial perspectives to improve insights into organic matter cycling at the landscape scale. Frontiers in Earth Science 7. doi: 10.3389/feart.2019.00127

Keenan, T.F., Migliavacca, M., Papale, D., Baldocchi, D., **Reichstein, M.**, Torn, M., Wutzler, T., 2019. Widespread inhibition of daytime ecosystem respiration. Nature Ecology & Evolution 3, 407 - 415. doi: 10.1038/s41559-019-0809-2

Knauer, J., Zaehle, S., Kauwe, M.G.D., Bahar, N.H.A., Evans, J.R., Medlyn, B.E., **Reichstein, M.**, Werner, C., 2019. Effects of mesophyll conductance on vegetation responses to elevated CO2 concentrations in a land surface model. Global Change Biology 25, 1820 - 1838. doi: 10.1111/gcb.14604

Kraft, B., Jung, M., Körner, M., Requena Mesa, C., Cortés, J., **Reichstein, M.**, 2019. Identifying dynamic memory effects on vegetation state using recurrent neural networks. Frontiers in Big Data 2. doi: 10.3389/fdata.2019.00031

Ma, X., Mahecha, M.D., Migliavacca, M., van der Plas, F., Benavides, R., Ratcliffe, S., Kattge, J., Richter, R., Musavi, T., Baeten, L., Barnoaiea, I., Bohn, F.J., Bouriaud, O., Bussotti, F., Coppi, A., Domisch, T., Huth, A., Jaroszewicz, B., Joswig, J., Pabon-Moreno, D.E., Papale, D., Selvi, F., Laurin, G.V., Valladares, F., **Reichstein, M.**, Wirth, C., 2019. Inferring plant functional diversity from space: the potential of Sentinel-2. Remote Sensing of Environment 233. doi: 10.1016/j.rse.2019.111368

Martini, D., Pacheco-Labrador, J., Perez‑Priego, O., van der Tol, C., El-Madany, T.S., Julitta, T., Rossini, M., **Reichstein, M.**, Christiansen, R., Rascher, U., Moreno, G., Martín, M.P., Yang, P., Carrara, A., Guan, J., González-Cascón, R., Migliavacca, M., 2019. Nitrogen and phosphorus effect on sun-induced fluorescence and gross primary productivity in mediterranean grassland. Remote Sensing 11. doi: 10.3390/rs11212562

Nair, R.K.F., Morris, K.A., Hertel, M., Luo, Y., Moreno, G., **Reichstein, M.**, Schrumpf, M., Migliavacca, M., 2019. N : P stoichiometry and habitat effects on Mediterranean savanna seasonal root dynamics. Biogeosciences 16, 1883 - 1901. doi: 10.5194/bg-16-1883-2019

Pacheco-Labrador, J., Perez‑Priego, O., El-Madany, T.S., Julitta, T., Rossini, M., Guan, J.-H., Moreno, G., Carvalhais, N., Martín, M.P., Gonzalez-Cascon, R., Kolle, O., **Reichstein, M.**, van der Tolg, C., Carrara, A., Martini, D., Hammer, T.W., Moossen, H., Migliavacca, M., 2019. Multiple-constraint inversion of SCOPE. Evaluating the potential of GPP and SIF for the retrieval of plant functional traits. Remote Sensing of Environment 234. doi: 10.1016/j.rse.2019.111362

**Reichstein, M.**, Camps-Valls, G., Stevens, B., Jung, M., Denzler, J., Carvalhais, N., Prabhat, 2019. Deep learning and process understanding for data-driven Earth system science. Nature 566, 195 - 204. doi: 10.1038/s41586-019-0912-1

**Reichstein, M.**, Carvalhais, N., 2019. Aspects of forest biomass in the earth system: Its role and major unknowns. Surveys in Geophysics 40, 693 - 707. doi: 10.1007/s10712-019-09551-x

Runge, J., Bathiany, S., Bollt, E., Camps-Valls, G., Coumou, D., Deyle, E., Glymour, C., Kretschmer, M., Mahecha, M.D., Muñoz-Marí, J., van Nes, E.H., Peters, J., Quax, R., **Reichstein, M.**, Scheffer, M., Schölkopf, B., Spirtes, P., Sugihara, G., Sun, J., Zhang, K., Zscheischler, J., 2019. Inferring causation from time series in Earth system sciences. Nature Communications 10. doi: 10.1038/s41467-019-10105-3

Stoy, P.C., El-Madany, T.S., Fisher, J.B., Gentine, P., Gerken, T., Good, S.P., Klosterhalfen, A., Liu, S., Miralles, D.G., Perez‑Priego, O., Rigden, A.J., Skaggs, T.H., Wohlfahrt, G., Anderson, R.G., Coenders-Gerrits, A.M.J., Jung, M., Maes, W.H., Mammarella, I., Mauder, M., Migliavacca, M., Nelson, J.A., Poyatos, R., **Reichstein, M.**, Scott, R.L., Wolf, S., 2019. Reviews and syntheses: Turning the challenges of partitioning ecosystem evaporation and transpiration into opportunities. Biogeosciences 16, 3747 - 3775. doi: 10.5194/bg-16-3747-2019

Zhao, W.L., Gentine, P., **Reichstein, M.**, Zhang, Y., Zhou, S., Wen, Y., Lin, C., Li, X., Qiu, G.Y., 2019. Physics‐constrained machine learning of evapotranspiration. Geophysical Research Letters 46, 14496 - 14507. doi: 10.1029/2019gl085291

***2018***

Baldocchi, D., Chu, H., **Reichstein, M.**, 2018. Inter-annual variability of net and gross ecosystem carbon fluxes: A review. Agricultural and Forest Meteorology 249, 520 - 533. doi: 10.1016/j.agrformet.2017.05.015

Besnard, S., Carvalhais, N., Arain, A., Black, A., de Bruin, S., Buchmann, N., Cescatti, A., Chen, J., Clevers, J.G.P.W., Desai, A.R., Gough, C.M., Havrankova, K., Herold, M., Hörtnagl, L., Jung, M., Knohl, A., Kruijt, B., Krupkova, L., Law, B.E., Lindroth, A., Noormets, A., Roupsard, 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. doi: 10.1088/1748-9326/aaeaeb

Bodesheim, P., Jung, M., Gans, F., Mahecha, M.D., **Reichstein, M.**, 2018. Upscaled diurnal cycles of land-atmosphere fluxes: a new global half-hourly data product. Earth System Science Data 10, 1327 - 1365. doi: 10.5194/essd-10-1327-2018

El-Madany, T.S., **Reichstein, M.**, Pérez‑Priego, O., Carrara, A., Moreno, G., Pilar Martín, M., Pacheco-Labrador, J., Wohlfahrt, G., Nieto, H., Weber, U., Kolle, O., Luo, Y., Carvalhais, N., Migliavacca, M., 2018. Drivers of spatio-temporal variability of carbon dioxide and energy fluxes in a mediterranean savanna ecosystem. Agricultural and Forest Meteorology 262, 258 - 278. doi: 10.1016/j.agrformet.2018.07.010

Flach, M., Sippel, S., Gans, F., Bastos, A., Brenning, A., **Reichstein, M.**, Mahecha, M.D., 2018. Contrasting biosphere responses to hydrometeorological extremes: revisiting the 2010 western Russian Heatwave. Biogeosciences 16, 6067 - 6085. doi: 10.5194/bg-15-6067-2018

Knauer, J., Zaehle, S., Medlyn, B.E., **Reichstein, M.**, Williams, C.A., Migliavacca, M., Kauwe, M.G.D., Werner, C., Keitel, C., Kolari, P., Limousin, J.-M., Linderson, M.-L., 2018. Towards physiologically meaningful water-use efficiency estimates from eddy covariance data. Global Change Biology 24, 694 - 710. doi: 10.1111/gcb.13893

Kraemer, G., **Reichstein, M.**, Mahecha, M.D., 2018. dimRed and coRanking—unifying dimensionality reduction in R. R Journal 10, 342 - 358. doi: 10.32614/rj-2018-039

Luo, Y., El-Madany, T.S., Filippa, G., Ma, X., Ahrens, B., Carrara, A., Gonzalez-Cascon, R., Cremonese, E., Galvagno, M., Hammer, T.W., Pacheco-Labrador, J., Martín, M.P., Moreno, G., Pérez-Priego, O., **Reichstein, M.**, Richardson, A.D., Römermann, C., Migliavacca, M., 2018. Using near-infrared-enabled digital repeat photography to track structural and physiological phenology in mediterranean tree–grass ecosystems. Remote Sensing 10. doi: 10.3390/rs10081293

Moreno-Martínez, Á., Camps-Valls, G., Kattge, J., Robinson, N., **Reichstein, M.**, Bodegom, P.V., Kramer, K., Cornelissen, J.H.C., Reich, P.B., Bahn, M., Niinemets, Ü., Peñuelas, J., Craine, J., Cerabolini, B., Minden, V., Laughlin, D.C., Sack, L., Allred, B., Baraloto, C., Byun, C., Soudzilovskaia, N.A., Running, S.W., 2018. A methodology to derive global maps of leaf traits using remote sensing and climate data. Remote Sensing of Environment 218, 69 - 88. doi: 10.1016/j.rse.2018.09.006

Nelson, J.A., Carvalhais, N., Cuntz, M., Delpierre, N., Knauer, J., Oge, J., Migliavacca, M., **Reichstein, M.**, Jung, M., 2018. Coupling water and carbon fluxes to constrain estimates of transpiration: the TEA algorithm. Journal of Geophysical Research: Biogeosciences 123, 3617 - 3632. doi: 10.1029/2018jg004727

Nelson, J.A., Carvalhais, N., Migliavacca, M., **Reichstein, M.**, Jung, M., 2018. Water-stress-induced breakdown of carbon–water relations: indicators from diurnal FLUXNET patterns. Biogeosciences 15, 2433 - 2447. doi: 10.5194/bg-15-2433-2018

Perez‑Priego, O., Katul, G., **Reichstein, M.**, El-Madany, T.S., Ahrens, B., Carrara, A., Scanlon, T.M., Migliavacca, M., 2018. Partitioning eddy covariance water flux components using physiological and micrometeorological approaches. Journal of Geophysical Research: Biogeosciences 123, 3353 - 3370. doi: 10.1029/2018jg004637

Sippel, S., El-Madany, T.S., Migliavacca, M., Mahecha, M.D., Carrara, A., Flach, M., Kaminski, T., Otto, F.E.L., Thonicke, K., Vossbeck, M., **Reichstein, M.**, 2018. Warm winter, wet spring, and an extreme response in ecosystem functioning on the Iberian Peninsula. Bulletin of the American Meteorological Society 99, S80 - S85. doi: 10.1175/bams-d-17-0135.1

Sippel, S., **Reichstein, M.**, Ma, X., Mahecha, M.D., Lange, H., Flach, M., Frank, D., 2018. Drought, heat, and the carbon cycle: a review. Current Climate Change Reports 4, 266 - 286. doi: 10.1007/s40641-018-0103-4

Urbazaev, M., Cremer, F., Migliavacca, M., **Reichstein, M.**, Schmullius, C., Thiel, C., 2018. Potential of multi-temporal ALOS-2 PALSAR-2 ScanSAR data for vegetation height estimation in tropical forests of Mexico. Remote Sensing 10. doi: 10.3390/rs10081277

Urbazaev, M., Thiel, C., Cremer, F., Dubayah, R., Migliavacca, M., **Reichstein, M.**, Schmullius, C., 2018. Estimation of forest aboveground biomass and uncertainties by integration of field measurements, airborne LiDAR, and SAR and optical satellite data in Mexico. Carbon Balance and Management 13. doi: 10.1186/s13021-018-0093-5

von Buttlar, J., Zscheischler, J., Rammig, A., Sippel, S., **Reichstein, M.**, Knohl, A., Jung, M., Menzer, O., Arain, M.A., Buchmann, N., Cescatti, A., Gianelle, D., Kieley, G., Law, B.E., Magliulo, V., Margolis, H., McCaughey, H., Merbold, L., Migliavacca, M., Montagnani, L., Oechel, W., Pavelka, M., Peichl, M., Rambal, S., Raschi, A., Scott, R.L., Vaccari, F.P., van Gorsel, E., Varlagin, A., Wohlfahrt, G., Mahecha, M.D., 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. doi: 10.5194/bg-15-1293-2018

Weiner, T., Gross, A., Moreno, G., Migliavacca, M., Schrumpf, M., **Reichstein, M.**, Hilman, B., Carrara, A., Angert, A., 2018. Following the turnover of soil bioavailable phosphate in mediterranean savanna by oxygen stable isotopes. Journal of Geophysical Research: Biogeosciences 123, 1850 - 1862. doi: 10.1029/2017jg004086

Wutzler, T., Lucas-Moffat, A., Migliavacca, M., Knauer, J., Sickel, K., Šigut, L., Menzer, O., **Reichstein, M.**, 2018. Basic and extensible post-processing of eddy covariance flux data with REddyProc. Biogeosciences 15, 5015 - 5030. doi: 10.5194/bg-15-5015-2018

***2017***

Ahrens, B., **Reichstein, M.**, 2017. Soil carbon: Depth of understanding. Nature Climate Change 7, 762 - 763. doi: 10.1038/nclimate3426

Boese, S., Jung, M., Carvalhais, N., **Reichstein, M.**, 2017. The importance of radiation for semiempirical water-use efficiency models. Biogeosciences 14, 3015 - 3026. doi: 10.5194/bg-14-3015-2017

Carreiras, J.M.B., Quegan, S., Le Toan, T., Minh, D.H.T., Saatchi, S.S., Carvalhais, N., **Reichstein, M.**, Scipal, K., 2017. Coverage of high biomass forests by the ESA BIOMASS mission under defense restrictions. Remote Sensing of Environment 196, 154 - 162. doi: 10.1016/j.rse.2017.05.003

Chu, H., Baldocchi, D.D., John, R., Wolf, S., **Reichstein, M.**, 2017. Fluxes all of the time? A primer on the temporal representativeness of FLUXNET. Journal of Geophysical Research: Biogeosciences 122, 289 - 307. doi: 10.1002/2016jg003576

Flach, M., Gans, F., Brenning, A., Denzler, J., **Reichstein, M.**, Rodner, E., Bathiany, S., Bodesheim, P., Guanche, Y., Sippel, S., Mahecha, M.D., 2017. Multivariate anomaly detection for Earth observations: a comparison of algorithms and feature extraction techniques. Earth System Dynamics 8, 677 - 696. doi: 10.5194/esd-8-677-2017

Jung, M., **Reichstein, M.**, Schwalm, C.R., Huntingford, C., Sitch, S., Ahlström, A., Arneth, A., Camps-Valls, G., Ciais, P., Friedlingstein, P., Gans, F., Ichii, K., Jain, A.K., Kato, E., Papale, D., Poulter, B., Raduly, B., Rödenbeck, C., Tramontana, G., Viovy, N., Wang, Y.-P., Weber, U., Zaehle, S., Zeng, N., 2017. Compensatory water effects link yearly global land CO2 sink changes to temperature. Nature 541, 516 - 520. doi: 10.1038/nature20780

Knauer, J., Zaehle, S., **Reichstein, M.**, Medlyn, B.E., Forkel, M., Hagemann, S., Werner, C., 2017. The response of ecosystem water-use efficiency to rising atmospheric CO2 concentrations: sensitivity and large-scale biogeochemical implications. New Phytologist 213, 1654 - 1666. doi: 10.1111/nph.14288

Koirala, S., Jung, M., **Reichstein, M.**, de Graaf, I.E.M., Camps-Valls, G., Ichii, K., Papale, D., Raduly, B., Schwalm, C.R., Tramontana, G., Carvalhais, N., 2017. Global distribution of groundwater-vegetation spatial covariation. Geophysical Research Letters 44, 4134 - 4142. doi: 10.1002/2017gl072885

Migliavacca, M., Pérez‑Priego, O., Rossini, M., El-Madany, T.S., Moreno, G., van der Tol, C., Rascher, U., Berninger, A., Bessenbacher, V., Burkart, A., Carrara, A., Fava, F., Guan, J.-H., Hammer, T.W., Henkel, K., Juarez-Alcalde, E., Julitta, T., Kolle, O., Martın, M.P., Musavi, T., Pacheco-Labrador, J., Perez-Burgueno, A., Wutzler, T., Zaehle, S., **Reichstein, M.**, 2017. Plant functional traits and canopy structure control the relationship between photosynthetic CO2 uptake and far-red sun-induced fluorescence in a Mediterranean grassland under different nutrient availability. New Phytologist 214, 1078 - 1091. doi: 10.1111/nph.14437

Musavi, T., Migliavacca, M., **Reichstein, M.**, Kattge, J., Wirth, C., Black, T.A., Janssens, I., Knohl, A., Loustau, D., Roupsard, O., Varlagin, A., Rambal, S., Cescatti, A., Gianelle, D., Kondo, H., Tamrakar, R., Mahecha, M.D., 2017. Stand age and species richness dampen interannual variation of ecosystem-level photosynthetic capacity. Nature Ecology & Evolution 1. doi: 10.1038/s41559-016-0048

Perez‑Priego, O., El-Madany, T.S., Migliavacca, M., Kowalski, A.S., Jung, M., Carrara, A., Kolle, O., Martín, M.P., Pacheco-Labrador, J., Moreno, G., **Reichstein, M.**, 2017. Evaluation of eddy covariance latent heat fluxes with independent lysimeter and sapflow estimates in a Mediterranean savannah ecosystem. Agricultural and Forest Meteorology 236, 87 - 99. doi: 10.1016/j.agrformet.2017.01.009

Reuter, M., Buchwitz, M., Hilker, M., Heymann, J., Bovensmann, H., Burrows, J.P., Houweling, S., Liu, Y.Y., Nassar, R., Chevallier, F., Ciais, P., Marshall, J., **Reichstein, M.**, 2017. How much CO2 is taken up by the European terrestrial biosphere? Bulletin of the American Meteorological Society 98, 665 - 671. doi: 10.1175/bams-d-15-00310.1

Sippel, S., Forkel, M., Rammig, A., Thonicke, K., Flach, M., Heimann, M., Otto, F.E.L., **Reichstein, M.**, Mahecha, M.D., 2017. Contrasting and interacting changes in simulated spring and summer carbon cycle extremes in European ecosystems. Environmental Research Letters 12. doi: 10.1088/1748-9326/aa7398

Sippel, S., Zscheischler, J., Heimann, M., Lange, H., Mahecha, M.D., van Oldenborgh, G.J., Otto, F.E.L., **Reichstein, M.**, 2017. Have precipitation extremes and annual totals been increasing in the world’s dry regions over the last 60 years? Hydrology and Earth System Sciences 21, 441 - 458. doi: 10.5194/hess-21-441-2017

Sippel, S., Zscheischler, J., Mahecha, M.D., Orth, R., **Reichstein, M.**, Vogel, M., Seneviratne, S.I., 2017. Refining multi-model projections of temperature extremes by evaluation against land–atmosphere coupling diagnostics. Earth System Dynamics 8, 387 - 403. doi: 10.5194/esd-8-387-2017

Wutzler, T., Zaehle, S., Schrumpf, M., Ahrens, B., **Reichstein, M.**, 2017. Adaptation of microbial resource allocation affects modelled long term soil organic matter and nutrient cycling. Soil Biology and Biochemistry 115, 322 - 336. doi: 10.1016/j.soilbio.2017.08.031

Zscheischler, J., Mahecha, M.D., Avitabile, V., Calle, L., Carvalhais, N., Ciais, P., Gans, F., Gruber, N., Hartmann, J., Herold, M., Ichii, K., Jung, M., Landschützer, P., Laruelle, G.G., Lauerwald, R., Papale, D., Peylin, P., Poulter, B., Ray, D., Regnier, P., Rödenbeck, C., Roman-Cuesta, R.M., Schwalm, C., Tramontana, G., Tyukavina, A.T., Valentini, R., van der Werf, G., West, T.O., Wolf, J.E., **Reichstein, M.**, 2017. Reviews and syntheses: An empirical spatiotemporal description of the global surface–atmosphere carbon fluxes: opportunities and data limitations. Biogeosciences 14, 3685 - 3703. doi: 10.5194/bg-14-3685-2017

***2016***

Campioli, M., Malhi, Y., Vicca, S., Luyssaert, S., Papale, D., Peñuelas, J., **Reichstein, M.**, Migliavacca, M., Arain, M.A., Janssens, I.A., 2016. Evaluating the convergence between eddy covariance and biometric methods for assessing carbon budgets of forests. Nature Communications 7. doi: 10.1038/ncomms13717

Forkel, M., Carvalhais, N., Rödenbeck, C., Keeling, R., Heimann, M., Thonicke, K., Zaehle, S., **Reichstein, M.**, 2016. Enhanced seasonal CO2 exchange caused by amplified plant productivity in northern ecosystems. Science 351, 696 - 699. doi: 10.1126/science.aac4971

Musavi, T., Migliavacca, M., van de Weg, M.J., Kattge, J., Wohlfahrt, G., van Bodegom, P., **Reichstein, M.**, Bahn, M., Carrara, A., Domingues, T., Gavazzi, M., Gianelle, D., Gimeno, C., Granier, A., Gruening, C., Havránková, K., Herbst, M., Hrynkiw, C., Kalhori, A., Kaminski, T., Klumpp, K., Kolari, P., Longdoz, B., Minerbi, S., Montagnani, L., Moors, E., Oechel, W., Reich, P., Rohatyn, S., Rossi, A., Rotenberg, E., Varlagin, A., Wilkinson, M., Wirth, C., Mahecha, M.D., 2016. Potential and limitations of inferring ecosystem photosynthetic capacity from leaf functional traits. Ecology and Evolution 6, 7352 - 7366. doi: 10.1002/ece3.2479

Sippel, S., Otto, F.E.L., Forkel, M., Allen, M.R., Guillod, B.P., Heimann, M., **Reichstein, M.**, Seneviratne, S.I., Thonicke, K., Mahecha, M.D., 2016. A novel bias correction methodology for climate impact simulations. Earth System Dynamics 7, 71 - 88. doi: 10.5194/esd-7-71-2016

Sippel, S., Zscheischler, J., **Reichstein, M.**, 2016. Ecosystem impacts of climate extremes crucially depend on the timing (commentary). Proceedings of the National Academy of Sciences of the United States of America 113, 5768 - 5770. doi: 10.1073/pnas.1605667113

Tramontana, G., Jung, M., Schwalm, C.R., Ichii, K., Camps-Valls, G., Ráduly, B., **Reichstein, M.**, Arain, M.A., Cescatti, A., Kiely, G., Merbold, L., Serrano-Ortiz, P., Sickert, S., Wolf, S., Papale, D., 2016. Predicting carbon dioxide and energy fluxes across global FLUXNET sites with regression algorithms. Biogeosciences 13, 4291 - 4313. doi: 10.5194/bg-13-4291-2016

Urbazaev, M., Thiel, C., Migliavacca, M., **Reichstein, M.**, Rodriguez-Veiga, P., Schmullius, C., 2016. Improved multi-sensor satellite-based aboveground biomass estimation by selecting temporally stable forest inventory plots using NDVI time series. Forests 7. doi: 10.3390/f7080169

***2015***

Ahlström, A., Raupach, M.R., Schurgers, G., Smith, B., Arneth, A., Jung, M., **Reichstein, M.**, Canadell, J.G., Friedlingstein, P., Jain, A.K., Kato, E., Poulter, B., Sitch, S., Stocker, B.D., Viovy, N., Wang, Y.P., Wiltshire, A., Zaehle, S., Zeng, N., 2015. The dominant role of semi-arid ecosystems in the trend and variability of the land CO2 sink. Science 348, 895 - 899. doi: 10.1126/science.aaa1668

Ahrens, B., Braakhekke, M.C., Guggenberger, G., Schrumpf, M., **Reichstein, M.**, 2015. Contribution of sorption, DOC transport and microbial interactions to the 14C age of a soil organic carbon profile: Insights from a calibrated process model. Soil Biology and Biochemistry 88, 390 - 402. doi: 10.1016/j.soilbio.2015.06.008

Bahn, M., **Reichstein, M.**, Guan, K., Moreno, J.M., Williams, C., 2015. Preface: Climate extremes and biogeochemical cycles in the terrestrial biosphere: impacts and feedbacks across scales. Biogeosciences 12, 4827 - 4830. doi: 10.5194/bg-12-4827-2015

Fernández-Martínez, M., Vicca, S., Janssens, I.A., Sardans, J., Luyssaert, S., Campioli, M., Chapin III, F.S., Ciais, P., Malhi, Y., Obersteiner, M., Papale, D., Piao, S.L., **Reichstein, M.**, Rodà, F., Peñuelas, J., 2015. Reply to ‘Uncertain effects of nutrient availability on global forest carbon balance’ and ‘Data quality and the role of nutrients in forest carbon-use efficiency’. Nature Climate Change 5, 960 - 961. doi: 10.1038/nclimate2794

Forkel, M., Migliavacca, M., Thonicke, K., **Reichstein, M.**, Schaphoff, S., Weber, U., Carvalhais, N., 2015. Codominant water control on global interannual variability and trends in land surface phenology and greenness. Global Change Biology 21, 3414 - 3435. doi: 10.1111/gcb.12950

Frank, D., **Reichstein, M.**, Bahn, M., Frank, D., Mahecha, M.D., Smith, P., Thonicke, K., van der Velde, M., Vicca, S., Babst, F., Beer, C., Buchmann, N., Canadell, J.G., Ciais, P., Cramer, W., Ibrom, A., Miglietta, F., Poulter, B., Rammig, A., Seneviratne, S.I., Walz, A., Wattenbach, M., Zavala, M.A., Zscheischler, J., 2015. Effects of climate extremes on the terrestrial carbon cycle: concepts, processes and potential future impacts. Global Change Biology 21, 2861 - 2880. doi: 10.1111/gcb.12916

Gross, A., Turner, B.L., Wright, S.J., Tanner, E.V.J., **Reichstein, M.**, Weiner, T., Angert, A., 2015. Oxygen isotope ratios of plant available phosphate in lowland tropical forest soils. Soil Biology and Biochemistry 88, 354 - 361. doi: 10.1016/j.soilbio.2015.06.015

Hashimoto, S., Carvalhais, N., Ito, A., Migliavacca, M., Nishina, K., **Reichstein, M.**, 2015. Global spatiotemporal distribution of soil respiration modeled using a global database. Biogeosciences 12, 4121 - 4132. doi: 10.5194/bg-12-4121-2015

Migliavacca, M., **Reichstein, M.**, Richardson, A.D., Mahecha, M.D., Cremonese, E., Delpierre, N., Galvagno, M., Law, B.E., Wohlfahrt, G., Black, T.A., Carvalhais, N., Ceccherini, G., Chen, J., Gobron, N., Koffi, E., Munger, J.W., Perez‑Priego, O., Robustelli, M., Tomelleri, E., Cescatti, A., 2015. Influence of physiological phenology on the seasonal pattern of ecosystem respiration in deciduous forests. Global Change Biology 21, 363 - 376. doi: 10.1111/gcb.12671

Musavi, T., Mahecha, M.D., Migliavacca, M., **Reichstein, M.**, van de Weg, M.J., van Bodegom, P.M., Bahn, M., Wirth, C., Reich, P.B., Schrodt, F., Kattge, J., 2015. The imprint of plants on ecosystem functioning: A data-driven approach. International Journal of Applied Earth Observation and Geoinformation 43, 119 - 131. doi: 10.1016/j.jag.2015.05.009

Papale, D., Black, T.A., Carvalhais, N., Cescatti, A., Chen, J., Jung, M., Kiely, G., Lasslop, G., Mahecha, M.D., Margolis, H., Merbold, L., Montagnani, L., Moors, E., Olesen, J.E., **Reichstein, M.**, Tramontana, G., van Gorsel, E., Wohlfahrt, G., Ráduly, B., 2015. Effect of spatial sampling from European flux towers for estimating carbon and water fluxes with artificial neural networks. Journal of Geophysical Research: Biogeosciences 120, 1941 - 1957. doi: 10.1002/2015jg002997

Pérez‑Priego, O., Guan, J.-H., Rossini, M., Fava, F., Wutzler, T., Moreno, G., Carvalhais, N., Carrara, A., Kolle, O., Julitta, T., Schrumpf, M., **Reichstein, M.**, Migliavacca, M., 2015. Sun-induced chlorophyll fluorescence and photochemical reflectance index improve remote-sensing gross primary production estimates under varying nutrient availability in a typical Mediterranean savanna ecosystem. Biogeosciences 12, 6351 - 6367. doi: 10.5194/bg-12-6351-2015

Schrodt, F., Kattge, J., Shan, H., Fazayeli, F., Joswig, J., Banerjee, A., **Reichstein, M.**, Bönisch, G., Díaz, S., Dickie, J., Gillison, A., Karpatne, A., Lavorel, S., Leadley, P., Wirth, C., Wright, I.J., Wright, S.J., Reich, P.B., 2015. BHPMF – a hierarchical Bayesian approach to gap-filling and trait prediction for macroecology and functional biogeography. Global Ecology and Biogeography 24, 1510 - 1521. doi: 10.1111/geb.12335

Suni, T., Guenther, A., Hansson, H.C., Kulmala, M., Andreae, M.O., Arneth, A., Artaxo, P., Blyth, E., Brus, M., Ganzeveld, L., Kabat, P., Noblet-Ducoudré, N.d., **Reichstein, M.**, Reissell, A., Rosenfeld, D., Seneviratne, S., 2015. The significance of land-atmosphere interactions in the Earth system—iLEAPS achievements and perspectives. Anthropocene 12, 69 - 84. doi: 10.1016/j.ancene.2015.12.001

***2014***

Ahrens, B., **Reichstein, M.**, 2014. Reconciling 14C and minirhizotron-based estimates of fine-root turnover with survival functions. Journal of Plant Nutrition and Soil Science 177, 287 - 296. doi: 10.1002/jpln.201300110

Ahrens, B., **Reichstein, M.**, Borken, W., Muhr, J., Trumbore, S.E., Wutzler, T., 2014. Bayesian calibration of a soil organic carbon model using delta14C measurements of soil organic carbon and heterotrophic respiration as joint constraints. Biogeosciences 11, 2147 - 2168. doi: 10.5194/bg-11-2147-2014

Bahn, M., **Reichstein, M.**, Dukes, J.S., Smith, M.D., McDowell, N.G., 2014. Climate-biosphere interactions in a more extreme world. New Phytologist 202, 356 - 359. doi: 10.1111/nph.12662

Beer, C., Weber, U., Tomelleri, E., Carvalhais, N., Mahecha, M.D., **Reichstein, M.**, 2014. Harmonized European long-term climate data for assessing the effect of changing temporal variability on land-atmosphere CO2 fluxes. Journal of Climate 27, 4815 - 4834. doi: 10.1175/jcli-d-13-00543.1

Braakhekke, M.C., Beer, C., Schrumpf, M., Ekici, A., Ahrens, B., Hoosbeek, M.R., Kruijt, B., Kabat, P., **Reichstein, M.**, 2014. The use of radiocarbon to constrain current and future soil organic matter turnover and transport in a temperate forest. Journal of Geophysical Research: Biogeosciences 119, 372 - 391. doi: 10.1002/2013jg002420

Buermann, W., Parida, B., Jung, M., MacDonald, G.M., Tucker, C.J., **Reichstein, M.**, 2014. Recent shift in Eurasian boreal forest greening response may be associated with warmer and drier summers. Geophysical Research Letters 41, 1995 - 2002. doi: 10.1002/2014gl059450

Carvalhais, N., Forkel, M., Khomik, M., Bellarby, J., Jung, M., Migliavacca, M., Mu, M., Saatchi, S., Santoro, M., Thurner, M., Weber, U., Ahrens, B., Beer, C., Cescatti, A., Randerson, J.T., **Reichstein, M.**, 2014. Global covariation of carbon turnover times with climate in terrestrial ecosystems. Nature 514, 213 - 217. doi: 10.1038/nature13731

Ciais, P., Dolman, A.J., Bombelli, A., Duren, R., Peregon, A., Rayner, P.J., Miller, C., Gobron, N., Kinderman, G., Marland, G., Gruber, N., Chevallier, F., Andres, R.J., Balsamo, G., Bopp, L., Br´eon, F.-M., Broquet, G., Dargaville, R., Battin, T.J., Borges, A., Bovensmann, H., Buchwitz, M., Butler, J., Canadell, J.G., Cook, R.B., DeFries, R., Engelen, R., Gurney, K.R., Heinze, C., Heimann, M., Held, A., Henry, M., Law, B., Luyssaert, S., Miller, J., Moriyama, T., Moulin, C., Myneni, R.B., Nussli, C., Obersteiner, M., Ojima, D., Pan, Y., Paris, J.-D., Piao, S.L., Poulter, B., Plummer, S., Quegan, S., Raymond, P., **Reichstein, M.**, Rivier, L., Sabine, C., Schimel, D., Tarasova, O., Valentini, R., Wang, R., van der Werf, G., Wickland, D., Williams, M., Zehner, C., 2014. Current systematic carbon-cycle observations and the need for implementing a policy-relevant carbon observing system. Biogeosciences 11, 3547 - 3602. doi: 10.5194/bg-11-3547-2014

Fernandez-Martinez, M., Vicca, S., Janssens, I.A., Sardans, J., Luyssaert, S., Campioli, M., Chapin III, F.S., Ciais, P., Malhi, Y., Obersteiner, M., Papale, D., Piao, S.L., **Reichstein, M.**, Roda, F., Penuelas, J., 2014. Nutrient availability as the key regulator of global forest carbon balance. Nature Climate Change 4, 471 - 476. doi: 10.1038/nclimate2177

Greve, P., Orlowsky, B., Mueller, B., Sheffield, J., **Reichstein, M.**, Seneviratne, S.I., 2014. Global assessment of trends in wetting and drying over land. Nature geoscience 7, 716 - 721. doi: 10.1038/ngeo2247

**Reichstein, M.**, Bahn, M., Mahecha, M.D., Kattge, J., Baldocchi, D.D., 2014. Linking plant and ecosystem functional biogeography. Proceedings of the National Academy of Sciences of the United States of America 111, 13697 - 13702. doi: 10.1073/pnas.1216065111

Wu, X., Babst, F., Ciais, P., Frank, D., **Reichstein, M.**, Wattenbach, M., Zang, C., Mahecha, M.D., 2014. Climate-mediated spatiotemporal variability in the terrestrial productivity across Europe. Biogeosciences 11, 3057 - 3068. doi: 10.5194/bg-11-3057-2014

Zscheischler, J., Mahecha, M.D., von Buttlar, J., Harmeling, S., Jung, M., Rammig, A., Randerson, T.J., Schölkopf, B., Seneviratne, I.S., Tomelleri, E., Zaehle, S., **Reichstein, M.**, 2014. A few extreme events dominate global interannual variability in gross primary production. Environmental Research Letters 9. doi: 10.1088/1748-9326/9/3/035001

Zscheischler, J., Michalak, A.M., Schwalm, C., Mahecha, M.D., Huntzinger, D.N., **Reichstein, M.**, Berthier, G., Ciais, P., Cook, R.B., El-Masri, B., Huang, M., Ito, A., Jain, A., King, A., Lei, H., Lu, C., Mao, J., Peng, S., Poulter, B., Ricciuto, D., Shi, X., Tao, B., Tian, H., Viovy, N., Wang, W., Wei, Y., Yang, J., Zeng, N., 2014. Impact of large-scale climate extremes on biospheric carbon fluxes: An intercomparison based on MsTMIP data. Global Biogeochemical Cycles 28, 585 - 600. doi: 10.1002/2014gb004826

Zscheischler, J., **Reichstein, M.**, Harmeling, S., Rammig, A., Tomelleri, E., Mahecha, M.D., 2014. Extreme events in gross primary production: a characterization across continents. Biogeosciences 11, 2909 - 2924. doi: 10.5194/bg-11-2909-2014

Zscheischler, J., **Reichstein, M.**, von Buttlar, J., Mu, M., Randerson, J.T., Mahecha, M.D., 2014. Carbon cycle extremes during the 21st century in CMIP5 models: Future evolution and attribution to climatic drivers. Geophysical Research Letters 41, 8853 - 8861. doi: 10.1002/2014gl062409

***2013***

Badawy, B.A.A.M., Rödenbeck, C., Heimann, M., **Reichstein, M.**, Carvalhais, N., 2013. Technical note: the simple diagnostic photosynthesis and respiration model (SDPRM). Biogeosciences 10, 6485 - 6508. doi: 10.5194/bg-10-6485-2013

Braakhekke, M.C., Wutzler, T., Beer, C., Kattge, J., Schrumpf, M., Ahrens, B., Schöning, I., Hoosbeek, M.R., Kruijt, B., Kabat, P., **Reichstein, M.**, 2013. Modeling the vertical soil organic matter profile using Bayesian parameter estimation. Biogeosciences 10, 399 - 420. doi: 10.5194/bg-10-399-2013

Buermann, W., Bikash, P.R., Jung, M., Burn, D.H., **Reichstein, M.**, 2013. Earlier springs decrease peak summer productivity in North American boreal forests. Environmental Research Letters 8. doi: 10.1088/1748-9326/8/2/024027

Forkel, M., Carvalhais, N., Verbesselt, J., Mahecha, M.D., Neigh, C.S.R., **Reichstein, M.**, 2013. Trend change detection in NDVI time series: Effects of inter-annual variability and methodology. Remote Sensing 5, 2113 - 2144. doi: 10.3390/rs5052113

Menzer, O., Moffat, A.M., Meiring, W., Lasslop, G., Schukat-Talamazzini, E.G., **Reichstein, M.**, 2013. Random errors in carbon and water vapor fluxes assessed with Gaussian Processes. Agricultural and Forest Meteorology 178-179, 161 - 172. doi: 10.1016/j.agrformet.2013.04.024

Mueller, B., Hirschi, M., Jimenez, C., Ciais, P., Dirmeyer, P.A., Dolman, A.J., Fisher, J.B., Jung, M., Ludwig, F., Maignan, F., Miralles, D.G., McCabe, M.F., **Reichstein, M.**, Sheffield, J., Wang, K., Wood, E.F., Zhang, Y., Seneviratne, S.I., 2013. Benchmark products for land evapotranspiration: LandFlux-EVAL multi-data set synthesis. Hydrology and Earth System Sciences 17, 3707 - 3720. doi: 10.5194/hess-17-3707-2013

**Reichstein, M.**, Bahn, M., Ciais, P., Frank, D., Mahecha, M.D., Seneviratne, S.I., Zscheischler, J., Beer, C., Buchmann, N., Frank, D.C., Papale, D., Smith, A.R.P., Thonicke, K., van der Velde, M., Vicca, S., Walz, A., Wattenbach, M., 2013. Climate extremes and the carbon cycle. Nature 500, 287 - 295. doi: 10.1038/nature12350

Stoy, P.C., Mauder, M., Foken, T., Marcolla, B., Boegh, E., Ibrom, A., Arain, M.A., Arneth, A., Aurela, M., Bernhofer, C., Cescatti, A., Dellwik, E., Duce, P., Gianelle, D., van Gorsel, E., Kiely, G., Knohl, A., Margolis, H., McCaughey, H., Merbold, L., Montagnani, L., Papale, D., **Reichstein, M.**, Saunders, M., Serrano-Ortiz, P., Sottocornola, M., Spano, D., Vaccari, F., Varlagin, A., 2013. A data-driven analysis of energy balance closure across FLUXNET research sites: The role of landscape scale heterogeneity. Agricultural and Forest Meteorology 171-172, 137 - 152. doi: 10.1016/j.agrformet.2012.11.004

Thiessen, S., Gleixner, G., Wutzler, T., **Reichstein, M.**, 2013. Both priming and temperature sensitivity of soil organic matter decomposition depend on microbial biomass--An incubation study. Soil Biology and Biochemistry 57, 739 - 748. doi: 10.1016/j.soilbio.2012.10.029

van Oijen, M., Beer, C., Cramer, W., Rammig, A., **Reichstein, M.**, Rolinski, S., Soussana, J.-F., 2013. A novel probabilistic risk analysis to determine the vulnerability of ecosystems to extreme climatic events. Environmental Research Letters 8. doi: 10.1088/1748-9326/8/1/015032

Wutzler, T., **Reichstein, M.**, 2013. Priming and substrate quality interactions in soil organic matter models. Biogeosciences 10, 2089 - 2103. doi: 10.5194/bg-10-2089-2013

Zscheischler, J., Mahecha, M.D., Harmeling, S., **Reichstein, M.**, 2013. Detection and attribution of large spatiotemporal extreme events in Earth observation data. Ecological Informatics 15, 66 - 73. doi: 10.1016/j.ecoinf.2013.03.004

***2012***

Baldocchi, D., **Reichstein, M.**, Papale, D., Koteen, L., Vargas, R., Agarwal, D., Cook, R., 2012. The role of trace gas flux networks in the biogeosciences. Eos Transactions 93, 217 - 219. doi: 10.1029/2012eo230001

Bonan, G.B., Oleson, K.W., Fisher, R.A., Lasslop, G., **Reichstein, M.**, 2012. Reconciling leaf physiological traits and canopy flux data: Use of the TRY and FLUXNET databases in the Community Land Model version 4. Journal of Geophysical Research: Biogeosciences 117, G02026. doi: 10.1029/2011jg001913

Lasslop, G., Migliavacca, M., Bohrer, G., **Reichstein, M.**, Bahn, M., Ibrom, A., Jacobs, C., Kolari, P., Papale, D., Vesala, T., Wohlfahrt, G., Cescatti, A., 2012. On the choice of the driving temperature for eddy-covariance carbon dioxide flux partitioning. Biogeosciences 9, 5243 - 5259. doi: 10.5194/bg-9-5243-2012

Luo, Y.Q., Randerson, J.T., Abramowitz, G., Bacour, C., Blyth, E., Carvalhais, N., Ciais, P., Dalmonech, D., Fisher, J.B., Fisher, R., Friedlingstein, P., Hibbard, K., Hoffman, F., Huntzinger, D., Jones, C.D., Koven, C., Lawrence, D., Li, D.J., Mahecha, M.D., Niu, S.L., Norby, R., Piao, S.L., Qi, X., Peylin, P., Prentice, I.C., Riley, W., **Reichstein, M.**, Schwalm, C., Wang, Y.P., Xia, J.Y., Zaehle, S., Zhou, X.H., 2012. A framework for benchmarking land models. Biogeosciences 9, 3857 - 3874. doi: 10.5194/bg-9-3857-2012

Moyano, F.E., Vasilyeva, N., Bouckaert, L., Cook, F., Craine, J., Yuste, J.C., Don, A., Epron, D., Formanek, P., Franzluebbers, A., Ilstedt, U., Katterer, T., Orchard, V., **Reichstein, M.**, Rey, A., Ruamps, L., Subke, J.A., Thomsen, I.K., Chenu, C., 2012. The moisture response of soil heterotrophic respiration: interaction with soil properties. Biogeosciences 9, 1173 - 1182. doi: 10.5194/bg-9-1173-2012

**Reichstein, M.**, 2012. Carbon management under extremes. Carbon management 3, 113 - 115. doi: 10.4155/cmt.12.8

Ryu, Y., Baldocchi, D.D., Black, T.A., Detto, M., Law, B.E., Leuning, R., Miyata, A., **Reichstein, M.**, Vargas, R., Ammann, C., Beringer, J., Flanagan, L.B., Gu, L.H., Hutley, L.B., Kim, J., Mccaughey, H., Moors, E.J., Rambal, S., Vesala, T., 2012. On the temporal upscaling of evapotranspiration from instantaneous remote sensing measurements to 8-day mean daily-sums. Agricultural and Forest Meteorology 152, 212 - 222. doi: 10.1016/j.agrformet.2011.09.010

Vicca, S., Luyssaert, S., Penuelas, J., Campioli, M., Chapin, F.S.I., Ciais, P., Heinemeyer, A., Högberg, P., Kutsch, W.L., Law, B.E., Malhi, Y., Papale, D., Piao, S.L., **Reichstein, M.**, Schulze, E.D., Janssens, I.A., 2012. Fertile forests produce biomass more efficiently. Ecology Letters 15, 520 - 526. doi: 10.1111/j.1461-0248.2012.01775.x

Wang, T., Brender, P., Ciais, P., Piao, S., Mahecha, M.D., Chevallier, F., **Reichstein, M.**, Ottle, C., Maignan, F., Arain, A., Bohrerf, G., Cescatti, A., Kiely, G., Law, B., Lutz, M., Montagnani, L., Moors, E., Osborne, B., Panferov, O., Papale, D., Vaccari, F., 2012. State-dependent errors in a land surface model across biomes inferred from eddy covariance observations on multiple timescales. Ecological Modelling 246, 11 - 25. doi: 10.1016/j.ecolmodel.2012.07.017

Williams, C.A., **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. doi: 10.1029/2011wr011586

Xiao, J.F., Chen, J.Q., Davis, K.J., **Reichstein, M.**, 2012. Advances in upscaling of eddy covariance measurements of carbon and water fluxes. Journal of Geophysical Research - Biogeosciences 117, G00j01. doi: 10.1029/2011jg001889

***2011***

Bonan, G.B., Lawrence, P.J., Oleson, K.W., Levis, S., Jung, M., **Reichstein, M.**, Lawrence, D.M., Swenson, S.C., 2011. Improving canopy processes in the Community Land Model version 4 (CLM4) using global flux fields empirically inferred from FLUXNET data. Journal of Geophysical Research - Biogeosciences 116, G02014. doi: 10.1029/2010jg001593

Braakhekke, M.C., Beer, C., Hoosbeek, M.R., **Reichstein, M.**, Kruijt, B., Schrumpf, M., Kabat, P., 2011. SOMPROF: A vertically explicit soil organic matter model. Ecological Modelling 222, 1712 - 1730. doi: 10.1016/j.ecolmodel.2011.02.015

Goebel, M.O., Bachmann, J., **Reichstein, M.**, Janssens, I.A., Guggenberger, G., 2011. Soil water repellency and its implications for organic matter decomposition - is there a link to extreme climatic events? Global Change Biology 17, 2640 - 2656. doi: 10.1111/j.1365-2486.2011.02414.x

Goerner, A., **Reichstein, M.**, Tomelleri, E., Hanan, N., Rambal, S., Papale, D., Dragoni, D., Schmullius, C., 2011. Remote sensing of ecosystem light use efficiency with MODIS-based PRI. Biogeosciences 8, 189 - 202. doi: 10.5194/bg-8-189-2011

Jimenez, C., Prigent, C., Mueller, B., Seneviratne, S.I., Mccabe, M.F., Wood, E.F., Rossow, W.B., Balsamo, G., Betts, A.K., Dirmeyer, P.A., Fisher, J.B., Jung, M., Kanamitsu, M., Reichle, R.H., **Reichstein, M.**, Rodell, M., Sheffield, J., Tu, K., Wang, K., 2011. Global intercomparison of 12 land surface heat flux estimates. Journal of Geophysical Research: Atmospheres 116, D02102. doi: 10.1029/2010jd014545

Jung, M., **Reichstein, M.**, Margolis, H.A., Cescatti, A., Richardson, A.D., Arain, M.A., Arneth, A., Bernhofer, C., Bonal, D., Chen, J.Q., Gianelle, D., Gobron, N., Kiely, G., Kutsch, W., Lasslop, G., Law, B.E., Lindroth, A., Merbold, L., Montagnani, L., Moors, E.J., Papale, D., Sottocornola, M., Vaccari, F., Williams, C., 2011. Global patterns of land-atmosphere fluxes of carbon dioxide, latent heat, and sensible heat derived from eddy covariance, satellite, and meteorological observations. Journal of Geophysical Research - Biogeosciences 116, G00j07. doi: 10.1029/2010jg001566

Kattge, J., Diaz, S., Lavorel, S., Prentice, I.C., Leadley, P., Bönisch, G., Garnier, E., Westoby, M., Reich, P.B., Wright, I.J., Cornelissen, J.H.C., Violle, C., Harrison, S.P., Van Bodegom, P.M., **Reichstein, M.**,et. al., 2011. TRY - a global database of plant traits. Global Change Biology 17, 2905 - 2935. doi: 10.1111/j.1365-2486.2011.02451.x

Keenan, T.F., Carbone, M.S., **Reichstein, M.**, Richardson, A.D., 2011. The model-data fusion pitfall: assuming certainty in an uncertain world. Oecologia 167, 587 - 597. doi: 10.1007/s00442-011-2106-x

Mahecha, M.D., **Reichstein, M.**, Carvalhais, N., Lasslop, G., Lange, H., Seneviratne, S.I., Vargas, R., Ammann, C., Arain, M.A., Cescatti, A., Janssens, I.A., Migliavacca, M., Montagnani, L., Richardson, A.D., 2011. Response to Comment on "Global Convergence in the Temperature Sensitivity of Respiration at Ecosystem Level". Science 331, 1265d. doi: 10.1126/science.1197033

Migliavacca, M., **Reichstein, M.**, Richardson, A.D., Colombo, R., Sutton, M.A., Lasslop, G., Tomelleri, E., Wohlfahrt, G., Carvalhais, N., Cescatti, A., Mahecha, M.D., Montagnani, L., Papale, D., Zaehle, S., Arain, A., Arneth, A., Black, T.A., Carrara, A., Dore, S., Gianelle, D., Helfter, C., Hollinger, D., Kutsch, W.L., Lafleur, P.M., Nouvellon, Y., Rebmann, C., Rocha, D., Rodeghiero, M., Roupsard, O., Sebastià, M.-T., Seufert, G., Soussana, J.-F., Molen, V.D., 2011. Semiempirical modeling of abiotic and biotic factors controlling ecosystem respiration across eddy covariance sites. Global Change Biology 17, 390 - 409. doi: 10.1111/j.1365-2486.2010.02243.x

Mueller, B., Seneviratne, S.I., Jimenez, C., Corti, T., Hirschi, M., Balsamo, G., Ciais, P., Dirmeyer, P., Fisher, J.B., Guo, Z., Jung, M., Maignan, F., Mccabe, M.F., Reichle, R., **Reichstein, M.**, Rodell, M., Sheffield, J., Teuling, A.J., Wang, K., Wood, E.F., Zhang, Y., 2011. Evaluation of global observations-based evapotranspiration datasets and IPCC AR4 simulations. Geophysical Research Letters 38, L06402. doi: 10.1029/2010gl046230

Pielke, R.A., Pitman, A., Niyogi, D., Mahmood, R., Mcalpine, C., Hossain, F., Goldewijk, K.K., Nair, U., Betts, R., Fall, S., **Reichstein, M.**, Kabat, P., De Noblet, N., 2011. Land use/land cover changes and climate: modeling analysis and observational evidence. Wiley interdisciplinary reviews : Climate change 2, 828 - 850. doi: 10.1002/wcc.144

Van Der Molen, M.K., Dolman, A.J., Ciais, P., Eglin, T., Gobron, N., Law, B.E., Meir, P., Peters, W., Phillips, O.L., **Reichstein, M.**, Chen, T., Dekker, S.C., Doubkova, M., Friedl, M.A., Jung, M., Van Den Hurk, B., De Jeu, R.A.M., Kruijt, B., Ohta, T., Rebel, K.T., Plummer, S., Seneviratne, S.I., Sitch, S., Teuling, A.J., Van Der Werf, G.R., Wang, G., 2011. Drought and ecosystem carbon cycling. Agricultural and Forest Meteorology 151, 765 - 773. doi: 10.1016/j.agrformet.2011.01.018

Vargas, R., Carbone, M.S., **Reichstein, M.**, Baldocchi, D.D., 2011. Frontiers and challenges in soil respiration research: from measurements to model-data integration. Biogeochemistry 102, 1 - 13. doi: 10.1007/s10533-010-9462-1

Weihermüller, L., Lamers, M., **Reichstein, M.**, 2011. Introduction to production, transport, and emission of trace gases from the vadose zone to the atmosphere. Vadose Zone Journal 10, 151 - 155. doi: 10.2136/vzj2010.0117

***2010***

Bahn, M., Janssens, I.A., **Reichstein, M.**, Smith, P., Trumbore, S.E., 2010. Soil respiration across scales: towards an integration of patterns and processes. New Phytologist 186, 292 - 296. doi: 10.1111/j.1469-8137.2010.03237.x

Bahn, M., **Reichstein, M.**, Davidson, E.A., Grünzweig, J., Jung, M., Carbone, M.S., Epron, D., Misson, L., Nouvellon, Y., Roupsard, O., Savage, K., Trumbore, S.E., Gimeno, C., Yuste, J.C., Tang, J., Vargas, R., Janssens, I.A., 2010. Soil respiration at mean annual temperature predicts annual total across vegetation types and biomes. Biogeosciences 7, 2147 - 2157. doi: 10.5194/bg-7-2147-2010

Beer, C., **Reichstein, M.**, Tomelleri, E., Ciais, P., Jung, M., Carvalhais, N., Rödenbeck, C., Arain, M.A., Baldocchi, D., Bonan, G.B., Bondeau, A., Cescatti, A., Lasslop, G., Lindroth, A., Lomas, M., Luyssaert, S., Margolis, H., Oleson, K.W., Roupsard, O., Veenendaal, E., Viovy, N., Williams, C., Woodward, F.I., Papale, D., 2010. Terrestrial Gross Carbon Dioxide Uptake: Global Distribution and Covariation with Climate. Science 329, 834 - 838. doi: 10.1126/science.1184984

Carvalhais, N., **Reichstein, M.**, Ciais, P., Collatz, G.J., Mahecha, M.D., Montagnani, L., Papale, D., Rambal, S., Seixas, J., 2010. Identification of vegetation and soil carbon pools out of equilibrium in a process model via eddy covariance and biometric constraints. Global Change Biology 16, 2813 - 2829. doi: 10.1111/j.1365-2486.2010.02173.x

Carvalhais, N., **Reichstein, M.**, Collatz, G.J., Mahecha, M.D., Migliavacca, M., Neigh, C.S.R., Tomelleri, E., Benali, A.A., Papale, D., Seixas, J., 2010. Deciphering the components of regional net ecosystem fluxes following a bottom-up approach for the Iberian Peninsula. Biogeosciences 7, 3707 - 3729. doi: 10.5194/bg-7-3707-2010

Eglin, T., Ciais, P., Piao, S.L., Barre, P., Bellassen, V., Cadule, P., Chenu, C., Gasser, T., Koven, C., **Reichstein, M.**, Smith, P., 2010. Historical and future perspectives of global soil carbon response to climate and land-use changes. Tellus, Series B - Chemical and Physical Meteorology 62, 700 - 718. doi: 10.1111/j.1600-0889.2010.00499.x

Gilmanov, T.G., Aires, L., Barcza, Z., Baron, V.S., Belelli, L., Beringer, J., Billesbach, D., Bonal, D., Bradford, J., Ceschia, E., Cook, D., Corradi, C., Frank, A., Gianelle, D., Gimeno, C., Gruenwald, T., Guo, H.Q., Hanan, N., Haszpra, L., Heilman, J., Jacobs, A., Jones, M.B., Johnson, D.A., Kiely, G., Li, S.G., Magliulo, V., Moors, E., Nagy, Z., Nasyrov, M., Owensby, C., Pinter, K., Pio, C., **Reichstein, M.**, Sanz, M.J., Scott, R., Soussana, J.F., Stoy, P.C., Svejcar, T., Tuba, Z., Zhou, G.S., 2010. Productivity, Respiration, and Light-Response Parameters of World Grassland and Agroecosystems Derived From Flux-Tower Measurements. Rangeland Ecology and Management 63, 16 - 39. doi: 10.2111/rem-d-09-00072.1

Janssens, I.A., Dieleman, W., Luyssaert, S., Subke, J.A., **Reichstein, M.**, Ceulemans, R., Ciais, P., Dolman, A.J., Grace, J., Matteucci, G., Papale, D., Piao, S.L., Schulze, E.D., Tang, J., Law, B.E., 2010. Reduction of forest soil respiration in response to nitrogen deposition. Nature Geoscience 3, 315 - 322. doi: 10.1038/ngeo844

Jung, M., **Reichstein, M.**, Ciais, P., Seneviratne, S.I., Sheffield, J., Goulden, M.L., Bonan, G., Cescatti, A., Chen, J.Q., De Jeu, R., Dolman, A.J., Eugster, W., Gerten, D., Gianelle, D., Gobron, N., Heinke, J., Kimball, J., Law, B.E., Montagnani, L., Mu, Q.Z., Mueller, B., Oleson, K., Papale, D., Richardson, A.D., Roupsard, O., Running, S., Tomelleri, E., Viovy, N., Weber, U., Williams, C., Wood, E., Zaehle, S., Zhang, K., 2010. Recent decline in the global land evapotranspiration trend due to limited moisture supply. Nature 467, 951 - 954. doi: 10.1038/nature09396

Lasslop, G., **Reichstein, M.**, Detto, M., Richardson, A.D., Baldocchi, D.D., 2010. Comment on Vickers et al.: Self-correlation between assimilation and respiration resulting from flux partitioning of eddy-covariance CO2 fluxes. Agricultural and Forest Meteorology 150, 312 - 314. doi: 10.1016/j.agrformet.2009.11.003

Lasslop, G., **Reichstein, M.**, Papale, D., Richardson, A.D., Arneth, A., Barr, A., Stoy, P., Wohlfahrt, G., 2010. Separation of net ecosystem exchange into assimilation and respiration using a light response curve approach: critical issues and global evaluation. Global Change Biology 16, 187 - 208. doi: 10.1111/j.1365-2486.2009.02041.x

Le Maire, G., Delpierre, N., Jung, M., Ciais, P., **Reichstein, M.**, Viovy, N., Granier, A., Ibrom, A., Kolari, P., Longdoz, B., Moors, E.J., Pilegaard, K., Rambal, S., Richardson, A.D., Vesala, T., 2010. Detecting the critical periods that underpin interannual fluctuations in the carbon balance of European forests. Journal of Geophysical Research: Biogeosciences 115. doi: 10.1029/2009jg001244

Luyssaert, S., Ciais, P., Piao, S.L., Schulze, E.-D., Jung, M., Zaehle, S., Schelhaas, M.J., **Reichstein, M.**, Churkina, G., Papale, D., Abril, G., Beer, C., Grace, J., Loustau, D., Matteucci, G., Magnani, F., Nabuurs, G.J., Verbeeck, H., Sulkava, M., Van Der Werf, G.R., Janssens, I., Team, C.S., 2010. The European carbon balance. Part 3: forests. Global Change Biology 16, 1429 - 1450. doi: 10.1111/j.1365-2486.2009.02056.x

Mahecha, M.D., **Reichstein, M.**, Carvalhais, N., Lasslop, G., Lange, H., Seneviratne, S.I., Vargas, R., Ammann, C., Arain, M.A., Cescatti, A., Janssens, I.A., Migliavacca, M., Montagnani, L., Richardson, A.D., 2010. Global Convergence in the Temperature Sensitivity of Respiration at Ecosystem Level. Science 329, 838 - 840. doi: 10.1126/science.1189587

Mahecha, M.D., **Reichstein, M.**, Jung, M., Seneviratne, S.I., Zaehle, S., Beer, C., Braakhekke, M.C., Carvalhais, N., Lange, H., Le Maire, G., Moors, E., 2010. Comparing observations and process-based simulations of biosphere-atmosphere exchanges on multiple time scales. Journal of Geophysical Research: Biogeosciences 115, G02003. doi: 10.1029/2009jg001016

**Reichstein, M.**, 2010. Journal club: a biogeochemist looks at where all the emitted carbon dioxide is going. Nature 464. doi: 10.1038/464145e

Richardson, A.D., Black, T.A., Ciais, P., Delbart, N., Friedl, M.A., Gobron, N., Hollinger, D.Y., Kutsch, W.L., Longdoz, B., Luyssaert, S., Migliavacca, M., Montagnani, L., Munger, J.W., Moors, E., Piao, S., Rebmann, C., **Reichstein, M.**, Saigusa, N., Tomelleri, E., Vargas, R., Varlagin, A., 2010. Influence of spring and autumn phenological transitions on forest ecosystem productivity. Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences 365, 3227 - 3246. doi: 10.1098/rstb.2010.0102

Schwalm, C.R., Williams, C.A., Schaefer, K., Arneth, A., Bonal, D., Buchmann, N., Chen, J.Q., Law, B.E., Lindroth, A., Luyssaert, S., **Reichstein, M.**, Richardson, A.D., 2010. Assimilation exceeds respiration sensitivity to drought: A FLUXNET synthesis. Global Change Biology 16, 657 - 670. doi: 10.1111/j.1365-2486.2009.01991.x

Teuling, A.J., Seneviratne, S.I., Stöckli, R., **Reichstein, M.**, Moors, E., Ciais, P., Luyssaert, S., Van Den Hurk, B., Ammann, C., Bernhofer, C., Dellwik, E., Gianelle, D., Gielen, B., Grünwald, T., Klumpp, K., Montagnani, L., Moureaux, C., Sottocornola, M., Wohlfahrt, G., 2010. Contrasting response of European forest and grassland energy exchange to heatwaves. Nature Geoscience 3, 722 - 727. doi: 10.1038/ngeo950

Wang, X., Piao, S., Ciais, P., Janssens, I.A., **Reichstein, M.**, Peng, S., Wang, T., 2010. Are ecological gradients in seasonal Q10 of soil respiration explained by climate or by vegetation seasonality? Soil Biology and Biochemistry 42, 1728 - 1734. doi: 10.1016/j.soilbio.2010.06.008

***2009***

Beer, C., Ciais, P., **Reichstein, M.**, Baldocchi, D., Law, B.E., Papale, D., Soussana, J.F., Ammann, C., Buchmann, N., Frank, D., Gianelle, D., Janssens, I.A., Knohl, A., Kostner, B., Moors, E., Roupsard, O., Verbeeck, H., Vesala, T., Williams, C.A., Wohlfahrt, G., 2009. Temporal and among-site variability of inherent water use efficiency at the ecosystem level. Global Biogeochemical Cycles 23, GB2018. doi: 10.1029/2008gb003233

Bombelli, A., Henry, M., Castaldi, S., Adu-Bredu, S., Arneth, A., De Grandcourt, A., Grieco, E., Kutsch, W.L., Lehsten, V., Rasile, A., **Reichstein, M.**, Tansey, K., Weber, U., Valentini, R., 2009. An outlook on the Sub-Saharan Africa carbon balance. Biogeosciences 6, 2193 - 2205. doi: 10.5194/bg-6-2193-2009

Fox, A., Williams, M., Richardson, A.D., Cameron, D., Gove, J.H., Quaife, T., Ricciuto, D., **Reichstein, M.**, Tomelleri, E., Trudinger, C.M., Van Wijk, M.T., 2009. The REFLEX project: Comparing different algorithms and implementations for the inversion of a terrestrial ecosystem model against eddy covariance data. Agricultural and Forest Meteorology 149, 1597 - 1615. doi: 10.1016/j.agrformet.2009.05.002

Görner, A., **Reichstein, M.**, Rambal, S., 2009. Tracking seasonal drought effects on ecosystem light use efficiency with satellite-based PRI in a Mediterranean forest. Remote Sensing of Environment 113, 1101 - 1111. doi: 10.1016/j.rse.2009.02.001

Jung, M., **Reichstein, M.**, Bondeau, A., 2009. Towards global empirical upscaling of FLUXNET eddy covariance observations: validation of a model tree ensemble approach using a biosphere model. Biogeosciences 6, 2001 - 2013. doi: 10.5194/bg-6-2001-2009

Luyssaert, S., **Reichstein, M.**, Schulze, E.D., Janssens, I.A., Law, B.E., Papale, D., Dragoni, D., Goulden, M.L., Granier, A., Kutsch, W.L., Linder, S., Matteucci, G., Moors, E., Munger, J.W., Pilegaard, K., Saunders, M., Falge, E.M., 2009. Toward a consistency cross-check of eddy covariance flux-based and biometric estimates of ecosystem carbon balance. Global Biogeochemical Cycles 23, GB3009. doi: 10.1029/2008gb003377

Mahecha, M.D., Martinez, A., Lange, H., **Reichstein, M.**, Beck, E., 2009. Identification of characteristic plant co-occurrences in neotropical secondary montane forests. Journal of Plant Ecology 2, 31 - 41. doi: 10.1093/jpe/rtp001

Piao, S., Friedlingstein, P., Ciais, P., Peylin, P., Zhu, B., **Reichstein, M.**, 2009. Footprint of temperature changes in the temperate and boreal forest carbon balance. Geophysical Research Letters 36, L07404. doi: 10.1029/2009gl037381

**Reichstein, M.**, Ciais, P., Beer, C., Beier, C., Ibrom, A., Janssens, I., Jung, M., Misson, L., Seneviratne, S., Smith, P., Williams, C., Wirth, C., 2009. The role of climate variability and extremes for global terrestrial carbon dynamics: lessons learnt from multiple observations and experiments. IOP Conference Series: Earth and Environmental Science 6. doi: 10.1088/1755-1307/6/4/042006

Reth, S., Graf, W., **Reichstein, M.**, Munch, J.C., 2009. Sustained stimulation of soil respiration after 10 years of experimental warming. Environmental Research Letters 4, 24005. doi: 10.1088/1748-9326/4/2/024005

Shurpali, N.J., Hyvonen, N.P., Huttunen, J.T., Clement, R.J., **Reichstein, M.**, Nykanen, H., Biasi, C., Martikainen, P.J., 2009. Cultivation of a perennial grass for bioenergy on a boreal organic soil - carbon sink or source? GCB Bioenergy 1, 35 - 50. doi: 10.1111/j.1757-1707.2009.01003.x

Stoy, P.C., Richardson, A.D., Baldocchi, D.D., Katul, G.G., Stanovick, J., Mahecha, M.D., **Reichstein, M.**, Detto, M., Law, B.E., Wohlfahrt, G., Arriga, N., Campos, J., Mccaughey, J.H., Montagnani, L., U, K.T.P., Sevanto, S., Williams, M., 2009. Biosphere-atmosphere exchange of CO2 in relation to climate: a cross-biome analysis across multiple time scales. Biogeosciences 6, 2297 - 2312. doi: 10.5194/bg-6-2297-2009

Tenhunen, J., Geyer, R., Adiku, S., **Reichstein, M.**, Tappeiner, U., Bahn, M., Cernusca, A., Dinh, N.Q., Kolcun, O., Lohila, A., Otieno, D., Schmidt, M., Schmitt, M., Wang, Q., Wartinger, M., Wohlfahrt, G., 2009. Influences of changing land use and CO2 concentration on ecosystem and landscape level carbon and water balances in mountainous terrain of the Stubai Valley, Austria. Global and Planetary Change 67, 29 - 43. doi: 10.1016/j.gloplacha.2008.12.010

Teuling, A.J., Hirschi, M., Ohmura, A., Wild, M., **Reichstein, M.**, Ciais, P., Buchmann, N., Ammann, C., Montagnani, L., Richardson, A.D., Wohlfahrt, G., Seneviratne, S.I., 2009. A regional perspective on trends in continental evaporation. Geophysical Research Letters 36, 20. doi: 10.1029/2008gl036584

Weber, U., Jung, M., **Reichstein, M.**, Beer, C., Braakhekke, M.C., Lehsten, V., Ghent, D., Kaduk, J., Viovy, N., Ciais, P., Gobron, N., Rödenbeck, C., 2009. The interannual variability of Africa's ecosystem productivity: a multi-model analysis. Biogeosciences 6, 285 - 295. doi: 10.5194/bg-6-285-2009

Williams, M., Richardson, A.D., **Reichstein, M.**, Stoy, P.C., Peylin, P., Verbeeck, H., Carvalhais, N., Jung, M., Hollinger, D.Y., Kattge, J., Leuning, R., Luo, Y., Tomelleri, E., Trudinger, C.M., Wang, Y.P., 2009. Improving land surface models with FLUXNET data. Biogeosciences 6, 1341 - 1359. doi: 10.5194/bg-6-1341-2009

***2008***

Carvalhais, N., **Reichstein, M.**, Seixas, J., Collatz, G.J., Pereira, J.S., Berbigier, P., Carrara, A., Granier, A., Montagnani, L., Papale, D., Rambal, S., Sanz, M.J., Valentini, R., 2008. Implications of the carbon cycle steady state assumption for biogeochemical modeling performance and inverse parameter retrieval. Global Biogeochemical Cycles 22, Gb2007. doi: 10.1029/2007gb003033

Desai, A.R., Richardson, A.D., Moffat, A.M., Kattge, J., Hollinger, D.Y., Barr, A., Falge, E., Noormets, A., Papale, D., **Reichstein, M.**, Stauch, V.J., 2008. Cross-site evaluation of eddy covariance GPP and RE decomposition techniques. Agricultural and Forest Meteorology 148, 821 - 838. doi: 10.1016/j.agrformet.2007.11.012

Heimann, M., **Reichstein, M.**, 2008. Terrestrial ecosystem carbon dynamics and climate feedbacks. Nature 451, 289 - 292. doi: 10.1038/nature06591

Jung, M., Verstraete, M., Gobron, N., **Reichstein, M.**, Papale, D., Bondeau, A., Robustelli, M., Pinty, B., 2008. Diagnostic assessment of European gross primary production. Global Change Biology 14, 2349 - 2364. doi: 10.1111/j.1365-2486.2008.01647.x

Knapp, A.K., Beier, C., Briske, D.D., Classen, A.T., Luo, Y., **Reichstein, M.**, Smith, M.D., Smith, S.D., Bell, J.E., Fay, P.A., Heisler, J.L., Leavitt, S.W., Sherry, R., Smith, B., Weng, E., 2008. Consequences of more extreme precipitation regimes for terrestrial ecosystems. Bioscience 58, 811 - 821. doi: 10.1641/b580908

Lasslop, G., **Reichstein, M.**, Kattge, J., Papale, D., 2008. Influences of observation errors in eddy flux data on inverse model parameter estimation. Biogeosciences 5, 1311 - 1324. doi: 10.5194/bg-5-1311-2008

Piao, S.L., Ciais, P., Friedlingstein, P., Peylin, P., **Reichstein, M.**, Luyssaert, S., Margolis, H., Fang, J.Y., Barr, A., Chen, A.P., Grelle, A., Hollinger, D.Y., Laurila, T., Lindroth, A., Richardson, A.D., Vesala, T., 2008. Net carbon dioxide losses of northern ecosystems in response to autumn warming. Nature 451, 49 - U43. doi: 10.1038/nature06444

**Reichstein, M.**, Beer, C., 2008. Soil respiration across scales: the importance of a model-data integration framework for data interpretation. Journal of Plant Nutrition and Soil Science 171, 344 - 354. doi: 10.1002/jpln.200700075

Richardson, A.D., Mahecha, M.D., Falge, E., Kattge, J., Moffat, A.M., Papale, D., **Reichstein, M.**, Stauch, V.J., Braswell, B.H., Churkina, G., Kruijt, B., Hollinger, D.Y., 2008. Statistical properties of random CO2 flux measurement uncertainty inferred from model residuals. Agricultural and Forest Meteorology 148, 38 - 50. doi: 10.1016/j.agrformet.2007.09.001

Vetter, M., Churkina, G., Jung, M., **Reichstein, M.**, Zaehle, S., Bondeau, A., Chen, Y., Ciais, P., Feser, F., Freibauer, A., Geyer, R., Jones, C., Papale, D., Tenhunen, J., Tomelleri, E., Trusilova, K., Viovy, N., Heimann, M., 2008. Analyzing the causes and spatial pattern of the European 2003 carbon flux anomaly using seven models. Biogeosciences 5, 561 - 583. doi: 10.5194/bg-5-561-2008

Wutzler, T., **Reichstein, M.**, 2008. Colimitation of decomposition by substrate and decomposers - a comparison of model formulations. Biogeosciences 5, 749 - 759. doi: 10.5194/bg-5-749-2008

Zobitz, J.M., Burns, S.P., **Reichstein, M.**, Bowling, D.R., 2008. Partitioning net ecosystem carbon exchange and the carbon isotopic disequilibrium in a subalpine forest. Global Change Biology 14, 1785 - 1800. doi: 10.1111/j.1365-2486.2008.01609.x

***2007***

Beer, C., **Reichstein, M.**, Ciais, P., Farquhar, G.D., Papale, D., 2007. Mean annual GPP of Europe derived from its water balance. Geophysical Research Letters 34, L05401. doi: 10.1029/2006gl029006

Belelli Marchesini, L., Papale, D., **Reichstein, M.**, Vuichard, N., Tchebakova, N., Valentini, R., 2007. Carbon balance assessment of a natural steppe of southern Siberia by multiple constraint approach. Biogeosciences 4, 581 - 595. doi: 10.5194/bg-4-581-2007

Bondeau, A., Smith, P.C., Zaehle, S., Schaphoff, S., Lucht, W., Cramer, W., Gerten, D., Lotze-Campen, H., Müller, C., **Reichstein, M.**, Smith, B., 2007. Modelling the role of agriculture for the 20th century global terrestrial carbon balance. Global Change Biology 13, 679 - 706. doi: 10.1111/j.1365-2486.2006.01305.x

Ciais, P., Manning, A.C., **Reichstein, M.**, Zaehle, S., Bopp, L., 2007. Nitrification amplifies the decreasing trends of atmospheric oxygen and implies a larger land carbon uptake. Global Biogeochemical Cycles 21, GB2030. doi: 10.1029/2006gb002799

Granier, A., **Reichstein, M.**, Breda, N., Janssens, I.A., Falge, E., Ciais, P., Grunwald, T., Aubinet, M., Berbigier, P., Bernhofer, C., Buchmann, N., Facini, O., Grassi, G., Heinesch, B., Ilvesniemi, H., Keronen, P., Knohl, A., Kostner, 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 and Forest Meteorology 143, 123 - 145. doi: 10.1016/j.agrformet.2006.12.004

Jung, M., Le Maire, G., Zaehle, S., Luyssaert, S., Vetter, M., Churkina, G., Ciais, P., Viovy, N., **Reichstein, M.**, 2007. Assessing the ability of three land ecosystem models to simulate gross carbon uptake of forests from boreal to Mediterranean climate in Europe. Biogeosciences 4, 647 - 656. doi: 10.5194/bg-4-647-2007

Jung, M., Vetter, M., Herold, M., Churkina, G., **Reichstein, M.**, Zaehle, S., Ciais, P., Viovy, N., Bondeau, A., Chen, Y., Trusilova, K., Feser, F., Heimann, M., 2007. Uncertainties of modeling gross primary productivity over Europe: A systematic study on the effects of using different drivers and terrestrial biosphere models. Global Biogeochemical Cycles 21, Gb4021. doi: 10.1029/2006gb002915

Luyssaert, S., Inglima, I., Jung, M., Richardson, A.D., **Reichstein, M.**, Papale, D., Piao, S.L., Schulze, E.D., Wingate, L., Matteucci, G., Aragao, L., Aubinet, M., Beer, C., Bernhoffer, C., Black, K.G., Bonal, D., Bonnefond, J.M., Chambers, J., Ciais, P., Cook, B., Davis, K.J., Dolman, A.J., Gielen, B., Goulden, M., Grace, J., Granier, A., Grelle, A., Griffis, T., Grunwald, T., Guidolotti, G., Hanson, P.J., Harding, R., Hollinger, D.Y., Hutyra, L.R., Kolar, P., Kruijt, B., Kutsch, W.L., Lagergren, F., Laurila, T., Law, B.E., Le Maire, G., Lindroth, A., Loustau, D., Malhi, Y., Mateus, J., Migliavacca, M., Misson, L., Montagnani, L., Moncrieff, J., Moors, E., Munger, J.W., Nikinmaa, E., Ollinger, S.V., Pita, G., Rebmann, C., Roupsard, O., Saigusa, N., Sanz, M.J., Seufert, G., Sierra, C.A., Smith, M.L., Tang, J., Valentini, R., Vesala, T., Janssens, I.A., 2007. The CO2 balance of boreal, temperate, and tropical forests derived from a global database. Global Change Biology 13, 2509 - 2537. doi: 10.1111/j.1365-2486.2007.01439.x

Luyssaert, S., Janssens, I.A., Sulkava, M., Papale, D., Dolman, A.J., **Reichstein, M.**, Hollmen, J., Martin, J.G., Suni, T., Vesala, T., Loustau, D., Law, B.E., Moors, E.J., 2007. Photosynthesis drives anomalies in net carbon-exchange of pine forests at different latitudes. Global Change Biology 13, 2110 - 2127. doi: 10.1111/j.1365-2486.2007.01432.x

Mahecha, M.D., **Reichstein, M.**, Lange, H., Carvalhais, N., Bernhofer, C., Grunwald, T., Papale, D., Seufert, G., 2007. Characterizing ecosystem-atmosphere interactions from short to interannual time scales. Biogeosciences 4, 743 - 758. doi: 10.5194/bg-4-743-2007

Miglietta, F., Gioli, B., Hutjes, R.W.A., **Reichstein, M.**, 2007. Net regional ecosystem CO2 exchange from airborne and ground-based eddy covariance, land-use maps and weather observations. Global Change Biology 13, 548 - 560. doi: 10.1111/j.1365-2486.2006.01219.x

Moffat, A.M., Papale, D., **Reichstein, M.**, Hollinger, D.Y., Richardson, A.D., Barr, A.G., Beckstein, C., Braswell, B.H., Churkina, G., Desai, A.R., Falge, E., Gove, J.H., Heimann, M., Hui, D.F., Jarvis, A.J., Kattge, J., Noormets, A., Stauch, V.J., 2007. Comprehensive comparison of gap-filling techniques for eddy covariance net carbon fluxes. Agricultural and Forest Meteorology 147, 209 - 232. doi: 10.1016/j.agrformet.2007.08.011

Owen, K.E., Tenhunen, J., **Reichstein, M.**, Wang, Q., Falge, E., Geyer, R., Xiao, X.M., Stoy, P., Ammann, C., Arain, A., Aubinet, M., Aurela, M., Bernhofer, C., Chojnicki, B.H., Granier, A., Gruenwald, T., Hadley, J., Heinesch, B., Hollinger, D., Knohl, A., Kutsch, W.L., Lohila, A., Meyers, T., Moors, E., Moureaux, C., Pilegaard, K., Saigusa, N., Verma, S., Vesala, T., Vogel, C., 2007. Linking flux network measurements to continental scale simulations: ecosystem carbon dioxide exchange capacity under non-water-stressed conditions. Global Change Biology 13, 734 - 760. doi: 10.1111/j.1365-2486.2007.01326.x

**Reichstein, M.**, Ciais, P., Papale, D., Valentini, R., Running, S., Viovy, N., Cramer, W., Granier, A., Ogee, J., Allard, V., Aubinet, M., Bernhofer, C., Buchmann, N., Carrara, A., Grunwald, T., Heimann, M., Heinesch, B., Knohl, A., Kutsch, W.L., Loustau, D., Manca, G., Matteucci, G., Miglietta, F., Ourcival, J.M., Pilegaard, K., 2007. Reduction of ecosystem productivity and respiration during the European summer 2003 climate anomaly: a joint flux tower, remote sensing and modelling analysis. Global Change Biology 13, 634 - 651. doi: 10.1111/j.1365-2486.2006.01224.x

**Reichstein, M.**, Papale, D., Valentini, R., Aubinet, M., Bernhofer, C., Knohl, A., Laurila, T., Lindroth, A., Moors, E., Pilegaard, K., Seufert, G., 2007. Determinants of terrestrial ecosystem carbon balance inferred from European eddy covariance flux sites. Geophysical Research Letters 34, L01402. doi: 10.1029/2006gl027880

Trudinger, C.M., Raupach, M.R., Rayner, P.J., Kattge, J., Liu, Q., Pak, B., **Reichstein, M.**, Renzullo, L., Richardson, A.D., Roxburgh, S.H., Styles, J., Wang, Y.P., Briggs, P., Barrett, D., Nikolova, S., 2007. OptIC project: An intercomparison of optimization techniques for parameter estimation in terrestrial biogeochemical models. Journal of Geophysical Research: Biogeosciences 112. doi: 10.1029/2006jg000367

Wutzler, T., **Reichstein, M.**, 2007. Soils apart from equilibrium - consequences for soil carbon balance modelling. Biogeosciences 4, 125 - 136. doi: 10.5194/bg-4-125-2007

Zobitz, J.M., Burns, S.P., Ogee, J., **Reichstein, M.**, Bowling, R., 2007. Partitioning net ecosystem exchange of CO2: A comparison of a Bayesian/isotope approach to environmental regression methods. Journal of Geophysical Research: Biogeosciences 112. doi: 10.1029/2006jg000282

***2006***

Adiku, S.G.K., **Reichstein, M.**, Lohila, A., Dinh, N.Q., Aurela, M., Laurila, T., Lueers, J., Tenhunen, J.D., 2006. PIXGRO: A model for simulating the ecosystem CO2 exchange and growth of spring barley. Ecological Modelling 190, 260 - 276. doi: 10.1016/j.ecolmodel.2005.04.024

Chevallier, F., Viovy, N., **Reichstein, M.**, Ciais, P., 2006. On the assignment of prior errors in Bayesian inversions of CO2 surface fluxes. Geophysical Research Letters 33, L13802. doi: 10.1029/2006gl026496

Papale, D., **Reichstein, M.**, Aubinet, M., Canfora, E., Bernhofer, C., Kutsch, W., Longdoz, B., Rambal, S., Valentini, R., Vesala, T., Yakir, D., 2006. Towards a standardized processing of Net Ecosystem Exchange measured with eddy covariance technique: algorithms and uncertainty estimation. Biogeosciences 3, 571 - 583. doi: 10.5194/bg-3-571-2006

**Reichstein, M.**, 2006. Integration of FLUXNET and Earth observation data with biogeochemical modelling. iLEAPS Newsletter 3, 32 - 34.

Wang, Q., Tenhunen, J., Schmidt, M., Kolcun, O., Droesler, M., **Reichstein, M.**, 2006. Estimation of total, direct and diffuse PAR under clear skies in complex alpine terrain of the National Park Berchtesgaden, Germany. Ecological Modelling 196, 149 - 162. doi: 10.1016/j.ecolmodel.2006.02.005

***2005***

Ciais, P., **Reichstein, M.**, Viovy, N., Granier, A., Ogée, J., Allard, V., Aubinet, M., Buchmann, N., Bernhofer, C., Carrara, A., Chevallier, F., De Noblet, N., Friend, A.D., Friedlingstein, P., Grünwald, T., Heinesch, B., Keronen, P., Knohl, A., Krinner, G., Loustau, D., Manca, G., Matteucci, G., Miglietta, F., Ourcival, J.M., Papale, D., Pilegaard, K., Rambal, S., Seufert, G., Soussana, J.F., Sanz, M.J., Schulze, E.D., Vesala, T., Valentini, R., 2005. Europe-wide reduction in primary productivity caused by the heat and drought in 2003. Nature 437, 529 - 533. doi: 10.1038/nature03972

Hibbard, K., Law, B.E., **Reichstein, M.**, Sulzman, J., Aubinet, M., Baldocchi, D., Bernhofer, C., Bolstad, P., Bosc, A., Campbell, J., Cheng, Y., Yuste, J.C., Curtis, P., Davidson, E.A., Epron, D., Granier, A., Grünwald, T., Hollinger, D., Janssens, I.A., Longdoz, B., Loustau, D., Martin, J., Monson, R., Oechel, W., Pippen, J., Ryel, R., Savage, K., Scott-Denton, L., Subke, J.-A., Tang, J., Tenhunen, J., Turcu, V., Vogel, C.S., 2005. An analysis of soil respiration across northern hemisphere temperate ecosystems. Biogeochemistry 73, 29 - 70. doi: 10.1007/s10533-004-2946-0

Jolly, W.M., Dobbertin, M., Zimmermann, N.E., **Reichstein, M.**, 2005. Divergent vegetation growth responses to the 2003 heat wave in the Swiss Alps. Geophysical Research Letters 32, L18409. doi: 10.1029/2005gl023252

**Reichstein, M.**, Falge, E., Baldocchi, D., Papale, D., Aubinet, M., Berbigier, P., Bernhofer, C., Buchmann, N., Gilmanov, T., Granier, A., Grünwald, T., Havránková, K., Ilvesniemi, H., Janous, D., Knohl, A., Laurila, T., Lohila, A., Loustau, D., Matteucci, G., Meyers, T., Miglietta, F., Ourcival, J.-M., Pumpanen, J., Rambal, S., Rotenberg, E., Sanz, M., Tenhunen, J., Seufert, G., Vaccari, F., Versala, T., Yakir, D., Valentini, R., 2005. On the separation of net ecosystem exchange into assimilation and ecosystem respiration: review and improved algorithm. Global Change Biology 11, 1424 - 1439. doi: 10.1111/j.1365-2486.2005.001002.x

**Reichstein, M.**, Kätterer, T., Andrén, O., Ciais, P., Schulze, E.-D., Cramer, W., Papale, D., Valentini, R., 2005. Temperature sensitivity of decomposition in relation to soil organic matter pools: critique and outlook. Biogeosciences 2, 317 - 321. doi: 10.5194/bg-2-317-2005

**Reichstein, M.**, Subke, J.-A., Angeli, A.C., Tenhunen, J.D., 2005. Does the temperature sensitivity of decomposition of soil organic matter depend upon water content, soil horizon, or incubation time? Global Change Biology 11, 1754 - 1767. doi: 10.1111/j.1365-2486.2005.001010.x

Reth, S., **Reichstein, M.**, Falge, E., 2005. The effect of soil water content, soil temperature, soil pH-value and the root mass on soil CO2 efflux - A modified model. Plant and Soil 268, 21 - 33. doi: 10.1007/s11104-005-0175-5

Wang, Q., Tenhunen, J., Dinh, N.Q., **Reichstein, M.**, Otieno, D., Granier, A., Pilegaard, K., 2005. Evaluation of seasonal variation of MODIS derived leaf area index at two European deciduous broadleaf forest sites. Remote Sensing of Environment 96, 475 - 484. doi: 10.1016/j.rse.2005.04.003

***2004***

Niinemets, U., Loreto, F., **Reichstein, M.**, 2004. Physiological and physicochemical controls on foliar volatile organic compound emissions. Trends in Plant Science 9, 180 - 186. doi: 10.1016/j.tplants.2004.02.006

Schmitgen, S., Geiss, H., Ciais, P., Neininger, B., Brunet, Y., **Reichstein, M.**, Kley, D., Volz-Thomas, A., 2004. Carbon dioxide uptake of a forested region in southwest France derived from airborne CO2 and CO measurements in a quasi-Lagrangian experiment. Journal of Geophysical Research: Atmospheres 109. doi: 10.1029/2003jd004335

Wang, Q., Tenhunen, J., Dinh, N.Q., **Reichstein, M.**, Vesala, T., Keronen, P., 2004. Similarities in ground- and satellite-based NDVI time series and their relationship to physiological activity of a Scots pine forest in Finland. Remote Sensing of Environment 93, 225 - 237. doi: 10.1016/j.rse.2004.07.006

Wang, Q., Tenhunen, J., Granier, A., **Reichstein, M.**, Bouriaud, O., Nguyen, D., Breda, N., 2004. Long-term variations in leaf area index and light extinction in a Fagus sylvatica stand as estimated from global radiation profiles. Theoretical and Applied Climatology 79, 225 - 238. doi: 10.1007/s00704-004-0074-3

***2003***

Ludwig, R., Mauser, W., Niemeyer, S., Colgan, A., Stolz, R., Escher-Vetter, H., Kuhn, M., **Reichstein, M.**, Tenhunen, J., Kraus, A., Ludwig, M., Barth, M., Hennicker, R., 2003. Web-based modelling of energy, water and matter fluxes to support decision making in mesoscale catchments - the integrative perspective of GLOWA-Danube. Physics and Chemistry of the Earth 28, 621 - 634. doi: 10.1016/s1474-7065(03)00108-6

Niinemets, U., **Reichstein, M.**, 2003. Controls on the emission of plant volatiles through stomata: A sensitivity analysis. Journal of Geophysical Research: Atmospheres 108. doi: 10.1029/2002jd002626

Niinemets, U., **Reichstein, M.**, 2003. Controls on the emission of plant volatiles through stomata: Differential sensitivity of emission rates to stomatal closure explained. Journal of Geophysical Research: Atmospheres 108. doi: 10.1029/2002jd002620

Rambal, S., Ourcival, J.M., Joffre, R., Mouillot, F., Nouvellon, Y., **Reichstein, M.**, Rocheteau, A., 2003. Drought controls over conductance and assimilation of a Mediterranean evergreen ecosystem: scaling from leaf to canopy. Global Change Biology 9, 1813 - 1824. doi: 10.1046/j.1529-8817.2003.00687.x

**Reichstein, M.**, Rey, A., Freibauer, A., Tenhunen, J., Valentini, R., Banza, J., Casals, P., Cheng, Y.F., Grünzweig, J.M., Irvine, J., Joffre, R., Law, B.E., Loustau, D., Miglietta, F., Oechel, W., Ourcival, J.-M., Pereira, J.S., Peressotti, A., Ponti, F., Qi, Y., Rambal, S., Rayment, M., Romanya, J., Rossi, F., Tedeschi, V., Tirone, G., Xu, M., Yakir, D., 2003. Modeling temporal and large-scale spatial variability of soil respiration from soil water availability, temperature and vegetation productivity indices. Global Biogeochemical Cycles 17, 1104. doi: 10.1029/2003gb002035

**Reichstein, M.**, Tenhunen, J., Roupsard, O., Ourcival, J.M., Rambal, S., Miglietta, F., Peressotti, A., Pecchiari, M., Tirone, G., Valentini, R., 2003. Inverse modeling of seasonal drought effects on canopy CO2 H2O exchange in three Mediterranean ecosystems. Journal of Geophysical Research: Atmospheres 108. doi: 10.1029/2003jd003430

Subke, J.A., **Reichstein, M.**, Tenhunen, J.D., 2003. Explaining temporal variation in soil CO2 efflux in a mature spruce forest in Southern Germany. Soil Biology and Biochemistry 35, 1467 - 1483. doi: 10.1016/s0038-0717(03)00241-4

***2002***

Hungate, B.A., **Reichstein, M.**, Dijkstra, P., Johnson, D., Hymus, G., Tenhunen, J.D., Hinkle, C.R., Drake, B.G., 2002. Evapotranspiration and soil water content in a scrub-oak woodland under carbon dioxide enrichment. Global Change Biology 8, 289 - 298. doi: 10.1046/j.1365-2486.2002.00468.x

Niinemets, U., **Reichstein, M.**, 2002. A model analysis of the effects of nonspecific monoterpenoid storage in leaf tissues on emission kinetics and composition in Mediterranean sclerophyllous Quercus species. Global Biogeochemical Cycles 16. doi: 10.1029/2002gb001927

Niinemets, U., **Reichstein, M.**, Staudt, M., Seufert, G., Tenhunen, J.D., 2002. Stomatal constraints may affect emission of oxygenated monoterpenoids from the foliage of Pinus pinea. Plant Physiology 130, 1371 - 1385. doi: 10.1104/pp.009670

**Reichstein, M.**, Tenhunen, J.D., Roupsard, O., Ourcival, J.M., Rambal, S., Dore, S., Valentini, R., 2002. Ecosystem respiration in two Mediterranean evergreen Holm Oak forests: drought effects and decomposition dynamics. Functional Ecology 16, 27 - 39. doi: 10.1046/j.0269-8463.2001.00597.x

**Reichstein, M.**, Tenhunen, J.D., Roupsard, O., Ourcival, J.M., Rambal, S., Miglietta, F., Peressotti, A., Pecchiari, M., Tirone, G., Valentini, R., 2002. Severe drought effects on ecosystem CO2 and H2O fluxes at three Mediterranean evergreen sites: revision of current hypotheses? Global Change Biology 8, 999 - 1017. doi: 10.1046/j.1365-2486.2002.00530.x

***Before 2002***

Bednorz, F., **Reichstein, M.**, Broll, G., Holtmeier, F.-K., Urfer, W., 2000. Humus forms in the forest-alpine tundra ecotone at Stillberg (Dischmatal, Switzerland): spatial heterogeneity and classification. Arctic, Antarctic, and Alpine Research 32, 21 - 29. doi: 10.2307/1552406

**Reichstein, M.**, Bednorz, F., Broll, G., Katterer, T., 2000. Temperature dependence of carbon mineralisation: conclusions from a long-term incubation of subalpine soil samples. Soil Biology and Biochemistry 32, 947 - 958. doi: 10.1016/s0038-0717(00)00002-x

Katterer, T., **Reichstein, M.**, Andren, O., Lomander, A., 1998. Temperature dependence of organic matter **decomposition**: a critical review using literature data analyzed with different models. Biology and Fertility of Soils 27, 258 - 262. doi: 10.1007/s003740050430

**Book Sections and other publications**

**Reichstein, M.**, Ahrens, B., Kraft, B., Camps-Valls, G., Carvalhais, N., Gans, F., Gentine, P., and Winkler, A. J.: Combining System Modeling and Machine Learning into Hybrid Ecosystem Modeling, in: Knowledge-Guided Machine Learning, edited by: Karpatne, A., Kannan, R., and Kumar, V., Chapman & Hall, London, 327-352, 2022.

Sillmann, J., Christensen, I., Hochrainer-Stigler, S., Huang-Lachmann, J.-T., Juhola, S., Kornhuber, K., Mahecha, M. D., Mechler, R., **Reichstein, M.**, Ruane, A. C., Schweizer, P.-J., and Williams, S.: Briefing note on systemic risk, International Science Council, 1 - 35, 10.24948/2022.01, 2022.

Adsuara, J.E., Perez-Suay, A., Moreno-Martınez, A., Camps-Valls, G., Kraemer, G., **Reichstein, M.**, Mahecha, M.D., 2021. Discovering differential equations from earth observation data, IGARSS 2020 - 2020 IEEE International Geoscience and Remote Sensing Symposium. IEEE, Waikoloa, HI, USA, pp. 3999 - 4002. doi: 10.1109/igarss39084.2020.9324639

Camps-Valls, G., Tuia, D., Zhu, X.X., **Reichstein, M.**, 2021. Deep learning for the earth sciences: A comprehensive approach to remote sensing, climate science, and geosciences. John Wiley & Sons Ltd, Hoboken, New Jersey, p. 405. doi: 10.1002/9781119646181

Camps-Valls, G., **Reichstein, M.**, Zhu, X., Tuia, D., 2020. Advancing deep learning for earth sciences: From hybrid modeling to interpretability, IGARSS 2020 - 2020 IEEE INTERNATIONAL GEOSCIENCE AND REMOTE SENSING SYMPOSIUM, ELECTR NETWORK, pp. 3979 - 3982. doi: 10.1109/igarss39084.2020.9323558

**Reichstein, M.**, 2020. How can artificial intelligence enhance our understanding of the earth system?, Latest Thinking Video. doi: 10.21036/ltpub10819

**Reichstein, M.**, Frank, D., Sillmann, J., Sippel, S., 2019. Outlook: Challenges for societal resilience under climate extremes, in: Sillmann, J., Sippel, S., Russo, S. (Eds.), Climate extremes and their implications for impact and risk assessment. Elsevier, Amsterdam, pp. 341 - 353. doi: 10.1016/b978-0-12-814895-2.00018-5

Requena-Mesa, C., **Reichstein, M.**, Mahecha, M.D., Kraft, B., Denzler, J., 2019. Predicting landscapes from environmental conditions using generative networks, in: Fink, G.A., Frintrop, S., Jiang, X. (Eds.), Pattern Recognition, DAGM GCPR 2019. Springer, Cham, pp. 203 - 217. doi: 10.1007/978-3-030-33676-9\_14

Trifunov, V.T., Shadaydeh, M., Runge, J., Eyring, V., **Reichstein, M.**, Denzler, J., 2019. Nonlinear causal link estimation under hidden confounding with an application to time series anomaly detection, in: Fink, G.A., Frintrop, S., Jiang, X. (Eds.), Pattern Recognition, DAGM GCPR 2019. Springer, Cham, pp. 261 - 273. doi: 10.1007/978-3-030-33676-9\_18

García, Y.G., Shadaydeh, M., Mahecha, M.D., **Reichstein, M.**, Denzler, J., 2018. BACI: Towards a biosphere atmosphere change index - Detection of extreme events in the biosphere, BigSkyEarth conference: AstroGeoInformatics, Tenerife, Spain, pp. 1 - 6. doi: 10.5281/zenodo.1451227

Martini, D., Pacheco-Labrador, J., Perez‑Priego, O., van der Tol, C., El-Madany, T.S., Julitta, T., Rossini, M., Gitelson, A., **Reichstein, M.**, Migliavacca, M., 2018. Photosynthesis-sun induced fluorescence relationship in a mediterranean grassland, International Geoscience and Remote Sensing Symposium (IGARSS). Institute of Electrical and Electronics Engineers Inc., Valencia, Spain, pp. 5979 - 5982. doi: 10.1109/igarss.2018.8517362

Pacheco-Labrador, J., Carvalhais, N., Perez-Priego, O., El-Madany, T.S., Rossini, M., Julitta, T., Moreno, G., González-Cascón, R., Martín, M.P., **Reichstein, M.**, Carrara, A., Guanter, L., Migliavacca, M., 2018. Assessing the use of multiple constraints and ancillary data to support scope model inversion in a experimental grassland, International Geoscience and Remote Sensing Symposium (IGARSS). Institute of Electrical and Electronics Engineers Inc., Valencia, Spain, pp. 5975 - 5978. doi: 10.1109/igarss.2018.8518487

**Reichstein, M.**, Besnard, S., Carvalhais, N., Gans, F., Jung, M., Kraft, B., Mahecha, M.D., 2018. Modelling landsurface time-series with recurrent neural nets, 2018 IEEE International geoscience and remote sensing symposium (IGARSS). Valencia, pp. 7640 - 7643. doi: 10.1109/igarss.2018.8518007

Requena-Mesa, C., **Reichstein, M.**, Mahecha, M.D., Kraft, B., Denzler, J., 2018. Predicting landscapes as seen from space from environmental conditions, 2018 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), pp. 1768 - 1771. doi: 10.1109/igarss.2018.8519427

Shadaydeh, M., Garcia, Y.G., Mahecha, M.D., **Reichstein, M.**, Denzler, J., 2018. Causality analysis of ecological time series: a time-frequency approach, in: Chen, C., Cooley, D., Runge, J., Szekely, E. (Eds.), 8th International Workshop on Climate Informatics: CI 2018, Boulder, Colorado, pp. 111 - 114. doi: 10.5065/d6bz64xq

Rodner, E., Barz, B., Guanche, Y., Flach, M., Mahecha, M.D., Bodesheim, P., **Reichstein, M.**, Denzler, J., 2016. Maximally divergent intervals for anomaly detection, ICML 2016 Anomaly Detection Workshop, New York (USA). doi: 10.17871/BACI\_ICML2016\_Rodner

Camps-Valls, G., Jung, M., Ichii, K., Papale, D., Tramontana, G., Bodesheim, P., Schwalm, C., Zscheischler, J., Mahecha, M.D., **Reichstein, M.**, 2015. Ranking drivers of global carbon and energy fluxes over land, IEEE International Symposium on Geoscience and Remote Sensing IGARSS, pp. 4416 - 4419. doi: 10.1109/igarss.2015.7326806

**Reichstein, M.**, Richardson, A.D., Migliavacca, M., Carvalhais, N., 2014. Plant–environment interactions across multiple scales, in: Monson, R.K. (Ed.), Ecology and the Environment. Springer, New York Dordrecht, Heidelberg, New York, London, pp. 1 - 27. doi: 10.1007/978-1-4614-7612-2\_22-1

Frank, D., **Reichstein, M.**, Miglietta, F., Pereira, J.S., 2013. Impact of climate variability and extremes on the carbon cycle of the Mediterranean region, in: Navarra, A., Tubiana, L. (Eds.), Regional Assessment of Climate Change in the Mediterranean; Volume 2: Agriculture, Forests and Ecosystem Services and People. Springer, New York, pp. 31 - 47. doi: 10.1007/978-94-007-5769-1

Aubinet, M., Feigenwinter, C., Heinesch, B., Laffineur, Q., Papale, D., **Reichstein, M.**, Rinne, J., van Gorsel, E., 2012. Nighttime flux correction, in: Aubinet, M., Vesala, T., Papale, D. (Eds.), Eddy Covariance: A Practical Guide to Measurement and Data Analysis Series: Springer Atmospheric Sciences.

**Reichstein, M.**, Stoy, P.C., Desai, A.R., Lasslop, G., Richardson, A.D., 2012. Partitioning of net fluxes, in: Aubinet, M., Vasala, T., Papale, D. (Eds.), Eddy Covariance: A Practical Guide to Measurement and Data Analysis. Springer, Atmospheric Sciences, pp. 263 - 289.

Richardson, A.D., Aubinet, M., Barr, A.G., Hollinger, D.Y., Ibrom, A., Lasslop, G., **Reichstein, M.**, 2012. Uncertainty quantification, in: Aubinet, M., Vesala, T., Papale, D. (Eds.), Eddy Covariance: A Practical Guide to Measurement and Data Analysis.

Seneviratne, S.I., Easterling, D., Goodess, C.M., Kanae, S., Kossin, J., Luo, Y., Marengo, J., McInnes, K., Rahimi, M., **Reichstein, M.**, Sorteberg, A., Vera, C., Zhang, X., 2012. Changes in climate extremes and their impacts on the natural physical environment, in: Field, C.B., Barros, V., Stocker, T.F., Qin, D., Dokken, D.J., Ebi, K.L., Mastrandrea, M.D., Mach, K.J., Plattner, G.-K., Allen, S.K., Tignor, M., Midgley, P.M. (Eds.), Managing the risks of extreme events and disasters to advance climate change adaptation: Special report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, pp. 109 - 230.

Shan, H., Kattge, J., Reich, P., Banerjee, A., Schrodt, F., **Reichstein, M.**, 2012. Gap filling in the plant kingdom - Trait prediction using hierarchical probabilistic matrix factorization, in: Langford, J. (Ed.), Proceedings of the International Conference for Machine Learning (ICML). International Conference on Machine Learning, pp. 1303 - 1310.

**Reichstein, M.**, Ågren, G.I., Fontaine, S., 2009. Is there a theoretical limit to soil carbon storage in old-growth forests? A model analysis with contrasting approaches, in: Wirth, C., Gleixner, G., Heimann, M. (Eds.), Old-Growth Forests. Springer, Berlin, pp. 267 - 281. doi: 10.1007/978-3-540-92706-8\_12

**Reichstein, M.**, Janssens, I.A., 2009. Semi-empirical modelling of the response of soil respiration to environmental factors in laboratory and field conditions, in: Kutsch, W., Bahn, M., Heinemeyer, A. (Eds.), Soil Carbon Dynamics - an Integrated Methodology. Cambridge Univ. Press, Cambridge, pp. 207 - 220.

Subke, J.-A., Heinemeyer, A., **Reichstein, M.**, 2009. Experimental design: scaling up in time and space, and its statistical considerations, in: Kutsch, W., Bahn, M., Heinemeyer, A. (Eds.), Soil Carbon Dynamics - an Integrated Methodology. Cambridge Univ. Press, Cambridge, pp. 34 - 48.

**Reichstein, M.**, 2007. Impact of climate change on forest soil carbon - Principles, Factors, Models, Uncertainties, in: Freer-Smith, P.H., Broadmeadow, M.S.J., Lynch, J.M. (Eds.), Forestry and climate change. CABI Publ., Wallingford, pp. 127 - 135.

**Reichstein, M.**, Tenhunen, J., Berbigier, P., Magliulo, E., Miglietta, F., Ourcival, J.-M., Pecchiari, M., Peressotti, A., Rambal, S., Valentini, R., Vitullo, M., 2001. Mediterranean ecosystem carbon and water exchange in response to drought: monospecific evergreen forest versus multi-species macchia, Funktionelle Bedeutung von Biodiversität. Parey, Berlin, pp. 154 - 154.

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