

Lebenslauf

Prof. Dr. Markus Reichstein

Geboren: 25.09.1972 in Kiel

Familienstand: verheiratet, 4 Kinder

Kontakt: Max-Planck-Institut für Biogeochemie
Abteilung Biogeochemische Integration
Hans-Knöll-Straße 10, 07745 Jena
Tel.: +49 3641 576200, Fax: +49 3641 577200
E-mail: reichstein-office@bgc-jena.mpg.de
URL Webseite: <https://www.bgc-jena.mpg.de/bgi/>
Twitter: @Reichstein_BGC
ORCID ID: 0000-0001-5736-1112; Publons Researcher ID: 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 (Microsoft) Seed Award für hervorragende Leistungen im Bereich E-Science
2009	Essential Science Indicators “Hot paper” (von Sciencewatch) für Moffat, Papale, Reichstein et al., 2007
2008	ERC Starting Grant QUASOM
2008	“Rising star in Environment & Ecology” (Classified by essential science indicators - Sciencewatch)
2005, 2007, 2008	CARBOEUROPE Preis <i>best young scientist paper award</i> für (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 <i>Knowledge Action Network on Emergent Risks and Extreme Events</i> (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 Komitees für Nachhaltigkeitsforschung in Future Earth
2018-2021	Leitung Steuerungsteam <i>Knowledge Action Network on Emergent Risks and Extreme Events</i> (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 (E ³ S)
2012	Hauptautor des IPCC-Sonderberichts über Klimaextreme (SREX), WG I.
2009-2013	Koordinator EU FP7 Projekt CARBO-Extreme
2008-2014	Mitglied des wissenschaftlichen Beratergremiums von iLEAPS/IGBP
2007-2015	Mitglied des wissenschaftlichen Beratergremiums von FLUXNET Synthesis

Mitglied Redaktionsgremien

One Earth (2019-2024), 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, E ³ S, EU FP6, FP7 und H2020 Projekten.

Aktuell geförderte Projekte (Auswahl)

WeatherGenerator (2025-2029), AI4PEX, (2024-2027), ELIAS (2023-2027), Max-Planck Caltech Carnegie Columbia (MC³) Center 4 Earth (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 (2022-2025), H2020 *Myriad-EU* (2021-2025), H2020 *XAIDA* (2021-2025), DFG *NFDI4Earth* (2021-2026), H2020 *USMILE* (2020-2026); DLR *Project Office BIOMASS* (2020-2025); 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 (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-atmosphere interactions under climate change*

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

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

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

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

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

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

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

2025

Poehls, J., Alonso, L., Koirala, S., **Reichstein, M.**, Carvalhais, N.: Downscaling soil moisture to sub-km resolutions with simple machine learning ensembles. *Journal of Hydrology*, 652, 132624. <https://doi.org/https://doi.org/10.1016/j.jhydrol.2024.132624>, 2025.

2024

Benson, V., Robin C., Requena-Mesa C, Alonso L., Carvalhais N., Cortés J., Gao Z., Linscheid N., Weynants M., **Reichstein M.**: Multi-modal Learning for Geospatial Vegetation Forecasting. *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.ijdr.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.; Leitaó, 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.; Teuling, A. J.; Koirala, S.; **Reichstein, M.**; Balsamo, G.; Vogel, M. M.; Yu, X.; Orth, R.: 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.; Brenning, A.; Li, W.; **Reichstein, M.**; Denzler, J.; Shangguan, W.; Yu, G.; Huang, F. et al.: 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.; Sippel, S.; Linscheid, N.; Rödenbeck, C.; Winkler, A.; **Reichstein, M.**; Mahecha, M. D.; Bastos, A.: Enhanced global carbon cycle sensitivity to tropical temperature linked to internal climate variability. *Science Advances* 10 (39), eadl6155, 10.1126/sciadv.adl6155, 2024.

Li, W.; Duveiller, G.; Wieneke, S.; Forkel, M.; Gentine, P.; **Reichstein, M.**; Niu, S.; Migliavacca, M.; Orth, R.: 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.; 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.; 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.; 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.; Schrupf, 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., Op de Beeck, M., Billesbach, 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. A., 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., Gharun, M., Marzuoli, R., Matamala, R., Metzger, S., Montagnani, L., Nicolini, G., O'Halloran, T., Ourcival, J.-M., Peichl, M., Pendall, E., Ruiz Reverter, B., 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*, *Biogeosciences*, 21, 5079–5115, <https://doi.org/10.5194/bg-21-5079-2024>, 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., Tárrega, 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 intelligence 2693-5015, 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., Doblus-Reyes, F., Durran, D., El Gaidi, A., Ewen, C., Exarchou, E., Eyring, V., Falkinoff, 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., Hoeffler, 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 Ziemann, 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.
- EIGHawi, R.; Kraft, B.; Reimers, C.; **Reichstein, M.**; Körner, M.; Gentine, P.; Winkler, A. J., 2023. Hybrid modeling of evapotranspiration: inferring stomatal and aerodynamic resistances using combined physics-based and machine learning. *Environmental Research* 18, 034039. <https://iopscience.iop.org/article/10.1088/1748-9326/acbbe0>
- 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.
- Gomasasca, 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., Schrupf, 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*, Singapore, 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.; Jung, M.; Migliavacca, M.; Poyatos, R.; Miralles, D. G.; El-Madany, T. S.; Galvagno, M.; Carrara, A.; Arriga, N.; Ibrom, A. ; Mammarella, I.; Papale, D.; Cleverly, J. R.; Liddell, M.; Wohlfahrt, G.; Markwitz, C.; Mauder, M.; Paul-Limoges, E.; Schmidt, M.; Wolf, S.; Brümmer, C.; Arain, M. A.; Fares, S.; Kato, T.; Ardö, J.; Oechel, W.; Hanson, C.; Korkiakoski, M.; Biraud, S.; Steinbrecher, R.; Billesbach, D.; Montagnani, L.; Woodgate, W.; Shao, C.; Carvalhais, N.; **Reichstein, M.**; Nelson, J. A., 2022. The effect of relative humidity on eddy covariance latent heat flux measurements and its implication for partitioning into transpiration and evaporation. *Agricultural and Forest Meteorology* 330, 109305.

2022

- Cortes-Andres, J., Camps-Valls, G., Sippel, S., Szekely, E., Sejdinovic, D., Diaz, E., Perez-Suay, A., Li, Z., Mahecha, M., **Reichstein, M.**, 2022. Physics-aware nonparametric regression models for Earth data analysis. *Environmental Research Letters*, 17(5), Article 054034. <https://doi.org/10.1088/1748-9326/ac6762>
- Denissen, J. M. C., Teuling, A. J., Pitman, A. J., Koirala, S., Migliavacca, M., Li, W. T., **Reichstein, M.**, Winkler, A. J., Zhan, C. H., Orth, R., 2022. Widespread shift from ecosystem energy to water limitation with climate change. *Nature Climate Change*, 12(7), 677-+. <https://doi.org/10.1038/s41558-022-01403-8>
- Fan, N., **Reichstein, M.**, Koirala, S., Mahecha, M., Ahrens, B., Carvalhais, N., 2022 Global apparent temperature sensitivity of terrestrial carbon turnover modulated by hydrometeorological factors. *Nat. Geosci.* 15, 989–994 (2022). <https://doi.org/10.1038/s41561-022-01074-2>

- Harris, E., Yu, L., Wang, Y. P., Mohn, J., Henne, S., Bai, E., Barthel, M., Bauters, M., Boeckx, P., Dorich, C., Farrell, M., Krummel, P. B., Loh, Z. M., **Reichstein, M.**, Six, J., Steinbacher, M., Wells, N. S., Bahn, M., and Rayner, P.: Warming and redistribution of nitrogen inputs drive an increase in terrestrial nitrous oxide emission factor, *Nat Commun*, 13, 4310, 10.1038/s41467-022-32001-z, 2022.
- Joswig, J., Wirth, C., Schuman, M. C., Kattge, J., Reu, B., Wright, I. J., Sippel, S. D., Rüger, N., Richter, R., Schaepman, M. E., van Bodegom, P. M., Cornelissen, J. H. C., Díaz, S., Hatttingh, W. N., Kramer, K., Lens, F., Niinemets, Ü., Reich, P. B., **Reichstein, M.**, Römermann, C., Schrod, F., Anand, M., Bahn, M., Byun, C., Campetella, G., Cerabolini, B. E. L., Craine, J. M., Gonzalez-Melo, A., Gutiérrez, A. G., He, T., Higuchi, P., Jactel, H., Kraft, N. J. B., Minden, V., Onipchenko, V., Peñuelas, J., Pillar, V. D., Sosinski, É., Soudzilovskaia, N. A., Weiher, E., Mahecha, M. D., 2022. Climatic and soil factors explain the two-dimensional spectrum of global plant trait variation. *Nature Ecology & Evolution*, 6, 36-50. doi:10.1038/s41559-021-01616-8
- Kraft, B., Jung, M., Korner, M., Koirala, S., **Reichstein, M.**, 2022. Towards hybrid modeling of the global hydrological cycle. *Hydrology and Earth System Sciences*, 26(6), 1579-1614. <https://doi.org/10.5194/hess-26-1579-2022>
- Kucuk, C., Koirala, S., Carvalhais, N., Miralles, D. G., **Reichstein, M.**, Jung, M., 2022. Characterizing the Response of Vegetation Cover to Water Limitation in Africa Using Geostationary Satellites. *Journal of Advances in Modeling Earth Systems*, 14(3), Article e2021MS002730. <https://doi.org/10.1029/2021ms002730>
- Kucuk, C., Koirala, S., Carvalhais, N., Miralles, D. G., **Reichstein, M.**, Jung, M., 2022. Observation-based assessment of secondary water effects on seasonal vegetation decay across Africa. *Frontiers in Big Data*, 5, Article 967477. <https://doi.org/10.3389/fdata.2022.967477>
- Li, N., Sippel, S., Winkler, A. J., Mahecha, M. D., **Reichstein, M.**, Bastos, A., 2022. Interannual global carbon cycle variations linked to atmospheric circulation variability. *Earth System Dynamics*, 13(4), 1505-1533. <https://doi.org/10.5194/esd-13-1505-2022>
- Li, W. T., Migliavacca, M., Forkel, M., Denissen, J. M. C., **Reichstein, M.**, Yang, H., Duveiller, G., Weber, U., Orth, R., 2022. Widespread increasing vegetation sensitivity to soil moisture. *Nature Communications*, 13(1), Article 3959. <https://doi.org/10.1038/s41467-022-31667-9>
- Luo, Y. P., Pacheco-Labrador, J., Richardson, A. D., Seyednasrollah, B., Perez-Priego, O., Gonzalez-Cascon, R., Martin, M. P., Moreno, G., Nair, R., Wutzler, T., Bucher, S. F., Carrara, A., Cremones, E., El-Madany, T. S., Filippa, G., Galvagno, M., Hammer, T., Ma, X. L., Martini, D., Zhang, Q., **Reichstein, M.**, Menzel, A., Roemermann, C., Migliavacca, M., 2022. Evergreen broadleaf greenness and its relationship with leaf flushing, aging, and water fluxes. *Agricultural and Forest Meteorology*, 323, Article 109060. <https://doi.org/10.1016/j.agrformet.2022.109060>
- Martini, D., Sakowska, K., Wohlfahrt, G., Pacheco-Labrador, J., van der Tol, C., Porcar-Castell, A., Magney, T. S., Carrara, A., Colombo, R., El-Madany, T. S., Gonzalez-Cascon, R., Martin, M. P., Julitta, T., Moreno, G., Rascher, U., **Reichstein, M.**, Rossini, M., & Migliavacca, M., 2022. Heatwave breaks down the linearity between sun-induced fluorescence and gross primary production. *New Phytologist*, 233(6), 2415-2428. <https://doi.org/10.1111/nph.17920>
- Mehrabi, Z., Ignaciuk, A., Levers, C., Delzeit, R., Braich, G., Bajaj, K., Amo-Aidoo, A., Anderson, W., Balgah, R. A., Benton, T. G., Chari, M. M., Ellis, E. C., Gahi, N. Z., Gaupp, F., Garibaldi, L. A., Gerber, J. S., Godde, C. M., Grass, I., Heimann, T., Hiron, M., Hoogenboom, G., Jain, M., James, D., Makowski, D., Masamba, B., Meng, S. S., Monprapussorn, S., Mueller, D., Nelson, A., Newlands, N. K., Noack, F., Oronje, M., Raymond, C., **Reichstein, M.**, Rieseberg, L. H., Rodriguez-Llanes, J. M., Rosenstock, T., Rowhani, P., Sarhadi, A., Seppelt, R., Sidhu, B. S., Snapp, S., Soma, T., Sparks, A. H., Teh, L., Tigchelaar, M., Vogel, M. M., West, P. C., Wittman, H., You, L. Z., 2022. Research priorities for global food security
- Nair, R., Strube, M., Hertel, M., Kolle, O., **Reichstein, M.**, Migliavacca, M., 2022. Go wide to go deep: Affordable, replicable robotic minirhizotron sampling for phenology studies, *bioRxiv*, 10.1101/2022.01.06.475082.
- O, S., Bastos, A., **Reichstein, M.**, Li, W. T., Denissen, J., Graefen, H., & Orth, R., 2022. The Role of Climate and Vegetation in Regulating Drought-Heat Extremes. *Journal of Climate*, 35(17), 5677-5685. <https://doi.org/10.1175/jcli-d-21-0675.1>
- Orth, R., Sungmin, O., Zscheischler, J., Mahecha, M. D., **Reichstein, M.**, 2022. Contrasting biophysical and societal impacts of hydro-meteorological extremes. *Environmental Research Letters*, 17(1), Article 014044. <https://doi.org/10.1088/1748-9326/ac4139>
- Pabon-Moreno, D. E., Migliavacca, M., **Reichstein, M.**, Mahecha, M. D., 2022. On the Potential of Sentinel-2 for Estimating Gross Primary Production. *Ieee Transactions on Geoscience and Remote Sensing*, 60, Article 4409412. <https://doi.org/10.1109/tgrs.2022.3152272>
- Pallandt, M., Ahrens, B., Koirala, S., Lange, H., **Reichstein, M.**, Schrupf, 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 Rooter, 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., Arnoeth, 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., Pflaiderer, 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., Gomasasca, U., Gough, C.M., Göckede, M., Ibrom, A., Ikawa, H., Janssens, I.A., Jung, M., Kattge, J., Keenan, T.F., Knohl, A., Kobayashi, H., Kraemer, G., Law, B.E., Liddell, M.J., Ma, X., Mammarella, I., Martini, D., Macfarlane, C., Matteucci, G., Montagnani, L., Pabon-Moreno, D.E., Panigada, C., Papale, D., Pendall, E., Penuelas, J., Phillips, R.P., Reich, P.B., Rossini, M., Rotenberg, E., Scott, R.L., Stahl, C., Weber, U., Wohlfahrt, G., Wolf, S., Wright, I.J., Yakir, D., Zaehle, S., **Reichstein, M.**, 2021. The three major axes of terrestrial ecosystem function. *Nature* 598, 468 - 472. doi: 10.1038/s41586-021-03939-9
- 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.**, Schrupf, 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 dynamics at 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., Lohila, A., Merbold, L., Rouspard, 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., Klemmedtsson, 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., Barnoiaea, 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.**, Schruppf, 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 Tol, 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/aaeaeab
- 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-16-6067-2018
- 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., Schrupf, 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., Guaniche, 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., Martin, 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., Schrupf, 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., Luysaert, 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., Schmulilius, 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., Arneeth, 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., Schrupf, 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., Luysaert, 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., Schrödt, 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., Schrupf, 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
- Schrödt, 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., Schrupf, 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., Pregon, A., Rayner, P.J., Miller, C., Gobron, N., Kinderman, G., Marland, G., Gruber, N., Chevallier, F., Andres, R.J., Balsamo, G., Bopp, L., Bréon, 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., Luysaert, 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., Schrumpp, 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., Luysaert, S., Penuelas, J., Campioli, M., Chapin, F.S.I., Ciais, P., Heinemeyer, A., Höglberg, 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., Bohrer, 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., Schmulius, 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., Arneeth, 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., Arneeth, 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., Rouspard, 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., Rouspard, 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., Luysaert, S., Margolis, H., Oleson, K.W., Rouspard, 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., Beilelli, 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., Luysaert, 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., Rouspard, 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., Arneeth, 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 Q_{10} 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., Rouspard, 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., Arneeth, 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

- Luysaert, 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., Waringer, 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.**, Luysaert, 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., Luysaert, 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
- Luysaert, 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., Bernhofer, 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., Hutyrá, 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., Grunwald, 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., Rouspard, 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., Rouspard, 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., Rouspard, 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.
- Adsuaara, J.E., Perez-Suay, A., Moreno-Martinez, 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., Guanache, 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.

Jena, 20.01.2025