

Prof. Dr. Benjamin D. Stocker

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Education

- Nov. 2009- Dec. 2013** **PhD Climate Sciences at Climate- and Environmental Physics**, University of Bern, *Climate Forcings and Feedbacks from the Terrestrial Biosphere – From Greenhouse-Gas Emissions to Anthropogenic Land Use Change*
Supervised by Prof. Fortunat Joos, date obtained: 13. Dec. 2013
- Sep. 2007- Oct. 2009** **MSc Climate Sciences at Climate- and Environmental Physics**, University of Bern, *Transient Simulations of Land Use Change in the Holocene – Separating the Human Impact from Natural Drivers of the Carbon Cycle*
Supervised by Prof. Fortunat Joos, date obtained: 16. Nov. 2009
- Jun. 2006** **Undergraduate in Geography** (120 ECTS) with a Minor (60 ECTS) in **Physics**, and a complementary (15 ECTS) in **General Ecology**, University of Bern

Employment

- Since Sep. 2019** **Assistant Professor** for Computational Ecosystem Science, Department for Environmental Systems Science, ETH Zürich, and WSL Birmensdorf, Switzerland
- Apr. 2019- Aug. 2019** **Visiting Scholar** with Prof. Robert Jackson, Department of Earth System Science, Stanford University, USA
- Mar. 2017- Feb. 2019** **Marie Skłodowska-Curie Postdoctoral Research Fellow** with Prof. Josep Peñuelas, Ecological and Forestry Applications Research Centre (CREAF), Barcelona, Spain
- Sep. 2017- Feb. 2018** **Postdoctoral Researcher** with Prof. S. Seneviratne, Department for Environmental Systems Science, ETH Zürich, Switzerland
- Mar. 2014- Sep. 2016** **Postdoctoral Research Fellow**, with Prof. I. C. Prentice, Department of Life Sciences, Imperial College London, U.K.
- Jan.-Feb. 2014** **Postdoctoral Researcher** with Prof. F. Joos, Climate- and Environmental Physics, University of Bern.

Approved research projects (Chronological order)

- **[co-applicant] SNF Agora**, *Biotinkering for Youth - Robotics and digital learning in plant science engagement*; Swiss National Science Foundation, 2.5 years, Apr. 2021 - Sep. 2023, 200 kCHF (approx. 182 kEUR). This funds outreach activities on robotics and digital learning for plant sciences which I co-create with co-applicants.
- **[co-PI] Virtual Earth System Research Institute**, *LEMONTREE - Land Ecosystem Models based On New Theory, observations, and Experiments*; Schmidt Futures, 5 years, Jan. 2021 - Dec. 2025, 10 mio. US\$ (approx. 9 mio. CHF). This funds a postdoc (3 yr) and a PhD (3 yr) in my group.
- **[co-PI] WSL Internal Innovative Project**, *Increasing cold stress on photosynthesis in a warming world?* Granted Aug. 2019, 60 kCHF (approx. 56 kEUR) [WSL internal project]. This funds a postdoc (Y. Luo), co-supervised by Prof. A. Gessler (WSL) and myself.
- **[PI] SNF Eccellenza Professorial Fellowship**, *MIND - developing next-generation Modelling approaches for simulating processes in the terrestrial biosphere by Including New Data streams and optimality approaches*; Swiss National Science Foundation, 60 months, Sep. 2020 - Aug. 2024, total 1.8 mio. CHF (approx. 1.6 mio. EUR). This funds my salary, 3 yr postdoc, and two 4-yr PhD in my group.

Supervision and mentoring

- **Current PhD:** Yunke Peng, 2020-present ; Francesco Giardina, 2020-present; Gabriela Sophia, MPI-BGC Jena, Germany, start in July 2021, co-supervision with Dr. Sönke Zaehle
- **Current MSc:** Pascal Schneider, 2021-present; Martina Buck, 2021-present; Ana Roldan Cevallos [scheduled start Nov. 2021]
- **Current postdoc** Koen Hufkens, 2021-present; Laura Marqués, 2019-present; Di Tian, 2020-present; Yungpeng Luo, 2021
- **Past co-supervision:** Fabienne Meier, MSc 2020-2021; Paula Casadei, MSc, 2018-2019; Fabian Feissli, MSc, 2011; Guan Jie Low, BSc, 2014

Teaching

- **Environmental Systems Data Science**, lecturer and author of tutorial (autumn 2020, 2021, tutorial available at https://stineb.github.io/esds_book/)
- **Global Change Biology**, lecturer, for MSc in Environmental Sciences and MSc in Agronomy, ETH Zürich (spring 2020, 2021, 2022)
- **Data Science Lab**, guest-lecturer, for MSc in Computer Science, ETH Zürich (spring and autumn 2021)
- **Machine Learning for Eddy Covariance data**, lecturer and author of tutorial, C2SM Summer School 2021 (tutorial available at https://stineb.github.io/ml4ec_workshop/)
- **Lecturer at summer schools:** *Greening of the Earth*, C2SM Summer School 2021; *The CO₂ Fertilisation Effect across Scales*, FORMON Summer School 2021
- **Introduction to the Carbon Cycle**, guest lecturer, MRes in Ecosystem and Environmental Change, Imperial College London; designed own course material (autumn 2015)
- **Teaching assistant** for several courses during PhD at Physics Institute, U. Bern

Professional service, panel memberships, and reviewing

- **PhD jury member:** Dr. Marcos Fernández-Martínez, UAB Barcelona, Spain (Jan. 2016)
- **Reviewer for grant proposals:** ERC Consolidator Grant Call 2018
- **Completed peer reviews** for journals: *Nature* (4), *Nature Geoscience* (4), *Nature Clim. Change* (1), *New Phyt.* (3), *Glob. Change Biol.* (5), *Geosci. Mod. Dev.* (5), *Biogeosciences* (9), *J. of Climate* (1), *Earth System Dynamics* (1), *Env. Research Lett.* (1), *Geophys. Research Lett.* (1), *Glob. Biogeochem. Cycles* (1), *Earth and Planetary Science Lett.* (1), *J. of Geophys. Research – Biogeosciences* (1), *Earth's Future* (1), *AGU Advances* (2), *Remote Sens. of the Env.* (1) [see also publons.com/a/1186022/]

Organisation of conferences

- **Conferences and symposia:** Zurich-Basel Plant Science Center Symposium, 8 Dec. 2021
- **Workshops:** *Terrestrial nitrogen cycling in Earth system models revisited*, UK, Feb. 2016; *Palaeoclimate experiments to evaluate the impact of LULUC on climate and the carbon cycle: a joint co-design workshop of the PAGES LandCover6ka WG and the Palaeoclimate Modelling Intercomparison Project*, Sep. 2018
- **Conference sessions:** EGU 2018, 2019, 2020, 2021; SIBECOL 2019; PAGES OSM 2017; INQUA 2015

Awards and fellowships

- **[Fellow] Marie Skłodowska-Curie Actions Individual Fellowship**, Mar. 2017-Feb. 2019, project number H2020-MSCA-IF-2015-701329 FIBER, total 158 kEUR (approx. 181 kCHF)
- **[Offered Fellowship] Incoming PEGASUS Fellowship**, granted by the Flemish Science Foundation (FWO), 36 months, July 2016. Not accepted due to acceptance of the MSCA Fellowship (see above).
- **[Fellow] SNF Early Postdoc.Mobility scholarship**, Swiss National Science Foundation, 18 months, Mar. 2015 - Aug. 2016, project number P2BEP2_158964, total 63 kEUR (72 kCHF).
- **Faculty prize** for best Master's thesis at the Physics Institute, University of Bern, obtained Feb. 2010

Research Output

- **56 peer-reviewed publications** in international journals (excluding registered pre-prints, accepted but not published manuscripts, and excluding IPCC chapters where I was a contributing author); 10 peer-reviewed, publications as first and shared first authorship
- 15 publications are among Web of Science Highly Cited Papers, incl. Stocker et al. (2018) and Stocker et al. (2019).
- **8190 accumulated citations, h-index of 29** (*Web of Science*, 07.01.2022), or 10,243 citations and a h-index of 37 (*Google Scholar*, 07.01.2022).
- Online lists of my research output can be found under the following links: <https://orcid.org/0000-0003-2697-9096/print>, <https://publons.com/researcher/1186022/benjamin-d-stocker/publications/>, and <https://scholar.google.es/citations?user=TX7egiYAAAAAJ&hl=en>

Publications in peer-reviewed scientific journals

- 2022** Qiu, C., Ciais, P., Zhu, D., Guenet, B., Chang, J., Chaudhary, N., Kleinen, T., Li, X., Müller, J., Xi, Y., Zhang, W., Ballantyne, A., Brewer, S. C., Brovkin, V., Charman, D. J., Gustafson, A., Gallego-Sala, A. V., Gasser, T., Holden, J., Joos, F., Kwon, M. J., Lauerwald, R., Miller, P. A., Peng, S., Page, S., Smith, B., **Stocker, B. D.**, Sannel, A. B. K., Salmon, E., Schurgers, G., Shurpali, N. J., Warlind, D., and Westermann, S.: A strong mitigation scenario maintains climate neutrality of northern peatlands, *One Earth*, <https://doi.org/10.1016/j.oneear.2021.12.008>, 2022.
- Kondo, M., Sitch, S., Ciais, P., Achard, F., Kato, E., Pongratz, J., Houghton, R. A., Canadell, J. G., Patra, P. K., Friedlingstein, P., Li, W., Anthoni, P., Arneth, A., Chevallier, F., Ganzenmüller, R., Harper, A., Jain, A. K., Koven, C., Lienert, S., Lombardozzi, D., Maki, T., Nabel, J. E. M. S., Nakamura, T., Niwa, Y., Peylin, P., Poulter, B., Pugh, T. A. M., Rödenbeck, C., Saeki, T., **Stocker, B.**, Viovy, N., Wiltshire, A., and Zaehle, S.: Are Land-Use Change Emissions in Southeast Asia Decreasing or Increasing?, *Global Biogeochemical Cycles*, 36, e2020GB006 909, <https://doi.org/https://doi.org/10.1029/2020GB006909>, 2022
- 2021** Gharun, M., Klesse, S., Tomlinson, G., Waldner, P., **Stocker, B.**, Rihm, B., Siegwolf, R., and Buchmann, N.: Effect of nitrogen deposition on centennial forest water-use efficiency, *Environmental Research Letters*, URL <http://iopscience.iop.org/article/10.1088/1748-9326/ac30f9>, 2021.
- Terrer, C., Phillips, R. P., Hungate, B. A., Rosende, J., Pett-Ridge, J., Craig, M. E., van Groenigen, K. J., Keenan, T. F., Sulman, B. N., **Stocker, B. D.**, Reich, P. B., Pellegrini, A. F. A., Pendall, E., Zhang, H., Evans, R. D., Carrillo, Y., Fisher, J. B., Van Sundert, K., Vicca, S., and Jackson, R. B.: A trade-off between plant and soil carbon storage under elevated CO₂, *Nature*, 591, 599–603, <https://doi.org/10.1038/s41586-021-03306-8>, 2021
 - Keenan, T. F., Luo, X., De Kauwe, M. G., Medlyn, B. E., Prentice, I. C., **Stocker, B. D.**, Smith, N. G., Terrer, C., Wang, H., Zhang, Y., and Zhou, S.: A constraint on historic growth in global photosynthesis due to increasing CO₂, *Nature*, 600, 253–258, <https://doi.org/10.1038/s41586-021-04096-9>, URL <https://doi.org/10.1038/s41586-021-04096-9>, 2021
 - Harrison, S. P., Cramer, W., Franklin, O., Prentice, I. C., Wang, H., Brännström, de Boer, H., Dieckmann, U., Joshi, J., Keenan, T. F., Lavergne, A., Manzoni, S., Mengoli, G., Morfopoulos, C., Penuelas, J., Pietsch, S., Rebel, K. T., Ryu, Y., Smith, N. G., **Stocker, B. D.**, and Wright, I. J.: Eco-evolutionary optimality as a means to improve vegetation and land-surface models, *New Phytologist*, 231, 2125–2141, <https://doi.org/https://doi.org/10.1111/nph.17558>, URL <https://nph.onlinelibrary.wiley.com/doi/abs/10.1111/nph.17558>, 2021
 - Ma, H., Mo, L., Crowther, T. W., Maynard, D. S., van den Hoogen, J., **Stocker, B. D.**, Terrer, C., and Zohner, C. M.: The global distribution and environmental drivers of aboveground versus belowground plant biomass, *Nature Ecology & Evolution*, 5, 1110–1122, <https://doi.org/10.1038/s41559-021-01485-1>, URL <https://doi.org/10.1038/s41559-021-01485-1>, 2021.

- Yu, Z., Joos, F., Bauska, T. K., **Stocker, B. D.**, Fischer, H., Loisel, J., Brovkin, V., Hugelius, G., Nehrbass-Ahles, C., Kleinen, T., and Schmitt, J.: No support for carbon storage of >1,000 GtC in northern peatlands, *Nature Geoscience*, 14, 465–467, <https://doi.org/10.1038/s41561-021-00769-2>, URL <https://doi.org/10.1038/s41561-021-00769-2>, 2021.
- Favero, A., Mendelsohn, R., Sohngen, B., and **Stocker, B.**: Assessing the long-term interactions of climate change and timber markets on forest land and carbon storage, *Environmental Research Letters*, 16, 014 051, <https://doi.org/10.1088/1748-9326/abd589>, URL <https://doi.org/10.1088/1748-9326/abd589>, 2021
- 2020** Joos, F., Spahni, R., **Stocker, B. D.**, Lienert, S., Müller, J., Fischer, H., Schmitt, J., Prentice, I. C., Otto-Bliesner, B., and Liu, Z.: N₂O changes from the Last Glacial Maximum to the preindustrial – Part 2: terrestrial N₂O emissions and carbon–nitrogen cycle interactions, *Biogeosciences*, 17, 3511–3543, <https://doi.org/10.5194/bg-17-3511-2020>, URL <https://bg.copernicus.org/articles/17/3511/2020/>, 2020.
- **Stocker, B. D.**, Wang, H., Smith, N. G., Harrison, S. P., Keenan, T. F., Sandoval, D., Davis, T., and Prentice, I. C.: P-model v1.0: an optimality-based light use efficiency model for simulating ecosystem gross primary production, *Geosci. Model Dev.*, 13, 1545–1581, <https://doi.org/10.5194/gmd-13-1545-2020>, 2020.
- Harrison, S. P., Gaillard, M.-J., **Stocker, B. D.**, Vander Linden, M., Klein Goldewijk, K., Boles, O., Braconnot, P., Dawson, A., Fluet-Chouinard, E., Kaplan, J. O., Kastner, T., Pausata, F. S. R., Robinson, E., Whitehouse, N. J., Madella, M., and Morrison, K. D.: Development and testing scenarios for implementing land use and land cover changes during the Holocene in Earth system model experiments, *Geosci. Model Dev.*, 13, 805–824, <https://doi.org/10.5194/gmd-13-805-2020>, 2020.
- Franklin, O., Cramer, W., Pietsch, S., Prentice, I. C., Wang Han, Brännström, Å., Dieckmann, U., Falster, D., Fariior, C., Hofhansl, F., Penuelas, J., Mäkelä, A., Manzoni, S., Rebel, K., Rovenskaya, E., Soudzilovskaia, N., **Stocker, B. D.**, Terrer, C., van Bodegom, P., Wright, I., Zaehle, S.: Organizing principles for vegetation dynamics, *Nature Plants*, <https://doi.org/10.1038/s41477-020-0655-x>, 2020.
- **Highly Cited Paper**
- 2019** **Stocker, B. D.**, Zscheischler, J., Keenan, T. F., Prentice, I. C., Seneviratne, S. I., and Peñuelas, J.: Drought impacts on terrestrial primary production underestimated by satellite monitoring, *Nature Geoscience*, 12, 264–270, doi:10.1038/s41561-019-0318-6, URL <https://doi.org/10.1038/s41561-019-0318-6>, 2019.
- **Highly Cited Paper**
- Guerrieri, R., Belmecheri, S., Ollinger, S. V., Asbjornsen, H., Jennings, K., Xiao, J., **Stocker, B. D.**, Martin, M., Hollinger, D. Y., Bracho-Garrillo, R., Clark, K., Dore, S., Kolb, T., Munger, J. W., Novick, K., and Richardson, A. D.: Disentangling the role of photosynthesis and stomatal conductance on rising forest water-use efficiency, *Proceedings of the National Academy of Sciences*, 116, 16 909–16 914, doi: 10.1073/pnas.1905912116, URL <https://www.pnas.org/content/116/34/16909>, 2019.
- **Highly Cited Paper**
- Terrer, C., Jackson, R. B., Prentice, I. C., Keenan, T. F., Kaiser, C., Vicca, S., Fisher, J. B., Reich, P. B., **Stocker, B. D.**, Hungate, B. A., Peñuelas, J., McCallum, I., Soudzilovskaia, N. A., Cernusak, L. A., Tälhelm, A. F., Van Sundert, K., Piao, S., Newton, P. C. D., Hovenden, M. J., Blumenthal, D. M., Liu, Y. Y., Müller, C., Winter, K., Field, C. B., Viechtbauer, W., Van Lissa, C. J., Hoosbeek, M. R., Watanabe, M., Koike, T., Leshyk, V. O., Polley, H. W., and Franklin, O.: Nitrogen and phosphorus constrain the CO₂ fertilization of global plant biomass, *Nature Climate Change*, 9, 684–689, doi:10.1038/s41558-019-0545-2, URL <https://doi.org/10.1038/s41558-019-0545-2>, 2019.
- **Highly Cited Paper**
- Fernandez-Martinez, M., Yu, R., Gamon, J., Hmimina, G., Filella, I., Balzarolo, M., **Stocker, B.**, and Peuelas, J.: Monitoring Spatial and Temporal Variabilities of Gross Primary Production Using MAIAC MODIS Data, *Remote Sensing*, 11, doi: 10.3390/rs11070874, URL <http://www.mdpi.com/2072-4292/11/7/874>, 2019.

- Fischer, H., Schmitt, J., Bock, M., Seth, B., Joos, F., Spahni, R., Lienert, S., Battaglia, G., **Stocker, B. D.**, Schilt, A., and Brook, E. J.: N₂O changes from the Last Glacial Maximum to the preindustrial – Part 1: Quantitative reconstruction of terrestrial and marine emissions using N₂O stable isotopes in ice cores, *Biogeosciences*, 16, 3997–4021, <https://doi.org/10.5194/bg-16-3997-2019>, URL <https://www.biogeosciences.net/16/3997/2019/> 2019.
 - Peaucelle, M., Janssens, I. A., **Stocker, B. D.**, Descals Ferrando, A., Fu, Y. H., Molowny-Horas, R., Ciais, P., and Peñuelas, J.: Spatial variance of spring phenology in temperate deciduous forests is constrained by background climatic conditions, *Nature Communications*, 10, 5388, [10.1038/s41467-019-13365-1](https://doi.org/10.1038/s41467-019-13365-1), <https://doi.org/10.1038/s41467-019-13365-1>, 2019.
- 2018** **Stocker, B. D.**, Zscheischler, J., Keenan, T. F., Prentice, I. C., Peñuelas, J., and Seneviratne, S. I.: Quantifying soil moisture impacts on light use efficiency across biomes, *New Phytologist*, 218, 1430–1449, <https://doi.org/10.1111/nph.15123>, <https://nph.onlinelibrary.wiley.com/doi/abs/10.1111/nph.15123>, 2018
- **Highly Cited Paper**
 - Vicca, S., **Stocker, B.**, Reed, S., Wieder, W. R., Bahn, M., Fay, P., Janssens, I., Lambers, H., Peñuelas, J., Piao, S., Rebel, K., Sardans, J., Sigurdsson, B., Sander, K. V., Wang, Y.-P., Zaehle, S., and Ciais, P.: Using research networks to create the comprehensive datasets needed to assess nutrient availability as a key determinant of terrestrial carbon cycling, *Environmental Research Letters*, URL <http://iopscience.iop.org/10.1088/1748-9326/aae7>, 2018.
 - **I shared first-authorship with S. Vicca**
 - Terrer, C., Vicca, S., **Stocker, B. D.**, Hungate, B. A., Phillips, R. P., Reich, P. B., Finzi, A. C., and Prentice, I. C.: Ecosystem responses to elevated CO₂ governed by plant-soil interactions and the cost of nitrogen acquisition, *New Phytologist*, 217, 507–522, 2018.
 - **Highly Cited Paper**
 - Wang, Y., Ciais, P., Goll, D., Huang, Y., Luo, Y., Wang, Y.-P., Bloom, A. A., Broquet, G., Hartmann, J., Peng, S., Peñuelas, J., Piao, S., Sardans, J., **Stocker, B. D.**, Wang, R., Zaehle, S., and Zechmeister-Boltenstern, S.: GOLUM-CNP v1.0: a data-driven modeling of carbon, nitrogen and phosphorus cycles in major terrestrial biomes, *Geoscientific Model Development*, 11, 3903–3928, doi:10.5194/gmd-11-3903-2018, URL <https://www.geosci-model-dev.net/11/3903/2018/>, 2018.
 - Le Quéré, C., Andrew, R. M., Friedlingstein, P., Sitch, S., Pongratz, J., Manning, A. C., Korsbakken, J. I., Peters, G. P., Canadell, J. G., Jackson, R. B., Boden, T. A., Tans, P. P., Andrews, O. D., Arora, V. K., Bakker, D. C. E., Barbero, L., Becker, M., Betts, R. A., Bopp, L., Chevallier, F., Chini, L. P., Ciais, P., Cosca, C. E., Cross, J., Currie, K., Gasser, T., Harris, I., Hauck, J., Haverd, V., Houghton, R. A., Hunt, C. W., Hurtt, G., Ilyina, T., Jain, A. K., Kato, E., Kautz, M., Keeling, R. F., Klein Goldewijk, K., Körtzinger, A., Landschützer, P., Lefevre, N., Lenton, A., Lienert, S., Lima, I., Lombardozzi, D., Metzl, N., Miller, F., Monteiro, P. M. S., Munro, D. R., Nabel, J. E. M. S., Nakaoka, S.-I., Nojiri, Y., Padin, X. A., Pregon, A., Pfeil, B., Pierrot, D., Poulter, B., Rehder, G., Reimer, J., Rödenbeck, C., Schwinger, J., Séférian, R., Skjelvan, I., **Stocker, B. D.**, Tian, H., Tilbrook, B., Tubiello, F. N., van der Laan-Luijckx, I. T., van der Werf, G. R., van Heuven, S., Viovy, N., Vuichard, N., Walker, A. P., Watson, A. J., Wiltshire, A. J., Zaehle, S., and Zhu, D.: Global Carbon Budget 2017, *Earth System Science Data*, 10, 405–448, doi:10.5194/essd-10-405-2018, URL, 2018
 - **Highly Cited Paper**
- 2017** **Stocker, B. D.**, Yu, Z., Massa, C., and Joos, F.: Holocene peatland and ice-core data constraints on the timing and magnitude of CO₂ emissions from past land use, *Proceedings of the National Academy of Sciences*, 114, 1492–1497, doi:10.1073/pnas.1613889114, 2017.
- Arneeth, A., Sitch, S., Pongratz, J., **Stocker, B. D.**, Ciais, P., Poulter, B., Bayer, A. D., Bondeau, A., Calle, L., Chini, L. P., Gasser, T., Fader, M., Friedlingstein, P., Kato, E., Li, W., Lindeskog, M., Nabel, J. E. M. S., Pugh, T. A. M., Robertson, E., Viovy, N., Yue, C., and Zaehle, S.: Historical carbon dioxide emissions caused by land-use changes are possibly larger than assumed, *Nature Geoscience*, 10, 79–84, URL <http://dx.doi.org/10.1038/ngeo2882>, 2017.
 - **Highly Cited Paper**

- Terrer, C., Vicca, S., Hungate, B. A., Phillips, R. P., Reich, P. B., Franklin, O., **Stocker, B. D.**, Fisher, J. B., and Prentice, I. C.: Response to Comment on “Mycorrhizal association as a primary control of the CO₂ fertilization effect”, *Science*, 355, 358–358, doi:10.1126/science.aai8242, URL <http://science.sciencemag.org/content/355/6323/358.3>, 2017.
 - Davis, T. W., Prentice, I. C., **Stocker, B. D.**, Thomas, R. T., Whitley, R. J., Wang, H., Evans, B. J., Gallego-Sala, A. V., Sykes, M. T., and Cramer, W.: Simple process-led algorithms for simulating habitats (SPLASH v1.0): robust indices of radiation, evapotranspiration and plant-available moisture, *Geoscientific Model Development*, 10, 689–708, doi:10.5194/gmd-10-689-2017, URL <http://www.geosci-model-dev.net/10/689/2017/>, 2017.
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- 2016** Le Quéré, C., Andrew, R. M., Canadell, J. G., Sitch, S., Korsbakken, J. I., Peters, G. P., Manning, A. C., Boden, T. A., Tans, P. P., Houghton, R. A., Keeling, R. F., Alin, S., Andrews, O. D., Anthoni, P., Barbero, L., Bopp, L., Chevallier, F., Chini, L. P., Ciais, P., Currie, K., Delire, C., Doney, S. C., Friedlingstein, P., Gkritzalis, T., Harris, I., Hauck, J., Haverd, V., Hoppema, M., Klein Goldewijk, K., Jain, A. K., Kato, E., Körtzinger, A., Landschützer, P., Lefevre, N., Lenton, A., Lienert, S., Lombardozzi, D., Melton, J. R., Metzl, N., Millero, F., Monteiro, P. M. S., Munro, D. R., Nabel, J. E. M. S., Nakaoka, S.-I., O'Brien, K., Olsen, A., Omar, A. M., Ono, T., Pierrot, D., Poulter, B., Rödenbeck, C., Salisbury, J., Schuster, U., Schwinger, J., Séférian, R., Skjelvan, I., **Stocker, B. D.**, Sutton, A. J., Takahashi, T., Tian, H., Tilbrook, B., van der Laan-Luijkx, I. T., van der Werf, G. R., Viovy, N., Walker, A. P., Wiltshire, A. J., and Zaehle, S.: Global Carbon Budget 2016, *Earth System Science Data*, 8, 605–649, doi:10.5194/essd-8-605-2016, URL <http://www.earth-syst-sci-data.net/8/605/2016/>, 2016.
- **Highly Cited Paper**
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- 2011** **Stocker, B. D.**, Strassmann, K., and Joos, F.: Sensitivity of Holocene atmospheric CO₂ and the modern carbon budget to early human land use: analyses with a process-based model, *Biogeosciences*, 8, 69-88, doi:10.5194/bg-8-69-2011, 2011.
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- 2010** Frank, D. C., Esper, J., Raible, C. C., Buntgen, U., Trouet, V., **Stocker, B.**, and Joos, F.: Ensemble reconstruction constraints on the global carbon cycle sensitivity to climate, *Nature*, 463, 527–530, 2010

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- 2020 Joshi, J., **Stocker, B. D.**, Hofhansl, F., Zhou, S., Dieckmann, U., and Prentice, I. C.: Towards a unified theory of plant photosynthesis and hydraulics, *bioRxiv*, <https://doi.org/10.1101/2020.12.17.423132>, URL <https://www.biorxiv.org/content/early/2020/12/18/2020.12.17.423132>, 2020.

Oral contributions to conferences and symposia

- *From weather to ecosystem forecasts - Opportunities for reliable carbon cycle and climate impact projections*, American Geosciences Union Fall Meeting, New Orleans, USA, 2021 [invited]
- *From weather to ecosystem forecasts - Opportunities for reliable carbon cycle and climate impact projections*, American Geosciences Union Fall Meeting, New Orleans, USA, 2021
- *From weather to ecosystem forecasts - Opportunities for reliable carbon cycle and climate impact projections*, Swiss National GAW/GCOS Symposium, Bern, Switzerland, 2021 [invited]
- *Global carbon and water exchange during drought reflects adaptation of rooting depth to climate and topography*, European Geosciences Union General Assembly, Vienna, Austria, 2021 [virtual conference]
- *Global climate controls on the plant rooting depth*, European Geosciences Union General Assembly, Vienna, Austria, 2020 [virtual conference]
- *Does flexible carbon allocation relieve nitrogen limitation? Theory and observations for a resource economics paradigm to model carbon-nitrogen cycle interactions in terrestrial ecosystems*, European Geosciences Union General Assembly, Vienna, Austria, 2019
- *Soil moisture controls on C cycle variability and drought impacts across scales*, American Geosciences Union Fall Meeting, Washington, USA, 2018
- *Satellite observations underestimate the impact of drought on terrestrial primary productivity*, European Geosciences Union General Assembly, Vienna, Austria, 2018
- *Evaluating revised past landuse change scenarios within carbon cycle constraints - a roadmap for including PAGES Landcover6K products for model-intercomparison*, 1st PMIP4 Conference, Stockholm, Sweden, 2017
- *Can observed ecosystem responses to elevated CO₂ and N fertilisation be explained by optimal plant C allocation?*, European Geosciences Union General Assembly, Vienna, Austria, 2016
- *Lost peatlands: Hindcasting the spatial shift in peatland distribution since the Last Glacial Maximum and its implication for the global peatland carbon balance*, XIX INQUA 2015, Nagoya, Japan, 2015
- *Multiple greenhouse gas feedbacks from the land biosphere under future climate change scenarios*, European Geosciences Union General Assembly, Vienna, Austria, 2013

Invited seminars

- *Searching for principles to predict terrestrial ecosystem dynamics*, Colloquium in Climatology, Climate Impact and Remote Sensing, Institute of Geography, University of Bern, Dec. 2020
- *(How) can we predict and observe global patterns of plant rooting depth?* BIOGEO Seminar Series, IPSL - LSCE, Paris, 2020
- *Soil moisture controls on C cycle variability and drought impacts across scales*, Lunch Seminar, Department of Global Ecology, Carnegie Institution for Science, Stanford, 2019

- *Towards a cost-based approach to understand and model nutrient limitation in terrestrial ecosystems*, INRA Bordeaux, 2018
- *Using data from ecosystem manipulation experiments to calibrate and validate (improve) models*, ClimMani Cost Action Final Conference, Utrecht, keynote, 2017
- *Trade-offs and optimality principles to guide the development of a next-generation vegetation model?* IPSL – LSCE, Paris, 2017
- *Large CO₂ emissions from preindustrial land use change – Does the carbon budget add up?* University of Cambridge, 2016
- *Large CO₂ emissions from preindustrial land use change – Does the carbon budget add up?* EHI Final Workshop, University Ca' Foscari Venezia, 24-25 November, 2016
- *Optimal plant carbon allocation implies a biological control on nitrogen availability*, PLECO, University of Antwerp, 2016
- *Preindustrial human impacts on the carbon cycle*, University of Reading, 2015
- *Preindustrial human impacts on the carbon cycle*, University College London, 2015
- *Spatio-temporal dynamics of global peatland extent and carbon stocks as simulated for the past twenty thousand years*, MPI Hamburg, 2014

Outreach activities

- Member of the *Protect Our Winters (NGO) Science alliance*
- “Climate expert” for *Swiss Alpine Club* (inputs on climate science and policy on guided tours).
- Co-creation of teaching activities for SNF Agora project *Biotinkering for Youth* (see CV).

Other artefacts with documented use

- 2021** **Stocker, B.** and Hufkens, K.: rmodel v1.2.0: R package implementing the P-model, <https://doi.org/10.5281/zenodo.4773325>, URL <https://doi.org/10.5281/zenodo.4773325>, 2021.
- R package published also on CRAN
 - **Stocker, B.**, Marqués, L., and Hufkens, K.: rsofun v4.0 Modelling framework for site-scale simulations of ecosystem processes in R, <https://doi.org/10.5281/zenodo.5530824>, URL <https://doi.org/10.5281/zenodo.5530824>, 2021.
 - **Stocker, B.** and Hufkens, K.: ingestr v1.3: R package for environmental data ingest, <https://doi.org/10.5281/zenodo.5531240>, URL <https://doi.org/10.5281/zenodo.5531240>, 2021a.
 - **Stocker, B.**: cwd v1.0: R package for cumulative water deficit calculation, <https://doi.org/10.5281/zenodo.5359053>, URL <https://doi.org/10.5281/zenodo.5359053>, 2021a.
 - **Stocker, B.**: SOFUN v3.4: A global model for simulating terrestrial ecosystem processes in Fortran90, <https://doi.org/10.5281/zenodo.5531421>, URL <https://doi.org/10.5281/zenodo.5531421>, 2021
 - **Stocker, B.**: DYP TOP v1.0: Demo code for dynamical global peatland modelling, <https://doi.org/10.5281/zenodo.5531337>, URL <https://doi.org/10.5281/zenodo.5531337>, 2021
 - **Stocker, B.**: ml4ec workshop v1: Tutorial for basic concepts and implementations of machine learning workflows in R, <https://doi.org/10.5281/zenodo.5521563>, URL <https://doi.org/10.5281/zenodo.5521563>, 2021

- 2018 Stocker, B. D.** (2018). fLUE [Data set]. *Zenodo*. <http://doi.org/10.5281/zenodo.1158524>
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 - **Stocker, B. D.**, Yu, Z., Joos, F.: Contrasting CO₂ emissions from different Holocene land-use reconstructions: Does the carbon budget add up?, *PAGES Magazine*, 26(1), 6-7, doi.org/10.22498/pages.26.1.6, 2018.
 - Harrison, S., **Stocker, B. D.**, Klein-Goldewijk, K., Kaplan, J. O., Braconnot, P.: Do we need to include anthropogenic land-use and land-cover changes in paleoclimate simulations?, *PAGES Magazine*, 26(1), 4-5, doi.org/10.22498/pages.26.1.4, 2018.
 - **Stocker, B. D.** (2018). soilm_global v0.1 (Version v0.1). *Zenodo*. <http://doi.org/10.5281/zenodo.1286966>
 - Code accompanying Stocker et al. (2019) *Nature Geoscience*
- 2017 Stocker, B. D.** (2017). nn_fluxnet2015 (Version submission_2). *Zenodo*. <http://doi.org/10.5281/zenodo.1158575>
- Code accompanying Stocker et al. (2018) *New Phytologist*
 - **Stocker, B.D.**, Z. Yu, C. Massa, and F. Joos. 2017. Global Peatland Carbon Balance and Land Use Change CO₂ Emissions Through the Holocene. ORNL DAAC, Oak Ridge, Tennessee, USA. <https://doi.org/10.3334/ORNLDAAC/1382>
 - Datasets accompanying Stocker et al. (2017) *PNAS*.
 - **Stocker, B. D.**, Prentice, I. C., Cornell, S. E., Davies-Barnard, T., Finzi, A. C., Franklin, O., Janssens, I., Larmola, T., Manzoni, S., Näsholm, T., Raven, J. A., Rebel, K. T., Reed, S., Vicca, S., Wiltshire, A., and Zaehle, S.: Terrestrial nitrogen cycling in Earth system models revisited, *New Phytologist*, 210, 1165–1168, doi: 10.1111/nph.13997, 2016-21758, 2016.

Contributions to research assessments

- 2013** Ciais, P., Sabine, C., Bala, G., Bopp, L., Brovkin, V., Canadell, J., Chhabra, A., DeFries, R., Galloway, J., Heimann, M., Jones, C., Le Quéré, C., Myneni, R., Piao, S., and Thornton, P.: Carbon and Other Biogeochemical Cycles. In: *Climate Change 2013: The Physical Science Basis*. IPCC Working Group I Contribution to AR5, Cambridge University Press., 2013.
- Contributing author
 - Smith P., Clark H., Dong H., Elsiddig E. A., Haberl H., Harper R., House J., Jafari M., et al. (2014). Chapter 11 - Agriculture, forestry and other land use (AFOLU). In: *Climate Change 2014: Mitigation of Climate Change*. IPCC Working Group III Contribution to AR5, Cambridge University Press, 2013
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