

CURRICULUM VITAE, PROF. DR. ALMUT ARNETH

RESEARCH INTERESTS

- Terrestrial ecosystem processes and global environmental change: land-climate impacts and feedbacks, role of land-use change in the climate system
- Role of terrestrial ecosystem function and services in coupled socio-ecological systems
- Quantify links between ecosystem function and functional diversity

EDUCATION

- 1998 Ph.D., Environmental Sciences, Soil Science Department, Lincoln University, New Zealand
- 1994 M.Sc. (Diplom), with distinction, Department of Plant Ecology, Bayreuth University Bayreuth, Germany

CURRENT POSITION

Professor and Division Head, Institute of Meteorology and Climate Research (IMK)/Atmospheric Environmental Research, Karlsruhe Institute of Technology (KIT), Garmisch-Partenkirchen, Germany

PREVIOUS POSITIONS

- 2004-12 Full Professor (2011-2012), Associate Professor (Docent, 2005-2010), Marie Curie Excellence Team Leader (from 2004), Department Physical Geography and Ecosystem Analysis, Lund University, Sweden
- 2009 Visiting Professor (6 months sabbatical, invited), Department of Physics, Division of Atmospheric Sciences, Helsinki University, Finland
- 2002-04 Researcher, Max Planck Institute for Meteorology, Hamburg, Germany; also Coordinator of the International Max Planck Research School on Earth System Modelling
- 2000-02 Emmy Noether Independent Young Investigators Group leader (DFG), Max Planck Institute for Biogeochemistry, Jena, Germany
- 1998-00 Post-doctoral fellow, Landcare Research, Lincoln University, New Zealand

FELLOWSHIPS AND AWARDS

- 2022 Highly-cited researcher, Clarivate - Web of Science, Category Cross-field
- 2021 Recipient of the 2022 Gottfried Wilhelm Leibniz Price of the DFG
- 2020 Selected as 'Scout' to recruit outstanding junior researchers to Germany under the Henriette Herz Scouting Programme of the Alexander von Humboldt Foundation
- 2020 Highly-cited researcher, Clarivate - Web of Science, Category Environment and Ecology
- 2019 Visiting Fellowship, Hawkesbury Institute for the Environment, Western Sydney University
- 2019 Highly-cited researcher, Clarivate - Web of Science, Category Environment and Ecology
- 2018 Highly-cited researcher, Clarivate - Web of Science, Category Cross-field
- 2012 Professorship via the Initiative and Networking Fund of the President of the Helmholtz Association, Germany
- 2010 Guest-fellowship for experienced researchers, awarded by the Alexander von Humboldt Foundation for a stay at KIT
- 2009 Visiting professorship, Helsinki University, Finland
- 2004 Marie Curie Excellence Team grant, European Commission (FP6), Lund University, Sweden
- 2000 Emmy Noether Independent Young Investigators Grant, DFG, Germany
- 1998 Post-doctoral fellowship, New Zealand Foundation for Science, Research & Technology

COMMISSIONS OF TRUST

Since 2022	Member of the Climate-Advisory Panel to the Land Baden-Württemberg
Since 2022	Lead author in the IPBES 'Nexus' Assessment Report
2018-2022	Lead Author, IPCC AR6 (WG2)
2020-2021	Invited expert to the IPBES-IPCC co-sponsored workshop and workshop-report author (section lead) 'Biodiversity and Climate Change'
2020	Author, Discussion Paper of the Leopoldina German National Academy of Sciences 'Global Biodiversity in Crisis – What can Germany and the EU do about it?'
2017-2019	Coordinating Lead Author, IPCC Special report on Climate change & Land
since 2016	Steering Committee Member, LUMIP (Land-use model intercomparison project, in CMIP6)
2016-2019	Coordinating Lead Author, IPBES, Global Assessment
2013-2017	Member, Advisory Group EC Horizon 2020 Challenge 5 'Climate action, environment, resource efficiency and raw materials'
2011-2018	Scientific Steering Committee of the IGBP/Future Earth core-project AIMES
2011-13	Member, Earth Science Advisory Council of the European Space Agency
2007-10	Associate Editor (Terrestrial Ecosystems), Global Biogeochemical Cycles
2004-10	Member, Scientific Steering Committee of the IGBP/Future Earth core-project iLEAPS

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RESEARCH GRANTS

2023-2027	wildE, Climate-smart rewilding: ecological restoration for climate change mitigation, adaptation and biodiversity support in Europe, EU Horizon Europe, Deputy-coordinator and WP Leader, 0.61 Mio €
2023-2027	EyeCLIMA, Verifying Emissions of Climate Forcers, EU Horizon Europe, 0.33 Mio €
2022-2026	Naturance, Nature for Insurance – Insurance for Nature, EC Horizon Europe, 0.3 Mio €
2022-2027	ForestPaths, Holistic Forest-based Policy Pathways for Climate Change Mitigation, EC Horizon Europe, WP leader, 0.4 Mio€
2021-2024	STEPSEC, Scrutinizing the feasibility of Terrestrial CDR Potentials under Socio-Ecological Constraints, German Ministry of Education and Research, PI, 0.35 Mio €
2021-2023	IsoTEch-Land, Future Fields pilot-project grant, KIT, Coordinator, 0.4 Mio€
2013-2021	Grant from the Helmholtz Foundation Impulse and Networking Fund, 1 Mio €
2018-2020	ISIPEDIA, EC ERANET, PI workpackage crop modelling, 0.12 Mio €
2013-2017	LUC4C, <i>Land-use change: assessing the net climate forcing, and options for climate change mitigation and adaptation</i> , 7 th FP IP, overall coordinator (6 Mio €), own share: 1.4 Mio €
2012-2017	OPERAS, Operational potential of ecosystem services applications, 7 th FP IP, Module and WP Leader, 0.5 Mio €
2011-2015	ECLAIRE, The impact of atmospheric pollution on European land ecosystems and soils in a changing climate, 7 th FP IP Theme and WP Leader, 0.3 Mio €
2011-2015	PEGASOS, Pan-European Gas and Aerosols Study, 7 th FP IP Theme and WP Leader, 0.33 Mio €
2010-2014	<i>ClimAfrica</i> , Climate change in Africa and its impact on humans and ecosystems. 7 th FP, WP Leader, 0.33 Mio. €
2010-2013	FUME, Forest fires under climate, social and economic changes in Europe, the Mediterranean and other fire-affected areas of the world, 7 th FP IP, own share: 0.3 Mio €
2010-2014	Pre-industrial is not pristine: Holocene terrestrial aerosol precursors. Academy of Finland, 0.4 Mio €
2009-2014	LUsTT, Land use today and tomorrow, Leader of Formas Strong Research Environment, 2.5 Mio €
2010-2012	What goes up must come down: Ozone, climate change and crop and forest carbon uptake. Swedish Research Council Formas, 0.35 Mio €

- 2009-2012 Lineé Excellence Centre Carbon-Climate-Interactions of Lund University (Vetenskapsrådet). Co-PI of workpackage Modelling of present and future processes and conditions with a background of Holocene and pre-Holocene scenarios and data 0.35 Mio €
- 2008-2010 Will future BVOC emissions from forests and crops increase or decrease surface O₃? Formas, 0.31 Mio €
- 2008-2010 Capturing the pristine atmosphere. Vetenskapsrådet, 0.17 Mio €
- 2008-2010 A process-based model of plant isoprene emissions. Human Frontier Science Programme, overall coordinator & work-package leader; own share: 0.3 Mio €
- 2007-2009 CarboAfrica. European Commission 6th FP STREP. Work-package Leader: Fire and Vegetation Dynamics; own share: 0.22 Mio €
- 2004-2008 Marie Curie Team on Exchange processes in the Land Surface - Atmosphere system. European Commission 6th Framework Programme. 2.1 Mio €
- 2002-2004 SABISA (Savannah Biogeochemistry in Southern Africa). Deutsche Forschungsgemeinschaft, 0.3 Mio €
- 1998-2001 BOBCAT (BOAT ON A BOREAL CARBON TOUR). Post-Doctoral Fellowship, New Zealand Foundation for Research, Science and Technology, 60 k€

PUBLICATIONS

Chapters in Assessments & Workshop Reports

Pörtner HO, Scholes R J, Agard J, Archer E, **Arneth A**, Bai X, Barnes D, Burrows M, Chan L, Cheung W L, Diamond S, Donatti C, Duarte C, Eisenhauer N, Foden W, Gasalla M A, Handa C, Hickler T, Hoegh-Guldberg O, Ichii K, Jacob U, Insarov G, Kiessling W, Leadley P, Leemans R, Levin L, Lim M, Maharaj S, Managi S, Marquet P A, McElwee P, Midgley G, Oberdorff T, Obura D, Osman E, Pandit R, Pascual U, Pires A P F, Popp A, Reyes-García V, Sankaran M, Settele J, Shin Y J, Sintayehu D W, Smith P, Steiner N, Strassburg B, Sukumar R, Trisos C, Val A L, Wu J, Aldrian E, Parmesan C, Pichs-Madruga R, Roberts D C, Rogers A D, Díaz S, Fischer M, Hashimoto S, Lavorel S, Wu N and Ngo H T (2021) *IPBES-IPCC co-sponsored workshop report on biodiversity and climate change*. IPBES and IPCC. doi: 10.5281/zenodo.4782538

Pörtner HO, Scholes R J, Agard J, Archer E, **Arneth A**, Bai X, Barnes D, Burrows M, Chan L, Cheung W L, Diamond S, Donatti C, Duarte C, Eisenhauer N, Foden W, Gasalla M A, Handa C, Hickler T, Hoegh-Guldberg O, Ichii K, Jacob U, Insarov G, Kiessling W, Leadley P, Leemans R, Levin L, Lim M, Maharaj S, Managi S, Marquet P A, McElwee P, Midgley G, Oberdorff T, Obura D, Osman E, Pandit R, Pascual U, Pires A P F, Popp A, Reyes-García V, Sankaran M, Settele J, Shin Y J, Sintayehu D W, Smith P, Steiner N, Strassburg B, Sukumar R, Trisos C, Val A L, Wu J, Aldrian E, Parmesan C, Pichs-Madruga R, Roberts D C, Rogers A D, Díaz S, Fischer M, Hashimoto S, Lavorel S, Wu N and Ngo H T (2021) *Scientific outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*. IPBES secretariat, Bonn, Germany. doi:10.5281/zenodo.4659158

Drenckhahn D, **Arneth A**, Filser J, Haberl H, Hansjürgens B, Herrmann B, Homeier J, Leuschner C, Mosbrugger V, Reusch T, Schäffer A, Scherer-Lorenzen M, Tockner K. (2020) *Global Biodiversity in Crisis – What can Germany and the EU do about it?*, German National Academy of Sciences Leopoldina, Halle, Germany, www.leopoldina.org/en/publications/detailview/publication/globale-biodiversitaet-in-der-krise-was-koennen-deutschland-und-die-eu-dagegen-tun-2020/

Shin Y-J, **Arneth A**, Roy-Chaudhury R, Midgley G, Bofofo Y, Bukareva E, Heinemann A, Horeca-Milcu A, Kolb M, Leadley P, Oberdorff T, Madruga R, Rondinini C, Saiot O, Yue T, Osano P (2019) *IPBES Global Assessment on Biodiversity and Ecosystem Services*, Chapter 4: Plausible futures of nature, its contributions to people and their good quality of life. Bonn, Germany. doi: 10.5281/zenodo.5519482

Arneth A, Deton D, Agus DF, Elbehri A, Erb K, Elasha B, Rahimi M, Rounsevell M, Spence A, Valentini R (2019). Chapter 1: Framing and Context. *Special Report Climate Change and Land, IPCC*, <https://www.ipcc.ch/srcccl/>.

Peer-reviewed articles

Arneth A, Leadley P, Claudet J, Coll M, Rondinini C, Rounsevell MDA, Shin YC, Alexander P, Fuchs R (2023). Making protected areas effective for biodiversity, climate and food. *Global Change Biology*. doi:10.1111/gcb.16664

Belda DM, Anthoni P, Warlind D, Olin S, Schurgers G, Tang J, Smith B and **Arneth A** (2022) LPJ-GUESS/LSMv1.0: a next-generation land surface model with high ecological realism. *Geoscientific Model Development*. doi: 10.5194/gmd-15-6709-2022.

Krause J, Harfoot M, Hoeks S, Anthoni P, Brown C, Rounsevell M and **Arneth A** (2022) How more sophisticated leaf biomass simulations can increase the realism of modelled animal populations. *Ecological Modelling*. doi: 10.1016/j.ecolmodel.2022.110061.

Ma JY, Rabin S S, Anthoni P, Bayer A D, Nyawira S S, Olin S, Xia L L and **Arneth A** (2022) Assessing the impacts of agricultural managements on soil carbon stocks, nitrogen loss, and crop production - a modelling study in eastern Africa. *Biogeosciences*. doi: 10.5194/bg-19-2145-2022.

Murray-Tortarolo G, Poulter B, Vargas R, Hayes D, Michalak A M, Williams C, Windham-Myers L, Wang J A, Wickland K P, Butman D, Tian H Q, Sitch S, Friedlingstein P, O'Sullivan M, Briggs P, Arora V, Lombardozzi D, Jain A K, Yuan W P, Seferian R, Nabel J, Wiltshire A, **Arneth A**, Lienert S, Zaehle S, Bastrikov V, Goll D, Vuichard N, Walker A, Kato E, Yue X, Zhang Z, Chatterjee A and Kurz W (2022) A Process-Model Perspective on Recent Changes in the Carbon Cycle of North America. *Journal of Geophysical Research*. doi: 10.1029/2022jg006904.

O'Sullivan M, Friedlingstein P, Sitch S, Anthoni P, **Arneth A**, Arora V K, Bastrikov V, Delire C, Goll D S, Jain A, Kato E, Kennedy D, Knauer J, Lienert S, Lombardozzi D, McGuire P C, Melton J R, Nabel J, Pongratz J, Poulter B, Seferian R, Tian H Q, Vuichard N, Walker A P, Yuan W P, Yue X and Zaehle S (2022) Process-oriented analysis of dominant sources of uncertainty in the land carbon sink. *Nature Communications*. doi: 10.1038/s41467-022-32416-8.

Oberpriller J, Herschlein C, Anthoni P, **Arneth A**, Krause A, Rammig A, Lindeskog M, Olin S and Hartig F (2022) Climate and parameter sensitivity and induced uncertainties in carbon stock projections for European forests (using LPJ-GUESS 4.0). *Geoscientific Model Development*. doi: 10.5194/gmd-15-6495-2022.

Rabin SS, Gerard F N and **Arneth A** (2022) The influence of thinning and prescribed burning on future forest fires in fire-prone regions of Europe. *Environmental Research Letters*. doi: 10.1088/1748-9326/ac6312.

Shin YJ, Midgley G F, Archer E R M, **Arneth A**, Barnes D K A, Chan L, Hashimoto S, Hoegh-Guldberg O, Insarov G, Leadley P, Levin L A, Ngo H T, Pandit R, Pires A P F, Portner H O, Rogers A D, Scholes R J, Settele J and Smith P (2022) Actions to halt biodiversity loss generally benefit the climate. *Global Change Biology*. doi: 10.1111/gcb.16109.

Henry RC, **Arneth A**, Jung M, Rabin S S, Rounsevell M D, Warren F and Alexander P (2022) Global and regional health and food security under strict conservation scenarios. *Nature Sustainability*. doi:10.1038/s41893-021-00844-x.

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, Ganzenmuller R, Harper A, Jain A K, Koven C, Lienert S, Lombardozzi D, Maki T, Nabel J, Nakamura T, Niwa Y, Peylin P, Poulter B, Pugh T A M, Rodenbeck C, Saeki T, Stocker B, Viovy N, Wiltshire A and Zaehle S (2022) Are Land-Use Change Emissions in Southeast Asia Decreasing or Increasing? *Global Biogeochemical Cycles*. doi: 10.1029/2020gb006909.

Liao CJ, Chen Y Z, Wang J M, Liang Y S, Huang Y S, Lin Z Y, Lu X J, Huang Y Y, Tao F, Lombardozzi D, **Arneth A**, Goll D S, Jain A, Sitch S, Lin Y L, Xue W, Huang X M and Luo Y Q (2022) Disentangling land model uncertainty via Matrix-based Ensemble Model Inter-comparison Platform (MEMIP). *Ecological Processes*. doi:10.1186/s13717-021-00356-8.

Liu JY, You Y Y, Li J F, Sitch S, Gu X H, Nabel J, Lombardozzi D, Luo M, Feng X Y, **Arneth A**, Jain A K, Friedlingstein P, Tian H Q, Poulter B and Kong D D (2021) Response of global land evapotranspiration to climate change, elevated CO₂, and land use change. *Agricultural and Forest Meteorology*. doi: 10.1016/j.agrformet.2021.108663.

Ma J, Olin S, Anthoni P, Rabin S S, Bayer A D, Nyawira S S and **Arneth A** (2022) Modeling symbiotic biological nitrogen fixation in grain legumes globally with LPJ-GUESS (v4.0, r10285). *Geoscientific Model Development*. doi: 10.5194/gmd-15-815-2022.

Smith P, **Arneth A**, Barnes D K A, Ichii K, Marquet P A, Popp A, Portner H O, Rogers A D, Scholes R J, Strassburg B, Wu J G and Ngo H (2022) How do we best synergize climate mitigation actions to co-benefit biodiversity? *Global Change Biology*. doi: 10.1111/gcb.16056

Arneth A, Olsson L, Cowie A, Erb K H, Hurlbert M, Kurz W A, Mirzabaev A and Rounsevell M D A (2021) Restoring degraded land. *Annual Review of Environment and Resources*. doi: 10.1146/annurev-environ-012320-054809

Rounsevell MDA, **Arneth A**, Brown C, Cheung W W L, Gimenez O, Holman I, Leadley P, Luján C, Mahevas S, Maréchaux I, Péliissier R, Verburg P H, Vieilledent G, Wintle B A and Shin Y-J (2021) Identifying uncertainties in scenarios and models of socio-ecological systems in support of decision-making. *One Earth*. doi:10.1016/j.oneear.2021.06.003

Bastos A, Orth R, Reichstein M, Ciais P, Viovy N, Zaehle S, Anthoni P, **Arneth A**, Gentine P, Joetzjer E, Lienert S, Loughran T, McGuire P C, Sungmin O, Pongratz J and Sitch S (2021) Vulnerability of European ecosystems to two compound dry and hot summers in 2018 and 2019. *Earth System Dynamics*. doi: 10.5194/esd-12-1015-2021

Ruane AC, Phillips M, Muller C, Elliott J, Jagermeyr J, **Arneth A**, Balkovic J, Deryng D, Folberth C, Iizumi T, Izaurrealde R C, Khabarov N, Lawrence P, Liu W F, Olin S, Pugh T A M, Rosenzweig C, Sakurai G, Schmid E, Sultan B, Wang X H, de Wit A and Yang H (2021) Strong regional influence of climatic forcing datasets on global crop model ensembles. *Agricultural and Forest Meteorology*. doi: 10.1016/j.agrformet.2020.108313

Winkler AJ, Myneni R B, Hannart A, Sitch S, Haverd V, Lombardozi D, Arora V K, Pongratz J, Nabel J, Goll D S, Kato E, Tian H Q, **Arneth A**, Friedlingstein P, Jain A K, Zaehle S and Brovkin V (2021) Slowdown of the greening trend in natural vegetation with further rise in atmospheric CO₂. *Biogeosciences*. doi: 10.5194/bg-18-4985-2021

Calvin C, Cowie A, Berndes G, **Arneth A**, Cherubini F, Portugal-Pereira J, Grassi G, House J, Johnson F X, Popp A, Rounsevell M, Slade R and Smith P Bioenergy for climate change mitigation: Scale and sustainability. *Global Change Biology Bioenergy*. doi: 10.1111/gcbb.12863

Krause A, **Arneth A**, Anthoni P and Rammig A (2020) Legacy effects from historical environmental changes dominate future terrestrial carbon uptake. *Earths Future*. doi: 10.1029/2020ef001674

Obermeier WA, Nabel J, Loughran T, Hartung K, Bastos A, Havermann F, Anthoni P, **Arneth A**, Goll D S, Lienert S, Lombardozi D, Luysaert S, McGuire P C, Melton J R, Poulter B, Sitch S, Sullivan M O, Tian H Q, Walker A P, Wiltshire A J, Zaehle S and Pongratz J (2021) Modelled land use and land cover change emissions - a spatio-temporal comparison of different approaches. *Earth System Dynamics*. doi: 10.5194/esd-12-635-2021

Bayer AD, Fuchs R, Mey R, Krause A, Verburg P H, Anthoni P and **Arneth A** (2021) Diverging land-use projections cause large variability in their impacts on ecosystems and related indicators for ecosystem services. *Earth System Dynamics*. doi: 10.5194/esd-12-327-2021

Birami B, Bamberger I, Ghirardo A, Grote R, **Arneth A**, Gaona-Colman E, Nadal-Sala D and Ruehr N K Heatwave frequency and seedling death alter stress-specific emissions of volatile organic compounds in Aleppo pine (2021) *Oecologia*. doi: 10.1007/s00442-021-04905-y

Chen ZC, Huntzinger D N, Liu J J, Piao S L, Wang X H, Sitch S, Friedlingstein P, Anthoni P, **Arneth A**, Bastrikov V, Goll D S, Haverd V, Jain A K, Joetzjer E, Kato E, Lienert S, Lombardozi D L, McGuire P C, Melton J R, Nabel J, Pongratz J, Poulter B, Tian H Q, Wiltshire A J, Zaehle S and Miller S M (2021) Five years of variability in the global carbon cycle: comparing an estimate from the Orbiting Carbon Observatory-2 and process-based models. *Environmental Research Letters*. doi: 10.1088/1748-9326/abfac1

Gonsamo G, Ciais P, Miralles D G, Sitch S, Dorigo W, Lombardozi D, Friedlingstein P, Nabel J, Goll D S, O'Sullivan M, **Arneth A**, Anthoni P, Jain A K, Wiltshire A, Peylin P and Cescatti A (2021) Greening drylands despite warming consistent with carbon dioxide fertilization effect. *Global Change Biology*. doi: 10.1111/gcb.15658

Arneth A, Shin YJ, Leadley P, Rondinini C, Bukvareva E, Kolb M, Midgley GF, Oberdorff T, Palomo I, Saito O. 2020. Post-2020 biodiversity targets need to embrace climate change. *PNAS*. doi: 10.1073/pnas.2009584117

Collalti C, Ibrom A, Stockmarr A, Cescatti A, Alkama R, Fernandez-Martinez M, Matteucci G, Sitch S, Friedlingstein P, Ciais P, Goll D S, Nabel J, Pongratz J, **Arneth A**, Haverd V and Prentice I C (2020) Forest

production efficiency increases with growth temperature. *Nature Communications*. 10.1038/s41467-020-19187-w

Rowlinson MA, Rap A, Hamilton D S, Pope R J, Hantson S, Arnold S R, Kaplan J O, **Arneth A**, Chipperfield M P, Forster P M and Nieradzik L (2020) Tropospheric ozone radiative forcing uncertainty due to pre-industrial fire and biogenic emissions. *Atmospheric Chemistry and Physics*. doi: 10.5194/acp-20-10937-2020

Ruane AC, Phillips M, Muller C, Elliott J, Jagermeyr J, **Arneth A**, Balkovic J, Deryng D, Folberth C, Iizumi T, Izaurralde R C, Khabarov N, Lawrence P, Liu W F, Olin S, Pugh T A M, Rosenzweig C, Sakurai G, Schmid E, Sultan B, Wang X H, de Wit A and Yang H (2021) Strong regional influence of climatic forcing datasets on global crop model ensembles. *Agricultural and Forest Meteorology*. doi: 10.1016/j.agrformet.2020.108313

Song X, Li F, Harrison S P, Luo T X, **Arneth A**, Forrest M, Hantson S, Lasslop G, Mangeon S, Ni J, Yue C, Hickler T, Luo Y Q, Sitch S, Xu X and Zhu Z C (2020) Vegetation biomass change in China in the 20th century: an assessment based on a combination of multi-model simulations and field observations. *Environmental Research Letters*. doi: 10.1088/1748-9326/ab94e8

Friedlingstein P, O'Sullivan M, Jones M W, Andrew R M, Hauck J, Olsen A, Peters G P, Peters W, Pongratz J, Sitch S, Le Quere C, Canadell J G, Ciais P, Jackson R B, Alin S, Aragao L, **Arneth A**, Arora V, Bates N R, Becker M, Benoit-Cattin A, Bittig H C, Bopp L, Bultan S, Chandra N, Chevallier F, Chini L P, Evans W, Florentie L, Forster P M, Gasser T, Gehlen M, Gilfillan D, Gkritzalis T, Gregor L, Gruber N, Harris I, Hartung K, Haverd V, Houghton R A, Ilyina T, Jain A K, Joetzjer E, Kadono K, Kato E, Kitidis V, Korsbakken J I, Landschutzer P, Lefevre N, Lenton A, Lienert S, Liu Z, Lombardozzi D, Marland G, Metzl N, Munro D R, Nabel J, Nakaoka S I, Niwa Y, O'Brien K, Ono T, Palmer P I, Pierrot D, Poulter B, Resplandy L, Robertson E, Rodenbeck C, Schwinger J, Seferian R, Skjelvan I, Smith A J P, Sutton A J, Tanhua T, Tans P P, Tian H, Tilbrook B, Van der Werf G, Vuichard N, Walker A P, Wanninkhof R, Watson A J, Willis D, Wiltshire A J, Yuan W P, Yue X and Zaehle S (2020) Global Carbon Budget 2020. *Earth System Science Data*. doi: 10.5194/essd-12-3269-2020

Tian H, Rongting X, Canadell J, Thompson RL, Winiwarter W, Suntharalingam P, Davidson EA, Ciais P, Jackson RB, Janssens-Maenhout G, Prather MJ, Regnier P, Pan N, Pan S, Peters GP, Shi H, Tubiello FN, Zaehle S, Zhou F, **Arneth A**, Battaglia G, Berthet S, Bopp L, Bouwman AF, Buitenhuis ET, Chang J, Chipperfield MP, Dangal SRS, Dlugokencky E, Elkins JW, Eyre BD, Fu B, Hall B, Ito A, Joos F, Krummel PB, Landolfi A, Laruelle GG, Lauerwald R, Li W, Lienert S, Maavara T, MacLeod M, Millet DB, Olin S, Patra PK, Prinn RG, Raymond PA, Ruiz DJ, van der Werf GR, Vuichard N, Wang J, Weiss RF, Wells KC, Wilson C, Yang J and Yao Y. (2020). A comprehensive quantification of global nitrous oxide sources and sinks, *Nature*. doi: 10.1038/s41586-020-2780-0

Bastos A, Ciais P, Friedlingstein P, Sitch S, Pongratz J, Fan L, Wigneron JP, Weber U, Reichstein M, Fu Z, Anthoni P, **Arneth A**, Haverd V, Jain AK, Joetzjer E, Knauer J, Lienert S, Loughran T, McGuire PC, Tian H, Viovy N, and Zaehle S (2020). Direct and seasonal legacy effects of the 2018 heat wave and drought on European ecosystem productivity. *Science Advances*. 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, Padron R S, Shi H, Tian H, Viovy N and Zaehle S (2020b) Impacts of extreme summers on European ecosystems: a comparative analysis of 2003, 2010 and 2018. *Philosophical Transactions of the Royal Society B-Biological Sciences*. doi: 10.1098/rstb.2019.0507

Rabin S, Alexander P, Henry R, Anthoni P, Pugh TAM, Rounseyell M, and **Arneth A** (2020), Impacts of future agricultural change on ecosystem service indicators. *Earth System Dynamics*. doi: 10.5194/esd-11-357-2020

Birami B, Naegele T, Gattmann M, Preisler Y, Gast A, **Arneth A**, and Ruehr NK (2020), Hot drought reduces the effects of elevated CO₂ on tree water-use efficiency and carbon metabolism. *New Phytologist*. doi: 10.1111/nph.16471

Hamilton DS, Moore JK, **Arneth A**, Bond TC, Carslaw KS, Hantson S, Ito A, Kaplan JO, Lindsay K, Nieradzik L, Rathod SD, Scanza RA, and Mahowald NM (2020). Impact of Changes to the Atmospheric Soluble Iron Deposition Flux on Ocean Biogeochemical Cycles in the Anthropocene. *Global Biogeochemical Cycles*. doi: 10.1029/2019gb006448

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