

Biographical sketch**Christopher Bower Field****October 2019**

Stanford Woods Institute for the Environment
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Education:

A.B. Harvard College, 1975 - Biology
Ph.D. Stanford University, 1981 - Biology

Positions Held:

1981 - 1984 Assistant Professor, Biology, University of Utah
1984 - 2002 Staff Scientist, Carnegie Institution of Washington
1986 - 1989 Assistant Professor by courtesy, Stanford University
1989 - 1996 Associate Professor by courtesy, Stanford University
1996 - 2005 Professor by courtesy, Stanford University
2002 - 2016 Director, Department of Global Ecology, Carnegie Institution
2005 - 2016 Faculty Director, Jasper Ridge Biological Preserve
2005 - present Professor, Department of Biology, Stanford University
2005 - present Senior Fellow by courtesy, Freeman Spogli Institute
for International Studies
2008 - present Professor, Department of Earth System Science,
Stanford University
2008 - present Senior Fellow, Woods Institute for the Environment,
Stanford University
2009 - present Senior Fellow, Precourt Institute for Energy, Stanford University
2012 – present Melvin and Joan Lane Professor for Interdisciplinary Environmental
Studies, Stanford University
2016 – present Perry L. McCarty Director, Stanford Woods Institute for the Environment

Major Boards:

2013 – 2019 Harvard University Board of Overseers
2016 – present WWF US Board of Directors
2018 – present California Academy of Sciences Board of Trustees

Chris Field is the Perry L. McCarty Director of the Stanford Woods Institute for the Environment and Melvin and Joan Lane Professor for Interdisciplinary Environmental Studies. His research focuses on climate change, ranging from work on improving climate models, to prospects for renewable energy systems, to community organizations that can minimize the risk of a tragedy of the commons. Field was the founding director of the Carnegie Institution's Department of Global Ecology, a position he held from 2002 to 2016. From 2008 to 2015, he was co-chair of Working Group II of the Intergovernmental Panel on Climate Change, where he led the effort on the IPCC Special Report on "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation" (2012) and the Working Group II contribution to the IPCC Fifth Assessment Report (2014) on Impacts, Adaptation, and Vulnerability. He is a recipient of the

Heinz Award, the Max Plank Research Award, the BBVA Foundation Frontiers of Knowledge Award, the Roger Revelle Medal, and the Stephen H. Schneider Award for Outstanding Science Communication. Field was elected to membership in the National Academy of Sciences (2001), and fellowships in the American Association for the Advancement of Science (2009), the American Academy of Arts and Sciences (2010), the Ecological Society of America (2012), the American Geophysical Union (2014), and the California Academy of Sciences (2015). Field received his PhD from Stanford in 1981.

Fellowships, Awards

1971	National Merit Scholarship
1975	Phi Beta Kappa
1975	A.B., summa cum laude
1977	NSF predoctoral fellowship
2000	Ecological Society of America, Aldo Leopold Fellow
2001	Elected Member, US National Academy of Sciences
2006	Stanford University Sidney and Skippy Prize for Outstanding Research in the Prevention or Reduction of Global Warming
2006	Townsend Distinguished Lecture, University South Carolina
2009	Elected Fellow, American Association for the Advancement of Science
2009	Heinz Award
2010	Elected Member, American Academy of Arts and Sciences
2011	W. David Baird Distinguished Lecturer, Pepperdine University
2011	Henry J. Oosting Memorial Lecture in Ecology, Duke University
2012	Doctor Honoris Causa, University of Buenos Aires
2012	Foreign Correspondent, Argentine Academy of Environmental Sciences
2012	Fellow, Ecological Society of America
2013	Max Planck Research Award
2013	BBVA Foundation Frontiers of Knowledge Award
2014	American Geophysical Union Roger Revelle Medal
2015	Stephen H. Schneider Award for Outstanding Science Communication
2015	Fellow, California Academy of Sciences

Service

Editorial review boards of *Trees*, *Ecology*, *Ecological Applications*, *PNAS*, and *Global Change Biology*.

Proposal evaluation panels for US Department of Agriculture, National Science Foundation Academic program evaluations for Brown University, University of California Santa Barbara, Commonwealth Scientific and Industrial Research Organization, and Argonne National Laboratory.

National Research Council Committees on Scientific Committee on Problems of the Environment (chair), *Ecosystems*, *Grand Challenges in Environmental Biology*, Board on Environmental Studies and Toxicology, Board on International Scientific Organizations, *Ecological Impacts of Climate Change* (chair), *Research Opportunities at the Interface of Physical and Biological Sciences*, *Hidden Costs of Energy*, *Earth Science and Applications from Space*, Developing a research agenda and research

governance approaches for climate intervention strategies that reflect sunlight to cool Earth (chair)

Scientific Steering Committees for International Satellite Land Surface Climatology Project Americas, International Geosphere-Biosphere Programme Core Project on Biospheric Aspects of the Hydrologic Cycle (chair), National Center for Ecological Analysis and Synthesis, US Carbon Cycle Science Program (chair), Global Carbon Project, National Ecological Observatory Network (chair), Intergovernmental Panel on Climate Change – Working Group II (co-chair), International Council for Science.

Testimony before several committees and sub-committees of the US Senate and House of Representatives.

Recent Research Publications:

(Google Scholar citations: <http://scholar.google.com/citations?user=whhr40wAAAAJ&hl=en>)

2019

Anderson, C. M., R. S. DeFries, R. Litterman, P. A. Matson, D. C. Nepstad, S. Pacala, W. H. Schlesinger, M. R. Shaw, P. Smith, C. Weber, and C. B. Field. 2019. Natural climate solutions are not enough. *Science* **363**: 933-934.

Duffy, P. B., C. B. Field, N. S. Diffenbaugh, S. C. Doney, Z. Dutton, S. Goodman, L. Heinzerling, S. Hsiang, D. B. Lobell, and L. J. Mickley. 2019. Strengthened scientific support for the Endangerment Finding for atmospheric greenhouse gases. *Science* **363**: eaat5982.

Hino, M., S. T. Belanger, C. B. Field, A. R. Davies, and K. J. Mach. 2019. High-tide flooding disrupts local economic activity. *Science Advances* **5**: eaau2736.

Jackson, R. B., E. I. Solomon, J. G. Canadell, M. Cargnello, and C. B. Field. 2019. Methane removal and atmospheric restoration. *Nature Sustainability* **2**: 436-438.

Mach, K. J., C. M. Kraan, W. N. Adger, H. Buhaug, M. Burke, J. D. Fearon, C. B. Field, C. S. Hendrix, J.-F. Maystadt, and J. O'Loughlin. 2019. Climate as a risk factor for armed conflict. *Nature* **571**: 193-197.

Terrer, C., R. B. Jackson, I. C. Prentice, T. F. Keenan, C. Kaiser, S. Vicca, J. B. Fisher, P. B. Reich, B. D. Stocker, B. A. Hungate, J. Peñuelas, I. McCallum, N. A. Soudzilovskaia, L. A. Cernusak, A. F. Talhelm, K. Van Sundert, S. Piao, P. C. D. Newton, M. J. Hovenden, D. M. Blumenthal, Y. Y. Liu, C. Müller, K. Winter, C. B. Field, W. Viechtbauer, C. J. Van Lissa, M. R. Hoosbeek, M. Watanabe, T. Koike, V. O. Leshyk, H. W. Polley, and O. Franklin. 2019. Nitrogen and phosphorus constrain the CO₂ fertilization of global plant biomass. *Nature Climate Change* **9**: 684-689.

2018

Anderson, C. M., K. A. Kissel, C. B. Field, and K. J. Mach. 2018. Climate Change Mitigation, Air Pollution, and Environmental Justice in California. *Environmental Science & Technology* **52**:10829–10838.

Baik, E., D. L. Sanchez, P. A. Turner, K. J. Mach, C. B. Field, and S. M. Benson. 2018. Geospatial analysis of near-term potential for carbon-negative bioenergy in the United States. *Proceedings of the National Academy of Sciences* **115**:3290-3295.

- Chauvin, K. M., G. Asner, R. Martin, W. Kress, S. Wright, and C. Field. 2018. Decoupled dimensions of leaf economic and anti-herbivore defense strategies in a tropical canopy tree community. *Oecologia*:1-18.
- Davis, S. J., N. S. Lewis, M. Shaner, S. Aggarwal, D. Arent, I. L. Azevedo, S. M. Benson, T. Bradley, J. Brouwer, Y.-M. Chiang, C. T. M. Clack, A. Cohen, S. Doig, J. Edmonds, P. Fennell, C. B. Field, B. Hannegan, B.-M. Hodge, M. I. Hoffert, E. Ingersoll, P. Jaramillo, K. S. Lackner, K. J. Mach, M. Mastrandrea, J. Ogden, P. F. Peterson, D. L. Sanchez, D. Sperling, J. Stagner, J. E. Trancik, C.-J. Yang, and K. Caldeira. 2018. Net-zero emissions energy systems. *Science* **360**:DOI: 10.1126/science.aas9793.
- Fang, Z., P. T. Freeman, C. B. Field, and K. J. Mach. 2018. Reduced sea ice protection period increases storm exposure in Kivalina, Alaska. *Arctic Science*:1-13.
- Field, C. B. 2018. Smart adaptation in an era of rising climate risks. *Bulletin of the Atomic Scientists* **74**:73-80.
- Lalonde, S. J., K. J. Mach, C. M. Anderson, E. J. Francis, D. L. Sanchez, C. Y. Stanton, P. A. Turner, and C. B. Field. 2018. Forest management in the Sierra Nevada provides limited carbon storage potential: an expert elicitation. *Ecosphere* **9**:e02321.
- Stanton, C. Y., K. J. Mach, P. A. Turner, S. J. Lalonde, D. L. Sanchez, and C. B. Field. 2018. Managing cropland and rangeland for climate mitigation: an expert elicitation on soil carbon in California. *Climatic Change* **147**:633-646.
- Turner, P. A., K. J. Mach, D. B. Lobell, S. M. Benson, E. Baik, D. L. Sanchez, and C. B. Field. 2018. The global overlap of bioenergy and carbon sequestration potential. *Climatic Change*:DOI 10.1007/s10584-10018-12189-z.
- Turner, P. A., C. B. Field, D. B. Lobell, D. L. Sanchez, and K. J. Mach. 2018. Unprecedented rates of land-use transformation in modelled climate change mitigation pathways. *Nature Sustainability* **1**:240-245.

2017

- Anderson, C. M., C. B. Field, and K. J. Mach. 2017. Forest offsets partner climate-change mitigation with conservation. *Frontiers in Ecology and the Environment* **15**:359-365.
- Badgley, G., C. B. Field, and J. A. Berry. 2017. Canopy near-infrared reflectance and terrestrial photosynthesis. *Science Advances* **3**:e1602244.
- Field, C. B., and K. J. Mach. 2017. Rightsizing carbon dioxide removal. *Science* **356**:706-707.
- Hino, M., C. B. Field, and K. J. Mach. 2017. Managed retreat as a response to natural hazard risk. *Nature Climate Change* **7**:364.
- Mach, K. J., and C. B. Field. 2017. Toward the next generation of assessment. *Annual Review of Environment and Resources* **42**:569-597.
- Mach, K. J., M. D. Mastrandrea, P. T. Freeman, and C. B. Field. 2017. Unleashing expert judgment in assessment. *Global Environmental Change* **44**:1-14.
- Mellett, T., C. Selvin, D. Defforey, K. Roberts, A. L. Lecher, K. Dennis, J. Gutknecht, C. Field, and A. Paytan. 2017. Assessing Cumulative Effects of Climate Change Manipulations on Phosphorus Limitation in a Californian Grassland. *Environmental Science & Technology*.
- Strong, A. L., T. P. Johnson, N. R. Chiariello, and C. B. Field. 2017. Experimental fire increases soil carbon dioxide efflux in a grassland long-term multifactor global change experiment. *Global change biology* **23**:1975-1987.

2016

- Hallegatte, S., J. Rogelj, M. Allen, L. Clarke, O. Edenhofer, C. B. Field, P. Friedlingstein, L. van Kesteren, R. Knutti, K. J. Mach, M. Mastrandrea, A. Michel, J. Minx, M. Oppenheimer, G.-K. Plattner, K. Riahi, M. Schaeffer, T. F. Stocker, and D. P. van Vuuren. 2016. Mapping the climate change challenge. *Nature Clim. Change* **6**:663-668.
- Mach, K. J., P. T. Freeman, M. D. Mastrandrea, and C. B. Field. 2016. A multistage crucible of revision and approval shapes IPCC policymaker summaries. *Science Advances* **2**:e1600421.
- Mach, K. J., M. D. Mastrandrea, T. E. Bilir, and C. B. Field. 2016. Understanding and responding to danger from climate change: the role of key risks in the IPCC AR5. *Climatic Change*: DOI 10.1007/s10584-016-1645-x.
- McManus, K. M., G. P. Asner, R. E. Martin, K. G. Dexter, W. J. Kress, and C. B. Field. 2016. Phylogenetic Structure of Foliar Spectral Traits in Tropical Forest Canopies. *Remote Sensing* **8**:196.
- Zhu, K., N. R. Chiariello, T. Tobeck, T. Fukami, and C. B. Field. 2016. Nonlinear, interacting responses to climate limit grassland production under global change. *Proceedings of the National Academy of Sciences*. DOI 10.1073/pnas.1606734113

2015

- Anderegg, W. R., A. Flint, C.-Y. Huang, L. Flint, J. A. Berry, F. W. Davis, J. S. Sperry, and C. B. Field. 2015. Tree mortality predicted from drought-induced vascular damage. *Nature Geoscience*.
- Buizer, J. L., K. Dow, M. E. Black, K. L. Jacobs, A. Waple, R. H. Moss, S. Moser, A. Luers, D. I. Gustafson, and T. Richmond. 2015. Building a sustained climate assessment process. *Climatic Change*:1-15.
- Duffy, P. B., P. Brando, G. P. Asner, and C. B. Field. 2015. Projections of future meteorological drought and wet periods in the Amazon. *Proceedings of the National Academy of Sciences* **112**:13172-13177.
- Field, C. B., and V. R. Barros. 2015. Added value from IPCC approval sessions. *Science* **350**:36.
- Field, C. B., and A. M. Michalak. 2015. Water, Climate, Energy, Food: Inseparable & Indispensable. *Daedalus* **144**:7-17.
- Hernandez, R. R., M. K. Hoffacker, and C. B. Field. 2015. Efficient use of land to meet sustainable energy needs. *Nature Climate Change* **5**: 353–358.
- Oster, M., J. J. Beck, R. E. Furrow, K. Yeung, and C. B. Field. 2015. In-field yellow starthistle (*Centaurea solstitialis*) volatile composition under elevated temperature and CO₂ and implications for future control. *Chemoecology* **25**:313-323.

2014

- Broadbent, E. N., A. M. Almeyda Zambrano, G. P. Asner, M. Soriano, C. B. Field, H. R. de Souza, M. Peña-Claros, R. I. Adams, R. Dirzo, and L. Giles. 2014. Integrating Stand and Soil Properties to Understand Foliar Nutrient Dynamics during Forest Succession Following Slash-and-Burn Agriculture in the Bolivian Amazon. *PLoS ONE* **9**:e86042.
- Dahlin, K., G. Asner, and C. Field. 2014. Linking vegetation patterns to environmental gradients and human impacts in a mediterranean-type island ecosystem. *Landscape Ecology*:1-15.
- Field, C.B., V.R. Barros, K.J. Mach, M.D. Mastrandrea, et. al., 2014: Technical summary. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of*

- the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 35-94
- Funk, J. M., C. B. Field, S. Kerr, and A. Daigneault. 2014. Modeling the impact of carbon farming on land use in a New Zealand landscape. *Environmental Science & Policy* 37:1-10.
- Hernandez, R. R., M. K. Hoffacker, and C. B. Field. 2014. Land-Use Efficiency of Big Solar. *Environmental Science & Technology* 48:1315-1323.
- IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1132 pp.
- IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 688 pp.
- IPCC. 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva, Switzerland.