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EDUCATION

Stanford University

Ph.D. Emmett Interdisciplinary Program in Environment and Resources (E-IPER) 2004

- Primary Advisor: Professor Stephen H. Schneider
- Climate policy and impact analysis, probabilistic integrated assessment modeling
- Department of Energy Global Change Education Program (GCEP) Fellow

B.S. Biological Sciences 2000

- With Distinction and Honors in Environmental Science, Technology and Policy
- 2000 Goldman Award recipient for honors thesis

PROFESSIONAL EXPERIENCE

Stanford Woods Institute for the Environment 2020—

- Research Director, Climate and Energy Policy Program and Senior Research Scholar

California Energy Commission 2020—

- Chief Advisor for Energy and Climate Research

Climatic Change (Scientific Journal) 2010—

- Managing Editor and Editorial Board

Near Zero, Carnegie Institution for Science 2015–20

- Director, Near Zero and Senior Research Associate, Carnegie Science

California Fourth Climate Change Assessment 2018

- Associate Editor

IPCC Working Group II Technical Support Unit 2009–15

- Co-Director, Science: (2011–2015)
- Deputy Director, Science (2009–2011)

Rhodium Group, LLC 2013–14

- Consultant, American Climate Prospectus: Economic Risks in the United States

Stanford Woods Institute for the Environment 2006–14

- Assistant Consulting Professor (2009–2014)
- Research Associate and Lecturer, E-IPER (2006–2009)
- Woods Institute Inter-University Scholar (2006)

Stanford Center for Environmental Science and Policy 2004–6

- Postdoctoral Scholar

PEER-REVIEWED PUBLICATIONS

Von Wald, G., Cullenward, D., Mastrandrea, M.D., Weyant, J. (submitted) “Accounting for the greenhouse gas emissions intensity of electricity imports to California.”

Von Wald, G., Mastrandrea, M.D., Cullenward, D., Weyant, J. (2020) “Analyzing California’s framework for estimating greenhouse gas emissions associated with retail electricity sales,” *The Electricity Journal* 33, 106818, <https://doi.org/10.1016/j.tej.2020.106818>

Inman, M., Mastrandrea, M.D., Cullenward, D. (2020) “An open-source model of the Western Climate Initiative cap-and-trade program with supply-demand scenarios to 2030,” *Climate Policy*, <https://doi.org/10.1080/14693062.2020.1760774>

Mastrandrea, M.D., Inman, M., Cullenward, D. (2020) “Assessing California’s progress toward its 2020 greenhouse gas emissions limit,” *Energy Policy*, 111219. <https://doi.org/10.1016/j.enpol.2019.111219>

Cullenward, D., Inman, M., Mastrandrea, M.D. (2019) “Tracking banking in the Western Climate Initiative cap-and-trade program,” *Environmental Research Letters* 14, 124037. <https://doi.org/10.1088/1748-9326/ab50df>

Clarke, L. et al. (2018) “Sector Interactions, Multiple Stressors, and Complex Systems.” In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 638–668. <https://nca2018.globalchange.gov/chapter/17/>

Davis, S.J. et al. (2018) “Net-zero emissions energy systems,” *Science* 360, eaas9793. <https://doi.org/10.1126/science.aas9793>

Mach, K.J., Mastrandrea, M.D., Freeman, P.T., Field, C.B. (2017) “Unleashing expert judgment in assessment,” *Global Environmental Change* 44, 1-14. <https://doi.org/10.1016/j.gloenvcha.2017.02.005>

O’Neill, B.C. et al. (2017) “IPCC reasons for concern regarding climate change risks,” *Nature Climate Change* 7, 28-37. <https://doi.org/10.1038/nclimate3179>

Mach, K.J., Freeman, P.T., Mastrandrea, M.D., Field, C.B. (2016) “A multistage crucible of revision and approval shapes IPCC policymaker summaries,” *Science Advances* 2, e1600421. <https://doi.org/10.1126/sciadv.1600421>

Hallegatte, S. et al. (2016) “Mapping the climate change challenge,” *Nature Climate Change* 6, 663-668. <https://doi.org/10.1038/nclimate3057>

Hallegatte, S. et al. (2016) “Make climate-change assessments more relevant,” *Nature* 534, 613-615. <https://doi.org/10.1038/534613a>

Mach, K.J., Mastrandrea, M.D., Bilir, T.E., Field, C.B. (2016) “Understanding and responding to danger from climate change: the role of key risks in the IPCC AR5,” *Climatic Change* 136, 427-

444. <https://doi.org/10.1007/s10584-016-1645-x>

IPCC (2015) *Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Climate Change, Food, and Agriculture*, Mastrandrea, M.D., K.J. Mach, V.R. Barros, T.E. Bilir, D.J. Dokken, et al. (Eds.). World Meteorological Organization, Geneva, Switzerland, 68 pp. <https://www.ipcc.ch/publication/ipcc-expert-meeting-on-climate-change-food-and-agriculture/>

Rhodium Group (2014) “American Climate Prospectus: Economic Risks in the United States.” Input to the Risky Business Project.

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*, Core Writing Team, Pachauri, R.K., Meyer, L.A. (Eds.). Cambridge University Press, Cambridge, UK and New York, NY, USA, 151 pp. <https://www.ipcc.ch/report/ar5/syr/>

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, et al. (Eds.). Cambridge University Press, Cambridge, UK and New York, NY, USA. <https://www.ipcc.ch/report/ar5/wg2/>

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., Field, C.B., Dokken, D.J., Mastrandrea, M.D., Mach, K.J., et al. (Eds.). Cambridge University Press, Cambridge, UK and New York, NY, USA. <https://www.ipcc.ch/report/ar5/wg2/>

IPCC (2012) *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change [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., and Midgley, P.M. (eds.)]. Cambridge University Press, Cambridge, UK, and New York, NY, USA, 582 pp. <https://www.ipcc.ch/report/managing-the-risks-of-extreme-events-and-disasters-to-advance-climate-change-adaptation/>

Mastrandrea, M.D. and Luers, A.L. (2012) “Climate change in California: scenarios and approaches for adaptation,” *Climatic Change* 111, 5-16. <https://doi.org/10.1007/s10584-011-0240-4>

Mastrandrea, M.D., Tebaldi, C., Snyder, C.P., Schneider, S.H. (2011) “Current and future impacts of extreme events in California,” *Climatic Change* 109, S43-S70. <https://doi.org/10.1007/s10584-011-0311-6>

Mastrandrea, M.D., Mach, K.J., Plattner, G.-K., Edenhofer, O., Stocker, T.F., Field, C.B., Ebi, K.L., Matschoss, P.R. (2011) “The IPCC AR5 guidance note on consistent treatment of uncertainties: a common approach across the working groups,” *Climatic Change* 108, 675–691. <https://doi.org/10.1007/s10584-011-0178-6>

Mastrandrea, M.D. and Mach, K.J. (2011) "Treatment of uncertainties in IPCC Assessment Reports: past approaches and considerations for the Fifth Assessment Report," *Climatic Change* 108, 659–673. <https://doi.org/10.1007/s10584-011-0177-7>

Mastrandrea, M.D., Field, C.B., Stocker, T.F., Edenhofer, O., Ebi, K.L., Frame, D.J., Held, H., Kriegler, E., Mach, K.J., Matschoss, P.R., Plattner, G.-K., Yohe, G.W., and Zwiers, F.W. (2010) Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change (IPCC). https://www.ipcc.ch/site/assets/uploads/2017/08/AR5_Uncertainty_Guidance_Note.pdf

Bonebrake, T.C., and Mastrandrea, M.D., (2010) "Tolerance adaptation and precipitation changes complicate latitudinal patterns of climate change impacts," *Proceedings of the National Academy of Sciences* 107, 12581-12586. <https://doi.org/10.1073/pnas.0911841107>

Warren, R., Mastrandrea, M.D., Hope, C. (2010) "Variation in the climatic response to SRES emissions scenarios among integrated assessment models," *Climatic Change* 102, 671-685. <https://doi.org/10.1007/s10584-009-9769-x>

Mastrandrea, M.D., Heller, N.E., Root, T.L., Schneider, S.H. (2010) "Bridging the gap: linking climate-impacts research with adaptation planning and management," *Climatic Change* 100, 87-101. <https://doi.org/10.1007/s10584-010-9827-4>

Smith, J.B. et al. (2009) "Assessing dangerous climate change through an update of the Intergovernmental Panel on Climate Change (IPCC) 'reasons for concern,'" *Proceedings of the National Academy of Sciences* 106, 4133-4137. <https://doi.org/10.1073/pnas.0812355106>

Lobell, D.B., Burke, M.B., Tebaldi, C., Mastrandrea, M.D., Falcon, W.P., Naylor, R.L. (2008) "Prioritizing climate change adaptation needs for food security in 2030." *Science* 319, 607-610. <https://doi.org/10.1126/science.1152339>

Schneider, S.H. et al. (2007) "Assessing key vulnerabilities and the risk from climate change." In *Climate Change 2007: Impacts, Adaptation, and Vulnerability – Contribution of Working Group II to the Intergovernmental Panel on Climate Change Fourth Assessment Report*, M. Parry et al. (Eds.), Cambridge University Press, Cambridge, UK, 779-810. <https://www.ipcc.ch/report/ar4/wg2/assessing-key-vulnerabilities-and-the-risk-from-climate-change/>

Fisher, B.S. et al. (2007) "Issues related to mitigation in the long term context." In *Climate Change 2007: Mitigation – Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, B. Metz et al. (Eds.), Cambridge University Press, Cambridge, UK. <https://www.ipcc.ch/report/ar4/wg3/issues-related-to-mitigation-in-the-long-term-context/>

Boyce, M.S. et al. (2006) "Demography in an increasingly variable world." *Trends in Ecology and Evolution* 21, 141-148. <https://doi.org/10.1016/j.tree.2005.11.018>

Schneider, S.H., Mastrandrea, M.D. (2005) “Probabilistic assessment of ‘dangerous’ climate change and emissions pathways.” *Proceedings of the National Academy of Sciences* 102, 15728-15735. <https://doi.org/10.1073/pnas.0506356102>

Root, T.L., MacMynowski, D., Mastrandrea, M.D., Schneider, S.H. (2005) “Human-modified temperatures induce species changes: Joint attribution.” *Proceedings of the National Academy of Sciences* 102, 7465-7469. <https://doi.org/10.1073/pnas.0502286102>

Mastrandrea, M.D., Schneider, S.H. (2004) “Probabilistic integrated assessment of ‘dangerous’ climate change.” *Science* 304, 571-575. <https://doi.org/10.1126/science.1094147>

Higgins, P.A.T., Mastrandrea, M.D., Schneider, S.H. (2002) “Dynamics of climate and ecosystem coupling: abrupt changes and multiple equilibria.” *Philosophical Transactions of the Royal Society of London series B-Biological Sciences* 357 (1421), 647-655. <https://dx.doi.org/10.1098/rstb.2001.1043>

Mastrandrea, M.D., Schneider, S.H. (2001) “Integrated assessment of abrupt climatic changes.” *Climate Policy* 1, 433-449. [https://doi.org/10.1016/S1469-3062\(01\)00038-9](https://doi.org/10.1016/S1469-3062(01)00038-9)

POLICY ENGAGEMENT

Cullenward, D., Mastrandrea, M.D., Von Wald, G. (2019) “Comments on the Draft Regulatory Amendments to the Power Source Disclosure Program.” Comment letter to California Energy Commission.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Greenhouse gas accounting in the Power Source Disclosure program.” Comment letter to California Energy Commission.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Implementing AB 398: California’s cap-and-trade reforms.” Comment letter to California Air Resources Board.

Inman, M., Mastrandrea, M.D., Cullenward, D. (2018) “An open-source model of supply and demand in the Western Climate Initiative cap-and-trade program.” Near Zero open-source model.

Inman, M., Cullenward, D., Mastrandrea, M.D. (2018) “Tracking banking in the Western Climate Initiative cap-and-trade program.” Near Zero Research Note.

Cullenward, D., Mastrandrea, M.D., Inman, M., Persad, G. (2018) “Greenhouse gas accounting and the Aliso Canyon Mitigation Agreement.” Comment letter to California Air Resources Board (with Union of Concerned Scientists).

Mastrandrea, M.D., Cullenward, D., Inman, M. (2018) “Ontario’s exit exacerbates allowance overallocation in the Western Climate Initiative cap-and-trade program.” Near Zero Research Note.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Implementing AB 398: evaluating and addressing concerns related to overallocation.” Comment letter to California Air Resources Board.

Inman, M., Mastrandrea, M.D. Cullenward, D. (2018) “California’s ‘self-correcting’ cap-and-trade auction mechanism does not eliminate market overallocation.” Near Zero Research Note.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Implementing AB 398: ARB’s Post-2020 Caps Report and offset limits” Comment letter to California Air Resources Board.

Inman, M., Cullenward, D., Mastrandrea, M.D. (2018) “Ready, fire, aim: ARB’s overallocation report misses its target.” Near Zero Research Note.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Implementing AB 398: ARB’s market design proposals and interpretation of offset limits.” Comment letter to California Air Resources Board.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Implementing AB 398: ARB’s initial post-2020 market design and “allowance pool” concepts.” Near Zero Research Note.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Interpreting AB 398’s Carbon Offsets Limits.” Near Zero Research Note.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “The Q1 2018 WCI Auction: Prices Fall While Oversupply Grows.” Near Zero Research Note.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2018) “Removing excess cap-and-trade allowances will reduce greenhouse gas emissions.” Near Zero Research Note.

Cullenward, D., Inman, M., Mastrandrea, M.D. (2017) “California’s climate emissions are falling, but cap-and-trade is not the cause.” Near Zero Research Note.

Mastrandrea, M.D., Inman, M., Cullenward, D. (2017) “The role of cap-and-trade in meeting California’s 2030 climate target.” Comment letter to California Air Resources Board.

Inman, M., Mastrandrea, M.D., Cullenward, D., Wara, M. (2017) “Managing uncertainty and risk in the proposed Scoping Plan Update.” Comment letter to California Air Resources Board.

BOOKS

Schneider, S.H., Root, T.L., and Mastrandrea, M.D. (eds.) Encyclopedia of Climate and Weather, Second Edition, Oxford University Press, 2011.

Mastrandrea, M.D. and Schneider, S.H. Preparing for Climate Change, MIT Press, 2010.

Schneider, S.H., Rosencranz, A., Mastrandrea, M.D., Kuntz-Duriseti, K. (Eds.) Climate Change Science and Policy, Island Press, 2009.

OTHER PUBLICATIONS

Inman, M., Sanchez, D.L., Mastrandrea, M.D., Davis, S.J., Fries, K. (2016) “An unprecedented push for low-carbon energy innovation: Expert perspectives on R&D opportunities for Mission Innovation.” Near Zero Report.

Sanchez, D.L., Mastrandrea, M.D., Inman, M. (2016) “Global Priorities for Zero-Emission Energy Innovation: An Expert Elicitation and Discussion.” Near Zero Report.

Snyder, C., Mastrandrea, M.D., Schneider, S.H. (2012) “The complex dynamics of the climate system: Constraints on our knowledge, policy implications and the necessity of systems thinking.” In Handbook of the Philosophy of Science: Philosophy of Complex Systems, Hooker, C. (Ed.).

Schneider, S.H. and Mastrandrea, M.D. (2010) “The politics of climate science.” In The Politics of Climate Change: A Survey, Boykoff, M.T. (Ed.), Routledge.

Naylor, R.L. and Mastrandrea, M.D., (2010) “Coping with climate risks in Indonesian rice agriculture: A policy perspective.” In Uncertainty and Environmental Decision Making: A Handbook of Research and Best Practice, Filar, J.A. and Haurie, A. (Eds.), Springer, pp. 127-153.

Mastrandrea, M.D., (2009) “Calculating the benefits of climate policy: Examining the assumptions of Integrated Assessment Models.” Pew Center for Climate Change Report. <http://www.pewclimate.org/benefits-workshop/mastrandrea-calculating-benefits-of-climate-policy>

Mastrandrea, M.D., (2009) “Treatment of climate impacts in Integrated Assessment Models.” Pew Center for Climate Change Workshop Report.

Mastrandrea, M.D. and Schneider, S.H., (2009) “Climate change science overview.” In Climate Change Science and Policy, Schneider, S.H., Rosencranz, A., Mastrandrea, M.D., Kuntz-Duriseti, K. (Eds.), Island Press.

Schneider, S.H. and Mastrandrea, M.D., (2009) “Risk, uncertainty, and assessing dangerous climate change.” In Climate Change Science and Policy, Schneider, S.H., Rosencranz, A., Mastrandrea, M.D., Kuntz-Duriseti, K. (Eds.), Island Press.

Fuessel, M. and Mastrandrea, M.D., (2009) “Integrated assessment modeling of climate change.” In Climate Change Science and Policy, Schneider, S.H., Rosencranz, A., Mastrandrea, M.D., Kuntz-Duriseti, K. (Eds.), Island Press.

Mastrandrea, M.D. and Schneider, S.H., (2008) “The Rising Tide: Time to Adapt to Climate Change.” *Boston Review*, Nov/Dec 2008, 7-10.

Luers, A.L. and Mastrandrea, M.D., (2008) “Climate change in California: Scenarios for adaptation.” Public Policy Institute of California Research Report.

Mastrandrea, M.D. and Schneider, S.H., (2008) “Greenhouse Effect.” In Oxford Companion to Global Change, Cuff, D., Goudie, A. (Eds.).

Mastrandrea, M.D. and Schneider, S.H. (2008) “Global Warming Resource Letter.” *American Journal of Physics* 76, 608-614.

Luers, A., Mastrandrea, M.D., Hayhoe, K., Frumhoff, P.C. (2007) “How to avoid dangerous climate change: a target for U.S. emissions reductions.” Union of Concerned Scientists Research Report.

Tebaldi, C., Mastrandrea, M.D., Smith, R. (2007) “Global Warming.” In Encyclopedia of Quantitative Risk Assessment, Everitt, B. and Melnick, E. (Eds.), John Wiley & Sons, New York.

Baer, P. and Mastrandrea, M.D. (2006) “High Stakes - Designing emissions pathways to reduce the risk of dangerous climate change.” International Public Policy Research Report.

Warren, R., Hope, C., Mastrandrea, M.D., Tol, R., Adger, N. and Lorenzoni, I. (2006) “Spotlighting impacts functions in integrated assessment.” Research Report Prepared for the Stern Review on the Economics of Climate Change.” Tyndall Centre Working Paper 91.

Mastrandrea, M.D., Luers, A.L. and Schneider, S.H. (2006) “Changing perceptions of changing risks: climate change and the California public.” Woods Institute for the Environment California Climate Change Project Policy Brief.

Mastrandrea, M.D. and Schneider, S.H. (2006) “Paleoclimate relevance to global warming.” In Encyclopedia of Quaternary Science, Elias, S.A., Ed., Elsevier, Oxford, UK.

Mastrandrea, M.D. (2003) “Book Review: The Global Warming Desk Reference,” *Climatic Change* 59, 411-416.

ACADEMIC AND EDUCATIONAL EXPERIENCE

Awarded Research Grants

- Stanford Precourt Institute for the Environment, “Harmonizing Electricity Sector Greenhouse Gas Accounting in California.” With J. Weyant, D. Cullenward (2019–20).
- Energy Foundation, “Western Climate Initiative cap-and-trade market model.” With D. Cullenward, M. Inman (2018).
- Environmental Protection Agency, “Integrating Information from Climate Scientists and Resource Managers: Informing Preparedness and Adaptation to Extreme Event Impacts on Air and Water Quality in California.” With L.W. Bedsworth, P.B. Duffy, and C. Tebaldi (2012–15).
- National Science Foundation, “NSF-DRMS: A multi-level, agent-based model for identifying the factors that enable or constrain international climate change negotiations.” With M. Borsuk, R.B. Howarth, G. Bang, G. Dosi, A. Roventini, and M. Gerst (2010–14).
- National Aeronautics and Space Administration, “The Science of Policy and Global Climate Change: Professional Development for K-12 Teachers.” With P. Matson, R. Lotan, and J. Saltzman (2009–12).
- California Ocean Protection Council, “Climate Change and the Law, Economics and Policy of California Land Use Change: Coastal Management Risk and Vulnerabilities.” With M. Caldwell, J. Kildow, and M. Reilly (2008–9).

- California Energy Commission Public Interest Energy Research (PIER) Grant, “Changes in Current and Future Extreme Events in California.” With S.H. Schneider (2008–2008).
- California Energy Commission PIER Grant, “Probabilistic estimates of future global GHG emissions and radiative forcing for use in California’s planning process.” With S.H. Schneider (2008).

Curriculum Development/Instruction

- Stanford Public Policy/Human Biology, “Climate Perspectives: Climate Science, Impacts, Policy, Negotiations, and Advocacy” (2019).
- International Honors Program, “Science and Policy of Climate Change” (2018–19).
- Stanford Biological Sciences/Human Biology/Earth Systems, “Controlling Climate Change in the 21st Century” (2007–12).
- Stanford Graduate School of Education, “The Science and Policy of Global Climate Change: Professional Development for K-12 Teachers” (2009–12).
- Stanford GSB, “Environmental Science for Managers and Policy Makers” (2008–11).
- Stanford Civil and Environmental Engineering, “Engineering and Policy Responses to Climate Change Impacts on Seaports” (2009).
- Stanford GSB, “Business Strategies for Environmental Sustainability” (2007–8).

Advising/Mentorship

- Committee member and/or mentor for more than 10 Stanford Ph.D. and M.S. students
- Stanford E-IPER Joint Master of Science Program Advisor: 2009–12