

Katharine J. Mach

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EDUCATION

Stanford University, Stanford, California, 2005-2010

Ph.D. in Biological Sciences at Hopkins Marine Station

Focus areas: marine biology, biomechanics, ecophysiology

Harvard College, Cambridge, Massachusetts, 2000-2004

A.B. in Biology, *summa cum laude*

Highest Honors in Biology; *Summa* grade for senior honors research thesis

Language citation in French

PROFESSIONAL AFFILIATIONS

Stanford University

Senior Research Scientist, Department of Earth System Science 2016-present

Director, Stanford Environment Assessment Facility 2016-present

Faculty Affiliate, Emmett Interdisciplinary Program in Environment and Resources 2017-present

Carnegie Institution for Science

Visiting Investigator, Department of Global Ecology 2016-present

Senior Research Associate, Department of Global Ecology 2015-2016

Carnegie Mellon University

Adjunct Assistant Professor, Department of Engineering and Public Policy 2016-present

Intergovernmental Panel on Climate Change Working Group II Technical Support Unit

Director, Science 2015

Co-Director, Science 2012-2015

Project Scientist 2011-2012

Postdoctoral Research Associate, Carnegie Institution for Science 2010-2011

JOURNAL ARTICLES & ASSESSMENT PUBLICATIONS

60 in total: 39 journal articles, 21 assessment publications (* indicates student or postdoc first author)

Fang*, Z., P.T. Freeman, C.B. Field, and K.J. **Mach** (in press). Reduced sea-ice protection period increases storm exposure in Kivalina, Alaska. *Arctic Science*.

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 (in press). Forest management in the Sierra Nevada provides limited carbon storage potential: an expert elicitation. *Ecosphere*.

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 (in press). Providing energy services without net addition of carbon dioxide to the atmosphere. *Science*.

- 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.
- Sanchez*, D.L., N. Johnson, S.T. McCoy, P.A. Turner, and K.J. **Mach** (2018). Near-term deployment of carbon capture and sequestration from biorefineries in the United States. *PNAS* 115: 4875-4880. (Coverage: Stanford, Washington Post, Argus, Brief).
- 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. *PNAS* 115: 3290-3295. (Coverage: Stanford Energy, E&E News, Carbon Brief, Phys.org).
- Turner*, P.A., K.J. **Mach**, D.B. Lobell, S.M. Benson, E. Baik, and C.B. Field (2018). The global overlap of bioenergy and carbon sequestration potential. *Climatic Change* 148: 1-10.
- 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.
- Sanchez*, D.L., G. Amador, J. Funk, and K.J. **Mach** (2018). Federal research, development, and demonstration priorities for carbon dioxide removal in the United States. *Environmental Research Letters* 13: 015005.
- Mach**, K.J., and C.B. Field (2017). Toward the next generation of assessment. *Annual Review of Environment and Resources* 42: 569-597. (Outreach products: Animation, Brief, Stanford Woods).
- 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. (Coverage: Stanford, Washington Post, Scientific American, NPR Take Two, Animation, Brief).
- Field, C.B., and K.J. **Mach** (2017). Rightsizing carbon dioxide removal. *Science* 356: 706-707. (Coverage: Stanford, E&E News, Climate Central, Washington Post, Fast Company, Center for Carbon Removal, Xinhua News, Futurity).
- Hino*, M., C.B. Field, and K.J. **Mach** (2017). Managed retreat as a response to natural hazard risk. *Nature Climate Change* 7: 364-370. (Coverage: Stanford, Stanford Woods, New Yorker, NPR On Point, Climate Central, Carbon Brief, E&E News, Co.Design, Cape Charles Mirror, Xinhua News, World Economic Forum, Alaska Public Radio, Houma Today, Global Citizen, Research Brief).
- 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.
- O'Neill, B., M. Oppenheimer, J. Birkmann, S. Hallegatte, B. Kopp, R. Licker, K.J. **Mach**, P. Marbaix, M. Mastrandrea, H. Poertner, J. Price, B. Scholes, K. Takahashi, J.-P. van Ypersele, R. Warren, and G. Yohe (2017). IPCC reasons for concern regarding climate change risks. *Nature Climate Change* 7: 28-37.
- Helmuth, B., and 47 co-authors including K.J. **Mach** (2016). Long-term, high frequency *in situ* measurements of intertidal mussel bed temperatures using biomimetic sensors. *Scientific Data* 3: 160087. (Coverage: New York Times).
- 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. (Coverage: Inside Climate News, Carnegie Science).
- Hallegatte, S., and K.J. **Mach** (2016). Make climate-change assessments more relevant. *Nature* 534: 613-615.
- 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 Climate Change* 6: 663-668.
- 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* 136: 427-444.
- IPCC (2016). *Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Communication* [Lynn, J., M. Araya, Ø. Christophersen, I. El Gizouli, S.J. Hassol, E.M. Konstantinidis, K.J. **Mach**, L.A. Meyer, K. Tanabe, M. Tignor, R. Tshikalanke, and J.-P. van Ypersele (eds.)]. World Meteorological Organization, Geneva, Switzerland, 229 pp.

- IPCC (2016). *Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Scenarios* [Riahi, K., J.C. Minx, V. Barros, M. Bustamente, T. Carter, O. Edenhofer, C.B. Field, E. Kriegler, J.-F. Lamarque, K.J. **Mach**, R. Mathur, B. O'Neill, R. Pichs-Madruga, G.-K. Plattner, D. Qin, Y. Sokona, T. Stocker, T. Zhou, J. Antle, N. Arnell, J. Edmonds, S. Emori, P. Friedlingstein, J. Fuglestvedt, F. Joos, H. Lotze-Campen, X. Lu, M. Meinshausen, N. Nakicenovic, M. Prather, B. Preston, N. Rao, J. Rogelj, J. Rozenberg, P.R. Shukla, J. Skea, C. Tebaldi, and D. van Vuuren (eds.)]. IPCC Working Group III Technical Support Unit, Potsdam Institute for Climate Impact Research, Potsdam, Germany, 56 pp.
- Busch, D.S., M.J. O'Donnell, C. Hauri, K.J. **Mach**, M. Poach, S.C. Doney, and S.R. Signorini (2015). Understanding, characterizing, and communicating responses to ocean acidification: challenges and uncertainties. *Oceanography* 28(2): 30-39.
- 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, O. Edenhofer, C.B. Field, T. Hiraishi, S. Kadner, T. Krug, J.C. Minx, R. Pichs-Madruga, G.-K. Plattner, D. Qin, Y. Sokona, T.F. Stocker, and M. Tignor (eds.)]. World Meteorological Organization, Geneva, Switzerland, 68 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* [Core Writing Team, R.K. Pachauri, and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp. [**Mach**, K.J., Core Writing Team member]
- IPCC (2014). Summary for Policymakers. In: *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, R.K. Pachauri, and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, pp. 1-31. [**Mach**, K.J., Core Writing Team member]
- IPCC (2014). Glossary [**Mach**, K.J., S. Planton, and C. von Stechow (eds.)]. In: *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, R.K. Pachauri, and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, pp. 117-130.
- 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 [Field, C.B., V.R. Barros, M.D. Mastrandrea, K.J. **Mach**, and 67 other drafting authors] (2014). Summary for Policymakers. 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. 1-32.
- Field, C.B., V.R. Barros, K.J. **Mach**, M.D. Mastrandrea, and 59 other co-authors (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.

- IPCC (2014). Glossary [Agard, J., E.L.F. Schipper, J. Birkmann, M. Campos, C. Dubeux, Y. Nojiri, L. Olsson, B. Osman-Elasha, M. Pelling, M.J. Prather, M.G. Rivera-Ferre, O.C. Ruppel, A. Sallenger, K.R. Smith, A.L. St. Clair, K.J. **Mach**, M.D. Mastrandrea, and T.E. Bilir (eds.)]. In: *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, pp. 1757-1776.
- Burkett, V.R., A.G. Suarez, M. Bindi, C. Conde, R. Mukerji, M.J. Prather, A.L. St. Clair, and G.W. Yohe (2014). Point of departure. 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. 169-194. [**Mach**, K.J., Contributing Author]
- Hewitson, B.C., A.C. Janetos, T.R. Carter, F. Giorgi, R.G. Jones, W.-T. Kwon, L.O. Mearns, E.L.F. Schipper, and M. van Aalst (2014). Regional context. In: *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, pp. 1133-1197. [**Mach**, K.J., Contributing Author]
- Kundzewicz, Z.W., S. Kanae, S.I. Seneviratne, J. Handmer, N. Nicholls, P. Peduzzi, R. Mechler, L.M. Bouwer, N. Arnell, K. **Mach**, R. Muir-Wood, G.R. Brakenridge, W. Kron, G. Benito, Y. Honda, K. Takahashi, and B. Sherstyukov (2013). Flood risk and climate change: global and regional perspectives. *Hydrological Sciences Journal* 59(1): 1-28.
- Denny, M.W., K.J. **Mach**, S. Tepler, and P. Martone (2013). Indefatigable: an erect coralline alga is highly resistant to fatigue. *Journal of Experimental Biology* 216: 3772-3780.
(The above article was featured in *Nature News & Views*: Carrington, E. (2013). Plant biomechanics: high-endurance algae. *Nature* 503: 345-346; and in *Inside JEB*: Stead, N. (2013). Coralline alga stands the test of time on shoreline. *Journal of Experimental Biology* 216: i.)
- Gattuso, J.-P., K.J. **Mach**, and G. Morgan (2013). Ocean acidification and its impacts: an expert survey. *Climatic Change* 117: 725-738.
- Mach**, K.J. (2013). Mechanisms of ecological change: research to management. [Review of the book *Ecological consequences of climate change: mechanisms, conservation, and management*, ed. E.A. Beever and J.L. Belant]. *Ecology* 94(1): 257-258.
- 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., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. **Mach**, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA, 582 pp.
- IPCC (2012). Summary for Policymakers. In: *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., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA, pp. 1-19. [**Mach**, K.J., Drafting Author]
- Handmer, J., Y. Honda, Z.W. Kundzewicz, N. Arnell, G. Benito, J. Hatfield, I.F. Mohamed, P. Peduzzi, S. Wu, B. Sherstyukov, K. Takahashi, and Z. Yan (2012). Changes in impacts of climate extremes: human systems and ecosystems. In: *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., V. Barros, T.F. Stocker, D. Qin, D.J.

- Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.). Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA, pp. 231-290. [Mach, K.J., Contributing Author]
- IPCC (2012). *Workshop Report of the Intergovernmental Panel on Climate Change Workshop on Socio-Economic Scenarios* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, V. Barros, C.B. Field, T. Zwickel, S. Schloemer, K. Ebi, M. Mastrandrea, K. Mach, and C. von Stechow (eds.)]. IPCC Working Group III Technical Support Unit, Potsdam Institute for Climate Impact Research, Potsdam, Germany, 51 pp.
- IPCC (2012). *Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Geoengineering* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, C. Field, V. Barros, T.F. Stocker, Q. Dahe, J. Minx, K. Mach, G.-K. Plattner, S. Schlömer, G. Hansen, and M. Mastrandrea (eds.)]. IPCC Working Group III Technical Support Unit, Potsdam Institute for Climate Impact Research, Potsdam, Germany, 99 pp.
- IPCC (2012). *Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Economic Analysis, Costing Methods, and Ethics* [Field, C.B., V. Barros, O. Edenhofer, R. Pichs-Madruga, Y. Sokona, M.D. Mastrandrea, K.J. Mach, and C. von Stechow (eds.)]. IPCC Working Group II Technical Support Unit, Carnegie Institution, Stanford, CA, USA, 75 pp.
- IPCC (2011). *Workshop Report of the Intergovernmental Panel on Climate Change Workshop on Impacts of Ocean Acidification on Marine Biology and Ecosystems* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, K.J. Mach, G.-K. Plattner, M.D. Mastrandrea, M. Tignor, and K.L. Ebi (eds.)]. IPCC Working Group II Technical Support Unit, Carnegie Institution, Stanford, CA, USA, 164 pp.
- Denny, M.W., W.W. Dowd, L. Bilir, and K.J. Mach (2011). Spreading the risk: small-scale body temperature variation among intertidal organisms and its implications for species persistence. *Journal of Experimental Marine Biology and Ecology* 400: 175-190.
- Mach, K.J., S.K. Tepler, A.V. Staaf, J.C. Bohnhoff, and M.W. Denny (2011). Failure by fatigue in the field: a model of fatigue breakage for the macroalga *Mazzaella*, with validation. *Journal of Experimental Biology* 214: 1571-1585.
- Mastrandrea, M.D., and K.J. Mach (2011). Treatment of uncertainties in IPCC Assessment Reports: past approaches and considerations for the Fifth Assessment Report. *Climatic Change* 108: 659-673.
- Mastrandrea, M.D., K.J. Mach, G.-K. Plattner, O. Edenhofer, T.F. Stocker, C.B. Field, K.L. Ebi, and P.R. Matschoss (2011). The IPCC AR5 guidance note on consistent treatment of uncertainties: a common approach across the working groups. *Climatic Change* 108: 675-691.
- Tepler, S.K., K.J. Mach, and M.W. Denny (2011). Preference versus performance: body temperature of the intertidal snail *Chlorostoma funebris*. *Biological Bulletin* 220: 107-117.
- Helmuth, B., B.R. Broitman, L. Yamane, S.E. Gilman, K. Mach, K.A.S. Mislán, and M.W. Denny (2010). Organismal climatology: analyzing environmental variability at scales relevant to physiological stress. *Journal of Experimental Biology* 213: 995-1003.
- Helmuth, B., L. Yamane, K.J. Mach, S. Chhotray, P. Levin, and S. Woodin (2010). All climate change is local: understanding and predicting the effects of climate change from an organism's point of view. *Stanford Journal of Law, Science and Policy* 2: 18-35.
- Martone, P.T., M. Boller, I. Burgert, J. Dumais, J. Edwards, K. Mach, N. Rowe, M. Ruedgeberg, R. Seidel, and T. Speck (2010). Mechanics without muscle: biomechanical inspiration from the plant world. *Integrative and Comparative Biology* 50(5): 888-907.
- Mastrandrea, M.D., C.B. Field, T.F. Stocker, O. Edenhofer, K.L. Ebi, D.J. Frame, H. Held, E. Kriegler, K.J. Mach, P.R. Matschoss, G.-K. Plattner, G.W. Yohe, and F.W. Zwiers (2010). Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change (IPCC). Available at <<http://www.ipcc.ch>>.
- Harley, C.D.G., M.W. Denny, K.J. Mach, and L.P. Miller (2009). Thermal stress and morphological adaptations in limpets. *Functional Ecology* 23: 292-301.
- Mach, K.J. (2009). Mechanical and biological consequences of repetitive loading: crack initiation and fatigue failure in the red macroalga *Mazzaella*. *Journal of Experimental Biology* 212: 961-976.
- Ellis, J.C., M.J. Shulman, H. Jessop, R. Suomala, S.R. Morris, V. Seng, M. Wagner, and K. Mach (2007). Impact of raccoons on breeding success in large colonies of Great Black-backed Gulls and Herring Gulls. *Waterbirds* 30: 375-383.

- Mach, K.J., D.V. Nelson, and M.W. Denny (2007).** Review. Techniques for predicting the lifetimes of waveswept macroalgae: a primer on fracture mechanics and crack growth. *Journal of Experimental Biology* 210: 2213-2230.
- Mach, K.J., B.B. Hale, M.W. Denny, and D.V. Nelson (2007).** Death by small forces: a fracture and fatigue analysis of wave-swept macroalgae. *Journal of Experimental Biology* 210: 2231-2243. (The two above articles were featured in *Inside JEB*: Blackburn, L. (2007). Seaweeds crack up. *Journal of Experimental Biology* 210: i-ii.)
- Miller, L.P., M.J. O'Donnell, and K.J. **Mach** (2007). Dislodged but not dead: survivorship of a high intertidal snail following wave dislodgement. *Journal of the Marine Biological Association of the United Kingdom* 87: 735-739.

AWARDS, HONORS, & FELLOWSHIPS

Candidate, Pritzker Emerging Environmental Genius Award	2017
UCAR Special Recognition Award for IPCC work	2014
UCAR Performance Award for IPCC work	2012
Jane Miller Scholars Award at Hopkins Marine Station	2010
Arthur C. Giese Award for best original experimental work at Hopkins Marine Station	2009
Stanford Interdisciplinary Graduate Fellowship	2008-2011
Stanford Graduate Fellowship	2005-2008
Wainwright Fellowship, Friday Harbor Laboratories, Washington	2007
Hannah T. Croasdale Fellowship, Phycological Society of America	2007
Earl H. & Ethel M. Myers Oceanographic & Marine Biology Trust Award	2007
Stanford Biological Sciences Excellence in Teaching Award	2006
A.B. in Biology, <i>summa cum laude</i>	2004
Phi Beta Kappa	2004
Harvard College Detur Book Prize	2001

GRANTS

Negative emissions: really?

David and Lucile Packard Foundation, \$200,000. Co-PI with C.B. Field, 2016-2018.

Natural and working lands in California's climate portfolio

S.D. Bechtel, Jr. Foundation, \$248,860. Co-PI with C.B. Field, 2016-2017.

Scoping work for the California natural and working lands inventory and assessment

Environmental Defense Fund, \$14,300. Co-PI with C.B. Field, 2016.

RECENT MENTORSHIP

(* indicates individual has completed program or employment and advanced to next career stage)

Stanford Ph.D. Students

- Garrett Adler, Emmett Interdisciplinary Program in Environment and Resources (research mentor)
- Christa Anderson, Emmett Interdisciplinary Program in Environment and Resources (committee member)
- Suchana Costa, Biology (committee member)
- Emily Francis, Earth System Science (committee member)
- Benjamin Franta, History of Science (research mentor)
- Miyuki Hino, Emmett Interdisciplinary Program in Environment and Resources (committee member)
- Rebecca Miller, Emmett Interdisciplinary Program in Environment and Resources (research mentor)
- Lin Shi, Emmett Interdisciplinary Program in Environment and Resources (research mentor)
- Yi-Lin Tsai, Civil and Environmental Engineering (research mentor)

Stanford Master's Students

Ejeong Baik, Energy Resources Engineering (research mentor)
Samanthe Belanger*, E-IPER MS-MBA (capstone project advisor)
Mackenzie Burnett, FSI International Policy Studies (research mentor)
Himanshu Gupta, E-IPER MS-MBA (capstone project advisor)
Ashley Hammerbacher*, Civil and Environmental Engineering (research mentor)

Stanford Summer Undergraduate Research Program Students

Ana Katrina (Nina) Donaldson*, Civil and Environmental Engineering (advisor with C. Field) [SESUR]
Connor Duwan, Environmental Studies, Yale University (advisor with M. Hino and C. Field) [SURGE]
Zhanpei Fang*, Physics and Art Practice (advisor with C. Field) [SESUR]
Kendall Kissel*, Earth Systems (co-advisor with C. Anderson and C. Field) [SESUR]
Talia Trepte*, Earth Systems (co-advisor with E. Francis and C. Field) [SESUR]
Lynée Turek-Hankins, Mechanical Engineering (advisor with M. Hino) [MUIR]

Carnegie Science Postdoctoral Scholars

Daniel Sanchez*, Global Ecology (supervisor)
Charlotte Stanton*, Global Ecology (supervisor)
Peter Turner*, Global Ecology (supervisor)

Stanford and Carnegie Science Researchers

Eren Bilir*, Global Ecology (supervisor)
Patrick Freeman*, Global Ecology (supervisor)
Carolien Kraan, Woods Institute for the Environment (supervisor)
Seth Lalonde*, Global Ecology (supervisor)

TEACHING EXPERIENCE

Guest lectures at Stanford University and other schools, for diverse undergraduate, graduate, law-school, and summer-program courses 2014-present

Directed Readings: Managed Retreat, Bioenergy with Carbon Capture and Storage, Wildfire Risk Management, Functionality-based Electronics Assessment, Instructor, Stanford University, California 2016-present

The California Coast: Science, Policy, and Law, Lecturer and Teaching Assistant, Stanford University, California 2009, 2011

Biomechanics, Lecturer and Teaching Assistant, Friday Harbor Laboratories, University of Washington 2008

Cell Biology and Animal Physiology, Teaching Assistant, Stanford University, California 2006

Biomechanics, Ecological Physiology, and Genetics of Intertidal Communities, Lecturer and Teaching Assistant, Hopkins Marine Station of Stanford University, California 2005, 2007, 2009

Clinging for Dear Life: Exploring Seaweeds from Wave-swept Rocky Shores, Outreach Workshop Leader, Expanding Your Horizons Conference, San Jose, California 2006-2008

SERVICE & PROFESSIONAL DEVELOPMENT

Reviewer for journals including *Climatic Change*, *Nature Climate Change*, *Nature*, *PNAS*, *Global Environmental Change*, *Environmental Science and Policy*, *Climate and Development*, *Journal of Environment and Development*, *Meteorological Monographs*, *Philosophical Transactions of the Royal Society A*, *Studies in History and Philosophy of Modern Physics*, and *Weather, Climate and Society* Ongoing

Media interviews upon request for diverse climate change topics Ongoing

External Examiner for University of Melbourne PhD thesis: "Bioenergy with Carbon Capture and Storage: Sustainability, Challenges, and Potential" by N. Pour	2018
Lead Author for IPCC Sixth Assessment Report	2018-present
Associate Deputy Editor for <i>Climatic Change</i>	2017-present
Lead Author for US Fourth National Climate Assessment	2016-present
Advisor for Center for Carbon Removal	2016-present
Seminar Committee for Carnegie Science Global Ecology , Chair of Committee	2015-2016
Media Training for IPCC Authors in California, the Netherlands, and Denmark	2013-2014
Leopold Leadership Program Advanced Training , "Hitting your policy mark: leveraging networks and collective impact," Washington, D.C.	2014
Seminar Committee for Carnegie Science Global Ecology , Member of Committee	2011-2012
Communicating Climate Change Science to Policymakers , Workshop Participant, Center for Ocean Solutions, Monterey, California	2010
Communication Partnership for Science and the Sea (COMPASS) Media Workshop , Participant, through the Center for Ocean Solutions, Moss Landing, California	2009
"What do policy makers need to know about climate change and the oceans?" Symposium , Event Organizer & Faculty-Panel Moderator, Monterey Research Institutions' Network	2009
Leadership Laboratories , Participant, Stanford Graduate School of Business, California	2009
Communication Matters Workshop Series , Participant, Stanford University, California	2009
I-RITE/I-SPEAK: Science Communication , Participant, Stanford Graduate Summer Institute, California	2009
The Role of Marine Science in Public Policy , Workshop Participant, Stanford University, California	2007

MEDIA & OTHER INTERVIEWS

Climate One

"Climate Winners and Losers," interview with S. Hsiang and K.J. Mach. May 29, 2018. Audio and video available at <http://www.climateone.org/events/climate-winners-and-losers>

Coping with Uncertainty: Normative Approaches, Current Practice

"Decision-making under Severe Uncertainty," interview with K.J. Mach. Video available at <https://player.vimeo.com/video/219973648?title=0&byline=0&portrait=0&color=ffffff>

Climate One

"Jeff Goodell: The Water Will Come," interview with J. Goodell, M. Krapels, and K.J. Mach. November 8, 2017. Audio and video available at <https://climateone.org/events/jeff-goodell-water-will-come>

World Affairs Council, San Francisco

"Taking Climate Change Seriously," interview with K.J. Mach and M. Hino. October 12, 2017. Video available at <http://www.worldaffairs.org/events/event/1766#.Wj1PLt-nEuU>

Uncommon Dialogue: Building Coastal Resilience: US Risks and Preparedness

"Moderator Takeaway: Sea Level Rise," interview with K.J. Mach. September 19, 2017. Video available at <https://www.youtube.com/watch?v=qw40aOKYtMs&t=21s>

Climate Geoengineering: GeoElive

"Climate Change and Geoengineering," interview with K.J. Mach. September 12, 2017. Video available at <https://www.facebook.com/isgpf/forum/videos/1974525119498518/>

The World, PRI

"Harvey May Have Caught Texas by Surprise, But Other Places Have Been Getting Ready for More Extreme Weather," interview with K.J. Mach. August 28, 2017. Audio available (K.J. Mach starting at 23:50) at <https://www.pri.org/programs/pris-world/relief-efforts-texas-sheriff-joes-pardon-and-plastic-bags>

The Reasoner

Interview with K.J. Mach. July 2017. Transcript available at <https://blogs.kent.ac.uk/thereasoner/files/2017/06/TheReasoner-117.pdf>

CTV News Channel

"Great Barrier Reef Bleaching," interview with K.J. Mach. April 10, 2017. Video available at <https://www.facebook.com/CTVNewsChannel/videos/1389876927740301/>

America Adapts: the Climate Change Podcast

“Behind the Scenes at the IPCC,” interview with K.J. Mach. March 14, 2017. Audio available at <http://americaadapts.libsyn.com/website/america-adapts-the-climate-change-podcast-0>

Other Voices Forum, Peninsula Peace and Justice Center

“One Year After Paris Climate Agreement: Now What?” interview with K.J. Mach and C.B. Field. December 17, 2016. Video available at <https://www.youtube.com/watch?v=oh9oGyALxTU>

Radio Ecoshock

“Climate Disruption: Here and Now,” interview with K.J. Mach, C.B. Field, and M. Mariette. September 8, 2016. Audio available (K.J. Mach starting at 25:01) at <http://www.ecoshock.org/2016/09/climate-disruption-here-now.html>

The Brad Bogner Show

“Episode 223” on COP21, interview with K.J. Mach and C.B. Field. December 30, 2015. Audio available at <http://www.bradbogner.com/episode-223-chris-field-and-katharine-mach-carnegie-institution-for-science-at-stanford/>

Green.TV

“COP21 Daily News: Fighting Climate Change is a Numbers Game,” interview with K.J. Mach and others. December 10, 2015. Video available (K.J. Mach starting at 1:30) at <https://www.facebook.com/greentv/videos/10153302016351452/>

Climate Home

“COP21,” interview with K.J. Mach. December 9, 2015. Video available at <https://youtu.be/uNFUNj4tymS>

Other Voices Forum, Peninsula Peace and Justice Center

“Last Chance? The United Nations Global Conference on Climate Change,” interview with K.J. Mach and C.B. Field. November 24, 2015. Video available at <https://youtu.be/4JmtUP7mKUI>

Ask a Leader, KUCI

“Physical Science and Political Science Meet at COP21,” interview with K.J. Mach and C.B. Field. November 24, 2015. Audio available at <http://tunein.com/topic/?topicId=102373949>

Colin McEnroe Show, WNPR

“Fighting Climate Change Could Involve Changing Your Lifestyle,” interview with J. Gowdy, C.B. Field, K.J. Mach, and J. Stodder. June 23, 2015. Audio available (K.J. Mach starting at 11:30) at <http://wnpr.org/post/fighting-climate-change-could-involve-changing-your-lifestyle-stream/0>

Ask a Leader, KUCI

“Scientists’ Take-Away From Lima,” interview with C.B. Field and K.J. Mach. December 16, 2014. Audio available (interview starting at 27:13) at <http://askaleader.com/?p=393>

Forum with Michael Krasny, KQED

“U.N. Panel Warns of ‘Severe and Irreversible’ Effects of Climate Change,” interview with E. Holthaus, K.J. Mach, M. Oppenheimer, and G. Yohe. November 4, 2014. Audio available (K.J. Mach starting at 11:18) at <http://www.kqed.org/a/forum/R201411040900>

2014 Roundtable at Stanford

“The Climate Conversation You Haven’t Heard,” video interview featuring K.J. Mach and others. October 24, 2014. Video available (K.J. Mach starting at 1:46) at <http://roundtable.stanford.edu/webcast/>

The Brian Lehrer Show, WNYC

“Ask a Climatologist,” interview with K.J. Mach. April 22, 2014. Audio available at <http://www.wnyc.org/story/ask-climate-scientist/>

IPCC Working Group II Interviews about Author Experiences

Interview with K.J. Mach at the final Lead Author meeting in Bled, Slovenia. July 2014. Video available at <http://vimeo.com/88201681> and <http://vimeo.com/88202245>

Evening News, KVMR

Interview with K.J. Mach. May 15, 2012. Audio available (interview starting at 18:50) at <http://audio.kvmr.org/podhawk/audio/KvmrPodcast-2012-05-15-70363.mp3>

INVITED PRESENTATIONS

Stanford Environment & Energy Panel Series

2018 Mach, K.J. Carbon removal in the climate response portfolio. Panelist. The National Press Club, Washington DC. Video available (K.J. Mach starting at 28:35) at <https://woods.stanford.edu/news-events/event/dc-forum-carbon-removal-climate-response-portfolio>

Stanford Precourt Institute for Energy

2018 Mach, K.J. Bioenergy with carbon capture and storage. Panelist. Stanford, California.

California Climate Policy Modeling Workshop

2018 Mach, K.J. Role of agriculture and forestry in achieving very low CO₂ futures. Panelist. University of California Davis, Davis, California.

Stanford University

2018 Mach, K.J. Climate change 2018: understanding the risks and the options. Implementing Climate Solutions at Scale Course, Stanford, California.

Saint Louis University

2018 Mach, K.J. Climate change 2018: managing risks, building responses. Saint Louis, Missouri. Video available at <https://www.youtube.com/watch?v=cYmF83zhu0I>

Middlebury Institute of International Studies at Monterey

2018 Mach, K.J. The Paris Agreement and carbon dioxide removal/negative emissions technologies. Panelist. Monterey, California.

Stanford University

2018 Mach, K.J. Gender and climate change: IPCC AR5 and beyond. Gender, Land, and Climate Change Course, Stanford, California.

Forum for Climate Engineering Assessment

2018 Mach, K.J. Assessing carbon dioxide removal. Panelist. Webinar.

University of Wisconsin-Madison

2018 Mach, K.J. Climate solutions 2018: assessing the risks and the options. Madison, Wisconsin.

Stanford University

2018 Mach, K.J. Advancing knowledge bases for the management of environmental risk. Earth System Science Seminar Series, Stanford, California.

Wilson Center

2018 Mach, K.J. An expert assessment of climate and conflict. Washington DC.

Duke University

2018 Mach, K.J. Climate 101: what every MBA needs to know. Global MBA Summit on Climate, Capital, and Business. Durham, North Carolina. Video available at <https://www.climatecapsummit.org/watch/>

Stanford University's Bechtel International Center

2018 Mach, K.J. Rightsizing carbon removal in ambitious climate change responses. Stanford, California.

Natural Capital Symposium

2018 Mach, K.J. A focus on risk and solutions: lessons from climate assessment and responses. Panelist. Stanford, California.

University of West Virginia

2018 Mach, K.J. IPCC, science, and public policy. Morgantown, West Virginia.

Stanford University

2018 Mach, K.J. Sea level rise: impacts and adaptation. Climate and Society Course, Stanford, California.

Dartmouth College

2018 Mach, K.J. Climate change 2018: understanding the risks and the options. Sustainable Resource Revolution Course, Hanover, New Hampshire.

Stanford Law School

2018 Mach, K.J. Global climate change science and policy. Climate Politics, Finance, and Infrastructure Course, Stanford, California.

Citizens' Climate Lobby

2018 Mach, K.J. Climate attribution. Menlo Park, California.

American Geophysical Union

2017 Mach, K.J., and C.B. Field. Rightsizing expectations for carbon dioxide removal towards ambitious climate goals. New Orleans, Louisiana.

Forum for Climate Engineering Assessment

2017 Mach, K.J., and C.B. Field. The exigencies driving a focus on carbon dioxide removal/negative emissions technologies. Washington DC. Video available at <https://echo360.org/media/6b18cb54-ec10-40b8-8a8c-f479e5c3491a/public>

Urban Sustainability Directors Network

2017 Mach, K.J. Climate change 2017: understanding the risks and the options. All-network webinar.

Boston University

2017 Mach, K.J. Assessment of risks and options in a changing climate. Pardee Center for the Study of the Longer-Range Future, Boston, Massachusetts. Video available at <http://www.bu.edu/pardee/2017/09/26/upcoming-seminar-assessment-of-risks-and-options-in-a-changing-climate/>

Uncommon Dialogue: Building Coastal Resilience: US Risks and Preparedness

2017 Mach, K.J. Sea level rise panel. Moderator. Stanford, California. Video available at <https://woods.stanford.edu/news-events/event/building-coastal-resilience-us-risks-and-preparedness>

Uncommon Dialogue: Building Coastal Resilience for Greater US and International Security

2017 Mach, K.J. Sessions throughout the day. Host, moderator, and panelist. Washington DC.

Stanford University's Energy@Stanford & SLAC

2017 Mach, K.J. Assessment of risks and options in a changing climate. Stanford, California. Video available at https://www.youtube.com/watch?v=2Axv1Vk_6r0

Northeastern Marine Science Center

2017 Mach, K.J. Assessment of risks and options in a changing climate. Nahant, Massachusetts.

US Government Accountability Office

2017 Mach, K.J., and M. Hino. Managed retreat as a response to natural hazard risk. Washington DC.

Uncommon Dialogue: Building Coastal Resilience for Greater US Security

2017 Mach, K.J. Coastal risk management and relocation discussions. Moderator. Washington DC.

Stanford University's Center for International Security and Cooperation

2017 Mach, K.J. What next for climate? Assessing the risks and the options. Stanford, California.

BECCS: Communicating the Facts in a Political World

2017 Mach, K.J., and C.B. Field. Rightsizing negative emissions—science, policy, and communications challenges. Packard Foundation, Los Altos Hills, California.

Consultative Group on Biological Diversity

2017 Mach, K.J. When climate change actions challenge our conservation goals: avoiding unintended consequences and managing trade-offs. Panelist. Flagstaff, Arizona.

Stanford University

2017 Mach, K.J. What next for climate? Assessing the risks and the options. Issues in Environmental Science, Technology and Sustainability Course, Stanford, California.

Coping with Uncertainty: Normative Approaches, Current Practice

2017 Mach, K.J. Unleashing expert judgment in assessment: IPCC AR5 and beyond. École Normale Supérieure, Paris, France. Video available at <https://www.youtube.com/watch?v=L7bYsHBgb-M>

Electric Power Research Institute

2017 Mach, K.J. Research frontier panel. Presenter and panelist. 20th Energy and Climate Research Seminar, Washington DC.

Stanford Law School

2017 Mach, K.J. The first 100 days of the Trump administration: implications for energy and climate—a bipartisan discussion. Panelist. Stanford, California.

University of California, Davis, Institute of Transportation Studies

2017 Mach, K.J. What next for climate? Assessing the risks and the options. Sustainable Transportation Energy Pathways Seminar Series, Davis, California.

Stanford University

2017 Mach, K.J. Gender and climate change: IPCC AR5 and beyond. Gender, Land, and Climate Change Course, Stanford, California.

Dartmouth College

2017 Mach, K.J. Climate change 2017: understanding the risks and the options. Sustainable Resource Revolution Course, Hanover, New Hampshire.

Climate Action Reserve

2017 Mach, K.J. Communicating climate change. Panelist. Navigating the American Carbon World, San Francisco, California.

Stanford University

2017 Mach, K.J. What next for climate? Assessing the risks and the options. Introduction to Environmental Science Course, Stanford, California.

Taste of Science

2017 Mach, K.J. Climate change 2017: understanding the risks and the options. Palo Alto, California.

Yale University

2017 Mach, K.J. What next for climate? Assessing the risks and the options. Seminar in Climate and Energy, New Haven, Connecticut.

Stanford University

2017 Mach, K.J. Climate change 2017: understanding the risks and the options. Implementing Climate Solutions at Scale Course, Stanford, California.

Chapman University

2017 Mach, K.J. Climate change: implications and adaptations globally and locally. Panelist. Orange, California.

Stanford University Energy Seminar

2017 Mach, K.J. What next for climate? Assessing the risks and the options. Stanford, California. Video available at <https://energy.stanford.edu/events/energy-seminar-katharine-mach-what-next-climate-assessing-risks-and-options>

Center for Carbon Removal

2017 Mach, K.J. Land-use overview. Panelist. Advisory Board Meeting, San Francisco, California

University of California, Davis

2017 Mach, K.J. Climate and energy: how the IPCC works. Energy and the Environment Course and Special Lecture, Davis, California.

Stanford University Atmosphere and Energy Program

2017 Mach, K.J. What's next for climate? Assessing the risks and the options. Stanford, California.

Stanford University

2017 Mach, K.J. Sea level rise: impacts and adaptation. Climate and Society Course, Stanford, California.

Forum for Climate Engineering Assessment

2017 Mach, K.J. The exigencies driving NETs/CDR. Carbon Dioxide Removal/Negative Emissions Technologies Workshop, Berkeley, California.

Stanford Environment & Energy Panel Series

2017 Mach, K.J. Climate adaptation. Panelist. The National Press Club, Washington DC. Video available (K.J. Mach starting at 28:30) at <https://woods.stanford.edu/news-events/news/how-adapt-changing-climate>

American Geophysical Union

2016 Mach, K.J. Getting near zero: decarbonizing the last 20% of energy-sector CO₂ emissions. Panelist. San Francisco, California. Video available (K.J. Mach starting at 1:16:53) at <http://bit.ly/2igEuss>

Stanford Law School

2016 Mach, K.J. The Trump administration: implications for energy and climate—a bipartisan discussion. Panelist. Stanford, California. Video available (K.J. Mach starting at 9:28) at <https://law.stanford.edu/event/trump-administration-implications-energy-climate-bipartisan-discussion/>

Stanford Woods Institute for the Environment Advisory Council Meeting

2016 Mach, K.J. The Stanford Environment Assessment Facility. Stanford, California.

World Meteorological Organization

2016 Mach, K.J. Engaging weather presenters as climate communicators. Panelist. Marrakech, Morocco.

Stanford Woods Institute for the Environment

- 2016 Mach, K.J. Climate change: from Paris to Stanford. Panelist. New York City, New York.
Stanford University Crothers Hall Global Citizenship Evening Series
- 2016 Mach, K.J. Climate change on the road through Paris. Panelist. Stanford, California.
California Public Utilities Commission
- 2016 Mach, K.J. A climate change discussion. Presenter and panelist. Thought Leaders Speaker Series, San Francisco, California.
US Senate Committee on Environment and Public Works
- 2016 Mach, K.J. Climate change: how the world has changed since IPCC AR5. Panelist in staff briefing. Washington DC.
Commission for Environmental Cooperation
- 2016 Mach, K.J. Climate change on the road through Paris: a focus on biodiversity. Presenter and panelist. Merida, Mexico.
Acterra Lecture Series
- 2016 Mach, K.J., and C.B. Field. After the Paris Agreement: how far we've come, and what is left to do. Sunnyvale, California.
Woodside and Portola Valley Rotary Club
- 2016 Mach, K.J., and C.B. Field. Climate change: the road through Paris. Woodside, California.
Stanford Earth Summer Faculty Seminar Series
- 2016 Mach, K.J. Assessment in a changing climate: IPCC AR5 and beyond. Stanford, California.
Oil, Gas, and Paris
- 2016 Mach, K.J. Climate change and world energy after the Paris Climate Agreement. Presenter and panelist. Schlumberger-Doll Research, Cambridge, Massachusetts.
Carnegie Mellon University
- 2016 Mach, K.J. Assessment in a changing climate: IPCC AR5 and beyond. Center for Climate and Energy Decision Making, Pittsburgh, Pennsylvania.
Carnegie Institution for Science Board of Trustees Meeting
- 2016 Mach, K.J. Science for climate solutions: the role of assessment. Washington DC.
Council on Foreign Relations
- 2016 Mach, K.J. The role of science in the post-Paris climate agenda. Panelist. Roundtable Series on Energy Security and Climate Change. Washington DC.
Stanford University's Connecting the Dots: Knowledge to Action
- 2016 Mach, K.J. Connecting knowledge to transformation: building on COP21. Panelist. Stanford, California.
Stanford Woods Institute for the Environment
- 2016 Mach, K.J. After Paris: innovation and implementation. Panelist. Community Retreat, Aptos, California.
Harvard Club of Southern California
- 2016 Mach, K.J., and C.B. Field. Climate change: the road through Paris. Pasadena, California.
Stanford Fresno Alumni Association
- 2016 Mach, K.J., and C.B. Field. Climate change: the road through Paris. Fresno, California.
Stanford's Women's Club
- 2016 Mach, K.J., and C.B. Field. Climate change: the road through Paris. Great Decisions Foreign Policy Discussion Series, Stanford, California.
Chapman University
- 2016 Mach, K.J. Climate change on the road through Paris: personal perspectives and global efforts. Orange, California.
Western Colorado State University
- 2016 Mach, K.J. Climate change on the road through Paris: the IPCC AR5 and beyond. Gunnison, Colorado.
Climate and Land Use Alliance
- 2016 Mach, K.J., and C.B. Field. Negative emissions—really? Napa, California.
California Department of Transportation
- 2016 Mach, K.J., and C.B. Field. Climate change on the road through Paris: the IPCC AR5 and the California context. Sacramento, California.
World Affairs Council, Peninsula Chapter

2016 Mach, K.J., and C.B. Field. The UN global conference on climate change: a final opportunity. Los Altos, California.

International Council on Monuments and Sites

2015 Mach, K.J. An introduction to the IPCC Assessment Reports and the consideration of cultural heritage in the AR5. Paris, France.

Electric Power Research Institute

2015 Mach, K.J. Characterizing and advancing our understanding of the social cost of carbon. Event moderator. Paris, France.

Development and Climate Days

2015 Mach, K.J. High-level closing panel. Panelist. Paris, France. Coverage available at <http://www.iied.org/mary-robinson-global-solidarity-needed-confront-climate-crisis>

Stanford University OpenXChange Open Office Hours

2015 Mach, K.J. Climate change panel. Panelist. Stanford, California.

A Climate Change Dialog: Risks and Opportunities for the Oil and Gas Industry

2015 Mach, K.J. The climate-change solution space: integrating mitigation, adaptation, and sustainable development. Sugarland, Texas.

Stanford University Crothers Hall Global Citizenship Evening Series

2015 Mach, K.J. Climate change on the road through Paris. Panelist. Stanford, California.

Stanford University's Energy@Stanford & SLAC

2015 Mach, K.J. The IPCC Fifth Assessment Report: a scientific foundation. Stanford, California. Video available at <https://youtu.be/XznrML77Ydk>

The Social Life of Climate Change: A Workshop on Climate Change & the Role of Social Sciences

2015 Mach, K.J. The IPCC Fifth Assessment Report: entry points for social science. Center for Advanced Study in the Behavioral Sciences, Stanford, California.

San Mateo County Democracy for America

2015 Mach, K.J., and C.B. Field. Climate change: the road through Paris. Redwood City, California.

Mission of the United States in Geneva

2015 Mach, K.J. The IPCC Fifth Assessment Report: six fundamental conclusions. Geneva, Switzerland.

Chevron Webinar Series

2015 Mach, K.J., and C.B. Field. Climate Change 2013/2014: risk of impacts—how they change with amount of warming. San Ramon, California.

Caribbean Regional Broadcast: A Climate Change Exchange on IPCC AR5 and UNFCCC COP21

2015 Mach, K.J., and C.B. Field. The IPCC Fifth Assessment Report. Caribbean Community Climate Change Centre, Belize City, Belize.

University of Zagreb

2015 Mach, K.J., and C.B. Field. The IPCC Fifth Assessment Report. Zagreb, Croatia.

CalEPA's Indicators of Climate Change in California

2015 Mach, K.J., and C.B. Field. The IPCC Fifth Assessment Report. Sacramento, California.

UNFCCC Bonn Climate Change Conference Side Event "Thinking from a Different Mindset"

2015 Mach, K.J. Climate change as a challenge in managing risks. Bonn, Germany.

University of Ljubljana and Slovenian Meteorological Agency

2015 Mach, K.J., and C.B. Field. The IPCC Fifth Assessment Report. Ljubljana, Slovenia.

Republic Hydrometeorological Service of Serbia

2015 Mach, K.J., and C.B. Field. The IPCC Fifth Assessment Report. Belgrade, Serbia.

IPCC Expert Meeting on Scenarios

2015 Mach, K.J., and C.B. Field. Scenarios in the AR5 for the assessment of impacts, adaptation, and vulnerability. International Institute for Applied Systems Analysis, Laxenburg, Austria.

CICERO Workshop: From Science to Policy—How to Improve the Dialogue?

2015 Mach, K.J. Balancing relevance, scientific rigor, and policy impact in IPCC assessment. Oslo, Norway. Meeting report at <http://www.cicero.uio.no/en/posts/news/report-from-science-to-policy-how-to-improve-the-dialogue>.

Western Colorado State University

2015 Mach, K.J. Climate change as a challenge in managing risks: the IPCC's Fifth Assessment Report. Gunnison, Colorado. Video available at <https://www.youtube.com/watch?v=g5mD42-O17w>

Arizona State University's School of Sustainability

2015 Mach, K.J. Transforming assessment in a changing climate. Tempe, Arizona. Video available at <https://vimeo.com/120009582>

McGill University's Department of Geography

2015 Mach, K.J. Transforming assessment in a changing climate. Montreal, Canada.

IPCC Outreach Event in Tanzania

2015 Mach, K.J. Reasons for concern in a changing climate. Arusha, Tanzania.

IPCC Outreach Event in Kenya

2015 Mach, K.J. Reasons for concern in a changing climate. Nairobi, Kenya.

SBSTA-IPCC Event at UNFCCC COP20

2014 Mach, K.J., and C.B. Field. IPCC Synthesis Report Topic 2: future climate changes, risks, and impacts. Lima, Peru.

Fourth Meeting of the Structured Expert Dialogue on the 2013-2015 Review at UNFCCC COP20

2014 Mach, K.J., and C.B. Field. The adequacy of 2°C in terms of risk management and progress towards the long-term global goal: risks of impacts and how they change with amount of warming. Lima, Peru.

IPCC Outreach Event at San Marcos University

2014 Mach, K.J. The frontier of impacts, adaptation, and vulnerability assessment. Lima, Peru.

Integrated Assessment Modeling Consortium Seventh Annual Meeting

2014 Mach, K.J. Integrated Assessment Models and Working Group II: lessons from the IPCC AR5. College Park, Maryland.

Lockheed Martin STAR Labs Palo Alto Colloquia

2014 Mach, K.J. Climate change impacts, adaptation, and vulnerability: the new international assessment. Palo Alto, California.

The IPCC's Fifth Assessment Report: What Does It Mean for Uganda's development?

2014 Mach, K.J. Risks, adaptation, and climate resilience: best practice lessons for Africa. Kampala, Uganda.

The IPCC's Fifth Assessment Report: What Does It Mean for Ethiopia's development?

2014 Mach, K.J. Risks, adaptation, and climate resilience: best practice lessons for Africa. United Nations Conference Centre, Addis Ababa, Ethiopia.

Ecological Society of America

2014 Mach, K.J. The US National Climate Assessment and the IPCC Fifth Assessment Report: what's in it for ecologists? Panelist. Sacramento, California.

Understanding Global Change: Summer Institute

2014 Mach, K.J. Risks and opportunities for response: a look at climate change impacts, adaptation, and vulnerability. University of California Museum of Paleontology, Berkeley, California.

Stanford Center for Assessment, Learning, and Equity: Summer Teachers' Workshop

2014 Mach, K.J. Climate change as a challenge in managing risks: the IPCC's Fifth Assessment Report. Stanford, California.

IPCC Regional Outreach in Singapore: Insights into the Fifth Assessment Report

2014 Mach, K.J. Working Group II: Impacts, Adaptation, and Vulnerability—an overview. Singapore.

IPCC Regional Outreach in the Philippines

2014 Mach, K.J. Working Group II: Impacts, Adaptation, and Vulnerability—an overview. Climate Change Commission of the Philippines, Manila, Philippines.

San Diego State University

2014 Mach, K.J. Risks and opportunities for response: a look at the IPCC's Fifth Assessment Report. Invited presentation for the Mathematics Colloquium of the Department of Mathematics and Statistics.

Stanford University's Connecting the Dots: the Climate, Energy, Food, and Water Nexus

2014 Mach, K.J., M.D. Mastrandrea, and C.B. Field. IPCC Working Group II: key findings. Stanford, California. Video available at <https://tomkat.stanford.edu/videos/ipcc-working-group-ii-key-findings-0>

American Geophysical Union Fall Meeting

- 2013 Mach, K.J., C.B. Field, M.D. Mastrandrea, and V. Barros. Assessment of the risks of climate change in the Working Group II contribution to the IPCC's Fifth Assessment Report. Invited presentation for session on Uncertainty Quantification of Climate Change, Earth System, and Integrated Assessment Models. San Francisco, California.
- 2013 Mastrandrea, M.D., C.B. Field, K.J. Mach, and V. Barros. Managing the risks of extreme events and disasters in a changing climate: lessons for adaptation to climate change. Invited presentation for session on Climate Change Adaptation and Mitigation. San Francisco, California.

Cañada Community College

- 2013 Mach, K.J. Climate change as a challenge of managing risks. Redwood City, California.

IPCC Working Group II Lead Author Meeting 4 for the Fifth Assessment Report

- 2013 Mach, K.J., and M.D. Mastrandrea. WGII AR5 summary documents: next steps. Bled, Slovenia.
- 2013 Mach, K.J., and C.B. Field. Beyond scenarios. Bled, Slovenia.

NASA Terrestrial Ecology Science Team Meeting

- 2013 Mach, K.J. IPCC WGII progress and findings: how has TE contributed and how could it contribute to the next round? La Jolla, California.

ACE Teachers' Workshop

- 2013 Mach, K.J. IPCC Working Group II assessment of climate change impacts, adaptation, and vulnerability. Sacramento, California.

Stanford Woods Institute Uncommon Dialogue on Climate Adaptation and Extremes

- 2013 Mach, K.J. Roles for private/public/university/media in preparing for extremes. Panel moderator.

Transformation in a Changing Climate

- 2013 Mach, K.J., J. Smith, N. Witoszek, and A. Franceschini. Deep conversation: the story of climate change. Presenter and participant. Oslo, Norway.

IPCC Working Group II Lead Author Meeting 3 for the Fifth Assessment Report

- 2012 Mach, K.J., and M.D. Mastrandrea. WGII AR5 summary documents: process and progress. Buenos Aires, Argentina.

Grass Valley Sierra Club

- 2012 Mach, K.J. Climate change and its impacts: the scientific basis and its assessment by the IPCC.

IPCC Working Group II Lead Author Meeting 2 for the Fifth Assessment Report

- 2011 Mach, K.J. Practical guidance for WGII AR5 FOD preparation: effective assessment practices, Frequently Asked Questions, boxes, and case studies. San Francisco, California.
- 2011 Smith, N., K.J. Mach, and M.D. Mastrandrea. Activities in support of WGII AR5: Cross-Cutting Topics and associated workshop/expert meetings since LAM1. San Francisco, California.

IPCC Working Group I/II Lead Author Meeting 3 for the Special Report on Extremes

- 2011 Mach, K.J. References and non-journal literature collection. Gold Coast, Australia.
- 2011 Working Group II and I co-chairs and TSUs. Key themes for preparation of the final draft— Chapters 1 through 9. Gold Coast, Australia.

IPCC Working Group II Regional Expert Meetings

- 2011 Mach, K.J. Conducting literature searches and identifying sources in non-UN languages.
- 2011 Mach, K.J., and M.D. Mastrandrea. Use of literature in the Working Group II contribution to Fifth Assessment Report.
- 2011 Mastrandrea, M.D., and K.J. Mach. Fifth Assessment Report guidance on consistent treatment of uncertainties.

San Diego State University

- 2010 Mach, K.J. Death by small forces: breakage by fatigue in wave-swept seaweeds. Invited presentation for Computational Science Research Center.

Society for Integrative and Comparative Biology

- 2010 Mach, K.J. Killing them softly: failure by fatigue in the wave-swept macroalga *Mazzaella*. Invited presentation for plant biomechanics symposium: Mechanics without muscle: evolutionary design of macrophytes. Seattle, Washington.

University of California at Berkeley

- 2009 Mach, K.J. Death by small forces: fatigue in seaweeds. Invited presentation for biomechanics working group.

Western Society of Naturalists

- 2008 Mach, K.J. What is going on with women in science?: a graduate student gets curious. Invited presentation for presidential symposium. Vancouver, British Columbia.

OTHER ACADEMIC PRESENTATIONS

American Geophysical Union

- 2017 Mach, K.J., and C.B. Field. Towards the next generation of climate change assessment: learning from past experiences to inform a sustainable future. New Orleans, Louisiana.
- 2017 Baik, E., D.L. Sanchez, P.A. Turner, K.J. Mach, C.B. Field, and S.M. Benson. Geospatial analysis of near-term technical potential of BECCS in the U.S. New Orleans, Louisiana.
- 2017 Turner, P.A., C.B. Field, D.B. Lobell, D.L. Sanchez, and K.J. Mach. Unprecedented rates of land-use transformation in modeled climate change mitigation pathways. New Orleans, Louisiana.

Society of American Foresters

- 2017 Anderson, C.M., C.B. Field, and K.J. Mach. Forest offsets partner climate mitigation and conservation. Albuquerque, New Mexico.

Ecological Society of America

- 2017 Anderson, C.M., C.B. Field, and K.J. Mach. Forest offsets partner climate mitigation and conservation. Portland, Oregon.

CO₂ Summit III: Pathways to Carbon Capture, Utilization, and Storage Deployment

- 2017 Sanchez, D.L., N. Johnson, S. McCoy, and K.J. Mach. Near-term deployment of carbon capture and storage from biorefineries in the United States. Poster Presentation. Calabria, Italy.
- 2017 Baik, E., D.L. Sanchez, K.J. Mach, C.B. Field, and S.M. Benson. Geospatial analysis of BECCS deployment potential in the US. Poster Presentation. Calabria, Italy.

National Adaptation Forum

- 2017 Hino, M., C.B. Field, and K.J. Mach. Managed retreat: a global analysis of drivers, barriers, and outcomes. Saint Paul, Minnesota.

American Association for the Advancement of Science

- 2017 Mach, K.J. IPCC climate assessment and its impacts on environmental policy. Global Environmental Assessments and the Bridge to Environmental Policy, Boston, Massachusetts. (Coverage: Stanford University).

American Geophysical Union

- 2016 Mach, K.J. Negative emissions technologies: new developments and scientific challenges. Panelist. San Francisco, California.
- 2016 Mach, K.J., P.T. Freeman, M.D. Mastrandrea, and C.B. Field. How IPCC science-policy interactions shape its policymaker summaries. Poster presentation. San Francisco, California.
- 2016 Mach, K.J., M.D. Mastrandrea, P.T. Freeman, and C.B. Field. Unleashing expert judgment in the IPCC's Fifth Assessment Report. Poster presentation. San Francisco, California.
- 2016 Hino, M., C.B. Field, and K.J. Mach. Managed retreat: a global analysis of drivers, barriers, and outcomes. Poster presentation. San Francisco, California.
- 2016 Field, C.B., and K.J. Mach. Negative emissions: the need, the potential, and the risks. San Francisco, California. (Coverage: Scientific American).

Our Common Future Under Climate Change

- 2015 Mach, K.J., M.D. Mastrandrea, V.R. Barros, and C.B. Field. Key risks in the IPCC's Fifth Assessment Report: a basis for evaluating and responding to danger from climate change. Paris, France.
- 2015 Mastrandrea, M.D., K.J. Mach, P.T. Freeman, V.R. Barros, and C.B. Field. Treatment of uncertainties in the IPCC's Fifth Assessment Report: lessons learned for informing management of climate-related risks. Poster presentation. Paris, France.

Society for Integrative and Comparative Biology

- 2008 Mach, K.J. The eternal tug: fatigue failure of wave-swept macroalgae in conditions of repeated subcritical loading. Poster presentation. San Antonio, Texas.

Western Society of Naturalists

- 2009 Mach, K.J. Failure by fatigue in the red macroalga *Mazzaella*. Seaside, California.
- 2007 Mach, K.J. Failure by fatigue in wave-swept macroalgae. Ventura, California.

Phycological Society of America

2006 Mach, K.J. A slow death? Failure by fatigue in seaweeds. Juneau, Alaska.

Hopkins Marine Station of Stanford University

2004 Mach, K.J. Distribution and function of tower cells in the epiphytic bryozoan *Membranipora membranacea*.

Bodega Marine Laboratory of University of California at Davis

2004 Mach, K.J. Distribution and function of tower cells in the epiphytic bryozoan *Membranipora membranacea*.

FIELD RESEARCH EXPERIENCE

I have completed ecological and biomechanical research at the following marine stations:

Hopkins Marine Station , CA, Laboratory Technician and Ph.D. Student	2004-2010
Friday Harbor Laboratories , WA, Wainwright Fellow and Course Research Assistant	2007-2008
Marine Science Center in Nahant , MA, Undergraduate Honors Researcher	2003-2004
Shoals Marine Laboratory , ME, NSF REU Fellow and Leader of Earthwatch Volunteers	2002-2004

PUBLIC SCIENCE WRITING

Hoover Institution Press

“Building Coastal Resilience for Greater United States Security,” by R.-M. De Souza, C.B. Field, A.C. Hill, K.J. Mach, M. Parker, S. Strazisar, and L. Rosenbohm. In press.

Vox

“Abandon Florida? Not quite. But it’s time for a retreat from flood zones,” by M. Hino, K.J. Mach, and C.B. Field. September 14, 2017. Available at <https://www.vox.com/the-big-idea/2017/9/14/16304730/flooding-irma-houston-retreat-floodplains-buyouts>

New York Times

“What climate scientists want you to see in the floodwaters,” by K. Mach and M. Hino. September 2, 2017. Available at <https://www.nytimes.com/2017/09/02/opinion/climate-hurricanes-flooding-harvey.html>

The Hill

“Shoring up coastal infrastructure is long past due,” by R.-M. De Souza, C. Field, A. Hill, and K. Mach. August 25, 2017. Available at <http://thehill.com/blogs/pundits-blog/energy-environment/347968-shoring-up-coastal-infrastructure-is-long-past-due>

Stanford Woods Institute for the Environment

“Adaptation in the climate response portfolio,” by K. Mach. January 27, 2017. Available at <https://woods.stanford.edu/sites/default/files/files/PBrief-ClimateResponse-Mach.pdf>

“Climate change 2016: Eight ways the world has changed since the last IPCC report,” by C.B. Field and K.J. Mach. November 2, 2016. Available in this report:

<https://woods.stanford.edu/sites/default/files/files/Stanford-Climate-Series-Recommendations.pdf>

World Economic Forum

“What role will fossil fuels play in our low-carbon future?” by C. Field and K. Mach. December 10, 2015. Available at <https://www.weforum.org/agenda/2015/12/what-role-will-fossil-fuels-play-in-our-low-carbon-future/>

“What are the economic consequences of climate change?” by C. Field and K. Mach. November 16, 2015. Available at <https://www.weforum.org/agenda/2015/11/what-are-the-economic-consequences-of-climate-change/>

RELEVANT WEBSITES

Stanford Environment Assessment Facility: <https://woods.stanford.edu/research/centers-programs/stanford-environment-assessment-facility>

Stanford University Researcher Profile: <https://profiles.stanford.edu/katharine-mach>

Stanford Woods Institute for the Environment Researcher Profile:

<https://woods.stanford.edu/about/woods-faculty/katharine-mach>

Department of Global Ecology Researcher Profile: <http://dge.stanford.edu/people/kmach>

LinkedIn Profile: <http://www.linkedin.com/pub/katharine-mach/19/6ab/a30>

Google Scholar Citations: <http://scholar.google.com/citations?user=HJxEu3cAAAAJ&hl=en&oi=ao>

IPCC Working Group II Fifth Assessment Report: <https://www.ipcc.ch/report/ar5/wg2/>

IPCC Special Report on Extremes: <https://www.ipcc.ch/report/srex/>