

PHILIP B. DUFFY
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EDUCATION

Stanford University
PhD, Applied Physics

Harvard University
AB, *magna cum laude*, Astronomy and Astrophysics

PROFESSIONAL POSITIONS

White House Office of Science and Technology Policy (OSTP)
Climate Science Advisor (on loan from Woodwell; 2021 - present)

Woodwell Climate Research Center (formerly Woods Hole Research Center)
Past President on leave to the White House (2022 - present)

Woodwell Climate Research Center (formerly Woods Hole Research Center)
President and Executive Director (2015 - 2022)

White House Office of Science and Technology Policy (OSTP)
Consultant (part-time; 2015)

White House National Science and Technology Council (NSTC)
Senior Advisor to the U.S. Global Change Research Program (2013 - 2015)

White House Office of Science and Technology Policy (OSTP)
Senior Policy Analyst, Environment and Energy Division (2011 - 2012)

Carnegie Institution for Science, Stanford CA.
Visiting Investigator, Dept. of Global Ecology (2013)
Visiting Scholar, Dept. of Global Ecology (2008 - 2011)

Woods Institute for the Environment, Stanford University
Visiting Scholar (2010 - 2011)

Climate Central, Inc.
Chief Scientist (2010 - 2011)
Principal Research Scientist (2009 - 2010)
Senior Research Scientist (2008 - 2009)
Palo Alto Office Director (2008 - 2011)

Lawrence Livermore National Laboratory (LLNL)
Senior Scientist, Physics and Life Sciences Directorate (2011 - 2015, assigned to the White House)
Leave of absence (2008 - 2011)
Deputy Leader, Atmospheric Science Division (2004 - 2005)
Leader, Climate and Carbon Cycle Modeling Group (1996 - 2004)
Physicist, Atmospheric Science Division (1991 - 1996)
Physicist, Nuclear Test and Military Applications Divisions (1986 - 1990)

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PROFESSIONAL POSITIONS (Continued)

University of California Institute for Research on Climate Change and its Societal Impacts
Founding Director (2003 - 2008)

University of California, Merced
Adjunct Associate Professor (2003 - 2009)

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC) INVOLVEMENT

Contributing Author, 3rd Assessment Report.

Review Editor, 5th Assessment Report.

Co-led the US government review of the entire AR5 (Working Groups 1, 2, and 3 contributions, plus Synthesis Report).

US government delegate to approval sessions for Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), AR5 Working Groups 1, 2, and 3, and Synthesis Report.

NATIONAL AND INTERNATIONAL POLICY

Biden - Harris Science Policy Committee: volunteer

U.S. House of Representatives Committee on Science, Space, and Technology: Testimony

U.S. House of Representatives Committee on Water and Power: Testimony

U.S. House of Representatives Committee on Science, Space, and Technology: Panelist

U.S. House of Representatives Sustainable Energy and Environment Coalition: Panelist

U.S. Department of State: Special Advisor to US delegation to IPCC-42.

White House National Science and Technology Council, Subcommittee on Global Change Research, Interagency Task Group on Science for Catastrophe Risk Assessment (Chair)

U.S. Department of State: Senior Technical Advisor on matters relating to the Intergovernmental Panel on Climate Change (2011 - 2015).

U.S. Department of State: Delegate to Approval Sessions for Intergovernmental Panel on Climate Change (1) Special Report on "Managing the risks of extreme events and disasters to advance climate change adaptation," (2) 5th Assessment Report Working Group 1 contribution, (3) 5th Assessment Report Working Group 2 contribution, (4) 5th Assessment Report Working Group 3 contribution, (5) 5th Assessment Report, Synthesis Report.

U.S. Department of State: Side Event Organizer at UNFCCC COP-15 Climate Conference.

PROFESSIONAL SERVICE

Pictet Asset Management, Sovereign Fund Project: Advisory Board Member, 2021

State of California Office of Planning and Research: Peer Review Committee for 4th California Climate Assessment

U.S. National Academy of Sciences: Consultant to review the 4th National Climate Assessment

U.S. National Academy of Sciences: Committee to Advise the US Global Change Research Program

U.S. National Academy of Sciences: Review committee for US National Climate Assessment

Center for Carbon removal: Advisory Panel member.

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US Department of the Interior: Northwest Climate Science Center external review team member
Argonne National Laboratory: Computing, Environment and Life Science Directorate external review committee
World Climate Research Program: Task Force on Regional Climate Downscaling
US Army Corps of Engineers: Numerical Modeling Review Group (post-Sandy risk assessment)
The Open Atmospheric Journal: Editorial Board Member
California Department of Water Resources: Climate Change Technical Advisory Group
Water Utility Climate Alliance: Modeling Advisory Committee
California Dept. of Water Resources: Delta Risk Management Strategy Project, Climate Team Leader
CalFed Science Program: Expert review panel on Endangered Species Act Biological Opinion
Conservation Biology Institute: Climate Data Basin Advisory Board Member

HONORS AND AWARDS

Pacific Leadership Fellow, University of California San Diego (2023)
New York Times Quotation of the Day, September 11, 2020
New York Times Quotation of the Day, November 3, 2017
Lawrence Livermore National Laboratory Science and Technology Award
United Nations Association Global Citizen Award
Contributor to Nobel Peace Prize-winning Intergovernmental Panel on Climate Change (IPCC)
Co-captain, Stanford University cycling team
John Harvard Scholarship

CLIMATE CHANGE ADAPTATION EXPERIENCE

Argos Analytics, Inc: Senior Advisor

California Dept. of Water Resources: Delta Risk Management Strategy Project, Climate Change Team Leader. Assessed risk to levees in the Sacramento-San Joaquin Delta from climate change and other threats.

Pacific Hydro, Inc. Evaluated impacts of climate change on hydropower development in the Chilean Andes.

CalFed Bay Delta Program: Independent Review of the National Marine Fisheries Service (NMFS) 2008 Draft Biological Opinion on listed (i.e. endangered) species of Chinook Salmon, Steelhead and Green Sturgeon.

U.S. Environmental Protection Agency: Advisor to assessment of climate change risk to ecosystems in the San Francisco Bay.

San Francisco Public Utilities Commission: Analyzed impacts of climate change on water quality in the Hetch-Hetchy system.

TEACHING EXPERIENCE

Students Mentored

- Jason Bartlett – University of California, Berkeley
- Jason Bell – University of California, Santa Cruz
- Jeremy Coquard¹ – University of California, Berkeley
- Ian Ferguson – University of California, Berkeley
- Nicholas Gentile – University of California, Davis
- Nancy Grumet-Prouty¹ – Stanford University
- Matthew Huber² – University of California, Santa Cruz
- John Iorio – Stanford University
- Colin McKellar – San Jose State University
- Michael Mastrandrea – Stanford University
- Miguel Fernandez² – University of California, Merced
- George Perry¹ – San Jose State University
- Jerry Selvaggi – New York University
- Michael Wickett¹ – University of California, Davis
- Esther Zeledon – Swarthmore College

¹ DOE Graduate Student Fellow; ² PhD committee member

Post-Docs Mentored

- Celine Bonfils – University of California, Merced
- Alfred Bourgeois – Lawrence Livermore National Lab
- Donald Eliason – Lawrence Livermore National Lab
- David Lobell – Lawrence Livermore National Lab, *Lawrence Fellow*
- Huaxiao Wang – Lawrence Livermore National Lab
- Michael Wickett – University of California, Davis

SELECTED NON PEER-REVIEWED PUBLICATIONS

Duffy, P.B. and M.L. Duffy, 2021. New research does not rule out worst climate outcomes. *Science*, letter to the editor, 12 February 2021.

Duffy, P. B., B. D. Santer, and T.M.L. Wigley, Solar variability does not explain late-20th century warming. *Physics Today*, January 2009. pp. 48-49.

Duffy, P.B., Climate Change and Health, *Delaware Journal of Public Health*, October 2017.

Duffy, P.B, J. Sheffield, and E. Maloney, Global Climate Simulations of North America, in *Climate Change in North America*, Elsevier, 2014.

Lemonick, M. *et al.*, 2012. *Global Weirdness: Severe Storms, Deadly Heat Waves, Relentless Drought, Rising Seas, and the Weather of the Future*. (P. B. Duffy, lead reviewer)

PEER-REVIEWED PUBLICATIONS

Over 21,000 citations on [Google Scholar](#)

- William J. Ripple, Christopher Wolf, Timothy M. Lenton, Jillian W. Gregg, Susan M. Natali, Philip B. Duffy, Johan Rockström, and Hans Joachim Schellnhuber, 2023. Feedback loops amplify the need for climate action, *One Earth*, vol. 6, issue 2, pp. 86-91.
- William J. Ripple, Christopher Wolf, Thomas M. Newsome, Jillian W. Gregg, Timothy M. Lenton, Ignacio Palomo, Jasper A. J. Eikelboom, Beverly E. Law, Saleemul Huq, Philip B. Duffy, Johan Rockström, World Scientists' Warning of a Climate Emergency 2021, *BioScience*, 2021; biab079, <https://doi.org/10.1093/biosci/biab079>
- Natali, S., J.P. Holdren, B.M. Rogers, R. Treharne, P. B. Duffy, R. Pomerance, E. MacDonald. 2021. Permafrost carbon feedbacks threaten global climate goals, *Proceedings of the National Academy of Sciences*, 117 (45) 27793-27794.
- Schwalm, C., S. Glendon, and P.B. Duffy, 2020. Reply to Hausfather and Peters: RCP8.5 is neither problematic nor misleading. *Proceedings of the National Academy of Sciences*, www.pnas.org/cgi/doi/10.1073/pnas.2007117117.
- Schwalm, C., S. Glendon, and P.B. Duffy, 2020. RCP8.5 tracks cumulative CO2 emissions. *Proceedings of the National Academy of Sciences*, www.pnas.org/cgi/doi/10.1073/pnas.2007117117.
- Duffy, P. B. *et al.* 2018. Strengthened scientific support for the Endangerment Finding for atmospheric greenhouse gases. *Science*. [10.1126/science.aat5982](https://doi.org/10.1126/science.aat5982).
- Birdsey, R., P. B. Duffy, Carolyn Smyth, Werner A. Kurz, Alexa J. Dugan, Richard Houghton, 2018. Climate, Economic, and Environmental Impacts of Producing Wood for Bioenergy. *Environmental Research Letters*, vol. 13, no. 5.
- Giffen, R. A., C. Schwalm, R. Perschel, P. B. Duffy, R. A. Houghton, W. Price, F. Lowenstein, 2017. Seeing Forests for More than Carbon in the Trees: Incentivizing Actions Beyond Carbon Storage to Mitigate Climate Change, *J. Forestry*, DOI: <https://doi.org/10.5849/jof.2016-016>
- Duffy, P. B., P. Brando, G. Asner, and C. Field, 2015. Projections of future drought and wet periods in the Amazon. *Proceedings of the National Academy of Sciences*, vol. 112 no. 43. 13172–13177, doi: [10.1073/pnas.1421010112](https://doi.org/10.1073/pnas.1421010112)
- Maurer, E., L. Brekke, T. Pruitt, B. Thrasher, J. Long, P. B. Duffy, M. Dettinger, D. Cayan, and J. Arnold 2014. An enhanced archive facilitating climate impacts and adaptation analysis. *Bull. Amer. Meteor. Soc.* doi: <https://dx.doi.org/10.1175/BAMS-D-13-00126.1>.
- Cayan, D. *et al.* Future Climate: Projected average climate in the Southwestern US, in Garfin G. ed. 2013. *Assessment of Climate Change in the Southwestern U.S.*, A Report Prepared for the National Climate Assessment. 509 pp. Island Press.
- Thrasher, B. L., E. P. Maurer, C. McKellar, and P. B. Duffy, 2012. Technical Note: Bias correcting climate model simulated daily temperature extremes with quantile mapping, *Hydrol. Earth Syst. Sci. Discuss.*, *9*, 5515-5529, doi: [10.5194/hessd-9-5515-2012](https://doi.org/10.5194/hessd-9-5515-2012).
- Duffy, P. B., and C. Tebaldi, 2012. Increasing prevalence of extreme summer temperatures in the U.S., *Climatic Change Letters*, *111* (2): 487 DOI: [10.1007/s10584-012-0396-6](https://doi.org/10.1007/s10584-012-0396-6).
- KL Cole, K Ironside, J Eischeid, G Garmin, PB Duffy, C Toney 2011 Past and ongoing shifts in Joshua tree distribution support future modeled range contraction, *Ecological Applications*, *21* (1) 137-149.
- Ferguson, I. M., P. B. Duffy, T. J. Phillips, X. Liang, J. A. Dracup, S. Schubert and P. Pegion, 2011. Non-stationarity of the signal and noise characteristics of seasonal precipitation anomalies, *Climate Dynamics*, DOI: [10.1007/s00382-010-0850-y](https://doi.org/10.1007/s00382-010-0850-y)
- Mote, P., L. Brekke, P. B. Duffy, and E. Maurer, 2010. "Guidelines for constructing climate scenarios. EOS, *Transactions of the American Geophysical Union*. *92*(31), 257, doi: [10.1029/2011EO310001](https://doi.org/10.1029/2011EO310001).

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- Wehner, M. F., G. Bala, P. B. Duffy, A. M. Mirin and R. Romano, 2010. "Towards direct simulation of future tropical cyclone statistics in a high resolution global atmospheric model," *Advances in Meteorology*, Volume 2010, Article ID 915303, doi: 10.1155/2010/915303.
- Wehner, M. F., R. L. Smith, G. Bala, and P. B. Duffy, 2010. The effect of horizontal resolution on simulation of very extreme U.S. precipitation events, *Climate Dynamics*, DOI 10.1007/s00382-009-0656-y
- Ferguson, I.M., J. A. Dracup, P. B. Duffy, P. Pegion, S. Schubert, 2010. Influence of SST forcing on stochastic characteristics of simulated precipitation and drought, *J. Hydrometeorology* 11:3, 754-769
- Loarie, S., P. B. Duffy, H. Hamilton. G. Asner, C. Field, and D. Ackerly, 2009. The velocity of climate change, *Nature*, 462, 1052-1055, doi: 10.1038/nature08649.
- Miller, J. Jin, N. J. Schlegel, M. A. Snyder, T. O'Brien, L. C. Sloan, P. B. Duffy, H. Hidalgo, Kanamaru, M. Kanamitsu, K. Yoshimura, D. R. Cayan. An analysis of simulated California climate using multiple dynamical and statistical techniques, California Energy Commission CEC-500-2009-017-F August 2009.
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- Kim, S-J. T. Crowley, P. B. Duffy, and G. Bala, 2008. High-Resolution Climate Simulation of the Last Glacial Maximum, *Climate Dynamics* 31, pp. 1-16. 10.1007/s00382-007-0332-z.
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- Maurer, E.P., L. Brekke, T. Pruitt, and P. B. Duffy, 2007, Fine-resolution climate change projections enhance regional climate change impact studies, *Eos, Transactions, American Geophysical Union*, 88(47), 504 (online at http://www.agu.org/eos_elec/2007/47-504.html)
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- "Climate Action Team Report to the Governor and Legislature," available at http://www.climatechange.ca.gov/climate_action_team/reports/index.html. Contributing author.
- "Our changing climate: Assessing the Risks to California" A summary report from the California Climate Change Center CEC-500-2006-077. Contributing author.
- Cole, K.L., K. Ironside, S. Arundel, P. B. Duffy, and J. Shaw. 2007. Modeling future plant distributions on the Colorado Plateau: An example using *Pinus edulis*. In, *The Colorado Plateau III*, C. van Riper III and M. Sogge (eds), The University of Arizona Press.
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- Bell, J. L., L. C. Sloan, J. Revenaugh and P. B. Duffy, 2003: Evaluation of Northern Hemisphere natural climate variability in multiple temperature reconstructions and global climate model simulations. *Global and Planetary Change*, 37, Issues 1-2, 10 June 2003, pp. 19-31.
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- Govindasamy, B., P. B. Duffy, and J. Coquard 2003: High Resolution Simulations of Global Climate, Part 2: Effects of Increased Greenhouse Gases. *Climate Dynamics*, 21, 391-404, 2003.
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- Govindasamy, B., K. Caldeira and P. B. Duffy, Geoengineering Earth's radiation balance to mitigate climate change from a quadrupling of CO₂, *Global & Planetary Change*. 37(1-2): 157-168, 2003.
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- Govindasamy, B., K. E. Taylor, P. B. Duffy, B. J. Santer, A. S. Grossman, and K. E. Grant, 2001. Limitations of the equivalent CO₂ approximation in climate change simulations; *J. Geophys. Res.*, 106, p. 22593-22603.
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- Govindasamy, B., P. B. Duffy, and K. Caldeira, 2001. Land Use Changes and Northern Hemisphere Cooling, *Geophys. Res. Lett.*, 28, 291-294.
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- Wickett, M. E., P. B. Duffy, and G. Rodrigue, 2000. A reduced grid for a parallel global ocean general circulation model, *Ocean Modeling*, 2, 85-107.
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- Bell, J., P. B. Duffy, C. Covey, and L. Sloan, Analysis of Temperature Variability in Sixteen Climate Model Simulations, *Geophysical Research Letters*, 27, 261-264, 2000.
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