

Timothy DelSole

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EDUCATION

- 1993 Ph.D. Applied Physics, Harvard University, Cambridge, Massachusetts
Dissertation: *Absolutely Unstable and Stochastically Forced Baroclinic Waves*
Advisor: Brian Farrell
- 1989 M.S. Applied Physics, Harvard University, Cambridge, Massachusetts
- 1988 B.S. Physics, North Carolina State University, Raleigh, North Carolina
summa cum laude and Valedictorian in Physics
- 1988 B.S. Applied Mathematics, North Carolina State University, Raleigh, North Carolina
summa cum laude
- 1984 Parkland High School, Winston-Salem, North Carolina, *Valedictorian*

ACADEMIC AND PROFESSIONAL EXPERIENCE

- 2012-Present Full Professor, Department of Atmospheric, Oceanic, and Earth Sciences,
George Mason University, Fairfax, Virginia
- 2003-2012 Associate Professor (with tenure in Aug. 2006), Department of Atmospheric,
Oceanic, and Earth Sciences, George Mason University, Fairfax, Virginia (depart-
ment name has changed during this time)
- 1997-Present Research Scientist, Center for Ocean-Land-Atmosphere Studies, Calver-
ton, Maryland (a center within Institute of Global Environment and Society, Inc.)
- 1995-1997 National Research Council Associate, NASA Goddard Space Flight Center,
Advisor: Arthur Hou
- 1993-1995 United States Department of Energy Global Change Distinguished Postdoc-
toral Fellow, NASA Goddard Space Flight Center, Advisor: Arthur Hou
- 1990-1993 NASA Global Change Graduate Fellow, Harvard University, Cambridge,
Massachusetts, Advisor: Brian Farrell

AWARDS

- 2011 Publication Award from the College of Sciences
- 2011 Nominated for Teaching Excellence Award at George Mason University
- 2008 Nominated for Teaching Excellence Award at George Mason University
- 1992 Distinguished Teacher Award by Derek Bok Center for Teaching and Learning
- 1988 *Most Outstanding Senior in Physics*
- 1987 National Science Foundation Undergraduate Fellowship

- [1] T. DelSole and M. K. Tippett. Simple bounds on the most predictable component of a stochastic model. *Proc. Royal Soc. A*, submitted, 2024.
- [2] T. DelSole and M. K. Tippett. Tuning Earth System Models without integrating to statistical equilibrium. *J. Adv. Model. Earth Syst.*, submitted, 2024.
- [3] N. Lydeen, T. DelSole, and B. A. Cash. Tuning Earth System Models: A benchmark algorithm. *unpublished*, 2023.
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- [5] T. DelSole and M. K. Tippett. Comparison of climate time series – part 5: Multivariate annual cycles. *Adv. Stat. Clim. Meteorol. Oceanogr.*, 10(1):1–27, 2024.
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- [7] T. DelSole and M. K. Tippett. The most predictable component of a linear stochastic model. *Proceedings of the Royal Society of London. Series A - Mathematical and Physical Sciences*, 479(2277):20230129, 2023.
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- [11] Laurie Trenary and Timothy DelSole. Advancing interpretability of machine-learning prediction models. *Environ. Data Sci.*, 1:e14, 2022.
- [12] T. DelSole and M. K. Tippett. Comparing climate time series – part 4: Annual cycles. *Adv. Stat. Clim. Meteorol. Oceanogr.*, 8(2):187–203, 2022.
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- [14] S. He, X. Li, T. DelSole, P. Ravikumar, and A. Banerjee. Sub-seasonal climate forecasting via machine learning: Challenges, analysis, and advances. *AAAI Conference on Artificial Intelligence (AAAI)*, 35(1):169–177, 2021.
- [15] T. DelSole and M. K. Tippett. A mutual information criterion with applications to canonical correlation analysis and graphical models. *Stat*, 10(1):e385, 2021.
- [16] T. DelSole and M. K. Tippett. Comparing climate time series – part 3: Discriminant analysis. *Adv. Stat. Clim. Meteorol. Oceanogr.*, 8(1):97–115, 2022.
- [17] L. Trenary and T. DelSole. Skillful statistical prediction of sub-seasonal temperature by training on dynamical model data. *Environ. Data Sci.*, 2:e7, 2023.

- [18] T. DelSole and M. K. Tippett. Comparing climate time series – part 2: Multivariate test. *Adv. Stat. Clim. Meteorol. Oceanogr.*, 7(2):73–85, 2021.
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PRESENTATIONS

- “The Most Predictable Component of a Linear Stochastic Model”, American Meteorological Society Annual Meeting, Baltimore, MD, February 1, 2024.
- “Comparing Climate Time Series,” UCLA, Statistics Department, Los Angeles, CA, October 5, 2023. <https://www.youtube.com/watch?v=Oi3ApNKG5ng>
- “The Most Predictable Component of a Linear Stochastic Model”, Texas A&M, Department of Oceanography, College Station, TX, October 2, 2023.
- “Do Models Correctly Simulate Atlantic Variability?” NOAA/CPO/CVP Webinar Series - Decadal Variability and Predictability, May 25, 2023. https://www.youtube.com/watch?v=vvcLfyut_A.
- “Advancements in Model Tuning.” European Center for Medium Range Forecasts, Reading, UK, September 30, 2022. <https://events.ecmwf.int/event/316/>
- “North Atlantic Predictability Without Ocean Dynamics.” Penn State University, State College, PA, September 21, 2022 (invited).
- “Do Models Generate Realistic Simulations?” Earth System Science Interdisciplinary Center (ESSIC), University of Maryland, MD, December 6, 2021. Virtual Presentation (invited). Recording: <https://www.youtube.com/watch?v=WdmwiTuuN8M&t=128s>

- “Do Models Generate Realistic Simulations?” Climate Diagnostics and Prediction Workshop, Silver Spring, MD, October 26, 2021. Virtual presentation (Invited).
- “Do Models Generate Realistic Simulations of the North Atlantic SST?” Virtual poster presentation at Multi-Annual to Decadal Climate Predictability in the North Atlantic-Arctic, Copenhagen, Denmark, September 21, 2021. Blue Action Predictability Conference.
- “Overview of Knowledge-Guided Machine Learning in Weather and Climate”, Workshop on Knowledge-Guided Machine Learning, August 9, 2021. Recording: <https://www.youtube.com/watch?v=WqdL3jstslM>
- “Climate Change: A Review of the Science,” The Goodwin House, February 11, 2021 (invited) <https://vimeo.com/469086734/c2b49425e2> (starting 16min)
- “The Science of Climate Change,” American Physical Society Mid-Atlantic Senior Physicists Group, December 17, 2020 (invited).
- “An Approach to Tuning Climate Models,” CESM co-chairs meeting, December 2, 2020 (invited).
- “How Well Can We Predict Climate Hazards Related to National Security?”, DA-COR House, Annual Conference on The Impact of Climate Change on U.S. Foreign Policy and National Interest, September 25, 2020 (invited)
- “The Role of Mathematical Sciences in Weather Forecasting,” National Academy of Sciences, project on Illustrating the Impact of the Mathematical Sciences, Webinar, September 8, 2020 (invited).
- “A New Way to Compare Time Series,” George Mason University Fairfax, VA, Feb. 6, 2019
- “New Developments in Model Selection, or A New Way to Not Fool Yourself,” George Mason University Fairfax, VA, Aug. 28, 2019.
- “What are the Most Predictable Patterns in Sub-Seasonal Forecasting?,” ECMWF Annual Seminar, Reading, UK, September 4, 2019 (invited) (<https://vimeo.com/385454275>)
- “A New Criterion for Selecting Multivariate Models,” 14th International Meeting on Statistical Climatology, Toulouse, France, June 25, 2019.
- “Confidence Intervals in Optimal Fingerprinting,” 14th International Meeting on Statistical Climatology, Toulouse, France, June 26, 2019.
- “Diagnosis of Sub-Seasonal Skill”, International Workshop on Climate Prediction 2019: Past, Present, and Future, June 4, 2019 (invited).
- “Differences in ocean variability between models and observations,” US AMOC Webinar, April 18, 2019 (available on YouTube <https://www.youtube.com/watch?v=pa2AerhyNSQ>).
- “S2S Predictability,” Earth System Prediction Capability Workshop, George Mason University, Fairfax, VA, February 21, 2019.
- “Recent Developments in Forecast Quality Assessment”, 2018 Second International Conference on Seasonal to Decadal Prediction (S2D), Boulder, CO, September 19, 2018 (keynote)
- “Reconstructing the Atlantic Meridional Overturning Circulation based on sea surface temperatures,” 2018 International AMOC Science Meeting, Coconut Grove, FL, July 25, 2018.

- “Machine Learning Problems in Sub-Seasonal Prediction”, Statistics and Data Science for Earth Systems Conference, U. Minnesota, May 5, 2018 (invited Institute for Research In Statistics and its Applications Distinguished Lecture).
- “Confidence Intervals in Optimal Fingerprinting,” International Detection and Attribution Group Workshop, Lawrence Berkeley National Laboratory, March 13, 2018.
- “The Role of Ocean Dynamics in Multi-year Predictability,” BIRS Workshop 17w5061 Nonlinear and Stochastic Problems in Atmospheric and Oceanic, Nov. 20, 2017
- “Subseasonal Prediction Skill from SubX”, NMME/SubX Science Meeting, NOAA Center for Weather and Climate Prediction, College Park, MD, September 13, 2017 (invited).
- “The Role of Ocean Dynamics in Multi-year Predictability,” Workshop on Atlantic Climate Variability Dynamics, Prediction and Hurricane Risk, Columbia U., NY, September 8, 2017 (invited).
- “Predicting the Next Decade,” Joint Statistical Meeting, Baltimore, MD, August 1, 2017 (invited).
- “Space-Only Fingerprinting,” AMS 24th Conference on Probability and Statistics in the Atmospheric Sciences, Baltimore, MD, July 29, 2017
- “Optimal Lagged Ensembles in Subseasonal Forecasting,” NOAA Subseasonal-to-seasonal task force, webinar, June 21, 2017.
- “The Science of Climate Change,” The Fairfax 100, Fairfax, VA, May 18, 2017.
- “The Science of Climate Change,” Climate Science Roundtable (organized by Sierra Club and Science Museum of Virginia), May 16, 2017.
- “Understanding North Atlantic Variability,” George Mason University, Fairfax, VA, May 10, 2017.
- “The Other Comment About Climate Change by the Head of the EPA,” George Mason Lightning Talk, Fairfax, VA, April 26, 2017.
- “The Science of Climate Change,” Greenspring Retirement Community, Springfield, VA, April 21, 2017.
- “Inferring Aerosol Cooling from Data,” Fourth Sante Fe Conference on Global and Regional Climate Change, Sante Fe, NM, Feb. 8, 2017. *invited*
- “The Science of Global Warming,” U. S. Naval Observatory, Washington, D.C., October 7, 2016.
- “Improving Estimates of Aerosol Cooling”, International Detection and Attribution Group meeting, Boulder, CO, Feb. 1, 2016.
- “Comparing Forecast Skill,” National Centers for Environmental Prediction, College Park, MD, October 13, 2015.
- “Finding Relations in Climate Data Sets,” Fifth Workshop on Understanding Climate Change from Data, U. Minnesota, Minneapolis, MN, August 5, 2015. *invited*
- “Estimating Aerosol Forced Variability,” International Detection and Attribution Group meeting, NCAR, Boulder, CO, January 21, 2015.
- “Using Climate Models to Constrain Learning Algorithms”, 4th annual workshop on Understanding Climate Change from Data, NCAR, Boulder, CO, June 30, 2014

- “The Science of Predicting the Next Decade,” U. Miami, Miami, May 22, 2014 *invited*.
- “Why Do Scientists Believe Climate Change is Real?,” Highland School, Warrenton, VA, April 21, 2014 (hosted by Citizens Climate Education Corp). *invited*
- “Extreme Weather and Climate Change,” NASA Ambassador Webinar, March 24, 2014. *invited*
- “The Science of Predicting the Next Decade,” Workshop on Eastern Coastal Infrastructure and Climate Change: Science, Impacts, Planning, and Response, Arlington, VA, February 25, 2014 (hosted by Los Alamos National Laboratory). *invited*
- “Complementary Skill and Predictability in Multi-model Ensembles,” International Conference on Subseasonal to Seasonal Prediction, NOAA Center for Weather and Climate Prediction, College Park, MD, February 10, 2014.
- “Does the Multi-Model Ensemble Enhance Skill?,” NOAA’s 38th Climate Diagnostics and Prediction Workshop, College Park, MD, October 22, 2014.
- “A Rigorous Framework for Validating Ensemble Forecasts,” ESPC/NUOPC Ensemble Workshop, Scripps Institute of Oceanography, LaJolla CA, July 30, 2013.
- “Gilbert Walker’s Detection and Attribution Study of 1908,” International Detection and Attribution Group Meeting, NCAR, Boulder, CO, July 2, 2013.
- “Advances in Validating Climate Predictions,” International Detection and Attribution Group Meeting, NCAR, Boulder, CO, July 1, 2013.
- “The Simplest General Circulation Model,” Workshop on Stochastic Modeling of the Oceans and Atmosphere, Institute for Mathematics and its Applications, University of Minnesota, MN, March 11, 2013. *invited*
- “Multi-year Prediction and Predictability,” International Science Conference on Climate Change, National Taiwan University, Taipei, Taiwan, September 20, 2012. *invited*
- “Limits of Climate Detection in Space and Time,” International Detection and Attribution Group Meeting, NCAR, Boulder, CO, February 2, 2012. *Invited*
- “Recent Advances in Multi-Year Prediction,” George Mason University, Fairfax, VA, November 11, 2011. *Invited*
- “Seamless Diagnosis of Predictability on Multiple Time Scales,” World Climate Research Program Open Science Meeting, Denver, CO, October 24, 2011.
- “Predictability Framework: A Synthesis,” Center for Ocean-Land-Atmosphere Studies (Scientific Advisory Committee), Calverton, MD, September 26, 2011.
- “Outstanding Problems at the Interface of Climate Prediction and Data Mining,” The First International Workshop on Climate Informatics, New York Academy of Sciences, New York, NY, August 26, 2011. *Keynote Address*
- “Climate Change: Natural or Anthropogenic?” Institute for Defense Analysis, Alexandria, VA, 22 July 2011. *Invited*
- “State and Parameter Estimation in Stochastic Dynamical Models,” Workshop on Representing Model Uncertainty and Error in Numerical Weather and Climate Prediction Models, European Center for Medium Range Forecast, 22 June 2011. *Invited*

- “Incorporating Natural Predictable Patterns in Fingerprinting and Decadal Prediction,” International Detection and Attribution Group Meeting, NCAR, Boulder, CO, January 31, 2011. *Invited*
- “A Significant Component of Multidecadal Variability in the Recent Acceleration of Global Warming,” Massachusetts Institute of Technology, Nov. 10, 2010. *Invited*
- “A Significant Component of Multidecadal Variability in the Recent Acceleration of Global Warming,” Harvard University, Nov. 9, 2010. *Invited*
- “A Significant Component of Multidecadal Variability in the Recent Acceleration of Global Warming,” International Center for Theoretical Physics, Trieste, Italy, Aug. 16, 2010. *Invited*
- Lecture Series on “Statistical Methods in Seasonal Prediction,” International Center for Theoretical Physics, Trieste, Italy, Aug. 2-6, 2010. *Invited*
- Lecture Series on “Statistical Methods in Monsoon Prediction” at the Indian Meteorological Department, New Dehli, India, Feb. 1-4, 2010. *Invited*
- “Challenges in Statistical Prediction of Indian Monsoons,” workshop on Predictability and Prediction of Monsoon, hosted by the Indian Ministry of Earth Sciences, New Dehli, India, Feb. 9, 2010. *Invited*
- “The Simplest General Circulation Model,” Conference on Ocean-Atmosphere Energy Transport, California Institute of Technology, CA, November 5, 2009.
- “A Global Multidecadal Oscillation,” Eighth Workshop on Decadal Climate Variability, St. Michaels, MD, October 13, 2009.
- Lecture Series on “Predictability of Weather and Climate,” International Center for Theoretical Physics, Trieste, Italy, July 27-July 29, 2010. *Invited*
- “A New Framework for Seamlessly Diagnosing Predictability on Multiple Time Scales,” presentation for UCAR Site Visit, 18 May 2009.
- “Optimal Detection of Decadal Predictability,” Climate Change Prediction Program, poster, Bethesda, MD, 9 April 2009
- “Optimal Detection of Decadal Predictability.” International Detection and Attribution Group, National Center for Atmospheric Research, Boulder, CO, January 23, 2009. *Invited*
- “Accounting for Model Error in the Ensemble Kalman Filter.” Center for Scientific Computation and Mathematical Science. University of Maryland, MD, Nov 19, 2008. *Invited*
- “Average Predictability Time: A New Method for Seamlessly Diagnosing Predictability Over Multiple Time Scales.” Courant Institute, New York, NY, Nov. 5, 2008. *Invited*
- Lectures on Statistical Prediction Methods, International Centre for Theoretical Physics, Trieste, Italy, 27-30 July 2009. *Invited*
- “Predictability of Climate Indices Related to Infectious Diseases,” DIMACS/DyDAn Workshop on Climate and Diseases. Center for Discrete Mathematics and Theoretical Computer Science, Rutgers University, Piscataway, NJ, April 7, 2008. *Invited*

- “Design of/Requirements for Climate Model Simulations to Ascertain Shifts in the Distribution of Extreme Weather Events. Workshop on “Identifying Outstanding Grand Challenges in Climate Change Research: Guiding the Department of Energy Strategic Planning.” Arlington, VA, March 25, 2008. *Invited*
- “Stochastic Climate Models.” Joint Mathematics Meeting, San Diego, CA, January 6, 2008. *Invited*
- Empirical Correction of the Global Forecast System. NOAA 32nd Climate Diagnostics and Prediction Workshop, Tallahassee, FL, October 22, 2007.
- “Stochastic Models of Geophysical Turbulence.” Workshop on Stochastic Dynamical Systems and Climate Modeling, Banff International Research Centre, Banff, Canada, April 18, 2007. *Invited*
- “Optimal Persistence Patterns: A New Method for Finding Climate Signals,” Duke University, Durham, NC, July 21, 2006. *Invited*
- Outstanding Issues in Applying Information Theory to Predictability, 2006 Joint Assembly (American Geophysical Union), Baltimore, MD, May 24, 2006.
- “Predictability, Information Theory, and Stochastic Models,” National Center for Atmospheric Research, Boulder, CO, April 28, 2006.
- “Optimal Persistence Patterns,” National Center for Atmospheric Research, Boulder, CO, April 26, 2006.
- “Optimal Persistence Patterns,” Harvard University, Boston, MA, April 25, 2006. *Invited*
- “Stochastic Models of Geophysical Fluids,” Harvard University, Boston, MA, April 24, 2006. *Invited*
- “Stochastic Models of Geophysical Fluids: Closure and Dimension Reduction.” Workshop on Mathematical and Geophysical Fluid Dynamics: Analytic and Stochastic Models. American Institute of Mathematics. Palo Alto, CA, February 13, 2006. *Invited*
- Statistics of Optimal Perturbations, 15th American Meteorological Society Conference on Atmospheric and Oceanic Fluid Dynamics. Cambridge, MA, June 16, 2005
- “Stochastic Models of Quasigeostrophic Models,” Workshop on Stochastic Climate Models, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany, May 31, 2005. *Invited*
- “Optimal Persistence Patterns,” Statistical and Applied Mathematical Sciences Institute, Research Triangle Park, North Carolina, May 13, 2005. *Invited*
- “Statistics of Optimal Perturbations in Quasigeostrophic Turbulence,” Workshop on Representing Unresolved Degrees of Freedom for the Atmosphere and Ocean, Centre de recherches mathématiques, Montreal, Canada, March 3, 2005. *Invited*
- “An Information Theory Perspective of Ensemble Methods,” Workshop on Ensemble Methods: From Weather Forecasting to Climate Change, Met Office, Exeter, UK, October 20, 2004. *Invited*
- “Statistical Methods in Climate Research,” Targeted Training Activity ‘Course on Climate Dynamics for Climate Research Centers and University Lecturers,’ International Center for Theoretical Physics, Trieste, Italy, August 23-27, 2004. *Invited*

- Predictability of Monthly Means Based on Information Theory, 84th American Meteorological Society Annual Meeting. Symposium on Forecasting the Weather and Climate of the Atmosphere and Ocean. Seattle, WA, January 15, 2004.
- “A Closure Theory for Quasigeostrophic Turbulence,” University of Toronto, Toronto, Canada. April 5, 2004. *Invited*
- A Closure Theory for Quasigeostrophic Turbulence, 14th American Meteorological Society Conference on Atmospheric and Oceanic Fluid Dynamics. San Antonio, TX, June 9-13, 2003.
- “A Closure Theory for Quasigeostrophic Turbulence,” National Center for Atmospheric Research Workshop on Stochastic Modeling of Geophysical Flows Workshop. Boulder, CO, March 12-14, 2003. *Invited*
- “Predictability of Weather and Climate Based on Information Theory,” Sloan workshop on the Known, unknown, and unknowable in Predictability. Savannah, GA, February 17-19, 2003. *Invited*
- Optimally Persistent Patterns: An Approach to Predictability and Decadal Variability Theory. Climate Diagnostics Center, Boulder, CO. May 16, 2002. *Invited*
- A Closure Theory of Quasigeostrophic Turbulence. National Center for Atmospheric Research, Boulder, CO. May 15, 2002. *Invited*
- Limits of Predictability Determined by Optimal Persistence Patterns. Workshop on Prospects for improved forecasts of weather and short-term climate variability on subseasonal time scales. NASA Goddard, Greenbelt, MD. April 16, 2002. *Invited*
- Optimally Persistent Patterns: An Approach to Predictability and Decadal Variability Theory. University of Maryland, College Park, MD. February 21, 2002. *Invited*
- Optimally Persistent Patterns: An Approach to Predictability and Decadal Variability Theory. International Research Institute for Climate Prediction, Lamont-Doherty Earth Observatory of Columbia University, Palisades, NY. November 29, 2001. *Invited*
- Optimally Persistent Patterns: An Approach to Predictability and Decadal Variability Theory. Institute for Terrestrial and Planetary Atmospheres, State University of New York, Stony Brook, New York. November 28, 2001. *Invited*
- A Theory for Stochastic Models of Large-Scale Turbulence. 13th AMS conference on Atmospheric and Oceanic Fluid Dynamics. Breckenridge, CO. June 4, 2001.
- Stochastic Models of Large-Scale Turbulence. European Geophysical Society XXVI General Assembly. Nice, France. March 26, 2001. *Invited*
- Stochastic Climate Models. Geophysical Fluid Dynamics Laboratory. May 12, 2000. *Invited*
- Statistical-Dynamical Models of Large-Scale Heat and Momentum Fluxes. Workshop on stochastic modeling for climate prediction. The Courant Institute of New York University. December 3, 1999. *Invited*
- Optimally persistent patterns in SST and height fields. NOAA Twenty-fourth annual climate diagnostics and prediction workshop. November 2, 1999.
- A stochastic model for transient eddy momentum fluxes in the upper troposphere. Presented at 12th AMS conference on atmospheric and oceanic fluid dynamics. 7-11 June 1999.

- Statistical-Dynamical modeling of the atmosphere and ocean. The Atmosphere/Ocean Science Colloquium at The Courant Institute of New York University. September 23, 1998. *Invited*
- Energy conserving and enstrophy dissipating stochastic models of shear-flow turbulence. Presented at Johns Hopkins conference in environmental fluid mechanics, April 3, 1998.

COMMITTEES AND
PANELS

- Scientific Committee for the 2024 International Meeting on Statistical Climatology (IMSC), Toulouse, France, June 24-28, 2024
- Scientific Committee for the 2019 International Meeting on Statistical Climatology (IMSC), Toulouse, France, June 24-28, 2019
- AMS Climate Change Statement Committee, 2017-2018
- NOAA US AMOC Task Team 2, Sept 2017-present
- SubX Task Force, Sept. 2016-2019.
- MAPP Subseasonal to Seasonal (S2S) Prediction Task Force, 2016-2020.
- NOAA Prediction Task Force, January 2014-December 2015.
- NASA Modeling, Analysis and Prediction Program (MAPP) Panel Review, Arlington, VA, Jan. 31-Feb. 1, 2017.
- Proposal Review Panel for Department of Energy, CASCADE, Rockville MD, Aug. 25-26, 2016.
- Program Committee of Climate Informatics, National Center for Atmospheric Research. Boulder, CO. Sept. 24-25, 2015 and Sept. 22-23, 2016.
- International Detection and Attribution Group. Member since January 2009.
- External Advisory Panel of NCARs Geophysical Statistics Project (GSP). National Center for Atmospheric Research. Boulder, CO. April 27-28, 2006.
- Proposal Review Panel for National Oceanographic and Atmospheric Administration. Silver Spring, MD. Oct. 19-21, 2005.
- External Advisory Panel of NCARs Geophysical Statistics Project (GSP). National Center for Atmospheric Research. Boulder, CO. May 2-3, 2005.
- Information Technology Research GEO Panel. National Science Foundation, Arlington, VA, April 28-30, 2003.
- NSF External Review Panel of NCARs Geophysical Statistics Project (GSP). National Center for Atmospheric Research. Boulder, CO. May 12-13, 2002.

SERVICE

- Special Editor for the State of the Climate Report in the Bulletin of the American Meteorological Society, since January 2024.
- Associate Editor for *Journal of Climate* since January 2023.
- Organizing committee for the International Meeting on Statistical Climatology June 23-28, 2024
- Mentored Eric Jing, a senior at Bronx High School of Science, guiding the development of a project submitted to the Regeneron Science Talent Search.

- Panel member for American Meteorological Society panel discussion on “Dealing with Reviewer Comments”, September 6, 2023.
- Editor in Chief for *Journal of Climate* January 2017 - December 2021.
- “How Well Can We Predict Climate Hazards Related to National Security?”, DACOR House, Annual Conference on The Impact of Climate Change on U.S. Foreign Policy and National Interest, September 25, 2020 (invited)
- “The Role of Mathematical Sciences in Weather Forecasting,” National Academy of Sciences, project on Illustrating the Impact of the Mathematical Sciences, Webinar, September 8, 2020 (invited).
- Panelist: public forum on “Climate Crisis: Impacts and Solutions” at GMU/Founders Hall Auditorium, 4/9/2019.
- Organizing committee for the International Meeting on Statistical Climatology June 24-28, 2019
- Editor for *Journal of Climate* January 2010 - December 2016.
- Contributing author to chapter 10 (Detection and Attribution) of the Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC AR5)
- Reviewer for chapter 11 (Near-term Climate Change: Projections and Predictability) of the Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC AR5).
- Senior Editor for the Oxford Research Encyclopedias on Statistical Methods in Climate Science (2016-present).
- Probability and Statistics Committee of American Meteorological Society, 2016-2018.
- Panelist for a public forum on “Climate Crisis: Impacts and Solutions” at GMU/Founders Hall Auditorium, 4/9/2019.
- “Why Do Scientists Believe Climate Change is Real?”, Highland School, Warrenton, VA, April 21, 2014 (hosted by Citizens Climate Education Corp). *invited*
- “Extreme Weather and Climate Change,” NASA Ambassador Webinar, March 24, 2014. *invited*
- Radio interview WINA (May 31, June 1, June 7, 2014)
 - <http://wina.com/podcasts/dr-tim-delsole/>
 - <http://wina.com/podcasts/tim-delsole/>
 - <http://wina.com/podcasts/dr-tim-delsole-2/>
- Question and answer session at the Climate Action Forum, Arlington Central Library, November 8, 2015.

GRANTS AWARDED

- **Predictability of Earth’s Climate**, 1/1/2004-12/31/2009 (including no-cost extension), \$2,440,643 (total awarded), co-PI, submitted jointly to NSF-NOAA-NASA, 0.5 FTE
- **Using Initial Tendency Errors to Reduce Systematic Errors, Identify Model Errors, and Construct Stochastic Parameterizations**, 2/1/2006-1/31/2010 (including no-cost extension), \$490,587, PI, NOAA, 1 sum

- **Optimal Detection of Decadal Predictability**, 9/1/2008-8/31/2011, \$165,001, DOE, 0.6 sum
- **Collaborative Research: Predictability of the Physical Climate System**, 1/1/2009-12/31/2013, \$3,298,209 (total proposed), co-PI, submitted jointly to NSF-NOAA-NASA, 0.5 FTE
- **Incorporating Scale and Predictability Information in Multi-model Ensemble Climate Predictions** 8/1/2010-7/31/2013, \$384,999, PI, NOAA, 1 sum
- **Collaborative Research: Separating Forced and Unforced Decadal Predictability in Models and Observations** 9/1/2010-8/31/2012, \$254,243, PI, DOE
- **Subseasonal NMME Forecasts: Skill, Predictability, and Multi-model** , 08/01/2014-07/31/2017, \$269,555, PI, NOAA
- **Leveraging ISI Multi-Model Prediction for Navy Operations**, 02/01/2013-09/30/2016, \$292,525, co-PI, Office of Naval Research.
- **EAGER: Collaborative Research: Learning Relationships between Climate Extremes and Climate Change**, 09/01/2014 08/31/2017, \$99,393, NSF.
- **Developing a Real-Time Multi-Model Sub-Seasonal Predictive Capability**, 07/01/2016 - 06/30/2018, \$239,134, NOAA.
- **Fingerprints of AMOC Variations Derived From Machine Learning Methods**, 07/01/2016 - 06/30/2019, \$287,680, NOAA.
- **Advancing Sub-Seasonal Weather Predictability Through Machine Learning Techniques**, 09/01/2018-08/31/2021, NSF.
- **Advancing Decadal Predictions by Optimally Detecting Differences in Causal Relations**, 09/01/2020-08/31/2023, \$486,960, NOAA.
- **Improving Climate Predictions by Rigorously Assessing Model Fidelity and Biases**. 9/1/2023-8/31/2026, \$473,318, NOAA