**CURRICULUM VITAE**

**May, 2018**

Name Dr. Simone Tilmes

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**PROFESSIONAL PREPARATION**

Westfälische Wilhelmsuniversität Münster, Physics and Vor-Diploma 1994

Germany Geophysics

University of Cologne Cologne Geophysics M.S. (Diploma) 1998

Germany

Johann Wolfgang Goethe Univ Frankfurt Geophysics Ph.D 2004

Germany and Geography

**APPOINTMENTS**

2014-present Project Scientist II, Atmospheric Chemistry Observations and Modeling,

National Center for Atmospheric Research, Boulder, Colorado

2010-present Chemistry Climate Liaison for the Community Earth System Model

2008-2014 Project Scientist I, Atmospheric Chemistry Division, National Center for

Atmospheric Research, Boulder, Colorado

2006-2008 Postdoctoral fellow, Advanced Study Program, National Center for

Atmospheric Research, Boulder, Colorado

2005-2006 Postdoctoral fellow, Deutschen Akademie der Naturforscher,

Leopoldina, performed at the National Center for Atmospheric

Research, Boulder, Colorado, Subject: “Arctic Ozone Loss and Climate

Change: Impact of changing environmental conditions on Arctic Ozone

Loss – Simulations with the NCAR ROSE Model“

2000-2005 PhD student and Postdoctoral fellow, Institute of Stratospheric

Research, Jülich, Germany; Subject: “Chemical Ozone Loss in the Arctic

and Antarctic Polar Stratosphere”

1999 Scientist at the Department for Research and Development of the

Deutscher Wetterdienst, Offenbach, Germany; Subject: “Local Photo-

Chemistry at the GAW-Station Hohenpeißenberg, Germany”

1995-1998 Undergraduate scientific assistant at the EURAD-Project (European Acid

Deposition Model, Institute for Geophysics and Meteorology),

University of Cologne, Germany

**WEB OF SCIENCE:**h-index: 30, 96 publications

**RESEARCH INTERESTS**

* Coupling between stratospheric dynamics, chemistry, and aerosols, and their influence on climate
* Impacts of potential future climate scenarios, including solar and stratospheric aerosol geoengineering, on atmospheric composition, air quality, and climate
* Importance of tropospheric chemistry and aerosol interactions on air quality and climate

**HONORS / AWARDS**

* Elected Chair for the Gordon research conference (GRC) on Climate Engineering in 2022
* Successful completion of UCAR’s Leadership Academy, 2017-2018
* Recognition Award for immense contribution of the advancements of air quality research in Nigeria, by the Center for Atmospheric Research, Nigeria, March 2018
* UCAR Diversity Award Nomination on “1st West African workshop on Air Quality; Measurements and Modeling, June 2014”, 2016
* CGD Christmas Award for internal work effort on Geoengineering, December 2016
* ACOM Christmas Award for internal work effort on Chemistry-Climate Modeling Initiative (CCMI) work, December 2016
* UCAR Outstanding Publication Award Nomination in 2009: Tilmes, S., R. Müller, R. Salawitch(2008) The sensitivity of polar ozone depletion to proposed geo-engineering schemes, *Science* 320, 1201; DOI: 10.1126/science.1153966
* Awarded for the Postdoctoral Appointment of the Advanced Study Program at the National Center for Atmospheric Research, 2006
* Awarded Fellow of the Deutschen Akademie der Naturforscher, Leopoldina Halle, Germany, 2005

**COMMUNITY SERVICE**

*Internal Committees*

* NCAR, CGD directors search committee member, 2017-2018
* Organized MOU between Nigeria Center for Atmospheric Research and UCAR, 2015
* Chairperson of the Early Career Scientist Assembly, NCAR, July 2010-2014
* Co-Chair of the NCAR Scientist Assembly, Nov 2010-April 2013
* Committee member on the Status of Women in Physics (CSWP); Ad-Hoc Organizing Committee, 2009, Committee Member: Woman in science at NCAR
* Advanced Study Program (ASP) representative on Early Career Scientist Assembly committee, July 2007- July 2008
* Co-chair of the ASP informal social committee, June 2007- June 2008

*External Committees / Panels*

* Panel member in Terraforming Workshop, Harvard, March 2018
* NASA MAP review panel in Washington DC, January 30 – February 2, 2017
* Panel member on the “Meeting of the Academic Working Group on International Governance of Climate Engineering, on the state of SRM scientific investigation”, Washington DC, March 2016
* Dissertation committee member for Lili Xia, Rutgers University, 2012
* NASA SEAC4RS Instrument/Measurement Panel, Washington DC, August 23-26, 2011
* Panel member of the Climate Engineering workshop by the U.S. Government Accountability Office (GAO), Keck Center in Washington, D.C., October 6-7, 2011

*Workshop Organizer / Session Convener*

* ACOM workshop organizer on “[Fundamentals in Atmospheric Chemistry and Aerosol Modeling](https://www2.acom.ucar.edu/workshop/fundamentals-atmospheric-chemistry-and-aerosol-modeling-2018)” to be held in August 2018
* Session organizer at the Climate Engineering Conference 2017, Berlin, Germany, Oct. 2017
* NCAR organizer for the Geoengineering Summer School 2015, and 5th GeoMIP workshop in Boulder, July 20-24, 2015 ([EOS Article](https://eos.org/meeting-reports/new-paths-in-geoengineering))
* Participation support of the Native American workshop, September 24, 2015.
* Organized first air quality workshop in Nigeria, June 2015 ([EOS Article](https://eos.org/meeting-reports/fortifying-international-collaborations-on-african-air-quality))
* Organized panel discussions on: Talking with Reporters; Talking with Funders, April 2013, and on Career opportunities at NCAR and Beyond, October 2012
* Organized NCAR ASP ECSA-WCRP Workshop: Regional Climate Issues in Developing Countries, October 2011 ([EOS Article](https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2012EO140008))
* Co-Convener of the ‘Geo-engineering’ Session at the EGU, April 2009 and May 2010, April 2011, Session for AGU 2016
* Convener of the ‘Geo-engineering’ Session at the EGU, April 2008

**EDUCATION / LECTURER**

* Lecturer: Annual CAM-chem / WACCM lecture during NCAR CESM tutorial 2010-2018
* Lecturer: Atmospheric and Ocean Science Workshop on Climate Engineering, Princeton University, August 2017
* Guest lecturer at CU Boulder (with Jen Kay), April 2017
* Lecturer: Geoengineering HITEC-Day, Juelich Germany, June, 2016
* Organized visit and education of Nigerian delegation visiting NCAR April, 2015
* Lecturer: GeoMIP Summer workshop: Chemistry, Dynamics and Surface UV, July 21, 2015
* Speaker at Climate Voices webinar: Explore geoengineering, March 10, 2015.
* Speaker at Cafe Scientific: Talk on Geoengineering, May 2010, Millennium Hotel, Boulder
* Presenter at the Environmental Defense Fund Science Day on Geoengineering, San Francisco, February 2010,
* Tutorial on Tracer-tracer correlation method in polar regions, at LARC, University of Colorado, Boulder, February 2009
* Jury: Peak to Peak Science Fair, 2007, 2008, 2009 and 2010; Mesa Elementary school 2010
* Girls Scout activity, May 2007

**PRESS RELEASES / MEDIA**

# New approach to geoengineering simulations is significant step forward; Modeling strategy allows scientists to explore ways to limit warming, reduce side effects. November 6, 2017, <https://www2.ucar.edu/atmosnews/news/129835/new-approach-geoengineering-simulations-significant-step-forward>

# The 2-degree goal and the question of geoengineering; How much geoengineering would it take to hit temperature target? September 7, 2016, <https://www2.ucar.edu/atmosnews/just-published/122687/2-degree-goal-and-question-geoengineering>

# Geoengineering the climate could reduce vital rains; Shading the planet would reduce vital rainfall in many regions, October 31st, 2013, <https://www2.ucar.edu/atmosnews/news/10531/geoengineering-climate-could-reduce-vital-rains>

# Stratospheric injections to counter global warming could damage ozone layer, April 24, 2008, <https://www2.ucar.edu/atmosnews/news/942/stratospheric-injections-counter-global-warming-could-damage-ozone-layer>

*In the news*: Mentioned ~350 times between 2011-2018, media outlets include the NY Times, CNBC, ABC News, Forbes, the Washington Post, MSNBC, Discovery, National Geographic, and Wired

**MENTORING**

* Daniele Visioni, served as mentor and advisor during 1 months NCAR visit, January 2018
* Co-supervise Nigerian PhD student Najib Yusuf (ongoing)
* Umar Saleh Abubakar, Engineer from Nigeria Center for atmospheric research, served as mentor and science support during 1 months NCAR visit, May, 2015
* Student support of Lili Xia, Rutgers University, Swarnali Sanyal and Arezoo Khodayari, University of Illinois, Matthias Braekebusch, CU Boulder, Dalon Stone, Texas University

**FUNDED AND PENDING PROPOSALS**

* NSF Convergence Proposal: Evaluating impacts of stratospheric aerosol climate engineering, prospectus submitted. ($1M) pending
* NSF 18-503, CNH-L: Co-PI together with Lili Xia (Rutgers University): Coupling between the human agricultural system and natural wildfire system under current and future climate. ($670,444) pending
* PI NSF Proposal 2018-0270: Fundamentals of Atmospheric Chemistry and Aerosol Modeling, Workshop support, April 2018 ($27000)
* DARPA through NSF, Co-PI together with Yaga Richter, October 2016 ($400,000) and February 2017 ($240,000)
* Collaborator on NSF IA AGS-15559702 proposal by Doug MacMartin: Building Confidence in an Intelligently-designed Climate Intervention Strategy
* Collaborator on SSP-DFG Foerderprojekt on “Stratospheric Ozone Loss in Mid-latitudes in summer – a Potential Risk of Climate Engineering”, PI: Baerbel Vogel, Research Center Juelich, Germany, funded between 2016-2018
* Collaborator on NSF proposal “CAREER: Monsoon and the Upper Troposphere Lower Stratosphere”, PI: Yutian Wu Purdue University, 2017-2020
* Collaborator: The Impact of Short Lived Halogen Species on the Troposphere and Stratosphere, PI: Douglas Kinnison
* Collaborator: Proposal Title: Bromine and Air Quality, Principal Investigator (PI): Ross Salawitch, Team Member Role: Collaborator, ROSES-2013
* Collaborator: Photochemistry of Atmospheric Ozone, Principal Investigator (PI): Ross Salawitch, Team Member Role: Collaborator, ROSES-2011

*Internal*

* FY11 NCAR Directorate Diversity Fund: WORLS - Seminar Series

*NCAR Strategic Capability (NSC) Computer Allocations (PI only)*

* PI: Simone Tilmes: Climate and air quality impacts including an interactive fire model for future climate scenarios with and without geoengineering November 2017 (9.5M Core hours)
* Advanced Science Discovery proposal, January 2017 (23M Core hours)

**PROFESSIONAL REVIEWS**

* Funding agencies*:* SNSF (Swiss National Fond)*,* National Aeronautics and Space Administration (NASA)*,* National Science Foundation (NSF), European Research Council (ERC)*,* LinkSCEEM/Cy-Tera Production 2013, NCAR ASP proposals
* Journals and Assessment Reports*:* CCMVal and WMO ozone assessments, Atmospheric Chemistry and Physics, Atmospheric Environment, Geophysical Research Letters, Journal of the Atmospheric Sciences, Journal of Climate, Journal of Geophysical Research – Atmospheres, Nature Climate Change, Quarterly Journal of the Royal Meteorological Society, Science, Proceedings of National Academy of Science, Science Magazine, Advances in Atmospheric Sciences

**CAMPAIGNS**

* Co-Investigator of the Stratosphere-Troposphere Analyses of Regional Transport Experiment (START08) aircraft campaign: 04/2008 – 07/2008

**PRESENTATIONS**

*Seminars*

* NCAR CGD Seminar, CESM1 (WACCM) Geoengineering Large Ensemble Project, May 2018
* Harvard University Seminar, Geoengineering Large Ensemble (GLENS) Project, March 2018
* NCAR EOL Seminar, Climate Engineering, Benefits, Side Effects, Risks and Opportunities, January 2017
* Seminar Juelich Research Center, Germany, Climate impacts in delayed mitigation and geoengineering scenarios, June 2016
* Seminar atInstitute for Advanced Sustainability Studies e.V., Postdam, Germany, Geoengineering Challenges and Impacts of SRM, June 2013
* NCAR CGD Seminar, The hydrological impact of geoengineering in the Geoengineering Model Intercomparison Project (GeoMIP), April 2013
* NCAR ACD Seminar: Impact of proposed geoengineering schemes on Troposphere and Stratosphere, 2008

*Invited Presentations*

* Geoengineering and the future ozone layer, *Proceedings of Symposium for the 30th Anniversary of the Montreal Protocol*, entitled, Paris, Sept. 20th, 2017
* Climate Engineering, Plenary speaker at the *Princeton University Atmospheric and Ocean Sciences workshop*, GFDL, August 2017
* Impact of Sulphate Aerosol Geoengineering on Stratospheric Ozone, *Gordon Conference*, Maine, June 2017
* What Is the Arctic We Need to Sustain the Global Climate System? — Workshop, *Week of the Arctic, side event to the Arctic Council Meeting*, Fairbanks, Alaska, May 2017
* *Special Envoy for Climate Change Jonathan Pershing, and the Bureau of Intelligence & Research, U.S. Department of State*, presenter on Geoengineering, Washington DC, December 9th 2016
* Climate impacts in delayed mitigation and geoengineering scenarios, *Workshop on 5C Arctic warming in a 2C world*, (Skype presentation), July 14th, 2016
* DARPA presentation on first seedling: Washington DC, August 15, 2016
* The State of SRM Scientific Investigation using Earth System Model, *Meeting of the Academic Working Group on International Governance of Climate Engineering*, organized by the School of international Service, American University, Washington DC, March 7, 2016
* Impact of Geoengineering on the Atmosphere with Ecological Implications, *The World Science Summit on Climate Engineering: Future Guiding Principles and Ethics, Council of Science and Society Presidents*, U.S. National Academy of Sciences, Washington DC, Dec 2-3, 2014.
* Impact of Very Short-lived Halogens on Stratospheric Ozone Abundance and UV radiation in a Geo-engineered Atmosphere, *AGU Fall Meeting*, San Francisco, CA, December 07, 2012
* The Impact of Solar Radiation Management on Stratospheric Chemistry, *Atmospheric Chemical Mechanisms - Atmospheric Chemistry into the Future*, UC Davis Conference Center, December 10-12 2012
* Impact of Geo-engineering on the Ozone Abundance in the Stratosphere, Monitoring of Geoengineering Effects and their Natural and Anthropogenic Analogues - Part II: **California Institute of Technology Pasadena, November 15-18, 2011**
* The impact of geo-engineered aerosols on Troposphere and Stratosphere, *Environmental Defense Found Science Day on Geo-engineering*, San Francisco, USA: February 2010
* The impact of geo-engineered aerosols on Troposphere and Stratosphere, *Asilomar Conference on Climate Interventions*, Monterey, CO: March 22-25, 2010, Poster Presentation
* Impact of Geo-engineered Aerosols on Stratospheric Ozone, *94th ESA Annual Meeting* Albuquerque: August, 2009
* Impact of Proposed Geo-engineering schemes on Troposphere and Stratosphere, *AMS/AGU Head and Chair Meeting* Boulder: 16. October, 2008
* Relevance of simulations of chemical responses to climate change for atmospheric chemistry, *Managing Solar Radiation Workshop*, San Francisco, USA: Nov. 2006
* Overview of chemical ozone loss in polar regions over the last 12 years based on satellite observations: HALOE, ILAS, and ILAS-II, *The International Association of Geomagnetism and Aeronomy,* Toulouse: July 2005

*Recent Oral Presentations:*

* NCAR CGD *CAP* meeting presentation, March 2017
* New Tier1 GeoMIP Experiment: Overshoot, *Climate Engineering Conference* *2017*, Berlin, Germany, October 2017
* Stratospheric Aerosol Geoengineering, 20-Member Ensemble Experiment using Feedback-Control, *Climate Engineering Conference 2017*, Berlin, Germany
* Climate impacts in delayed mitigation and geoengineering scenarios, *NCAR Networking and Discovery day*, April 22, 2016
* New SOA approach in CESM WACCM and CAMchem, *CESM working group meeting*, Breckenridge, June 2016
* Overview of the large ensemble geoengineering simulations, *Meeting at CAS and societal dimension group*, October 19, 2016.
* Climate impacts in delayed mitigation and geoengineering scenarios, *AGU* Meeting, Dec 2017
* CESM working group meeting February / March 2017
  + Chemistry-Climate Working Group: State of CAMchem
  + Joint AMWG/WACCM/CHWG: Summary of the WACCM/CAM/Chemistry modelling suite
  + Societal Dimensions Working Group: Large Ensemble Climate Intervention Simulations
  + Advanced Science Discovery Presentation: “Large Ensemble Climate Intervention Simulations”
* CESM working group meeting February 2016:
  + Chemistry-Climate Working Group: Coupling the fire model with the atmosphere in CESM.
  + Societal Dimensions Working Group: Climate outcome of combined geoengineering and mitigation scenarios.
* Controlling factors of OH and Methane Lifetime, *Chemistry Climate Model Intercomparison, (CCMI) Workshop*, Rome, Italy, October 2015
* Representation of CESM CAM4-chem within the Chemistry-Climate Model Initiative (CCMI), *20th Annual CESM Workshop*, Breckenridge, June 18th, 2015
* Can regional Geoengineering save the Arctic Sea-ice?, *Fourth GeoMIP Stratospheric Aerosol Geoengineering Workshop*, Paris, France, April 24-25, 2014
* Proposal for a new GeoMIP experiment for Chemistry Climate Model Initiative (CCMI), *Third Chemistry-Climate Model Initiative (CCMI) Workshop*, Lancaster, UK, May 20-22, 2014, oral presentation
* S. Tilmes, Global Chemistry-Climate Modeling, Simulating West African Air Quality, *1st West African Workshop on Air Quality*, Abuja, Nigeria, June 2014
* UCAR’s Members Meeting, booth and poster on Geoengineering Model Intercomparison Project (GeoMIP)

**PUBLICATIONS**

[Complete list](https://staff.ucar.edu/users/tilmes)

*Assessments*

* *WMO Ozone Assessment 2018*: Chapter 6 Co-author, Section author on climate engineering
* *TOAR co-author on ozone chapter 6*: Assessment of global-scale model performance in replicating global and regional scale ozone distributions and trends, 2017
* *Overview of IGAC/SPARC Chemistry-Climate Model Initiative (CCMI) Community Simulations in Support of Upcoming Ozone and Climate Assessments*, Co-author of Chapter 6: Stratospheric Chemistry and Chapter 7: Upper Troposphere Lower Stratosphere,SPARC Newsletter No. 40, p. 48-66, 2013
* *WMO ozone assessment 2010*: Co-author in Chapter 5: Information and Options for Policymakers, Contributor of Chapter 2: Stratospheric
* Investigation of trace gas variability for use in model evaluation, J. Zimmermann and S. Tilmes (1999), *GLOREAM Annual Report,* 1999

*Non-refereed Publications*

* **S. Tilmes**, Short Comment in Atmos. Chem. Phys. Discussion o, 1977-2020, 2009, to the Paper: Evaluation of CLaMS, KASIMA and ECHAM5/MESSy1 simulations in the lower stratosphere using observations of Odin/SMR and ILAS/ILAS-I, F. Khosrawi, R. Müller, M. H. Proffitt, R. Ruhnke, O. Kirner, P. Jöckel, J.-U. Grooß, J. Urban, D. Murtagh, and H. Nakajima(March 2009)
* R. Müller and **S. Tilmes** (2008), Comment on “Middle atmosphere CO, N2O, HNO3, and temperature profiles during the warm Arctic winter 2001–2002” by G. Muscari et al., *J. Geophys. Res.*, **113**,doi:10:1029/2007/JD009709

*Diplomarbeit*

S. Kanera (1998), Die Bestimmung der trockenen Deposition in einem mesoskaligen Chemie-Transport-Model (EURAD), *Diplomarbeit*, Universität Köln

*Dissertations and Books*

* Book on *Stratospheric Ozone Depletion and Climate Change*, Chapter Author: Impact of Geo-engineering on Stratospheric Ozone and Climate, Edited by Rolf Müller, published 2012
* Book on *Geo-Engineering Climate Change. Environmental Necessity or Pandora’s Box?* Chapter Author , Edited by Brian Lauder and J. Michael T. Thompson, published 2010
* S. Tilmes (2004), Chemical ozone loss in the Arctic polar stratosphere derived from satellite observations, *Ph.D. thesis* Johann Wolfgang Goethe Universität, Frankfurt, Germany, Tilmes2003-Dissertation.pdf, 172pp.
* S. Tilmes (2004), Chemical ozone loss in the Arctic polar stratosphere: an analysis of twelve years of satellite observations, Jülich, Forschungszentrum, Zentralbibliothek, Schriften des Forschungszentrums J¨ulich, *Reihe Umwelt / Environment*, **43** 3-89336-347-5, 162pp