MARK GARY LAWRENCE
Curriculum Vitae

CONTACT INFORMATION

Institute for Advanced Sustainability Studies (IASS)
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Private Address: Lanzelhohl 29, 55128 Mainz, Germany

BIRTHDATE and PLACE: 5 February 1969, Woodbury, NJ, USA (US citizen)

CURRENT POSITION AND RESEARCH FOCUS

Scientific director and currently managing director at the IASS, focusing on a range of sustainable development topics at the science-policy and science society interface. Primary personal focus on topics related to atmospheric science, including mitigating the impacts of short-lived, climate forcing pollutants (SLCPs), and the potential impacts, uncertainties and risks of “climate engineering”.

SCIENTIFIC EMPLOYMENT

10/2011 – present	**Scientific Director** *Institute for Advanced Sustainability Studies, Potsdam, Germany*
10/2009 – 9/2010	**Visiting Professor (*Vertretungsprofessor*) for Meteorology** *Institute for Physics of the Atmosphere, University of Mainz* *(on leave from the Max Planck Institute for Chemistry)*
1/2006 – 10/2011	**Research Group Leader** *Max Planck Institute for Chemistry, Mainz, Germany*
8/2000 – 12/2005	**Junior Research Group Leader (*Nachwuchsgruppenleiter*)** *Max Planck Institute for Chemistry, Mainz, Germany*
10/1996 - 7/2000	**Post-Doctoral Researcher** *Max Planck Institute for Chemistry, Mainz, Germany*

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EDUCATION

PhD (1996) and Master of Science in Earth and Atmospheric Sciences (1993), Bachelor of Science in Physics (1991)
Georgia Institute of Technology, Atlanta, Georgia

PUBLICATIONS and PRESENTATIONS

Author and co-author of over 130 peer-reviewed scientific publications;
Citation statistics: *Citations* $\geq$ *2500, h-score* $\geq$ *28*

Presentations: Numerous invited and contributed presentations at conferences, workshops, institute symposia, summer schools, public education series, etc.

SELECTED PROFESSIONAL AND SERVICE ACTIVITIES

- Supervising PhD and Masters students (ca. 20 graduated as of 2015)
- Coordinator, Workpackage Leader or Subproject Leader in several projects funded by the EU and German Research Funding Agencies (DFG, BMBF).
- Teaching numerous courses on Atmospheric Science and Meteorology, 2002-2011 at the University of Mainz, and since 2013 annually at the University of Potsdam.
- Present and past member of several science advisory committees, including:
    - IGAC Scientific Steering Committee (2010 – present, currently co-chair)
    - Commission on Atmos. Chemistry and Global Pollution (CACGP) (2002–2010, 2014-present)
    - UNEP/ABC Steering Committee (2006 – present)
    - SCIAMACHY Steering Group (1999 – 2011)
- Past associate editor of *Atmospheric Chemistry and Physics* (2000-2008) and past member of *Atmospheric Environment* editorial board (2001-2004)
- Convener of numerous sessions at conferences
- Scientific Program Chair for the 2006 CACGP/IGAC/WMO symposium in Cape Town
- Organizer of three training schools for the UNEP/ABC-Asia program (Bangkok – 2006; Kathmandu – 2008 and 2011)

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SELECTED RECENT PUBLICATIONS

Lawrence, M. G., and P. J. Crutzen, Was breaking the taboo on research on climate engineering via albedo modification a moral hazard, or a moral imperative?, *Earth's Future*, 5, 136-143, doi:10.1002/2016EF000463, 2017.

Irvine, P. J., B. Kravitz, **M. G. Lawrence**, D. Gerten, C. Caminade, S. N. Gosling, E. J. Hendy, B. T. Kassie, W. D. Kissling, H. Muri, A. Oschlies, and S. J .Smith, Towards a comprehensive climate impacts assessment of solar geoengineering, *Earth's Future*, 5, 93-106, doi:10.1002/2016EF000389, 2017.

Mahata, K. S., A. K. Panday, M. Rupakheti, and **M. G. Lawrence**, Seasonal and diurnal variations of methane and carbon dioxide in the Kathmandu Valley in the foothills of the central Himalaya, *Atmos. Chem. Phys. Discuss.,* doi:10.5194/acp-2016-1136, 2017.

Benduhn, F., J. Schallock, and **M. G. Lawrence**, Early growth dynamical implications for the steerability of stratospheric solar radiation management via sulfur aerosol particles, *Geophys. Res. Lett.*, 43, 9956-9963, doi:10.1002/2016GL070701, 2016.

Irvine, P. J., B. Kravitz, **M. G. Lawrence**, and H. Muri, An overview of the Earth system science of solar geoengineering, *WIREs Clim Change*, 7, 815-833, doi:10.1002/wcc.423, 2016.

Rupakheti, D., B. Adhikary, P. S. Praveen, M. Rupakheti, S. Kang, K. S. Mahata, M. Naja, Q. Zhang, A. K. Panday, and **M. G. Lawrence**, Pre-monsoon air quality over Lumbini, a world heritage site along the Himalayan foothills, *Atmos. Chem. Phys. Discuss.,* doi:10.5194/acp-2016-430, 2016.

Glienke, S., P. J. Irvine, **M. G. Lawrence**, The impact of geoengineering on vegetation in experiment G1 of the GeoMIP, *J. Geophys. Res.*, 120, 10,196-10,213, doi:10.1002/2015JD024202, 2015.

Kravitz, B., A. Robock, S. Tilmes, O. Boucher, J. M. English, P. J. Irvine, A. Jones, **M. G. Lawrence**, M. MacCracken, H. Muri, J. C. Moore, U. Niemeier, S. J. Phipps, J. Sillmann, T. Storelvmo, H. Wang, and S. Watanabe, The Geoengineering Model Intercomparison Project Phase 6 (GeoMIP6): simulation design and preliminary results, *Geosci. Model Dev.*, 8, 3379–3392, doi:10.5194/gmd-8-3379-2015, 2015.

Melamed L., P. S. Monks, A. H. Goldstein, **M. G. Lawrence**, and J. Jennings, The international global atmospheric chemistry (IGAC) project: Facilitating atmospheric chemistry research for 25 years, *Anthropocene*, 12, 17–28, doi:10.1016/j.ancene.2015.10.001, 2015.

SELECTED RECENT PUBLICATIONS (Continued)

Reichwein, D., A.-M. Hubert, P. J. Irvine, F. Benduhn, and **M. G. Lawrence**, State responsibility for environmental harm from climate engineering, *Climate Law*, 5, 142 – 181, doi:10.1163/18786561-00504003, 2015.

S. Schäfer; **Lawrence, M. G**., and 34 further co-authors, The European Transdisciplinary Assessment of Climate Engineering (EuTRACE): Irvine, P. J., Kravitz, B., Lawrence, M. G., Muri, H. An overview of the Earth system science of solar geoengineering. - Wiley Interdisciplinary Reviews - Climate Change, 2015.

Butler, T., B. Lode, A. Parker, K. Mar, F. Schmidt, **M. G. Lawrence**, Decarbonisation, carbon neutrality, and climate neutrality, IASS Brochure, 2015.

Glienke, S., P. J. Irvine, **M. G. Lawrence**, The impact of geoengineering on vegetation in experiment G1 of the GeoMIP, *J. Geophys. Res.*, DOI: 10.1002/2015JD024202, 2015.

Reichwein, D., Hubert, A.-M., Irvine, P. J., Benduhn, F., **Lawrence, M. G.**: State Responsibility for Environmental Harm from Climate Engineering, Climate Law, 5, 142-181, 2015.

Kravitz, B., A. Robock, S. Tilmes, O. Boucher, J. M. English, P. J. Irvine, A. Jones, **M. G. Lawrence**, M. MacCracken, H. Muri, J. C. Moore, U. Niemeier, S. J. Phipps, J. Sillmann, T. Storelvmo, H.Wang, and S. Watanabe, The Geoengineering Model Intercomparison Project Phase 6 (GeoMIP6): simulation design and preliminary results, Geosci. Model Dev, 8, 3379–3392, 2015, doi: 10.5194, 2015.

Schäfer, S., A. Maas, H. Stelzer, and **M. G. Lawrence**, Earth's Future in the Anthropocene: Technological Interventions between Piecemeal and Utopian Engineering, Earth's Future, 2, 239-243, 2014.

Schmale, J., D. Shindell, E. v. Schneidemesser, I. Chabay, and **M. G. Lawrence**, Air pollution: Clean up our skies, Nature, 515, 335-337, 2014.

Churkina, G., R. Grote, T. Butler, **M. G. Lawrence**, Natural Selection? Picking the right trees for urban greening, *Environ. Sci.*, Volume 47, Pages 12-14, DOI:10.1016/j.envsci. 2014.10.014, 2014.

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Irvine, P., S. Schäfer, **M. G. Lawrence**, Solar Radiation Management could be a game changer, *Nature*, Volume 4, Page 842, 2014.

Schäfer, S., P. J. Irvine, A.-M. Hubert, D. Reichwein, S. Low, H. Stelzer, A. Maas, and **M. G. Lawrence**, Field tests of solar climate engineering, *Nat. Clim. Change*, 3, 766, 2013.

Zhu, T., M. L. Melamed, D. Parrish, M. Gauss, L. G. Klenner, **M. G. Lawrence**, A. Konare, and C. Liousse, Impacts of Megacities on air pollution and climate, *WMO/IGAC Report*, 2013.

Butler, T. M., Z. S. Stock, M. R. Russo, H. A. C. Denier van der Gon, and **M. G. Lawrence**, Megacity ozone air quality under four alternative future scenarios, *Atmos. Chem. Phys*., 12, 4413-4428, 2012.

Kunkel, D., **M. G. Lawrence**, H. Tost, A. Kerkweg, P. Jöckel, and S. Borrmann, Urban emission hot spots as sources for remote aerosol deposition, *Geophys. Res. Lett.*, 39, L01808, 6 PP., 2012.

Lelieveld, J., D. Kunkel, and **M. G. Lawrence**, Global risk of radioactive fallout after major nuclear reactor accidents, *Atmos. Chem. Phys*., 12, 4245-4258, 2012.

Taraborrelli, D., **M. G. Lawrence**, J. N. Crowley, T. J. Dillon, S. Gromov, C. B. M. Groß, L. Vereecken, and J. Lelieveld, Hydroxyl radical buffered by isoprene oxidation over tropical forests, *Nature,*:5, 190–193, 2012.

Lawrence, M. G., and J. Lelieveld, Atmospheric pollutant outflow from southern Asia: A review, *Atmos. Chem. Phys.*, 10, 11017-11096, 2010.

Butler, T. M., and **M. G. Lawrence**, The influence of megacities on global atmospheric chemistry: a modelling study, *Env. Chem.,* 6, 219–225, doi:10.1071/EN08110, 2009.