



PERSONAL INFORMATION

Family name, first name: STOHL, Andreas
Researcher unique identifier(s): Researcher ID: A-7535-2008
ORCID: 0000-0002-2524-5755
Nationality: Austria, Date of birth: 23 March 1968
Marital status: married, three children
Web site: <http://folk.nilu.no/~andreas/>

12/12/2018



EDUCATION

2000 Habilitation, University of Natural Resources and Life Sciences, Vienna, Austria
1996 PhD, Faculty of Natural Sciences, University of Vienna, Austria
1992 Diploma in Meteorology, Faculty of Natural Sciences, University of Vienna, Austria
1986-1992 Parallel studies of Astronomy and Meteorology, University of Vienna, Austria

CURRENT POSITION

2004 – Senior scientist and group leader, NILU – Norwegian Institute for Air Research, Norway

PREVIOUS POSITIONS

2010 Guest Professor, University of Innsbruck, Austria
2003 – 2004 Research Associate, University of Colorado, Boulder, CO, USA
1997 – 2003 Assistant professor (C1), Technical University of Munich, Germany
1995 – 1997 Research Assistant, University of Natural Resources and Life Sciences, Vienna, Austria
1996 – 1996 Compulsory military service, partly as an expert on dispersion modelling, Austria
1992 – 1995 Research Assistant, University of Natural Resources and Life Sciences, Vienna, Austria

JOB RESPONSIBILITIES

Andreas Stohl is leader of the “Atmospheric Transport Processes Group” (aka “FLEXPART Group”) at NILU. The group currently consists of seven permanently employed senior scientists (M. Cassiani, S. Eckhardt, N. Evangeliou, C. Groot Zwaaftink, I. Pisso, A. Stohl, R. Thompson), a programmer (E. Sollum), a post-doc (H. Ardeshiri) and a PhD student (S. Dinger). Nine different nationalities are represented in the group. Since NILU is a non-profit foundation with little base funding, the group is supported by external contracts, a large fraction acquired and managed by Stohl directly. In addition, Stohl also oversees project-based work outside the FLEXPART group as part of the COMTESSA Advanced Grant (K. Stebel, camera observations; A. Kylling, radiative transfer modelling; N. Schmidbauer, SO₂ releases). Stohl has full freedom in his research and has no major administrative or teaching responsibilities.

FELLOWSHIPS AND AWARDS

2015 **Advanced Grant** of the *European Research Council*
2014-2018 **ISI Highly Cited Researcher** (<https://hcr.clarivate.com/>); one of only three researchers in Norway who were listed in all the four years of 2014-2017
2012 **Recognition and Appreciation** by the *Ozone Secretariate, United Nations Environment Programme* for “valuable contributions and efforts in the Scientific Assessment Panel”
2011+2012 **Editor’s Citations for Excellence in Refereeing** for the *American Geophysical Union’s (AGU) Journal of Geophysical Research-Atmospheres*
2009 **Group Achievement Award** from the *U.S.A. National Aeronautics and Space Administration (NASA)* for outstanding accomplishments in the framework of ARCTAS
2009 **Certificate of Appreciation** from the *World Meteorological Organization and the International Council for Science* for “valuable contributions that have helped make the International Polar Year 2007-2008 a success and an enduring example of international collaboration”
2007 **NOAA OAR Outstanding Scientific Paper Award** from the *U.S.A. National Oceanic and Atmospheric Administration’s (NOAA) Office for Oceanic and Atmospheric Research* for the paper by O. R. Cooper, A. Stohl, M. Trainer, et al. (2006)
2004 **EUROTRAC-2 Young Scientist Award**, a one-time prize given to five scientists under the age of 40 for their achievements during the EUREKA project *EUROTRAC-2* (www.gsf.de/eurotrac/winners.html)

COMMISSIONS OF TRUST (selected list)

- 2015 + 2017 **Chair of ERC (European Research Council) Evaluation Panel PE10 (Geosciences) for Consolidator Grants**
- 2013 Member, ERC Evaluation Panel PE10 (Geosciences) for Consolidator Grants
- since 2009 **Chair of Expert Group on Short-Lived Climate Forcers**, Arctic Monitoring and Assessment Programme (AMAP); group has already delivered two AMAP assessment reports.
- since 2015 Member of the Scientific Steering Committee, Air Pollution in the Arctic: Climate, Environment and Societies (PACES)
- 2010-2014 Member of the Scientific Steering Committee, International Commission on Atmospheric Chemistry and Global Pollution
- 2009 – 2010 Co-author of the 2010 Scientific Assessment of Ozone Depletion
- 2006 – 2007 Coordinating lead author for the UNECE Taskforce on Hemispheric Transport of Air Pollutants Interim Report
- 2003 – 2006 Coordinator of POLARCAT (Polar Study Using Aircraft, Remote Sensing, Surface Measurements and Models, of Climate, Chemistry, Aerosols, and Transport), an International Polar Year core activity that was also endorsed by AMAP, IGAC, iLEAPS, and SPARC
- 2003 – 2017 Co-editor of EGU journal Atmospheric Chemistry and Physics
- 2003 – 2004 Associate Editor of Journal of Geophysical Research
- 2002 – 2003 Spokesperson for the German Atmospheric Research Programme 2000
- 2000 – Reviewer and/or review panel member for at least 30 research funding agencies in more than 10 countries (e.g., NSF, NASA, NOAA, DFG, SNCF, NERC, Finnish Academy, etc.)
- 1999 – Reviewer for >70 international scientific journals

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

NILU is not awarding academic degrees and thus supervision of students is not in focus; nevertheless, Andreas Stohl has been the main supervisor of master/doctoral students and he has served as an opponent during PhD/master defences in several countries.

Current PhD student with Stohl as supervisor: **Solvejg Dinger** (University of Heidelberg)

Recently finished PhD students: **2018, Andreas Vogel** (University of Oslo); **2017, Monica Dragosics** (University of Iceland); **2016, Henrik Grythe** (Stockholm University)

Earlier PhD students (incomplete list): N. I. Kristiansen, D. Hirdman, C. W. Stjern, R. Damoah, S. Eckhardt (Eckhardt won a prize for the best dissertation at Technical University of Munich)

INVITED PRESENTATIONS AT INTERNATIONAL MEETINGS

Andreas Stohl is a frequent invited speaker at institute seminars, conferences and other meetings.

ORGANISATION OF SCIENTIFIC MEETINGS (selected list)

- 2013 – 2017 Co-convener of session “From Chernobyl to Fukushima: Development of the Geoscientists’ Knowledgebase” at EGU conferences
- 2010 Head convener of the session „Troposphere and stratosphere dynamics and processes and their links with climate“, International Polar Year Science Conference 2010
- 2003 – 2012 Alternating head- or co-convener of annual session “Vertical and long-range transport of trace gases in the troposphere” at EGU conferences
- 2009 Convener of session “Short-lived pollutants in the polar regions: Sources, transport, impacts” at the EGU conference
- 2008 Convener of session „Polar and oceanic regions – relating local and regional processes to the larger scale” at the 10th IGAC Conference
- 2005 Co-convener of two sessions at the AGU Fall Meeting

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- 2014 – Member, European Geosciences Union
- 2002 – Member, Austrian Society for Meteorology

MAJOR COLLABORATIONS

Harald Sodemann, transport modelling (of water), University of Bergen; Kathy Law, atmospheric chemistry, Pierre Simon Laplace Institute, Paris; Thomas Trickl, remote sensing, Karlsruhe Institute of Technology, Garmisch-Partenkirchen; Patricia Quinn, aerosol research, NOAA, Seattle; Takuya Saito, chemistry, National Institute for Environmental Studies, Tsukuba; Gunnar Myhre, CICERO, Norway; Michael Schulz, MET Norway; Petra Seibert, dispersion modelling, University of Vienna; O. Popovicheva, measurements of black carbon in Russia, Lomonosov Moscow State University; Joe McConnell, interpretation of ice cores, Desert Research Institute, Reno; O. R. Cooper, atmospheric chemistry, NOAA, Boulder; and many more.

EXPERIENCE WITH PROJECT MANAGEMENT

Stohl was coordinator of two EU projects (e.g. <http://eclipse.nilu.no/>), he is currently director of the (virtual) Nordic Centre of Excellence eSTICC (<http://esticc.net/>) and holds an ERC Advanced Grant (<https://comtessa-turbulence.net/>). During the last ten years, Stohl has served as a principal investigator or coordinator in more than 20 national and international research projects. These projects have provided approximately 12 MEUR of external funding to Stohl's group, and a total managed funding (including funding to other institutes in projects under Stohl's coordination) exceeding 20 MEUR. To date, all projects were successfully completed.

TRACK RECORD

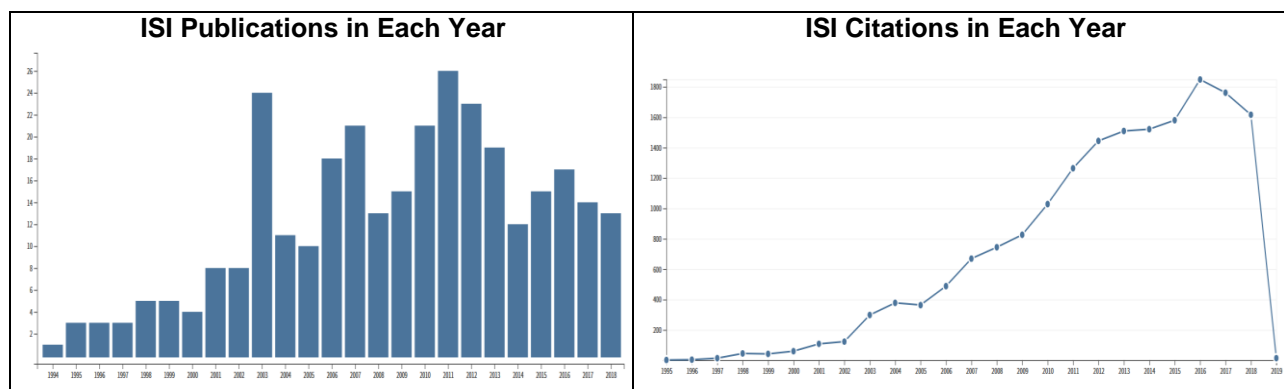
Research performance

In the Norwegian Research Council's Evaluation of the Geosciences in Norway (2011), Stohl's group was awarded the **top grade, given only to 5 of 65 groups** evaluated.

Stohl is **one of only ten researchers in Norway** listed as **highly cited** in 2017, and **one of only three** who were listed as highly cited in all recent years (2014-2018) with available statistics; see <https://hcr.clarivate.com/>.

According to own counting, Stohl has published **320 peer-reviewed articles** in international scientific journals. ISI Web of Science (ISI WoS) lists 312 articles authored by Stohl, Google Scholar finds 693 articles including non-peer-reviewed papers.

As of December 2018, **ISI WoS identifies >17700 citations** of Stohl's publications, giving an **h-index of 69** and **m-index of 2.9**; Google Scholar finds **>26200 citations, h-index of 84**, i10-index of 292. **Eight of the ten most cited papers of Stohl in ISI WoS are first-authored, including two single-author papers.**



Research interests

Andreas Stohl studies and models transport processes in the atmosphere. He is the main developer of the open-source Lagrangian models FLEXTRA and FLEXPART, started in the mid-1990s. From the start of his career, he was a **strong proponent of the open-source movement**, making code, data and research results openly available to the public. As a result, FLEXPART (see www.flexpart.eu) nowadays is **one of the most widely used models** in the atmospheric sciences, with a community of probably many more than 100 user groups worldwide. The model is used for research as well as for operational applications. FLEXPART is the official atmospheric transport model for emergency preparedness in Austria, Belgium and Switzerland and the United Nations' Comprehensive Nuclear Test Ban Treaty Organization (CTBTO). Two articles describing the model

in 1998 and 2005 (Stohl et al., 1998, 2005) have together received more than 1800 citations according to Google Scholar, and a new article describing recent developments is in preparation.

In earlier years, Andreas Stohl was interested in ozone formation, exchange of air between the stratosphere and troposphere and intercontinental pollution transport. His discovery of transport of North American pollution ozone to Europe (Stohl and Trickl, 1999) was identified by ISI Essential Science Indicators® to have triggered the **number 1 in the Geosciences** in their list of “Research fronts” for five bimonthly periods between July 2005 and June 2006 (<http://www.esi-topics.com/fmf/2005/july05-AndreasStohl.html>). In the last 12 years, Stohl has become increasingly interested in pollution and climate of the **polar regions**, on which he has published several highly cited papers. These include the discovery of the importance of smoke from wildfires (Stohl et al., 2007) and flaring of gas associated with oil production in Russia as important pollution sources for the Arctic (Stohl et al., 2013).

During the last ten years, Stohl has developed and used tools for **inverse estimation of emission sources** (e.g., of volcanic ash or radionuclides). For instance, Stohl et al. (2011) were the first to use inverse modelling for determining the emissions of volcanic ash, a technique that has now been introduced operationally at many emergency response agencies responsible for volcanic ash forecasts. His study of radionuclide emissions from the damaged Fukushima nuclear power plant (Stohl et al., 2012) raised international media attention after being highlighted in Nature. Stohl also uses inverse modelling for determination of greenhouse gas emissions (Stohl et al., 2009), again leading to open-source code (<http://flexinvert.nilu.no/flexinvert.html>). He is leading the integration of greenhouse gas observations into a modelling framework in the national ICOS (Integrated Carbon Observation System) project (<https://no.icos-cp.eu/>).

Turbulence is another aspect of atmospheric transport, in which Stohl is interested. In his Advanced Grant project COMTESSA (<https://comtessa-turbulence.net/so2-release/>), he is studying turbulent dispersion in novel tomography experiments involving infrared and ultraviolet cameras observing artificial tracer releases. Eddy covariance measurements are used to constrain Large Eddy Simulations of the tracer releases.

Stohl is also interested in **climate research** and has recently coordinated (2011-2015) an EU project on short-lived climate forcers (Stohl et al., 2015). Another research field that Stohl has followed is **water in the atmosphere**. For instance, his method of identifying the evaporative sources of water vapour and of precipitation (Stohl and James, 2004, 2005) is recently receiving increased attention. This development was followed by studies of the 3D transport of water vapour in atmospheric rivers associated with cyclones (Stohl et al., 2008; Sodemann and Stohl, 2013), and a co-authored review paper on the oceanic and terrestrial sources of continental precipitation (Gimeno et al., 2012).

A very new research field for Stohl is the **interpretation of ice core data** using atmospheric transport modelling (McConnell et al., 2018).

Five key papers (complete list available from <https://folk.nilu.no/~andreas/publications/index.html>):

Stohl, A., et al. (2015): Evaluating the climate and air quality impacts of short-lived pollutants. *Atmos. Chem. Phys.* **15**, 10529-10566, doi:10.5194/acp-15-10529-2015.

Sodemann, H., and A. Stohl (2013): Moisture origin and meridional transport in atmospheric rivers and their association with multiple cyclones. *Mon. Wea. Rev.* **141**, 2850-2868, doi:10.1175/MWR-D-12-00256.1.

Stohl, A., et al. (2012): Xenon-133 and caesium-137 releases into the atmosphere from the Fukushima Dai-ichi nuclear power plant: determination of the source term, atmospheric dispersion, and deposition. *Atmos. Chem. Phys.* **12**, 2313-2343, doi:10.5194/acp-12-2313-2012.

Stohl, A., P. Seibert, J. Arduini, S. Eckhardt, P. Fraser, B. R. Grealley, C. Lunder, M. Maione, J. Mühle, S. O'Doherty, R. G. Prinn, S. Reimann, T. Saito, N. Schmidbauer, P.G. Simmonds, M. K. Vollmer, R. F. Weiss, and Y. Yokouchi (2009): An analytical inversion method for determining regional and global emissions of greenhouse gases: Sensitivity studies and application to halocarbons. *Atmos. Chem. Phys.* **9**, 1597-1620, doi:10.5194/acp-9-1597-2009.

Stohl, A., C. Forster, A. Frank, P. Seibert, and G. Wotawa (2005): Technical Note: The Lagrangian particle dispersion model FLEXPART version 6.2. *Atmos. Chem. Phys.* **5**, 2461-2474, doi:10.5194/acp-5-2461-2005.