

Sophie SZOPA

French Citizenship

Laboratoire des Sciences du Climat et de l'Environnement (LSCE)
Institut Pierre Simon Laplace (IPSL)
ORCID: 0000-0002-8641-1737

SENIOR RESEARCH SCIENTIST IN ATMOSPHERIC CHEMISTRY

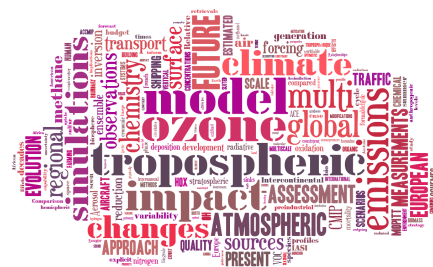
LINKING GLOBAL AND LOCAL SCALES AS WELL AS AIR POLLUTION AND CLIMATE ISSUES

Expertise & Skills

Climate/Chemistry Interactions;
Global Tropospheric Chemistry;
Intercontinental Transport of Air
Pollution

Tools: Numerical Atmospheric
Chemistry Model Development and
Applications (box-model with explicit
chemical scheme; Regional Air Quality
Model; Earth System Model)

Outreach: Dissemination of AR6 IPCC
Key Elements



92 international peer reviewed publications

H-index (Wos) 48

See <https://www.webofscience.com/wos/author/record/F-8984-2010>

Web of Science's Highly cited researcher
in 2016, 2017, 2018, 2019, 2020

Google scholar:

https://scholar.google.fr/citations?hl=fr&user=4Sa_iqsAAAJ

Recognition

2023 Piers J. Sellers Global Environmental Change Mid-Career Award from the American Geophysical Union

Professional Experience

2024 Expert at the Scoping meeting for the AR7 IPCC Special Report on Climate Change and Cities (Riga, April 2024) WGI-WGII-WGIII

2018-2023 **Intergovernmental Panel on Climate Change (IPCC) - 6th Assessment Report (AR6):**

Coordinating Lead Author of the WG1 **Chapter 6 'Short Lived Climate Forcers'**

Reviewer WGII and WGIII reports (for SLCF//air pollution aspects)

Contributing Author WG1 Chapter 1 'Framing, Context, Methods' and Chapter 12 'Climate change information for regional impact and for risk assessment'

Author of the WGI **Technical Summary**

Drafting Author of the WGI **Summary for Policymakers**

Contributing Author to the IPCC AR6 **Synthesis report** and its Summary for Policymakers

Part of the scientific teams who explained the SPM scientific roots at the SYR and WGI **SPM approvals**

Expert at the **Workshop on the Use of Scenarios** in the 6th Assessment Report and Subsequent Assessments (Bangkok, March 2023) WGI-WGII-WGIII

Participation to the Expert Meeting on Short-Lived Climate Forcers (SLCF) – IPCC TFI-WGI (Geneva, May 2018)

2018 and 2022 Field campaigns with geochemists and volcanologists in Arequipa (Peru) and Shoshone (California, USA) for the ANR PaleOx project (led by S.Szopa)

2013 Field campaign to study isoprene emissions by oaks at the Observatoire de Haute Provence, for the ANR CANOPEE project (led by J. Lathière)

2008-now Research Scientist at the « Commissariat à l'Énergie Atomique et aux Énergies Alternatives », Laboratoire des Sciences du Climat et de l'Environnement

- 2007 Post-doctoral Fellow, Laboratoire de Météorologie Dynamique (LMD-IPSL), Ecole Polytechnique, France - Supervisor L. Menut
- 2004-2006 Post-doctoral Fellow, Laboratoire des Sciences du Climat et de l'Environnement (LSCE), Supervisor D. Hauglustaine

Career Breaks

Maternity leaves in 2005 and 2008

Education

- 2016 **Habilitation à Diriger des Recherches (HDR)** i.e. "accreditation to supervise research": Jury: E Villenave, V Thouret, JF Muller, J Chappellaz, JL Dufresne, S Bekki.
- 2000-2003 **PhD with highest honor, Paris Est Créteil (UPEC)** - Laboratoire Interuniversitaire des Systèmes Atmosphériques (LISA) – Supervisors G. Bergametti, B. Aumont
Title 'Development of an automatic generator of explicit and reduced chemical schemes suited to multiscale studies of photochemical pollution'
- 2002 European Research Course on Atmospheres (**ERCA**) - Grenoble
- 2000 Master (equivalent to M. Sc.) in Environmental Chemistry with specialisation in Chemical and Biological Air Quality – Université Paris Cité
- 1998 Licence (equivalent to bachelor) in Chemistry – Université Paris Est Créteil (UPEC)

Dissemination: Teaching and Outreach

Co-responsible for a SPOC (Small Private Online Course) on Ecological Transition, followed annually since 2020 by thousands of 2nd-year undergraduate students at the Paris-Saclay University, regardless of their field of study

Responsible for a one-day training for all the Paris-Saclay University staff making IPCC and IPBES conclusions accessible to a general audience through serious games and mediation by PhD students (deployment starting in Oct 2024).

Member of the Scientific board of the CNED MOOC ([B.A.BA](#) of climate and biodiversity) for general audience (since 2024)

Member of the Scientific board of the national platform for [pedagogical resources on TEDS](#) (Ecological Transition and Sustainable Development) at UVED (Online University for Environment and Sustainable Development) (since 2024)

IPCC Dissemination

- **Training for Journalists:** Masterclasses for France TV editors-in-chief, Radio France staff, and general journalist training (IPCC methodology and key results).
- **Opening Presentations on IPCC Reports for public and private actors** (Hermès, Veolia, Le Grand Défi, BPCE, the Observatory of Sustainable Procurement, Union of National Social Security Funds, IGEDD of the Ministry of Ecological Transition, senior civil servants, Office for Climate Education, French Embassy in Latvia) and for the general public (Petit Festival de la Côte Vermeille, Utopiales, Amnesty International-France). Participated in the Spring 2022 New Member of Parliament Outreach Initiative (#MandatClimatBiodiversité).
- **Presentation of the IPCC Synthesis Report or WGI summary for policymakers to Decision-Makers** (Assembly of French Nationals Abroad, Mayors and Directors General of Services of the Paris-Saclay Agglomeration Community, Assembly of Corsica, elected officials of the Ile-de-France region, and the Parliament of Andorra). Presentations also delivered to various **higher education institutions** (Centrale Paris, ENS Paris-Saclay, ENGEES, Neoma Business School, ENSTA, Student Convention on Hydrogen), at Sciences Po (Q&A on the summary for decision-makers of the WGI), to **academics** (University Association of Civil Engineering, ESTP Alumni, Jülich Forschungszentrum, INRAE training, EDGAAL Doctoral School, Galilée Doctoral School), and in high schools (Lycée Chaptal in Paris, Lycée français de Montréal). Meeting of French authors with the Minister of Higher Education and Research during the release of the IPCC synthesis report.
- **Lectures on Short-Lived Climate Forcers at Yale University, NOAA GFDL, and Mines ParisTech.**

- **Invited Speaker** at AGU (2022) for a special session on the WGI assessment report, **Invited Keynote Speaker** at WCRP (2023), Gordon Conference on Natural Emissions of Hydrocarbons (2024), and IGAC (2024).
- **Active Participant in IPCC-WGI By-Products Production:** Contributed to the WGI Summary for All, Summary for Urban Policymakers, WGI Factsheets, and reviewed French translations of the WGI FAQs, SPM, and TS.

Management & Institutional Responsibilities (on-going)

- Since Jan 2024 **Co-Lead, with Franck Lecocq, of the French National Committee on Global Changes CNFCG** Supporting experts involved in international assessments such as the IPCC and IPBES, and in international research programs like WCRP and Future Earth
- Oct 2022 – Jul 2024 Vice-President of the Paris-Saclay University in charge of Sustainable Development. Led the development of the first draft of the decarbonization plan and strategy to increase sustainable development training across all educational programs and for all staff
- 2022 Deputy Director in charge of the Research of the Graduate School “Geosciences, Climate, Environment and Planets” of the Paris-Saclay University (for 6 months)
- 2012-2014 **Deputy Director of the Laboratoire des Sciences du Climat et de l'Environnement (LSCE)** (300 persons)
- 2010-2012 Multidisciplinary Team Leader, (~30 persons): biosphere/atmospheric chemistry/climate interactions

Supervision of graduate students, PhD & post-docs:

- 4 Post-docs **B Koffi**, EU project QUANTIFY, now Scientific and Technical Project Officer at the EU-Joint Research Centre // **T Elias**, EU project GEOmon, now researcher in the HYGEOs private company // **G Clain**, SALUTAIR project; now engineer at MODEM, french specialist in radiosondes // **R Thièblemont**, PaleOX project; now at BRGM.
- 3 PhDs **T Verbeke**, Impact of ozone deposition on vegetation (co-supervised by D Hauglustaine & J Lathiere), now in post-doctoral position // **L Conte**, Oceanic emissions of reactive atmospheric species (co-supervised by L Bopp) // **C. Karam**: Role and functioning of natural to weakly polluted atmospheres on the oxidizing capacity of the Earth atmosphere (co-supervised by S Bekki)
- 5 master students **F. Bernardais** (2011): Ozone change at the 2050 horizon as simulated by a chemistry-climate model // **A Bellataf** (2012): Oceanic CO & isoprene emission modeling at the Earth scale. // **K Giannopoulos** (2011): Inverse modelling of the global primary atmospheric sources. // **T Verbeke** (2011): Impact of future landuse change on ozone deposition. // **C. Karam** (2017): Impact of the OH regeneration and halogenated compounds in global atmospheric chemistry
- 1 engineer **X Lu**, PaleOX project (co-supervised by A Cozic)

Scientific expertise & Research Committees (on-going)

- Elected Member of the section 19 « Earth system: ocean & atmosphere » of the CNRS panel in charge of the recruitment and evaluation of the CNRS researchers (2012-2016, 2 mth/yr)
- Elected Member of the section 52 « Environments and Society: from fundamental to operational » of the CNRS panel (2015-2016, 15 d/yr)
- Nominated Member of the TOSCA scientific panel of the French spatial agency (CNES) (funding program) (2012-2014)
- Nominated Member of the Meteo-France Commission for the evaluation of researchers (2014-2016)
- Member of the Board of Directors of the Air Liquide Foundation (2018-2022)
- Member of the Scientific Committee of the Funding call CNRS-LEFE-CHAT Atmospheric chemistry (2019-2022)
- Member of the GENCI thematic committee "Environment" (Computing time attribution) (2019-2022)

Member of the Scientific Steering Committee of APARC (Atmospheric Processes And their Role in Climate, Core project of the World Climate Research Programme)

Liaison APARC for the IGAC Scientific Steering Committee (International Global Atmospheric Chemistry, <https://igacproject.org>) since Jan 2022

Member of the Scientific Advisory Board of the Climate and Clean Air Coalition (UNEP-CCAC) (<https://www.ccacoalition.org/>) since Oct 2022

Core Member of the WMO Global Atmosphere Watch (GAW) Scientific Advisory Group (SAG) on Reactive Gases (RG) since Apr 2023

PhD/HDR Juries:

Examiner PhD E. Legendre (ISTEP): Etude des anomalies isotopiques de l'Oxygene et du Soufre dans les sulfates d'origine volcanique et anthropique (2016) // Reviewer PhD D. Au Yang (IPGP): Tracage isotopique des sources et processus régissant le budget du soufre dans les aérosols (PM10) urbains: les exemples de Paris et Montreal. (2017) // Reviewer HDR M. Plu (Météo-France): Prévisibilité des tempêtes, cyclones et de la composition atmosphérique (2017) // Reviewer PhD Herizo Narivelo (2023) : Étude de l'impact des espèces halogénées émises par les volcans sur la chimie troposphérique

International Research Networking

Co-convenor of an EGU (European Geosciences Union General Assembly) session at, Vienna, 2008-2019 "Atmospheric Composition: Variability and Trends"

Member of the Organising Committee of the IGAC [International Global Atmospheric Chemistry] international conference (2008 - Annecy - 530 partic.), Co-Resp. of actions for young scientist integration

Participation to the international Task Force on Hemispheric Transport of Air Pollution (HTAP) (2006-2010) – participation to the intermodel exercise as a modeller

Participation to the international Initiative ACCMIP (atmospheric climate-chemistry model intercomparison project) in preparation of the 5th IPCC report (2013)

Participation to the international Initiative ACCENT-Photocomp (multimodel numerical simulations of the 2050 atmospheric composition) in preparation of the 4th IPCC report (2007)

Review activities

Reviewer for Atmospheric Chemistry and Physics, Environmental Chemistry, Science of the Total Environment, Atmospheric Environment, Journal of Geophysical Research, Climate Research & Geoscientific Model Development.

Project reviews for the French National Research Agency (ANR), for the Netherlands Organisation for Scientific Research (NWO), for the Belgian Fund for Scientific Research (FNRS), for the Marsden Fund Council, New Zealand, and for the Swiss National Science Foundation (SNSF) - Network project review for the European Science Foundation (ESF)

Reviewer of the Canadian report on photochemical smog on Canada, 2010 (chapter "intercontinental pollution transport") for Environment Canada.

Reviewer of the First Report of the WMO COVID-19 Task Team: Review on Meteorological and Air Quality Factors Affecting the COVID-19 Pandemic (WMO-No. 1262), 2021.

Coordination of research projects

EU-FP6 Geomon (2008-2011, coord. P. Ciais) Global Earth Observation and Modelling: **Deputy leader** of the *Integration and modelling studies* activity, **Member of the Executive Board**.

Led the contribution of the IPSL institute to IPCC chemistry-climate activities (CMIP5) – 2009-2012

National funding from the National Institute for Earth Sciences and Astronomy INSU-LEFE program -BOTOX (2011-2014), Tropospheric budget of oxygenated compounds. **Coordinator**

National funding from the French Ministry of Ecology – PRIMEQUAL-SALUTAIR (2010-2013), Air Quality in Europe in 2030 under the effects of climate change and emissions mitigation policies, **Coordinator** (with B. Bessagnet, INERIS)

National funding from the INSU-LEFE program, FORCAGE (2015-2016), Cartography of the oceanic emissions of gaseous compounds of interest in the tropospheric chemistry. **Coordinator**

National funding from the French National Research Agency (ANR) (selective call <13% of success)– PaleOX (2017-2020), Oxidation in the pristine Cenozoic atmosphere - Co-evolution with life and climate.

Coordinator