Dr James Levine

Research Fellow

School of Geography, Earth and Environmental Sciences (/schools/gees/index.aspx)

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About

James Levine is an atmospheric chemist, interested in changes in atmospheric composition driven by interactions between the atmosphere (both atmospheric chemistry and climate) and the biosphere. He is currently working on a project, the Cooperative LBA Atmospheric Regional Experiment, that aims to: improve our understanding of the influence that trace gases emitted from the Amazon rainforest (and vegetation at large) have on the ability of the atmosphere to rid itself of harmful pollutants, with implications for air quality and climate; and explore how this influence might change in response to future changes in climate and land use.

Qualifications

- PhD Atmospheric Science, University of Cambridge
- MSci (Hons) MA Natural Sciences, University of Cambridge

Biography

James Levine previously worked for the British Antarctic Survey, exploring the causes of past changes in atmospheric composition recorded in polar ice cores. He was interested in the causes of dramatic changes in the concentration of methane for example between glacial and interglacial periods, linked to the impacts of climate change on wetlands (the largest natural source of methane) and global vegetation (affecting the rate of methane removal from the atmosphere). More recently, James was exploring the causes of changes in the atmospheric burden of sea salt in polar regions and, linked to those, the potential to use sea salt in polar ice cores to infer past changes in sea ice extent.

James primarily takes a computer-modelling approach, his first taste of this coming from an undergraduate project in the Centre for Atmospheric Science, University of Cambridge, exploring the impact of pollution from the east coast of the US on Western European air quality. He later studied for a PhD at the University of Cambridge, investigating the potential for 'very short-lived gases' from the ocean to reach the stratosphere and contribute to the depletion of stratospheric ozone. In between, he worked for the European Ozone Research Coordinating Unit, coordinating the EC thematic project, Global Monitoring for the Environment and Security - Global Atmospheric Observations.

Postgraduate supervision

Supporting an MPhil student in the Department of Earth Sciences, University of Cambridge, in continued exploration of the potential of sea salt as an ice core proxy for past sea ice extent.

Supervising a Science without Borders student in the School of Geography, Earth and Environmental Sciences, University of Birmingham, exploring atmospheric chemistry above the Amazon rainforest.

Research

- Interactions between the atmosphere (chemistry and climate) and the biosphere
- Implications of changes in atmospheric composition for future air quality/climate
- Explanation of past changes in atmospheric composition as recorded in polar ice

Publications

Quiquet, A., A. T. Archibald, A. D. Friend, J. Chappelaz, **J. G. Levine**, E. J. Stone, P. J. Telford, and J. A. Pyle, The relative importance of methane sources and sinks during the Last Interglacial period and into the last glaciation, Quat. Sci. Rev. 112, doi:10.1016/j.quascirev.2015.01.004 (http://dx.doi.org/10.1016/j.quascirev.2015.01.004), 2015.

Levine, J. G., X. Yang, A. E. Jones, and E. W. Wolff, Sea salt as an ice core proxy for past sea ice extent: a process-based model study, J. Geophys. Res., doi:10.1002/2013JD020925 (http://onlinelibrary.wiley.com/doi/10.1002/2013JD020925/abstract), 2014.

Foley, A. M., D. Dalmonech, A. D. Friend, F. Aires, A. Archibald, P. Bartlein, L. Bopp, J. Chappellaz, P. Cox, N. R. Edwards, G. Feulner, P. Friedlingstein, S. P. Harrison, P. O. Hopcroft, C. D. Jones, J. Kolassa, **J. G. Levine**, I. C. Prentice, J. Pyle, N. Vázquez Riveiros, E. W. Wolff, and S. Zaehle, Evaluation of biospheric components in Earth system models using modern and palaeo observations: the state-of-the-art, Biogeosciences, 10, doi:10.5194/bg-10-8305-2013 (http://www.biogeosciences.net/10/8305/2013/bg-10-8305-2013.html), 2013.

Levine, J. G., E. W. Wolff, P. O. Hopcroft, and P. J. Valdes, Controls on the tropospheric oxidizing capacity during an idealized Dansgaard-Oeschger event, and their implications for the rapid rises in atmospheric methane during the last glacial period, Geophys. Res. Lett., 39, L12805, doi:10.1029/2012GL051866 (http://onlinelibrary.wiley.com/doi/10.1029/2012GL051866/abstract), 2012.

Levine, J. G., E. W. Wolff, A. E. Jones, L. C. Sime, P. J. Valdes, A. T. Archibald, G. D. Carver, N. J. Warwick, and J. A. Pyle, Reconciling the changes in atmospheric methane sources and sinks between the Last Glacial Maximum and the pre industrial era, Geophys. Res. Lett., 38, 867 L23804, doi:10.1029/2011GL049545 (http://onlinelibrary.wiley.com/doi/10.1029/2011GL049545/abstract), 2011.

Archibald, A. T., **J. G. Levine**, N. L. Abraham, M. C. Cooke, P. M. Edwards, D. E. Heard, M. E. Jenkin, A. Karunaharan, R. C. Pike, P. S. Monks, D. E. Shallcross, P. J. Telford, L. K. Whalley, and J. A. Pyle, Impacts of HOx regeneration and recycling in the oxidation of isoprene: Consequences for the composition of past, present and future atmospheres, Geophys. Res. Lett., 38, L05804, doi:10.1029/2010GL046520 (http://onlinelibrary.wiley.com/doi/10.1029/2010GL046520/abstract), 2011.

Levine, J. G., E. W. Wolff, A. E. Jones, and L. C. Sime, The role of atomic chlorine in glacial‐interglacial changes in the carbon-13 content of atmospheric methane, Geophys. Res. Lett., 38, L04801, doi:10.1029/2010GL046122 (http://onlinelibrary.wiley.com/doi/10.1029/2010GL046122/abstract), 2011.

Levine, J. G., E. W. Wolff, A. E. Jones, M. A. Hutterli, O. Wild, G. D. Carver, and J. A. Pyle, In search of an ice core signal to differentiate between source‐driven and sink‐driven changes in atmospheric methane, J. Geophys. Res., 116, D05305 doi:10.1029/2010JD014878 (http://onlinelibrary.wiley.com/doi/10.1029/2010JD014878/abstract), 2011.

Levine, J. G., P. Braesicke, N. R. P. Harris, and J. A. Pyle, Seasonal and inter-annual variations in troposphere-to-stratosphere transport from the tropical tropopause layer, Atmos. Chem. Phys., 8, doi:10.5194/acp-8-3689-2008 (http://www.atmos-chem-phys.net/8/3689/2008/acp-8-3689-2008.html), 2008.

Levine, J. G., P. Braesicke, N. R. P. Harris, N. H. Savage, and J. A. Pyle, Pathways and timescales for troposphere-to-stratosphere transport via the tropical tropopause layer and their relevance for very short lived substances, J. Geophys. Res. 112, D04308, doi:10.1029/2005JD006940 (http://onlinelibrary.wiley.com/doi/10.1029/2005JD006940/abstract), 2007.

Cook, P. A., N. H. Savage, S. Turquety, G. D. Carver, F. M. O'Connor, A. Heckel, D. Stewart, L. K. Whalley, A. E. Parker, H. Schlager, H. B. Singh, M. A. Avery, G. W. Sachse, W. Brune, A. Richter, J. P. Burrows, R. Purvis, A. C. Lewis, C. E. Reeves, P. S. Monks, **J. G. Levine**, and J. A. Pyle, Forest fire plumes over the North Atlantic: p-TOMCAT model simulations with aircraft and satellite measurements from the ITOP/ICARTT Campaign, J. Geophys. Res., 112, D10S43, doi:10.1029/2006JD007563 (http://onlinelibrary.wiley.com/doi/10.1029/2006JD007563/abstract), 2007.

Braathen, G., N. Harris, and **J. Levine**(Eds), GMES-GATO, A European Strategy for Global Atmospheric Monitoring, Luxembourg: Office for Official Publications on the European Communities, EUR 21154, ISBN 92-894-4734-6 (http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0CEcQFjAE&url=http%3A%2F%2Fbookshop.europa.eu%2Fpl%2Fgmes-gato-pbKI5904281%2Fdownloads%2FKI-59-04-281-EN-C%2FKI5904281ENC_002.pdf%3Bpgid%3Dy8dIS7GUWMdSR0EAIMEUUsWb0000j347M5PK%3Bsid%3DFyd9QXbWQVV9biQ2m8Lj5hTzteQBEXEFEfQ%3D%3FFileName%3DKI5904281ENC_002.pdf%26SKU%3DKI5904281ENC_PDF%26CatalogueNumber%3DKI-59-04-281-EN-C&ei=6LdDU4azB6Gu7Aan2oGIBQ&usg=AFQjCNHF7sTt8c1GBLbK_ph8KJQm10ASOw&cad=rja), 2004.

Harris, N. R. P., G. T. Amanatidis, and **J. G. Levine**(Eds), Stratospheric Ozone 2002, Proceedings to the Sixth European Symposium, Luxembourg: Office for Official Publications on the European Communities, EUR 20650, ISBN 92-894-5484-9 2003.