

Dr James Levine

Research Fellow

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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. Chappellaz, **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.

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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.

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