

**CURRICULUM VITAE OF:
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(26/11/1975)**

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CURRENT POSITION

- Feb 2004 **National Oceanic and Atmospheric Administration (NOAA) – University of Colorado, Boulder, Colorado, USA**
- Head of NOAA ESRL Aerosol Radiative Impacts Laboratory
 - Promoted to Research Scientist II, December 2008.
 - Promoted to Research Scientist I, December 2007.
 - Research scientist within the Earth System Research Laboratory of NOAA and the Cooperative Institute for Research into Environmental Sciences (CIRES), University of Colorado.
 - Atmospheric aerosol research including development and deployment of instrumentation to measure radiative properties and climate impact of aerosols.
 - Measurement and assessment of emissions from commercial shipping industry.
 - Integration of emissions research into US and global GHG and particulate regulation.
 - Refer to ‘Publications’ and ‘Work History’ for more detail.

EDUCATION

2000 – 2003 **PhD Queensland University of Technology (QUT)** Awarded January 2004

Discipline: Atmospheric Chemistry & Physics

Topic: Modelling and Experimental Investigations into the Formation of Atmospheric Secondary Organic Aerosols

EMPLOYMENT HISTORY

2004 – present **Research Scientist II – National Oceanic and Atmospheric Administration (NOAA) / University of Colorado**

- Cloud and Aerosol Processes Branch within the Earth System Research Laboratory of NOAA (Boulder, Colorado, USA).
- 2004 – 2007: Post Doctoral Fellow
- 2007 – 2008: Research Scientist I
- 2008 – Present: Research Scientist II
- 2010 – Principle Investigator – Aerosol Radiative Properties CalNEX field campaign.
- 2010 – Principle Investigator – Aerosol Radiative Properties Deepwater Horizon Gulf of Mexico Special Field Mission.

- 2008 – Principle Investigator – Aerosol Radiative Properties International Polar Year ARCPAC field campaign.
- 2006 – Principle Investigator – Aerosol Radiative Properties Gulf of Mexico GoMACCS field campaign.
- Design, fabrication, construction, testing and deployment of laboratory, ground and aircraft-based high sensitivity, fast time response long-path instruments for the measurement of the climate impact of atmospheric, black carbon, brown carbon and dust.
- Management and supervision of research and development projects, post-doctoral fellows and engineering staff.
- Refer to ‘Publications’

SELECTED PROFESSIONAL NOTES

2010

- Principle Investigator NOAA CALNEX 2010 Climate and Air Quality Field Campaign: Aerosol Radiative Properties.
- Principle Investigator NOAA Deep Water Horizon Special Mission 2010 Field Campaign: Aerosol Radiative Properties.
- Aerosol Science and Technology: Journal Article 2nd most referenced article for 2009 (co-author).
- Aerosol Science and Technology: Journal Article 3rd most referenced article for 2009 (lead author).
- IMO 60th Session of the Marine Environment Protection Committee: Research paper submission on the development of Black Carbon Emissions in the Arctic from Commercial Shipping.
- Nominated: Masao Horiba Award for research and development of innovative technology in analysis and measurement of combustion emissions.
- IMO 61st Session of the Marine Environment Protection Committee: Review of research paper submission in discussion of Sea Water Scrubbing Exhaust regulations.
- Invited Speaker: National Centre for Atmospheric Research Advanced Studies program Summer Colloquium: “Asia in the 21st Century”. Boulder, Colorado.
- Invited Panellist/Speaker: “The Future of Commercial Shipping Regulation - Sustainable Shipping Conference, Miami, Florida.
- Invited Speaker: European Fleet for Airborne Research Clouds and Aerosols Workshop. Toulouse, France.

2009

- Scientific Advisor: Sustainable Maritime Solutions
- Scientific Advisor: Energy and Environmental Research Associates
- IMO 59th Session of the Marine Environment Protection Committee: Research paper submission in support of US EPA marine Emission Control Area (ECA) proposal.
- Commendation NOAA OMAO: Development of NOAA Fleet GHG Emissions Estimate.
- Radio Interviews on Pollution from Commercial Shipping on US, Central American and Australian radio.
- Many popular press interviews and articles on pollution from commercial shipping
- Journal of Geophysical Research-Atmospheres: Journal article most downloaded for two weeks of February, 2009
- Invited Speaker: Sustainable Shipping Conference, San Fran Cisco
- Invited Speaker: Southern California Environmental Health Sciences Center Annual Conference
- Invited Speaker: NCAR Journalist Fellowship
- Aerosol Science and Technology: Journal Article 7th most referenced article for 2008.
- Nature Magazine: Journal Article Highlight
- Invitee: Gordon Conference in Atmospheric Chemistry
- Panel Member: Tropospheric Airborne Measurement Panel
- Invitee: US Emissions Initiative

2008

- Popular Press Articles on Black Carbon Emissions from Commercial Shipping
- Natural History Magazine: Journal Article Highlight
- Geophysical Research Letters: Journal Article Highlight
- Invited Speaker: NOAA Science Review
- Principle Investigator NOAA ARCPAC 2008 Climate Field Campaign: Aerosol Radiative Properties.

2005 – 2010

Scientific Reviews

- US Department of Energy Research Proposals
- National Science Foundation Research Proposals
- NASA Research Proposals
- NOAA Small Business Research Proposals
- Aerosol Science and Technology
- Atmospheric Chemistry and Physics
- Journal of Geophysical Research
- Geophysical Research Letters
- Chemosphere
- Atmospheric Environment
- Environmental Science and Technology
- Atmospheric Measurement Techniques
- IMO MEPC

2007

- Invited Speaker: American Geophysical Union: Invited Speaker
- Interee: Gordon Conference in Atmospheric Chemistry

PUBLICATIONS

2011

Mc Naughton, C. S., et al. (2011), Absorbing aerosol in the troposphere of the Western Arctic during the 2008 ARCTAS/ARCPAC airborne field campaigns, *Atmos. Chem. Phys. Discuss.*, *11*(1), 1543-1594.

Langridge, J., et al. (2011), Aircraft Instrument for Comprehensive Characterisation of Aerosol Optical Properties, Part I: Wavelength Dependent Optical Extinction and its Relative Humidity Dependence Measured using Cavity Ringdown Spectroscopy, *In Preparation*.

Lack, D. A., et al. (2011), Aircraft Instrument for Comprehensive Characterisation of Aerosol Optical Properties, Part 2: Black and Brown Carbon Absorption and Absorption Enhancement Measured with Photo Acoustic Spectroscopy, *In Preparation*.

Lack, D. A., et al. (2011), Brown Carbon Absorption Evolution Within Biomass Combustion, *In Preparation*.

Lack, D. A., et al. (2011), Brown Carbon Coatings on Black Carbon Produced from Inefficient Combustion, *In Preparation*.

Lack, D., et al. (2011), Observed Changes in Climate and Air Quality – Relevant Shipping Emissions Due to Fuel and Speed Regulation, *In Preparation*.

Bailey, D., et al. (2011), Black Carbon from Arctic Shipping Could Accelerate the Ice Melt, *In Preparation*.

2010

Lack, D. A., and C. D. Cappa (2010), Impact of Brown and Clear Carbon on Light Absorption Enhancement, Single Scatter Albedo and Absorption Wavelength Dependence of Black Carbon, *Atmospheric Chemistry and Physics*, 10, 4207-4220.

Cross, E. S., et al. (2010), Soot Particle Studies - Instrument Inter-Comparison – Project Overview, *Aerosol Science and Technology*, 44, 592-611.

Corbett, J. J., et al. (2010), Arctic shipping emissions inventories and future scenarios, *Atmos. Chem. Phys.*, 10(19), 9689-9704.

Brock, C. A., et al. (2010), Characteristics, sources, and transport of aerosols measured in spring 2008 during the aerosol, radiation, and cloud processes affecting Arctic climate (ARCPAC) project, *Atmos. Chem. Phys. Discuss.*, 10(11), 27361-27434.

2009

Lack, D. A., et al. (2009), Absorption Enhancement of Coated Absorbing Aerosols: Validation of the Photo-Acoustic Technique for Measuring the Enhancement *Aerosol Science and Technology*, 43(10), 1006-1012.

Lack, D. A., et al. (2009), Particulate Emissions from Commercial Shipping. Optical, Physical and Chemical Properties, *Journal of Geophysical Research*, 114(D00F04), doi:10.1029/2008JD011300.

Lack, D. A., et al. (2009), The Relative Humidity Dependence of the Absorption of Mineral Dust Aerosol after Long-Range Atmospheric Transport from the Sahara, *Geophysical Research Letters*, 36 (L24805), doi:10.1029/2009GL041002.

Lack, D. A. (2009), Prevention of Air Pollution from Ship: Study Pertaining to Ship Emissions' Impact on Climate Change and Air Quality Submitted by the United States, in *International Maritime Organisation 59th Session of the Marine Environment Protection Committee*, edited, London.

Williams, E. J., and D. A. Lack (2009), NOAA Research Fleet Gaseous and Particulate Emissions Estimate, National Oceanic and Atmospheric Administration, Boulder, CO.

Massoli, P., et al. (2009), Aerosol Optical and Hygroscopic Properties during TexAQS-1 GoMACCS 2006 and their Impact on Aerosol Direct Radiative Forcing, *Journal of Geophysical Research*, 114(D00F07), doi:10.1029/2008JD011604.

Massoli, P., et al. (2009), Uncertainty in Light Scattering Measurements by Nephelometer: Results from Laboratory Studies and Implications for Ambient Measurements, *Aerosol Science and Technology*, 43(11), DOI: 10.1080/02786820903156542

Cappa, C. D., et al. (2009), Source Characterization from Ambient Measurements of Aerosol Optical Properties, *Geophysical Research Letters*, 36(L14813), doi:10.1029/2009GL038979.

2008

Lack, D. A., et al. (2008), Bias in Filter Based Aerosol Light Absorption Measurements Due to Organic Aerosol Loading: Evidence from Ambient Measurements, *Aerosol Science and Technology*, 42(12), 1033-1041.

Lack, D. A., et al. (2008), Light Absorbing Carbon Emissions from Commercial Shipping, *Geophysical Research Letters*, 35(L13815), doi:10.1029/2008GL033906

Cappa, C., et al. (2008), Bias in Filter Based Aerosol Light Absorption Measurements Due to Organic Aerosol Loading: Evidence from Laboratory Measurements, *Aerosol Science and Technology*, 42(12), 1022-1032.

Schwarz, J. P., et al. (2008), Measurement of the Mixing State, Mass, and Optical Size of

Individual Black Carbon Particles in Urban and Biomass Burning Emissions, *Geophysical Research Letters*, 35(L13810), doi:10.1029/2008GL033968.

Schwarz, J. P., et al. (2008), Coatings and their Enhancement of Black Carbon Light Absorption in the Tropical Atmosphere, *Journal of Geophysical Research*, 113(D03203), doi:10.1029/2007JD009042.

2007

Baynard, T., et al. (2007), Design and Application of a Pulsed Cavity Ring-Down Aerosol Extinction Spectrometer for Field Measurements, *Aerosol Science Technology*, 41(4), 447 - 462.

Lack, D.A., (2007), Rocky Mountain Rescue Group and National Instruments Saving Lives in Colorado, *NI News – Customer Solutions*, July, 2007 (<http://sine.ni.com/csol/cds/item/vw/p/id/794/nid/124200>)

2006

Lack, D., et al. (2006), Aerosol Absorption Measurement using Photoacoustic Spectroscopy: Sensitivity, Calibration, and Uncertainty Developments, *Aerosol Science and Technology*, 40(9), 697-708.

2003

Lack, D. A., et al. (2003), Seasonal Variability of Secondary Organic Aerosol: A Global Modeling Study, *Journal of Geophysical Research*, 109(D03203), doi:10.1029/2003JD003418.

Lack, D.A., (2003), Modelling the Formation of Atmospheric Aerosol from Gaseous Organic Precursors, *Australian Digital Thesis Program, 2003*, (<http://adt.library.qut.edu.au/adt-qut/public/adt-QUT20040713.130653>)

2002

Lack, D.A. et al. The Effect of Propene on the Formation of Secondary Organic Aerosol from Toluene & m-Xylene, *Proceedings of the 16th International Clean Air & Environment Conference of Australia & New Zealand*, 2002

Bofinger, N.D. et al., Secondary Organic Aerosol: The Yield Parameter, *Proceedings of the 16th International Clean Air & Environment Conference of Australia & New Zealand*, 2002.

2001

Plint, N. D., et al. (2001), The Catalysed Synthesis of Symmetrical Ketones from Alcohols, *Journal of Molecular Catalysis A-Chemical*, 165(1-2), 275-281.

1999

Kloprogge, T., et al. (1999), Non-destructive Identification of Minerals by Raman Microscopy, *Chemistry in Australia*, 66(1), 40-44.

Frost, R. L., et al. (1999), New Techniques for Studying the Intercalation of Kaolinites from Georgia with Formamide, *Clays & Clay Minerals*, 47(3), 297-303.