

## CURRICULUM VITAE - Robert Wood

Associate Professor  
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### Education:

- B.A.* University of Cambridge, UK, 1989-1992  
Natural Sciences (Physics and Theoretical Physics)
- Ph.D.* University of Manchester Institute of Science and Technology, UK, 1993-1997  
Atmospheric Physics, Title: *Aircraft Observations of Boundary Layer Structure*, Advisor  
Peter R Jonas

### Professional Experience

*Department of Atmospheric Sciences, University of Washington, Seattle (2010-present):*

**Associate Professor:** Responsible for the development of a program of research centered on the understanding of cloud physical processes, and teaching in the undergraduate and graduate program.

*Department of Atmospheric Sciences, University of Washington, Seattle (2006-2010):*

**Assistant Professor:** Responsible for the development of a program of research centered on the understanding of cloud physical processes, and teaching in the undergraduate and graduate program.

*Department of Atmospheric Sciences, University of Washington, Seattle (2004-2006):*

**Research Assistant Professor:** Responsible for the development of a program of research centered on the understanding of cloud physical processes.

*Department of Atmospheric Sciences, University of Washington, Seattle (2001-2003):*

**Research Associate:** Studied boundary layer cloud structure, variability, and microphysical processes.

*Meteorological Research Flight, UK Met Office (1997-2001):*

**Research Scientist:** Research related to boundary layer cloud microphysical processes and structural properties. Responsibilities included the planning and executing of aircraft-based field programs.

### Honors

- The 2001 L. F. Richardson Prize, Royal Meteorological Society.
- Editors' Citation for Excellence in Refereeing for *Journal of Geophysical Research – Atmospheres*, 2007.
- University of Washington Department of Atmospheric Sciences Teaching Award
- The 2011 Henry G Houghton Award, American Meteorological Society, "For advancing understanding of the interactions between cloud droplets, aerosols, radiation and precipitation in marine stratocumulus."

### Professional Activities

- Editor, *Journal of Climate* (2009-present)
- Reviewer for *Journal of the Atmospheric Sciences*, *Quarterly Journal of the Royal Meteorological Society*, *Journal of Climate*, *Journal of Geophysical Research*, *Atmospheric Research*, *Atmospheric Chemistry and Physics*, *Journal of Applied Meteorology*, *Journal of Atmospheric and Oceanic Technology*, *Atmospheric Chemistry and Physics*, *Transactions on Geoscience and Remote Sensing*, *Journal of Computational Physics*, *Geophysical Remote Sensing Letters*, *Nature*.

- Member of American Meteorological Society, Royal Meteorological Society, American Geophysical Union
- American Meteorological Society STAC Atmospheric Radiation committee member
- VAMOS Ocean-Cloud-Atmosphere-Land Study (VOCALS) Scientific Working Group member
- Principal Investigator - VOCALS-Regional Experiment (VOCALS-REx), Chile, Oct/Nov 2008.
- Principal Investigator – ARM Mobile Facility Deployment - Clouds, Aerosols and Precipitation (CAP-MBL), Azores (March-December 2009)
- VAMOS Modeling Group member.
- Chairperson, Gordon Conference on Radiation and Climate, 2011.
- NASA CloudSat/CALIPSO Mission Science Team Member.
- Physics of Stratocumulus Top (POST) Science Team Member.
- Member, Steering committee for the DoE Atmospheric Systems Research (ASR) Cloud-Aerosol-Precipitation Interactions (CAPI) working group, Nov 2009-present.
- US Climate Variability and Predictability Research Program (CLIVAR) Scientific Steering Committee, Member, 2011-present
- Member, US CLIVAR Process Study Model Improvement Panel (PSMIP), 2010-present
- CoChair, US CLIVAR Process Study Model Improvement Panel (PSMIP), 2011-present
- Study Co-lead, Keck Institute for Space Studies (KISS): Innovative Satellite Observations to Characterize the Cloudy Boundary Layer, 2010-present.

### Publications

- [1] Wood, R., I. M. Stromberg, P. R. Jonas and C. S. Mill, 1997: Analysis of an air motion system on a light aircraft for boundary layer research. *J. Atmos. Oceanic Technol.*, **14**, 960-968.
- [2] Wood, R., D. W. Johnson and S. R. Osborne, 1998: The effect of drizzle on the redistribution of aerosol in the boundary layer: estimation of the scale of the effect during ACE-2 using aircraft data. *J. Aerosol Sci.*, **29**, Supp 1, 1097-1098.
- [3] Wood, R., I. M. Stromberg and P. R. Jonas, 1999: Aircraft observations of sea breeze frontal structure. *Quart. J. Roy. Meteor. Soc.*, **125**, 1959-1996.
- [4] Wood, R. and P. R. Field, 2000: Relationships between total water, condensed water and cloud fraction in stratiform clouds examined using aircraft data. *J. Atmos. Sci.*, **57**, 1888-1905.
- [5] Wood, R., D. W. Johnson, S. R. Osborne, M.O. Andreae, B. Bandy, T. S. Bates, C. O'Dowd, P. Glantz, K. Noone, P. K. Quinn, J. Rudolph, K. Suhre, 2000: Boundary layer and aerosol evolution during the third Lagrangian experiment of ACE-2. *Tellus*, **52B**, 401-422.
- [6] Osborne, S. R., D. W. Johnson, R. Wood, B. Bandy, M. O. Andreae, C. O'Dowd, P. Glantz, K. Noone, J. Rudolph, T. S. Bates P. K. Quinn, 2000: Evolution of the aerosol, cloud and boundary layer dynamic and thermodynamic characteristics during the second lagrangian experiment of ACE-2. *Tellus*, **52B**, 375-400.
- [7] Johnson D. W., S. R. Osborne, R. Wood, B. Bandy, M. O. Andreae, C. O'Dowd, P. Glantz, K. Noone, J. Rudolph, T. S. Bates P. K. Quinn, 2000: Observations of the evolution of the aerosol, cloud and boundary layer characteristics during the first Lagrangian experiment of ACE-2. *Tellus*, **52B**, 348-374.
- [8] Johnson D. W., S. R. Osborne, R. Wood, B. Bandy, M. O. Andreae, C. O'Dowd, P. Glantz, K. Noone, J. Rudolph, T. S. Bates P. K. Quinn, 2000: An overview of the Lagrangian experiments undertaken during the second Aerosol Characterisation Experiment. *Tellus*, **52B**, 290-320.
- [9] Solazzo, M., L. M. Russell, D. Percival, S. R. Osborne, R. Wood and D. Johnson, 2000: Entrainment rates during ACE-2 Lagrangian experiments calculated from aircraft measurements. *Tellus*, **52B**, 335-347.
- [10] Andreae, M. O., W. Elbert, R. Gabriel, D. W. Johnson, S. R. Osborne R. Wood, 2000: Soluble ion chemistry of the atmospheric aerosol and SO<sub>2</sub> concentrations over the eastern North Atlantic during ACE-2. *Tellus*, **52B**, 1066-1087.

- [11] Ghosh, S., P. R. Jonas and R. Wood, 2000: Large eddy simulations and aircraft observations of two cases of stratocumulus cloud. *Quart. J. Roy. Meteor. Soc.*, **126**, 2851-2872.
- [12] Wood, R., 2000: Parametrization of the effect of drizzle upon the droplet effective radius in stratocumulus clouds. *Quart. J. Roy. Meteorol. Soc.*, **126**, 3309-3325.
- [13] Suhre, K., D. W. Johnson, R. Rosset, S. R. Osborne, R. Wood, T. S. Bates, F. Raes, 2000: A continental outbreak of air that occurred during the Second Aerosol Characterization Experiment (ACE 2): A Lagrangian experiment. *J. Geophys. Res.*, **105**, 17911-17924.
- [14] Suhre, K., V. Crassier, C. Mari, R. Rosset, D. W. Johnson, S. R. Osborne, R. Wood, M. O. Andreae, B. Bandy, T. S. Bates, S. Businger, C. Gerbig, F. Raes and J. Rudolph, 2000, Chemistry and aerosols in the marine boundary layer: 1-D modelling of three ACE-2 Lagrangian experiments. *Atmos. Environ.*, **34**, 5079-5094.
- [15] Osborne, S. R., D. W. Johnson, K. N. Bower, R. Wood, 2001: Modification of the aerosol size distribution within exhaust plumes produced by diesel-powered ships. *J. Geophys. Res.*, **106**, 9827-9842.
- [16] Larson, V. E., R. Wood, P. R. Field, J.-C. Golaz, T. H. Vonder Haar, W. R. Cotton, 2001: Systematic biases in the microphysics and thermodynamics of numerical models that ignore subgrid-scale variability. *J. Atmos. Sci.*, **58**, 1117-1128.
- [17] Larson, V. E., R. Wood, P. R. Field, J.-C. Golaz, T. H. Vonder Haar, W. R. Cotton, 2001: Small-scale and mesoscale variability of scalars in cloudy boundary layers: One dimensional probability density functions. *J. Atmos. Sci.*, **58**, 1978-1994.
- [18] Wood, R. and J. P. Taylor, 2001: Liquid water path variability in unbroken marine stratocumulus cloud. *Quart. J. Roy. Meteorol. Soc.*, **127**, 2635-2662.
- [19] Wood, R., S. Irons, and P. R. Jonas, 2002: How important is the spectral ripening effect in stratiform boundary layer clouds? Studies using simple trajectory analysis. *J. Atmos. Sci.*, **59**, 2681-2693.
- [20] Price, J. D., and R. Wood, 2002: Comparison of probability density functions for total specific humidity and saturation deficit humidity, and consequences for cloud parameterization. *Quart. J. Roy. Meteorol. Soc.*, **128**, 2059-2072.
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- [22] Wood, R., C. S. Bretherton, and D. L. Hartmann, 2002: Diurnal cycle of liquid water path over the subtropical and tropical oceans. *Geophys. Res. Lett.* 10.1029/2002GL015371.
- [23] Field, P. R., R. Wood, E. Hirst, R. Greenaway, P. Kaye, P. R. A. Brown, and J. A. J. Smith, 2003: Ice particle interarrival times measured with a fast FSSP. *J. Atmos. Oceanic Technol.*, **20**, 249-261, 2003.
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- [25] Wood, R., and Bretherton, C.S., 2004: Boundary layer depth, entrainment and decoupling in the cloud-capped subtropical and tropical marine boundary layer. *J. Clim.*, **17**, 3576-3588.
- [26] Comstock, K. K., R. Wood, S. E. Yuter, and C. S. Bretherton, 2004: Reflectivity and rain rate in and below drizzling stratocumulus. *Quart. J. Roy. Meteor. Soc.*, **128**, 2891-2918.
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- [29] Wood, R., 2005: Drizzle in stratocumulus. Part II: Microphysical Aspects. *J. Atmos. Sci.*, **62**, 3035-3050.
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- [35] Wood, R., and C. S. Bretherton, 2006: On the relationship between stratiform low cloud cover and lower tropospheric stability., *J. Clim.*, **19**, 6425-6432.
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- [38] Wood, R., 2007: Cancellation of aerosol indirect effects in marine stratocumulus through cloud thinning. *J. Atmos. Sci.*, **64**, 2657-2669.
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- [43] Chen, R., R. Wood, Z. Li, R. Ferraro, and F-L Chang, 2008: Studying the vertical variation of cloud droplet effective radius using ship and spaceborne remote sensing data. *J. Geophys. Res.*, **113**, D00A02, doi:10.1029/2007JD009596.
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- [47] Kay, J. E., and R. Wood, 2008: Timescale analysis of aerosol sensitivity during homogeneous freezing and implications for upper tropospheric water vapor budgets. *Geophys. Res. Lett.*, **35**, L10809, doi:10.1029/2007GL032628.
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- [49] Quaas, J. (Rapporteur), S. Bony, W. D. Collins, L. Donner, A. Illingworth, A. Jones, U. Lohmann, M. Satoh, S. E. Schwartz, W-K. Tao, and R. Wood, 2009: Current understanding and quantification of clouds in the changing climate system and strategies for reducing critical uncertainties. In the Strüngmann Forum Report, *Clouds in the Perturbed Climate System: Their Relationship to Energy Balance, Atmospheric Dynamics, and Precipitation*. Edited by Jost Heintzenberg and Robert J. Charlson. MIT Press ISBN 978-0-262-01287-4

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- [58] Bretherton, C. S., R. Wood, R. C. George, D. Leon, G. Allen, and X. Zheng, 2010: Southeast Pacific stratocumulus clouds, precipitation and boundary layer structure sampled along 20S during VOCALS-REx. *Atmos. Chem. Phys.*, **10**, 10639-10654.
- [59] Wood, R., C. S. Bretherton, D. Leon, A. D. Clarke, P. Zuidema, G. Allen, and H. Coe, 2010: An aircraft case study of the spatial transition from closed to open mesoscale cellular convection. *Atmos. Chem. Phys.*, **11**, 2341-2370, doi:10.5194/acp-11-2341-2011.
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### Submitted or In-Press

- [62] Kahn, B. H., J. Teixeira, E. J. Fetzer, A. Gettelman, S. M. Hristova-Veleva, X. Huang, A. K. Kochanski, M. Köhler, S. K. Krueger, R. Wood, and M. Zhao, 2011: Temperature and water vapor variance scaling in global models: Comparisons to satellite and aircraft data. *J. Climate*, accepted.
- [63] Wood, R., and P. R. Field, 2011: The distribution of cloud horizontal sizes. *Submitted to J. Clim.*, August 2010.
- [64] Sakaeda, N., R. Wood, and P. J. Rasch, 2011: Direct and semi-direct aerosol effects of Southern African biomass burning aerosol. Submitted to *J. Geophys. Res.*, Dec. 2010.
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- Kleinman, Y-N. Lee, S. Springston, T. Toniazzo, R. Krejci, J. Fochesatto, G. Shaw, P. Krecl, B. Brooks, G. McKeeking, K. N. Bower, P. I. Williams, J. Crosier, I. Crawford, P. Connolly, D. Covert, and A. R. Bandy, 2011: Southeast Pacific atmospheric composition and variability sampled along 20S during VOCALS-REx. Submitted to *Atmos. Chem. Phys.*, Dec. 2010.
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- [70] Wood, R., 2011: Stratocumulus clouds: A review paper, submitted to *Mon. Wea. Rev.*, May 2011.
- [71] Shank, L. M., A. D. Clarke, S. Howell, S. Freitag, V. Brekhovskikh, V. Kapustin, C. McNaughton, T. Campos, and R. Wood, 2011: Organic carbon and non-refractory aerosol over the remote Southeast Pacific: oceanic and combustion sources. Submitted to *Atmos. Chem. Phys.*, May 2011.