

[r.p.allan@reading.ac.uk](mailto:r.p.allan@reading.ac.uk) +44 (0)118 3785568  
**Department of Meteorology, University of Reading**  
National Centre for Atmospheric Science-Climate  
Walker Institute, National Centre for Earth Observation

**A reader in climate science specialising in Earth Observation, radiative processes and the global water cycle;** numerous peer-reviewed publications and strong links with the Met Office and the Intergovernmental Panel on Climate Change.

### Career Outline

**2009-present:** Reader in Climate Science, Department of Meteorology, University of Reading, UK  
**2005-2010:** NERC Advanced Fellow, ESSC, University of Reading  
**2003-2005:** Research Fellow, ESSC, University of Reading  
**1999:** Visiting scientist, Geophysical Fluid Dynamics Laboratory, Princeton, NJ, USA  
**1998-2003:** Research Scientist, Hadley Centre, Met Office;  
**1995-1998:** PhD, Meteorology Department, University of Reading (CASE award, Hadley Centre)

### Professional activities

Contributing author/expert reviewer for Intergovernmental Panel on Climate Change (AR4, AR5)  
Associate Editor, Journal of Climate  
American Meteorological Society Atmospheric Radiation Committee  
Met Office Improving Hydrological Predictions (IHP) program steering committee member  
Special Focus Issue Editor: Surveys in Geophysics, Earth's Energy Flows, 2010-12; Environmental Research Letters, Changes in the Global Water Cycle, 2009/2010  
NERC Peer Review College Member, 2007-2010  
Member of Geostationary Earth Radiation Budget International Science Team, since 1999  
NASA Clouds and the Earth's Radiant Energy System science team member, since 2003

### Grants awarded

SAPRISE NERC CWC directed program Co-I (£350k)  
CALM NERC CMIP5 call PI (£103k)  
HYDEF NERC CWC directed program Co-I (£224k)  
PAGODA NERC CWC directed program, PI 2010-2013 (£971k + £14k NCEO funding)  
PREPARE NERC standard grant, PI, 2010-2013 (£318k)  
FENNEC NERC consortium grant, Co-I, 2010-2013 (£370k)  
HadIR/MW JWCRP PI with Met Office, 2009-2012  
Royal Society Incoming Short Visits grant, 2008 (£3785)  
NERC Advanced Fellowship, 2005-2010 (£282k)

### Awards

2008, Outstanding reviewer, JGR-Atmospheres  
2003, HJE Reid award, NASA Langley Research Center  
1993, Cann prize; 1992, First Year prize for Environmental Science, University of East Anglia

## Teaching and Outreach

**Teaching:** Science of Climate Change (MT2CC1A, co-convenor), Climate Change (MTMG16, convenor), MSc Team projects (MTMG05), Introduction to Meteorology (MT11C), BSc/MSc tutoring/project supervisor (MT37A, MTMG99, MTMG05), Current Weather/Climate Discussion (MTMG04, contributor), Exam marker/second marker/checker, Peer Observations, PhD monitoring committees (6), University of Reading; Climate Processes and Modelling PhD course, Sweden; Water Vapour in the Climate System, Summer School, Corsica; Radiation & Climate, Earth System Spring School (NCAS/NCEO), Scarborough, Cambridge, Southampton, UK; Adult Education (Modules: Weather and Climate; Climate Change, Past, Present and Future) University of Reading, University of Oxford; Climate Change, Randolph College, Reading.

**PhD supervisor:** Kerian Ferreira (Walker institute), Ross Maidment (Meteorology), Claire Barber (ESSC), Nicky Chalmers (Meteorology, 2011), Ruth Comer (ESSC, 2008)

**PhD examiner:** L. Read, Imperial College, 2004; N. Clerbaux, RMIB, 2008; R. Holley ESSC, 2009; T. Andrews, Leeds, 2010; A. Ipe, RMIB, 2011; K. Chan, Imperial, 2011.

**Media/Policy:** BBC Newsnight, BBC radio 4 and world service, Guardian, Telegraph, Financial Times, Global Re-insurance, European Commission/Environment Policy

**Outreach:** Departmental/NCAS climate outreach coordinator; schools events; Lloyds of London

## Recent Selected Scientific Meetings

See also <http://www.met.rdg.ac.uk/~sgs02rpa/talks.html>

**Seminars:** "Current changes in the water cycle" Deutscher Wetterdienst (2012), Imperial College London (2011), Univ. Sussex (2010), ETH Zurich (2010); "Exploiting observations to seek robust responses in global precipitation", Met Office (2010)

**Invited Speaker:** EGU session "Climate, Hydrology and Water Infrastructure" (2012); ISSI workshop on Earth's Hydrological Cycle (2012), WAVACS water vapour workshop (2011), NCAS National meeting (2010), NCEO National Conference (2009, 2010), Royal Meteorological Society Conference (2009), AGU Chapman Conference on water vapour (2008), EGU conference, Surface Radiation Budget (2008); Met Office workshop: Improving Predictions of the Large-scale Hydrological Cycle (2008)

**Convenor:** Royal Meteorol. Soc. Clouds & Earth's Energy Budget (2011); ISSI workshop: Earth's Energy Flows (2011); AGU Fall, Dynamic/Thermodynamic Controls on Hydrological Cycle (2008).

## Publications

See also <http://www.met.rdg.ac.uk/~sgs02rpa/publications.html>

**Allan, R.P.** (2011) Regime dependent changes in global precipitation. *Climate Dynamics*. 10.1007/s00382-011-1134-x (In Press)

O'Gorman, P. A., **R. P. Allan**, M. P. Byrne and M. Previdi (2012) Energetic constraints on precipitation under climate change, *Surv. Geophys.*, in press, 10.1007/s10712-011-9159-6

**Allan, R. P.** (2012) The role of water vapour in Earth's energy flows, *Surv. Geophys.*, in press, 10.1007/s10712-011-9157-8.

Maidment, R. I., D.I.F. Grimes, **R.P. Allan**, H. Greatrex, O. Rojas and O. Leo (2012) Evaluation of satellite-based and model re-analysis rainfall estimates for Uganda Meteorological Applications, in press, 10.1002/met.1283

Loeb, N. G., J. M. Lyman, G. C. Johnson, **R. P. Allan**, D. R. Doelling, T. Wong, B. J. Soden and G. L. Stephens (2012), Observed changes in top-of-the-atmosphere radiation and upper-ocean heating consistent within uncertainty, *Nature Geoscience*, 5, 110-113, doi:10.1038/ngeo1375

Liu, C. and **R. P. Allan** (2012) Multi-satellite observed responses of precipitation and its extremes to interannual climate variability, *J. Geophys. Res.* 117, D03101, doi:10.1029/2011JD016568

Lavers, D. A., **R. P. Allan**, E. F. Wood, G. Villarini, D. J. Brayshaw and A. J. Wade (2011) Winter floods in Britain are connected to atmospheric rivers, *Geophys. Res. Lett.*, 38, L23803, 10.1029/2011GL049783

**Allan, R.P.** (2011) Human influence on rainfall. *Nature*, 470 (7334). pp. 344-345.

**Allan, R.P.** (2011) Combining satellite data and models to estimate cloud radiative effect at the surface and in the atmosphere. *Meteorological Applications*, 18 (3). pp. 324-333.

- Allan, R.P.** and Zveryaev, I.I. (2011) Variability in the summer season hydrological cycle over the Atlantic-Europe region 1979-2007. *International Journal of Climatology*, 31 (3). pp. 337-348.
- Allan, R.P.**, Woodage, M. J., Milton, S. F., Brooks, M. E. and Haywood, J. M. (2011) Examination of long-wave radiative bias in general circulation models over North Africa during May-July. *Quarterly Journal of the Royal Meteorological Society*, 137 (658). pp. 1179-1192.
- Haywood, J. M., Johnson, B. T., Osborne, S. R., Baran, A. J., Brooks, M., Milton, S. F., Mulcahy, J., Walters, D., **Allan, R. P.**, Klaver, A., Formenti, P., Brindley, H. E., Christopher, S. and Gupta, P. (2011) Motivation, rationale and key results from the GERBILS Saharan dust measurement campaign. *Quarterly Journal of the Royal Meteorological Society*, 137 (658). pp. 1106-1116.
- John, V.O., Holl, G., **Allan, R.P.**, Buehler, S.A., Parker, D.E. and Soden, B.J. (2011) Clear-sky biases in satellite infrared estimates of upper tropospheric humidity and its trends. *Journal of Geophysical Research*, 116. D14108.
- Zahn, M. and **Allan, R.P.** (2011) Changes in water vapor transports of the ascending branch of the tropical circulation. *Journal of Geophysical Research*, 116. D18111
- Pearson, K. J., Hogan, R. J., **Allan, R. P.**, Lister, G. M. S. and Holloway, C.E. (2010) Evaluation of the model representation of the evolution of convective systems using satellite observations of outgoing longwave radiation. *Journal of Geophysical Research*, 115. A20206.
- Allan, R.P.** and Liepert, B. G. (2010) Anticipated changes in the global atmospheric water cycle. *Environmental Research Letters*, 5 (2). 025201.
- Allan, R.P.**, Soden, B. J., John, V. O., Ingram, W. and Good, P. (2010) Current changes in tropical precipitation. *Environmental Research Letters*, 5 (2). 025205.
- Zveryaev, I. I. and **Allan, R.P.** (2010) Summertime precipitation variability over Europe and its links to atmospheric dynamics and evaporation. *Journal of Geophysical Research*, 115. D12102.
- Allan, R.P.** (2009) Examination of Relationships between Clear-Sky Longwave Radiation and Aspects of the Atmospheric Hydrological Cycle in Climate Models, Reanalyses, and Observations. *Journal of Climate*, 22 (11). 3127 -3145 .
- Haywood, J. M., **Allan, R.P.**, Bornemann, J., Forster, P. M., Francis, P. N., Milton, S., Radel, G., Rap, A., Shine, K. P. and Thorpe, R. (2009) A case study of the radiative forcing of persistent contrails evolving into contrail-induced cirrus. *Journal of Geophysical Research*, 114 (D24). D24201.
- John, V.O., **Allan, R. P.** and Soden, B.J. (2009) How robust are observed and simulated precipitation responses to tropical ocean warming? *Geophysical Research Letters*, 36. L14702 .
- Allan, R.P.** and Soden, B.J. (2008) Atmospheric warming and the amplification of precipitation extremes. *Science*, 321 (5895). pp. 1481-1484.
- Zveryaev, I.I., Wibig, J. and **Allan, R.P.** (2008) Contrasting interannual variability of atmospheric moisture over Europe during cold and warm seasons. *Tellus Series A: Dynamic Meteorology and Oceanography*, 60 (1). pp. 32-41.
- Milton, S.F., Greed, G., Brooks, M.E., Haywood, J., Johnson, B., **Allan, R.P.**, Slingo, A. and Grey, W.M.F. (2008) Modeled and observed atmospheric radiation balance during the West African dry season: Role of mineral dust, biomass burning aerosol, and surface albedo. *Journal of Geophysical Research*, 113 (D20). D00C02.
- Slingo, A., Bharmal, N.A., Robinson, G.J., Settle, J.J., **Allan, R.P.**, White, H.E., Lamb, P.J., Lele, M. I., Turner, D.D., MacFarlane, S., Kassianov, E., Barnard, J., Flynn, C. and Miller, M. (2008) Overview of observations from the RADAGAST experiment in Niamey, Niger: Meteorology and thermodynamic variables. *Journal of Geophysical Research*, 113 (D20). D00E01.
- Allan, R.P.** and Soden, B. J. (2007) Large discrepancy between observed and simulated precipitation trends in the ascending and descending branches of the tropical circulation. *Geophysical Research Letters*, 34. L18705.
- Allan, R.P.** (2007) Improved simulation of water vapour and clear-sky radiation using 24 hour forecasts from ERA40. *Tellus Series A: Dynamic Meteorology and Oceanography*, 59A (3). pp. 336-343. ISSN 0280-6495
- Allan, R.P.**, Slingo, A., Milton, S. F. and Brooks, M. E. (2007) Evaluation of the Met Office global forecast model using Geostationary Earth Radiation Budget (GERB) data. *Quarterly Journal of the Royal Meteorological Society*, 133 (629). pp. 1993-2010.
- Comer, R. E., Slingo, A. and **Allan, R. P.** (2007) Observations of the diurnal cycle of outgoing longwave radiation from the Geostationary Earth Radiation Budget instrument. *Geophysical Research Letters*, 34 (2). L02823.
- Bony, S., Colman, R., Kattsov, V.M., **Allan, R.P.**, Bretherton, C.S., Hall, A., Hallegatte, S., Holland, M.M., Ingram, W., Randall, D.A., Soden, B.J., Tselioudis, G. and Webb, M.J. (2006) How well do we understand and evaluate climate change feedback processes? *Journal of Climate*, 19 (15). pp. 3445-3482.

- Slingo, A., Ackerman, T.P., **Allan, R.P.**, Kassianov, E.I., McFarlane, S.A., Robinson, G.J., Barnard, J.C., Miller, M.A., Harries, J.E., Russell, J.E. and Dewitte, S. (2006) Observations of the impact of a major Saharan dust storm on the Earth's radiation balance. *Geophysical Research Letters*, 33. L24817.
- Allan, R.P.** (2006) Variability in clear-sky longwave radiative cooling of the atmosphere. *Journal of Geophysical Research*, 111. D22105.
- Zvervaev, I.I. and **Allan, R.P.** (2005) Water vapor variability in the tropics and its links to dynamics and precipitation. *Journal of Geophysical Research*, 110 (D21). D21112.
- Allan, R.P.**, Slingo, A., Milton, S.F. and Culverwell, I. (2005) Exploitation of Geostationary Earth Radiation Budget data using simulations from a numerical weather prediction model: Methodology and data validation. *Journal of Geophysical Research*, 110 (D14). D14111.
- Uppala, S.M., Kållberg, P. W., Simmons, A. J., Andrae, U., Bechtold, V. D. C., Fiorino, M., Gibson, J. K., Haseler, J., Hernandez, A., Kelly, G. A., Li, X., Onogi, K., Saarinen, S., Sokka, N., **Allan, R.P.**, Andersson, E., Arpe, K., Balmaseda, M. A., Beljaars, A. C. M., Berg, L. V. D., Bidlot, J., Bormann, N., Caires, S., Chevallier, F., Dethof, A., Dragosavac, M., Fisher, M., Fuentes, M., Hagemann, S., Holm, E., Hoskins, B. J., Isaksen, L., Janssen, P. A. E. M., Jenne, R., McNally, A. P., Mahfouf, J.-F., Morcrette, J.-J., Rayner, N. A., Saunders, R. W., Simon, P., Sterl, A., Trenberth, K. E., Untch, A., Vasiljevic, D., Viterbo, P. and Woollen, J. (2005) The ERA-40 re-analysis. *Quarterly Journal of the Royal Meteorological Society*, 131 (612). pp. 2961-3012.
- Harries, J. E., Russell, J. E., Hanafin, J. A., Brindley, H., Futyan, J., Rufus, J., Kellock, S., Matthews, G., Wrigley, R., Last, A., Mueller, J., Mossavati, R., Ashmall, J., Sawyer, E., Parker, D., Caldwell, M., Allan, P. M., Smith, A., Bates, M. J., Coan, B., Stewart, B. C., Lepine, D. R., Cornwall, L. A., Corney, D. R., Ricketts, M. J., Drummond, D., Smart, D., Cutler, R., Dewitte, S., Clerbaux, N., Gonzalez, L., Ipe, A., Bertrand, C., Joukoff, A., Crommelynck, D., Nelms, N., Llewellyn-Jones, D. T., Butcher, G., Smith, G. L., Szweczyk, Z. P., Mlynczak, P. E., Slingo, A., **Allan, R.P.** and Ringer, M. A. (2005) The Geostationary Earth Radiation Budget Project. *Bulletin of the American Meteorological Society*, 86 (7). pp. 945-960.
- Haywood, J.M., **Allan, R.P.**, Culverwell, I., Slingo, A., Milton, S.F., Edwards, J.M. and Clerbaux, N. (2005) Can desert dust explain the outgoing longwave radiation anomaly over the Sahara during July 2003? *Journal of Geophysical Research*, 110 (D5). D05105.
- Ringer, M.A. and **Allan, R.P.** (2004) Evaluating climate model simulations of tropical cloud. *Tellus*, 56A. pp. 308-327.
- Allan, R.P.**, Ringer, M.A., Pamment, J.A. and Slingo, A. (2004) Simulation of the Earth's radiation budget by the European Centre for Medium-Range Weather Forecasts 40-year reanalysis (ERA40). *Journal of Geophysical Research*, 109 (D18). D18107.
- Allan, R.P.**, Ringer, M.A. and Slingo, A. (2003) Evaluation of moisture in the Hadley Centre Climate Model using simulations of HIRS water vapour channel radiances. *Quarterly Journal of the Royal Meteorological Society*, 129. p. 595.
- Allan, R.P.** and Ringer, M.A. (2003) Inconsistencies between satellite estimates of longwave cloud forcing and dynamical fields from reanalyses. *Geophysical Research Letters*, 30 (9). 1491. ISSN 0094-8276
- Brindley, H. and **Allan, R.P.** (2003) Simulations of the effects of inter-annual and decadal variability on the clear-sky outgoing longwave radiation spectrum. *Quarterly Journal of the Royal Meteorological Society*, 129. pp. 2971-2988.
- Allan, R.P.**, Ramaswamy, V. and Slingo, A. (2002) Diagnostic analysis of atmospheric moisture and clear-sky radiative feedback in the Hadley Centre and Geophysical Fluid Dynamics Laboratory (GFDL) climate models. *Journal of Geophysical Research*, 107 (D17). 4329.
- Allan, R.P.**, Slingo, A. and Ramaswamy, V. (2002) Analysis of moisture variability in the European Centre for Medium-Range Weather Forecasts 15-year reanalysis over the tropical oceans. *Journal of Geophysical Research*, 107 (D15). 4230.
- Allan, R.P.** and Slingo, A. (2002) Can current climate model forcings explain the spatial and temporal signatures of decadal OLR variations? *Geophysical Research Letters*, 29 (7). 1141. ISSN 0094-8276
- Trenberth, K. E., Wielicki, B. A., Del Genio, A. D., Wong, T., Chen, J., Carlson, B. E., **Allan, R. P.**, Robertson, F., Jacobowitz, H., Slingo, A., Randall, D. A., Kiehl, J. T., Soden, B. J., Gordon, C. T., Miller, A. J., Yang, S.-K. and Susskind, J. (2002) Changes in tropical clouds and radiation. *Science*, 296 (5576) 2095a.
- Wielicki, B. A., Wong, T., **Allan, R. P.**, Slingo, A., Kiehl, J. T., Soden, B. J., Gordon, C. T., Miller, A. J., Yang, S.-K., Randall, D. A., Robertson, F., Susskind, J. and Jacobowitz, H. (2002) Evidence for large decadal variability in the tropical mean radiative energy budget. *Science*, 295 (5556). pp. 841-844.
- Allan, R.P.**, Slingo, A. and Ringer, M. A. (2002) Influence of dynamics on the changes in tropical cloud radiative forcing during the 1998 El Niño. *Journal of Climate*, 15 (14). pp. 1979-1986.
- Allan, R.P.** (2000) Evaluation of simulated clear-sky longwave radiation using ground-based observations. *Journal of Climate*, 13. pp. 1951-1964.

- Slingo, A., Pamment, J. A., **Allan, R. P.** and Wilson, P. S. (2000) Water vapor feedbacks in the ECMWF reanalyses and Hadley Centre climate model. *Journal of Climate*, 13 (17). pp. 3080-3098.
- Allan, R.P.**, Shine, K. P., Slingo, A. and Pamment, J. A. (1999) The dependence of clear-sky outgoing longwave radiation on surface temperature and relative humidity. *Quarterly Journal of the Royal Meteorological Society*, 125 Part B. pp. 2103-2126.
- Allan, R.P.** and Slingo, A. (1998) Simulated long-wave clear-sky irradiance over the ocean: spatial and temporal variability 1979-1993. *Physics and Chemistry of the Earth*, 23 (5-6). pp. 599-604