

Neil Robert Edwards MA PhD

Research interests and achievements

Climate and Earth system dynamics: NRE is one of the principal architects of the GENIE intermediate complexity Earth system modelling project.

Integrated assessment modelling: helped to develop the first effective coupling between complex climate and energy-economy models.

Geophysical fluid dynamics: published on many topics in GFD including an influential bottom boundary layer model.

Publication record: 38 refereed publications (as of November 2009)

Selected grants

2007–2010 Dynamics of the Earth system and the ice-core record (DESIRE), NERC QUEST and CNRS (France), 1.6M GBP in UK, nine institutions, led by BAS, 26 co-Investigators, 217 000 GBP to NRE (co-I and member of 7-strong management team), for one c. three-year PDRF

2006–2009 Quaternary QUEST: Regulation of atmospheric carbon dioxide on glacial-interglacial timescales and its coupling to climate change, funded by NERC QUEST, 990 000 GBP, eight institutions led by UEA, 14 co-Investigators, 145 000 GBP to NRE (co-I) for two, jointly funded PDRFs with Oxford and UEA

2002–2005 Efficient Earth system models, personal fellowship, funded by Swiss National Science Foundation, c. 300 000 CHF or 150 000 GBP

Appointments

2005–2007 Reader in Earth System Science, Open University

2002–2005 NCCR-Climate Research Fellow (personal fellowship),
Climate and Environmental Physics, University of Bern, Switzerland

2000–2002 Research Fellow, Gravity Wave-Mean Flow Interaction,
Laboratoire des Ecoulements Géophysiques et Industriels,
Université Joseph Fourier, Grenoble 1, France.

1997–2000 Research Fellow, School of Ocean and Earth Science,
Southampton Oceanography Centre.

1993–1996 Research Fellow, Applied Mathematics, Universities of Exeter and Keele

1992–1993 Research Fellow, Applied Mathematics, University of Leeds.

Education

1992 PhD *Numerical modelling of turbulence in the stably stratified atmosphere.*

Department of Applied Mathematics, University of Leeds

1988 Certificate of Advanced Study (Part III Mathematics),
Cambridge University

1987 BA Mathematics, Queens' College, Cambridge University

Selected publications

- Holden, P. B., Edwards, N. R., Oliver, K. I. C., Lenton, T. M. and Wilkinson, R. D. 2009 A probabilistic calibration of climate sensitivity and terrestrial carbon change in GENIE-1. *Climate Dynamics* doi:10.1007/s00382-009-0630-8
- Müller, S. A., Joos, F., Plattner, G.-K., Edwards, N. R. and Stocker, T. S. 2008 Modelled natural and excess radiocarbon: Sensitivities to the gas exchange formulation and ocean transport strength. *Global Biogeochemical Cycles*, Vol. 22, Art. GB3011.
- Plattner, G.-K., *et al.* (23 authors) 2008 Long-term climate commitments projected with climate - carbon cycle models. *Journal of Climate*, Vol. 21, pp. 2721-2751.
- T. M. Lenton, *et al.* (21 authors) 2007 Effects of atmospheric dynamics and ocean resolution on bi-stability of the thermohaline circulation examined using the Grid Enabled Integrated Earth system modelling (GENIE) framework. *Climate Dynamics*, Vol. 29, pp. 591-613.
- Ridgwell, A., Hargreaves, J., Edwards, N. R., Annan, J. D., Lenton, T. M., Marsh, R., Yool, A. and Watson, A. 2007 Marine geochemical data assimilation in an efficient Earth System Model of global biogeochemical cycling. *Biogeosciences*, Vol. 4, pp. 87-104.
- Siddall, M., Stocker, T. F., Henderson, G. M., Joos, F., Frank, M., Edwards, N. R., Ritz, S. and Müller, S. A. 2007 Modelling the relationship between $^{231}\text{Pa}/^{230}\text{Th}$ distribution in North Atlantic sediment and Atlantic Meridional Overturning Circulation. *Paleoceanography*, Vol. 22, Art. PA2214.
- Bahn, O., Drouet, L., Edwards, N.R., Haurie, A., Knutti, R., Kypreos, S., Stocker, T.F. and Vial, J.-P. 2006 The Coupling of Optimal Economic Growth and Climate Dynamics. *Climatic Change*, Vol. 79, pp. 103-119
- Müller, S.A., Joos, F., Edwards, N.R. and Stocker, T.F. 2006 Water mass distribution and ventilation time scales in a cost-efficient, 3-dimensional ocean model. *J. Climate*, Vol. 19, pp. 5479-5499.
- Lenton, T. M., Williamson, M. S., Edwards, N. R., Marsh, R., Price, A. R., Ridgwell, A. J., Shepherd, J. G., and the GENIE team. 2006 Millennial timescale carbon cycle and climate change in an efficient Earth system model. *Climate Dynamics*, Vol. 26, pp. 687-711.
- Edwards, N.R. and Marsh R. 2005 Uncertainties due to transport-parameter sensitivity in an efficient 3-D ocean-climate model. *Climate Dynamics*, Vol. 24, pp. 415-433
- Rohling, E.J., Marsh, R., Wells, N.C., Siddall, M. and Edwards, N.R. 2004. Similar meltwater contributions to glacial sea level changes from Antarctic and northern ice sheets. *Nature*, Vol. 430, pp. 1016-1021
- Killworth, P.D. and Edwards, N.R. 1999. A turbulent bottom boundary layer code for use in numerical ocean models. *J. Physical Oceanography*, Vol. 29, pp. 1221-1238