

Dr Tom Dunkley Jones

Birmingham Fellow

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About

Tom is a micropalaeontologist and paleoceanographer specializing in the study of fossil coccolithophore algae. His research interests are focused on the warm-climate states of the Paleogene period and include the evolution, systematics and ecology of coccolithophores. Tom has also worked on the paleoceanography and paleoclimates of large climate perturbations, including the Eocene/Oligocene transition and the Paleocene-Eocene Thermal Maximum.

Qualifications

2008 – PhD University College London

2001 – MSc Imperial College London

2000 – MSci, MA University of Cambridge

Biography

2001 – 2004 Hydrogeologist, Komex Europe, London

2004 - 2007 PhD Dept. Earth Sciences, University College London

2008 – 2009 PDRA Dept. of Geography, University College London; Dynamics of the Paleocene-Eocene Thermal Maximum

2010 – 2011 Royal Society Dorothy Hodgkin Fellowship, Department of Earth Science and Engineering, Imperial College, London

2012 – Royal Society Dorothy Hodgkin Fellowship and Birmingham Fellow, School of Geography, Earth and Environmental Sciences, University of Birmingham

Awards:

The Micropalaeontological Society, Alan Higgins Award for Contributions to Applied Micropalaeontology (2012)

Geological Society of London, President's Award for exceptional young geoscientists (2010)

The Micropalaeontological Society, Charles Downie Award, best paper from PhD research (2010)

Palaeontological Association Sylvester Bradley Award (2007)

Cushman Foundation Loeblich and Tappan Student Research Award (2005)

Teaching

MSc Applied and Industrial Micropalaeontology:

Cenozoic Calcareous Nannofossils and Coccolithophore-based Paleoceanographic Proxies

Postgraduate supervision

Nursufiah Sulaiman (GEES) Response of Indo-Pacific coccolithophore communities to the Eocene/Oligocene transition

Cherry Newsam (Earth Sciences, UCL; lead supervisor Prof. Paul Bown) Late Paleogene coccolithophore evolution

Katy Prentice (Earth Science and Engineering, Imperial College) Developing coccolith Sr/Ca ratios as a palaeoproductivity proxy

Isabel Fenton (Division of Ecology and Evolution, Imperial College; lead supervisor Prof. Andy Purvis) Diversity and community processes in marine microplankton

Research

Research interests

Tom's research is concerned with understanding the evolution and controls on the Earth's climate during the Paleogene period, with a particular focus on the interrelationships between the biologically mediated marine carbon cycle and global climate. He has a particular focus on the response of low-latitude marine calcareous

phytoplankton (coccolithophore) communities and surface ocean productivity to rapid global cooling across the Eocene-Oligocene boundary (EOB) (Pearson et al., 2008; Dunkley Jones et al., 2008).

Tom has been fortunate to study assemblages of exceptionally well-preserved calcareous microfossils collected from the Paleogene sediments of southern Tanzania (Bown et al., 2008), part of the Tanzanian Drilling Project lead by Prof. Paul Pearson. The Tanzanian microfossil assemblages have provided extraordinary new paleobiological information, including a doubling of the previously known global diversity of Eocene coccolithophores (Bown & Dunkley Jones, 2006; Bown et al., 2007; Bown et al., 2008; Dunkley Jones et al., 2009), the discovery of previously unknown Paleogene lower photic zone coccolithophores (Bown et al., 2009) and a study of the reliability of nannofossil proxy records (Dunkley Jones & Bown, 2007).

In 2009 Tom sailed as a nannofossil palaeontologist on the Integrated Ocean Drilling Program Expedition 320 (March-May, 2009), one of two expeditions that form the "Pacific Equatorial Age Transect (PEAT)". The PEAT scientific program recovered an unprecedented near-continuous record of equatorial Pacific oceanography from the start of the Eocene (55Ma) to the present, and recovered complete Eocene-Oligocene boundary successions at four localities. Tom is currently working on new records of calcareous phytoplankton productivity from these equatorial Pacific cores.

Research grants

2012-2013 Royal Society Small Grant: Paleogene marine calcareous phytoplankton: ecological dynamics through rapid climate events and long-term macroevolution

2010-2013 Royal Society Dorothy Hodgkin Fellowship

2012 NERC Ion Microprobe Facility Grant:IMF743/1012 Trace metal constraints on coccolithophore calcification mechanisms.

2011 NERC Ion Microprobe Facility Grant: IMF420/1010 Surface ocean productivity through the Eocene/Oligocene transition using the Sr/Ca composition of coccolith calcite.

Other activities

- Member of the Natural Environment Research Council (NERC) Peer-Review College
- Member of the Royal Society's International Exchanges Committee
- Member of the UK Joint Committee for Palaeontology
- The Micropalaeontological Society (TMS) Special Publications Editor
- Member of the Palaeontographical Society Council

Publications

2013

Dunkley Jones, T., Lunt, D.J., Schmidt, D.N. Ridgwell, A., Sluijs, A, Valdes, P.J. and Maslin, M.A. 2013. Climate model and proxy data constraints on ocean warming across the Paleocene-Eocene Thermal Maximum. *Earth Science Reviews*. doi.org/10.1016/j.earscirev.2013.07.004 (<http://doi.org/10.1016/j.earscirev.2013.07.004>).

Manners, H.R., Grimes, S.T., Sutton, P.A., Domingo, L., Leng, M.J., Twitchett, R.J., Hart, M.B., **Dunkley Jones, T.**, Pancost, R.D., Duller, R. and Lopez-Martinez, N. 2013. High-resolution carbon isotope stratigraphies for six sections across the PETM in a transect from continental to fully marine environments in northern Spain. *Earth and Planetary Science Letters*. doi.org/10.1016/j.epsl.2013.06.016 (<http://doi.org/10.1016/j.epsl.2013.06.016>).

Armitage, J.J., **Dunkley Jones, T.**, Duller, R.A., Whittaker, A.C., and Allen, P.A. 2013. Temporal buffering of climate-driven sediment flux cycles by transient catchment response. *Earth and Planetary Science Letters*. doi:10.1016/j.epsl.2013.03.020.

Dunkley Jones, T., Ivanović, R. F., Ridgwell, A., Lunt, D. J., Maslin, M. A., Valdes, P. J. and Flecker, R. 2013. Methane Hydrate Instability: A View from the Palaeogene, in *Climate Forcing of Geological Hazards* (eds B. McGuire and M. Maslin), John Wiley & Sons, Ltd, Chichester, UK. doi: 10.1002/9781118482698.ch12

Maslin, M., Owen, M., Betts, R. A., Day, S., **Dunkley Jones, T.** and Ridgwell, A. 2013. Assessing the Past and Future Stability of Global Gas Hydrate Reservoirs, in *Climate Forcing of Geological Hazards* (eds B. McGuire and M. Maslin), John Wiley & Sons, Ltd, Chichester, UK. doi: 10.1002/9781118482698.ch11

2012

Lunt, D.J., **Dunkley Jones, T.**, Huber, M., Heinemann, M., LeGrande, A., Winguth, A., Loptson, C., Marotzke, J., Tindall, J., Valdes, P., and Winguth, C. 2012. A model-data comparison for a multi-model ensemble of Early Eocene Atmosphere-Ocean simulations: EoMIP. *Climates of the Past*. doi:10.5194/cpd-8-1229-2012.

Pälike, H., et al. 2012. A Cenozoic record of the equatorial Pacific carbonate compensation depth, *Nature* 488: 609-615, doi:10.1038/nature11360

Bown, P.R. and **Dunkley Jones, T.** 2012. Calcareous nannofossils from the Paleogene equatorial Pacific (IODP Expedition 320 Sites U1331-1334). *J. Nanoplankton Res.* 32(2):3-51.

Westerhold, T., Röhl, U., Wilkens, R., Pälike, H., Lyle, M., **Dunkley Jones, T.**, Bown, P., Moore, T., Kamikuri, S., Acton, G., Ohneiser, C., Yamamoto, Y., Richter, C., Fitch, P., Scher, H., Liebrand, D. and the Expedition 320/321 Scientists. 2012. Revised composite depth scales and integration of IODP Sites U1331–U1334 and ODP Sites 1218–1220, *Proceedings of the Integrated Ocean Drilling Program, 320/321*, doi: 10.2204/iodp.proc.320321.201.2012.

2011

Coggon, R. M., Teagle, D. A. H. and **Dunkley Jones, T.** 2011. Comment on "What do we know about the evolution of Mg to Ca ratios in seawater?" by Wally Broecker and Jimin Yu, *Paleoceanography*, 26, PA3224, doi:10.1029/2011PA002186.

Dunkley Jones, T. 2011. The Micropalaeontological Record of Global Change. *Journal of Micropalaeontology*. 30:95-96, doi:10.1144/0262-821X11-022.

Gibbs, S.J., Stuart A. Robinson, S.A, Bown, P.R, **Dunkley Jones, T.** and Henderiks, J. 2011. Comment on Erba et al. 'Calcareous nanoplankton response to surface-water acidification around Oceanic Anoxic Event 1a', *Science*, 175b, doi:10.1126/science.1199459.

2010

Dunkley Jones, T., Ridgwell, A., Lunt, D.J., Maslin, M.A., Schmidt, D.N. and P.J. Valdes. 2010. A Paleogene perspective on climate sensitivity and methane hydrate instability. *Phil. Trans. R. Soc. A*, 368: 2395-2415.

Lunt, D.J, Valdes, P.J, **Dunkley Jones, T.**, Ridgwell, A., Haywood, A.M., Schmidt, D.N., Marsh. R., Maslin, M. 2010. CO₂ driven ocean circulation changes as an

amplifier of PETM hydrate destabilization: *Geology*, 38: 875-878.

Maslin, M.A., Owen, M., Betts, R., Day, S., **Dunkley Jones, T.** and Ridgwell, A. 2010. Gas hydrates: Past and Future Geohazard? *Phil. Trans. R. Soc. A*, 368: 2369-2393.

Pälike, H., Lyle, M., Nishi, H., Raffi, I., Gamage, K., Klaus, A., and the Expedition 320/321 Scientists. 2010. *Proceedings of the Integrated Ocean Drilling Program*, Volume 320/321, doi:10.2204/iodp.proc.320321.2010.

2009

Dunkley Jones, T., P. R. Bown, and P. N. Pearson. 2009. Exceptionally well preserved upper Eocene to lower Oligocene calcareous nannofossils (Prymnesiophyceae) from the Pande Formation (Kilwa Group), Tanzania, *Journal of Systematic Palaeontology* 7(4):359-411.

Bown, P. R., **Dunkley Jones, T.**, Young, J.R. and Randell, R. 2009. A Paleogene record of extant lower photic zone calcareous nanoplankton, *Palaeontology*. 52:457-469.

Pälike, H., Nishi, H., Lyle, M., Raffi, I., Klaus, A., Gamage, K., and the Expedition 320/321 Scientists, 2009. Pacific Equatorial Transect. *IODP Prel. Rept.*, 320, doi:10.2204/iodp.pr.320.2009

2008

Dunkley Jones, T., Bown, P.R., Pearson, P.N., Wade, B.S., Coxall, H.K., and Lear, C.H. 2008. Major shifts in calcareous phytoplankton assemblages through the Eocene-Oligocene transition of Tanzania and their implications for low-latitude primary production, *Paleoceanography* 23, PA4204.

Pearson, P. N. McMillan, I. K., Wade, B. S., **Dunkley Jones, T.**, Coxall, H. K., Bown, P. R. and Lear, C. H. 2008. Extinction and environmental change across the Eocene/Oligocene boundary in Tanzania. *Geology* 36:179-182.

Bown, P. R., **Dunkley Jones, T.**, Lees, J.A., Pearson, P.N., Randell, R., Coxall, H.K., Mizzi, J., Nicholas, C., Karega, A., Singano, J., Wade, B.S. 2008. A calcareous microfossil Konservat-Lagerstätte from the Paleogene Kilwa Group of coastal Tanzania. *GSA Bulletin* 120:3-12

2007

Dunkley Jones, T. and Bown, P. R. 2007. Post-sampling dissolution and the consistency of nannofossil diversity measures: A case study from freshly cored sediments of coastal Tanzania. *Marine Micropaleontology*, 62(4):254-268.

Bown, P. R., **Dunkley Jones, T.** and Young, J. R. 2007. *Umbilicosphaera jordani* Bown, 2005 from the Palaeogene of Tanzania: confirmation of generic assignment and Palaeocene origination for the family Calcidiscaceae. *Journal of Nannoplankton Research*, 29(1):25-30.

Dunkley Jones, T. 2007. *Salterella* and *Volborthella* from the Early Cambrian of Spitsbergen; the evolution of agglutinating organisms during the Neoproterozoic-Cambrian transition. *Micropaleontology* 53(4):331-342.

2006

Bown, P. R. and **Dunkley Jones, T.** 2006. New Paleogene calcareous nannofossil taxa from coastal Tanzania: Tanzania Drilling Project Sites 11 to 14. *Journal of Nannoplankton Research*, 28(1):17-34.

Nicholas, C. J., Pearson, P. N., Bown, P. R., **Dunkley Jones, T.**, Huber, B. T., Karega, A., Lees, J. A., McMillan, I. K., O'Halloran, A., Singano, J. M. and Wade, B. S. 2006. Stratigraphy and sedimentology of the Upper Cretaceous to Paleogene Kilwa Group, southern coastal Tanzania. *Journal of African Earth Sciences*, 45(4-5):431-466.

