

TIM LENTON – PUBLICATIONS SINCE 2000

Journal articles

- Thomas, M.A., Suntharalingam, P., Pozzoli, L., Rast, S., Devasthale, A., Kloster, S., Feichter, J. and Lenton, T.M. (2010) Quantification of DMS aerosol-cloud-climate interactions using ECHAM5-HAMMOZ model in current climate scenario. Atmospheric Chemistry and Physics Discussions, **10**(2), 3087-3187.
- Livina, V.N., Kwasniok, F., Lenton, T.M. (2010) Potential analysis reveals changing number of climate states during the last 60 kyr. Climate of the Past Discussions, **6**, 77-82.
- Miles, C.J., Bell, T.G., Lenton, T.M. 2009. Testing the relationship between the solar radiation dose and surface DMS concentrations using in situ data. Biogeosciences, **6**(9), 1927-1934.
- Goldblatt, C., Claire, M.W., Lenton, T.M., Matthews, A.J., Watson, A.J., Zahnle, K.J. 2009. Nitrogen-enhanced greenhouse warming on early Earth. Nature Geoscience, **2**(12), 891-896.
- Goodwin, P. and Lenton, T.M. (2009) Quantifying the feedback between ocean heating and CO₂ solubility as an equivalent carbon emission. Geophysical Research Letters, **36** (15), art. no. L15609.
- Rockström, J., Steffen, W., Noone, K., Persson, Å, Chapin, F.S., Lambin, E.F., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., De Wit, C.A., Hughes, T., Van Der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R.W., Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P. and Foley, J.A., 2009. A safe operating space for humanity. Nature, **461**(7263), 472-475.
- Veron, J.E.N., Hoegh-Guldberg, O., Lenton, T.M., Lough, J.M., Obura, D.O., Pearce-Kelly, P., Sheppard, C.R.C., Spalding, M., Stafford-Smith, M.G. and Rogers, A.D., 2009. The coral reef crisis: The critical importance of <350 ppm CO₂. Marine Pollution Bulletin, **58**(10), 1428-1436.
- Lenton, T.M. and Vaughan, N.E. (2009) The radiative forcing potential of different geoengineering options. Atmospheric Chemistry and Physics **9**, 5539-5561. url: <http://www.atmos-chem-phys.net/9/5539/2009/>.
- Holden, P.B., Edwards, N.R., Oliver, K.I.C., Lenton, T.M., Wilkinson, R.D. (2009) A probabilistic calibration of climate sensitivity and terrestrial carbon change in GENIE-1. Climate Dynamics, pp. 1-22 in press.

- Vaughan, N.E., Lenton, T.M., Shepherd, J.G. (2009) Climate change mitigation: trade-offs between delay and strength of action required. Climatic Change, **96**, 29-43, doi: 10.1007/s10584-009-9573-7.
- Fairman, M.J., Price, A.R., Xue, G., Molinari, M., Nicole, D.A., Lenton, T.M., Marsh, R., Takeda, K., Cox, S.J. (2009) Earth system modelling with Windows Workflow Foundation. Future Generation Computer Systems, **25** (5) pp. 586-597.
- Johnson, M.T., Vaughan, N.E., Goodwin, P., Goldblatt, C., Roudesli, S., Lenton, T.M. (2008) Why NH₃ is not a candidate reagent for ambient CO₂ fixation: A response to "alternative solution to global warming arising from CO₂ Emissions - Partial neutralization of tropospheric H₂CO₃ with NH₃". Environmental Progress, **27**, 412-417.
- Livina, V.N., Edwards, N.R., Goswami, S., Lenton, T.M. (2008) A wavelet-coefficient score for comparison of two-dimensional climatic-data fields. Quarterly Journal of the Royal Meteorological Society, **134**, 941-955.
- Williams, H.T.P., Lenton, T.M. (2008) Environmental regulation in a network of simulated microbial ecosystems. Proceedings of the National Academy of Sciences of the United States of America, **105**, 10432-10437.
- Lenton, T.M., Held, H., Kriegler, E., Hall, J.W., Lucht, W., Rahmstorf, S., Schellnhuber, H.J. (2008) Tipping elements in the Earth's climate system. Proceedings of the National Academy of Sciences, **105**, 1786-1793.
- Wood, A.J., G.J. Ackland, J. Dyke, H.T.P. Williams and T.M. Lenton (2008). Daisyworld: A review. Reviews of Geophysics **46**: RG1001.
- Fairman, M.J., Price, A.R., Xue, G., Molinari, M., Nicole, D.A., Lenton, T.M., Marsh, R., Takeda, K., Cox, S.J. (2007) Building scientific workflows for earth system modelling with windows workflow foundation. Lecture Notes in Computing Sciences **4489**(3), 273-280.
- Boyle, R.A., Lenton, T.M. and Williams, H.T.P. (2007) Neoproterozoic 'snowball Earth' glaciations and the evolution of altruism. Geobiology, **5**, 337-349.
- Lenton, T.M. and Klausmeier, C.A. (2007) Biotic stoichiometric controls on the deep ocean N: P ratio. Biogeosciences, **4**, pp. 353-367.
- Lenton, T.M., Marsh, R., Price, A.R., Lunt, D.J., Aksenov, Y., Annan, J.D., Cooper-Chadwick, T., Cox, S.J., Edwards, N.R., Goswami, S., Hargreaves, J.C., Harris, P.P., Jiao, Z., Livina, V.N., Payne, A.J., Rutt, I.C., Shepherd, J.G., Valdes, P.J., Williams, G. and Williamson, M.S.(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, 29, 591-693. doi:10.1007/s00382-007-0254-9.

Livina, V. and Lenton, T. (2007) A modified method for detecting incipient bifurcations in a dynamical system, Geophys. Res.Let. 34, L03712.

Ridgwell, A., Hargreaves, J.C., 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, 4, pp. 1-18.

Ridgwell, A.J., Zondervan, I., Hargreaves, J.C., Bijma, J. and Lenton, T.M.(2007) Assessing the potential long-term increase of oceanic fossil fuel CO₂ uptake due to CO₂-calcification feedback, Biogeosciences, 4, pp. 481-492.

Williams, H.T.P. and Lenton, T.M. (2007) Artificial selection of simulated microbial ecosystems. Proceedings of the National Academy of Science 104(21), pp. 8918-8923.

Williams, H.T.P. and Lenton, T.M. (2007) The Flask model: Emergence of nutrient-recycling microbial ecosystems and their disruption by environment-altering 'rebel' organisms, Oikos, 116, pp. 1087-1105.

Goldblatt, C. Lenton, T.M. and Watson, A.J. (2006) Bistability of atmospheric oxygen and the great oxidation, Nature, 443, 683-686.

Marsh, R. Smith, M.P.L.M. Rohling, E.J. Lunt, D.J. Lenton, T.M. Williamson, M.S. and Yool, A. (2006) Modelling ocean circulation, climate and oxygen isotopes in the ocean over the last 120,000 years, Climate of the Past Discussions, 2, 657-709.

Lunt, D.J. Williamson, M.S. Valdes, P.J. and Lenton, T.M. (2006) Comparing transient, accelerated, and equilibrium simulations of the last 30,000 years with the GENIE-1 model, Climate of the Past Discussions, 2, 267-283.

Boyle, R.A. and Lenton, T.M. (2006) Fluctuation in the physical environment as a mechanism for reinforcing evolutionary transitions, Journal of Theoretical Biology, 242, 832-843.

Lenton, T.M. and Klausmeier, C.A. (2006) Co-evolution of phytoplankton C:N:P stoichiometry and the deep ocean N:P ratio, Biogeosciences Discussions, 3, 1023-1047.

Williamson, M.S. Lenton, T.M. Shepherd, J.G. and Edwards, N.R. (2006) An Efficient Numerical Terrestrial Scheme (ENTS) for Earth System Modelling, Ecological Modelling, 198, 362-374.

- Lenton, T.M. and Britton, C. (2006) Enhanced carbonate and silicate weathering accelerates recovery from fossil fuel CO₂ perturbations, Global Biogeochemical Cycles, 20, GB3009.
- Wood, A.J. Ackland, G.J. and Lenton, T.M. (2006) Mutation of albedo and growth response produces oscillations in a spatial Daisyworld, Journal of Theoretical Biology, 242, 1, 188-198.
- Lenton, T.M. Williamson, M.S. Edwards, N.R. Marsh, R. Price, A.R. Ridgwell, A.J. Shepherd, J.G. Cox, S.J. and the GENIE team (2006) Millennial timescale carbon cycle and climate change in an efficient Earth system model, Climate Dynamics, 26, 7-8, 687-711.
- Lenton, T.M. (2006) Climate Change to the end of the Millennium, Climatic Change, 76, 1-2, 7-29.
- Price, A.R. Xue, G. Yool, A. Lunt, D.J. Valdes, P.J. Lenton, T.M. Wason, J.L. Pound, G.E. Cox, S.J. and the GENIE team (2006), Optimization of GENIE Earth system model components using Grid-enabled data management and computation, Concurrency and Computation: Practice and Experience.
- Cameron, D.R. Lenton, T.M. Ridgwell, A.J. Shepherd, J.G. Marsh, R.J. and Yool, A. (2005), A factorial analysis of the marine carbon cycle controls on atmospheric CO₂, Global Biogeochemical Cycles, 19, 4, GB4027.
- Marsh, R.J. Yool, A. Lenton, T.M. Gulamali, M.Y. Edwards, N.R. Shepherd, J.G. Krznic, M. Newhouse, S. and Cox, S.J. (2004) Bistability of the thermohaline circulation identified through comprehensive 2-parameter sweeps of an efficient climate model, Climate Dynamics, 23, 761-777.
- Bergman, N.M. Lenton, T.M. and Watson, A.J. (2004) COPSE: a new model of biogeochemical cycling over Phanerozoic time, American Journal of Science, 304, 397-437.
- Adams, B. White, A. and Lenton, T.M. (2004) An analysis of some diverse approaches to modelling net primary productivity, Ecological Modelling, 177, 353-391.
- Lenton, T.M. and Watson, A.J. (2004) Biotic enhancement of weathering, atmospheric oxygen and carbon dioxide in the Neoproterozoic, Geophysical Research Letters, 31, 5, L05202.
- Handoh, I.C. and Lenton, T.M. (2003) Periodic mid-Cretaceous Oceanic Anoxic Events linked by oscillations of the phosphorus and oxygen biogeochemical cycles, Global Biogeochemical Cycles, 17, 4, 1092.

- Lenton, T.M. and Huntingford, C. (2003) Global terrestrial carbon storage and uncertainties in its temperature sensitivity examined with a simple model, Global Change Biology, 9, 10, 1333-1352.
- Huntingford, C. Hargreaves, J.C. Lenton, T.M. and Annan, J. (2003) Extent of partial ice cover due to carbon cycle feedback in a zonal energy balance model, Hydrology and Earth System Sciences, 7, 2, 213-219.
- Adams, B. Carr, J. Lenton, T.M. and White, A. (2003) One-dimensional daisyworld: spatial interactions and pattern formation, Journal of Theoretical Biology, 223, 4, 505-513.
- Ackland, G. Clark, M. and Lenton, T.M. (2003) Catastrophic desert formation on Daisyworld, Journal of Theoretical Biology, 223, 1, 39-44.
- Lenton, T.M. and Wilkinson, D.M. (2003) Developing the Gaia theory, Climatic Change, 58, 1-2, 1-12.
- Lenton, T.M. and van Oijen, M. (2002) Gaia as a complex adaptive system, Philosophical Transactions of the Royal Society B, 357, 1421, 683-695.
- Lenton, T.M. (2002) Testing Gaia: the effect of life on Earth's habitability and regulation, Climatic Change, 52, 409-422.
- Lenton, T.M. and Cannell, M.G.R. (2002) Mitigating the Rate and Extent of Global Warming, Climatic Change, 52, 3, 255-262.
- Lenton, T.M. (2001) The role of land plants, phosphorus weathering and fire in the rise and regulation of atmospheric oxygen, Global Change Biology, 7, 6, 613-629.
- Lenton, T.M. and Lovelock, J.E. (2001) Daisyworld revisited: quantifying biological effects on planetary self-regulation, Tellus, 53B, 3, 288-305.
- Lenton, T.M. and von Bloh, W. (2001) Biotic feedback extends the life span of the biosphere, Geophysical Research Letters, 28, 9, 1715-1718.
- Lenton, T.M. and Lovelock, J.E. (2000) Daisyworld is Darwinian: Constraints on Adaptation are Important for Planetary Self-Regulation, Journal of Theoretical Biology, 206, 1, 109-114.
- Huntingford, C. Cox, P.M. and Lenton, T.M. (2000) Contrasting responses of a simple terrestrial ecosystem model to global change, Ecological Modelling, 134, 41-58.
- Lenton, T. M. (2000) Land and ocean carbon cycle feedback effects on global warming in a simple Earth system model, Tellus, 52B, 5, 1159-1188.

Lenton, T.M. and Watson, A.J. (2000) Redfield revisited: 1. Regulation of nitrate, phosphate and oxygen in the ocean, Global Biogeochemical Cycles, 14, 1, 225-248.

Lenton, T.M. and Watson, A.J. (2000) Redfield revisited: 2. What regulates the oxygen content of the atmosphere? Global Biogeochemical Cycles, 14, 1, 249-268.

Books/edited journal special issues

Guerzoni, S. Harding, S. Lenton, T. and Lucchi, F.R. (eds.) (2001) Earth System Science: A new subject for study (Geophysiology) or a new philosophy? In: Proceedings of the International School Earth and Planetary Sciences, University of Siena, Siena.

Chapters in edited books

Lenton, T.M. (2005) Hamilton and Gaia. In: Ridley, M. (ed.) Narrow Roads of Gene Land - The Collected Papers of W. D. Hamilton, Volume 3 - Last Words, Oxford University Press, Oxford, 257-264.

Toniazzo, T. Lenton, T.M. Cox, P.M. and Gregory, J. (2005) Entropy and Gaia: Is there a link between MEP and self-regulation in the climate system? In: Kleidon, A. and Lorenz, R.D. (eds.) Non-equilibrium Thermodynamics and the Production of Entropy: Life, Earth, and Beyond, Springer Verlag, Berlin, 223-242.

Lenton, T.M. Caldeira, K.G. and Szathmáry, E. (2004) What does history teach us about the major transitions and the role of disturbances in the evolution of life and of the Earth system? In: H.-J. Crutzen, P.J. Clark, W.C. Claussen, M. and Held, H. (eds.) Earth System Analysis for Sustainability, Dahlem Workshop Report 91, Schellnhuber, Cambridge, MA, The MIT Press, 29-52.

Lenton, T.M. Caldeira, K.G. Franck, S.A. Horneck, G. Jolly, A. Rabbow, E. Schellnhuber, H.J. Szathmáry, E. Westall, F. Zavarzin, G.A. and Zimmermann-Timm, H. (2004) Group Report: Long-term Geosphere-Biosphere Coevolution and Astrobiology. In: Schellnhuber, H.-J. Crutzen, P.J. Clark, W.C. Claussen, M. and Held, H. (eds.) Earth System Analysis for Sustainability, Dahlem Workshop Report 91, Cambridge, MA, The MIT Press, 111-139.

Lenton, T.M. (2004) Clarifying Gaia: Regulation with or without Natural Selection. In: Schneider, S.H. Miller, J.R. Crist, E. and Boston, P.J. (eds.) Scientists Debate Gaia: The Next Century, London, MIT Press, 15-25.

Bergman, N.M. Lenton, T.M. and Watson, A.J. (2004) A New Biogeochemical Earth System Model for the Phanerozoic Eon. In: Schneider, S.H. Miller, J.R. Crist, E. and

- Boston, P.J. (eds.) Scientists Debate Gaia: The Next Century, London, MIT Press, 101-113.
- Lenton, T.M. (2004) Gaia, in Steffen, W. Jager, J. Matson, P. *et al.* (eds.) Global Change and the Earth System: A Planet Under Pressure, Springer-Verlag, Berlin.
- Lenton, T.M. (2003) The coupled evolution of life and atmospheric oxygen. In: Rothschild, L. and Lister, A. (eds.) Evolution on Planet Earth: The Impact of the Physical Environment, Academic Press, London, 35-53.
- Lenton, T.M. (2002) Gaia Hypothesis. In: Goudie, A.S. (ed.) Encyclopedia of Global Change, Oxford University Press, New York, 491-495.
- Lenton, T.M. (2002) Gaia Hypothesis. In: Holton, J.R. Pyle, J. and Curry, J.A. (eds.) Encyclopedia of Atmospheric Sciences, Academic Press, London, 2, 815-820.
- Lenton, T.M. (2002) Earth as a Self-Regulating System. In: Chilek, V. (ed.) Encyclopedia of Life Support Systems, UNESCO, Eolss Publishers, Oxford.
- Prentice, I.C. *et al.* (2001) The Carbon Cycle and Atmospheric Carbon Dioxide. In: Houghton, J.T. Ding, Y. Griggs, D.J. *et al.* (eds.) Climate Change 2001: The Scientific Basis, Cambridge University Press, Cambridge, 183-237, (Contributing author)
- Lenton, T.M. (2001) Redfield Revisited: What Regulates the Nutrient Balance of the Ocean and the Oxygen Content of the Atmosphere? In: Guerzoni, S. Harding, S. Lenton, T. and Lucchi, F.R. (eds.) Earth System Science, University of Siena, Siena, 143-158.
- Lenton, T.M. (2001) Introduction to the Gaia Theory. In: Guerzoni, S. Harding, S. Lenton, T.M. and Lucchi, F.R. (eds.) Earth System Science, University of Siena, Siena, 9-29.