

Mid-Term Review of our Research Strategy 2012-2017

November 2014



Mid-term review of Tyndall's 2012-2017 Research Strategy

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Summary

The partners of the Tyndall Centre for Climate Change Research continue to inform society on the risks, tradeoffs and opportunities arising from climate change with their research and dissemination. During 2012, 2013 and 2014, we published 190 peer-reviewed papers, 14 reports and four books. We organised six one-day idea exploration workshops and a major conference on radical emissions reductions. The workshops covering topics of beyond two degrees, urban growth, modelling societal behaviour, trade, China's carbon emissions, and technologies for low carbon power. We responded to seven government inquiries and organised side events at UN Conference of the Party meetings, and our collaborations with Fudan University have strengthened. In 2012 and 2013, we secured 71 new research projects. To 2017, our primary focus of interest will be to better understand (1) the synergies and tradeoffs using integrated assessment methods taking human behaviour into account, (2) the interactions between climate and socio-economic extremes, and (3) how to accelerate societal change.

A. Progress so far.

Overall, the Tyndall partnership and output post core-funding appears to be stable or slightly growing, with a good match to the research strategy and continued good visibility nationally and internationally. We currently have 220 affiliated members, with about 40 faculty, a solid core of PhD researchers (the largest group) and Research Fellows. Our publication number is high (190 2012-2014), our publications are well-cited, and several papers were published in high impact journals (e.g. 11 in *Nature Climate Change* since 2012; see Appendix). Press coverage and web hits are stable. Tyndall partners reported 71 new grants in 2012&2013, for a total value of £13.3 million. This is higher than during the core-funding period (about £2 million per year in external grants). Several events and activities were organised by Tyndall partners, averaging to nearly one event per month (see Appendix). We have contributed to national and international climate change related policies and actions through responses to at least seven government inquiries on climate change, our presence at COP (see 'Activities' in Appendix), our role on national and international committees and our contributions to the IPCC Assessment reports and other channels (Table 2).

B. Progress with the Research Strategy.

Special events and activities have taken place in all four Themes (Governance & Behaviour, Energy & Emissions, Cities & Coasts, Water & Land). See full list in the Appendix. It included for G&B a workshop on Two degrees and on Behaviourally-realistic modelling, leading the 2012 Assembly and 2013 PhD Conference and earning a prize for policy evaluation; for E&E workshops on climate change and trade, on CO₂ emissions in China, on new technologies, and a Conference on Radical Emissions Reductions; for C&C two Stakeholder workshops (ITRC & Arcadia), a workshop on climate change and urban growth, a presence at the BA and earning a Prize for the science of risks; and finally for L&W a conference on REDD+ and running up Prize also for the science of risks. Many of these activities have cut across Themes.

Funded projects are also distributed among the four Themes, with only a 25% difference in the number of projects among themes. There are clusters of funded research projects on:

- integrated assessments [cities including health, water-food-energy nexus, climate engineering] (all Themes)
- climate extremes [in urban areas, agriculture, including adaptation options] (C&C and L&W)
- consumption patterns and/or behaviour in relation to climate mitigation (B&G and E&E)

Our links with Fudan University have grown and strengthened, with at least the following projects involving UK-China collaborations: CO₂ emissions (with Manchester and with UEA), integrated assessment in urban areas (with Newcastle) and over China (with UEA), carbon labelling (with Manchester), climate change and water security and migrations (both with UEA).

C. Our focus to 2017.

In order to generate a more explicit identity and help generate new ideas, we identify three areas to focus our joint research in the next 2-3 years:

1) What are the **synergies and trade offs** between climate change responses and other societal issues, building on existing integrated assessment methods that we will develop to take human behaviour more fully into account. The following areas are of particular interest:

- human health, particularly in the context of urbanisation and development, including how to align policy on air and water quality with policy on climate change
- food, water, energy security, carbon sinks, and biodiversity and how they interact, including the coherence of various policy and the needs for governance that cuts across multiple levels

2) What are the interactions between climate and weather **extremes** and socio-economic systems and their instabilities? The following areas are of particular interest:

- understanding the cascading effects of climate extremes and/or climate or energy-related socio-economic events on agriculture, the economy, human security and health, perception of climate change and acceptance of climate policies
- managing risks and responding to climate extremes in a climate-resilient way, particularly in urban environments; attribution of climate change in the context of the UN Loss and Damage mechanism
- exploring the policy implications beyond two degrees

3) What are the incentives and obstacles to **accelerating change**? This topic covers both mitigation and adaptation and cuts across a range of areas, including:

- technology, innovation, transfer mechanisms and finance
- consumption and production patterns
- values, attitudes, behaviour & practices (identity)
- politics and power of winners and losers
- defining the radical emissions reduction space

We renew our commitment to exert an influence on the design and achievability of national and international climate change related policies and actions, and work to ensure our research continues to informative relevant processes. This includes:

- participation in the UK Climate Change Risk Assessment and National Adaptation Programme
- support to UK, EU and China climate policy when needed (response to inquiry, working with DECC and FCO, briefings on relevant papers)
- continued presence at the UN Conference of the Party to support the release of the annual carbon budget and Atlas, and any timely Tyndall output, particularly ahead of COP-21 (December 2015) where the successor of the Kyoto protocol will be agreed

Our research is also well-aligned with the aspirations of Future Earth. The Tyndall Centre at UEA will host the European Hub for Future Earth secretariat. This will create synergies between Tyndall and the International Global Change scene and help shape the research agenda and outreach activities in the UK and internationally.

Appendix: Summary of activities during 2012-2013 (2 years)

Table 1. Summary of the number of affiliates, publications and projects by Tyndall partners.

	Affiliates	Journals (+reports)	Books	Number of new projects	Total grants (£)
Cambridge	8			2	
Cardiff	21	6		21	
Manchester	28	30 (+11)	2	11	
Newcastle	16	7		10	
Oxford	6	5		None reported	
Southampton	27	25		1	
Sussex	12		1	None reported	
UEA	80	53	1	14	
Fudan	20	20		12	
Total	218	122	3	71	13.3 million

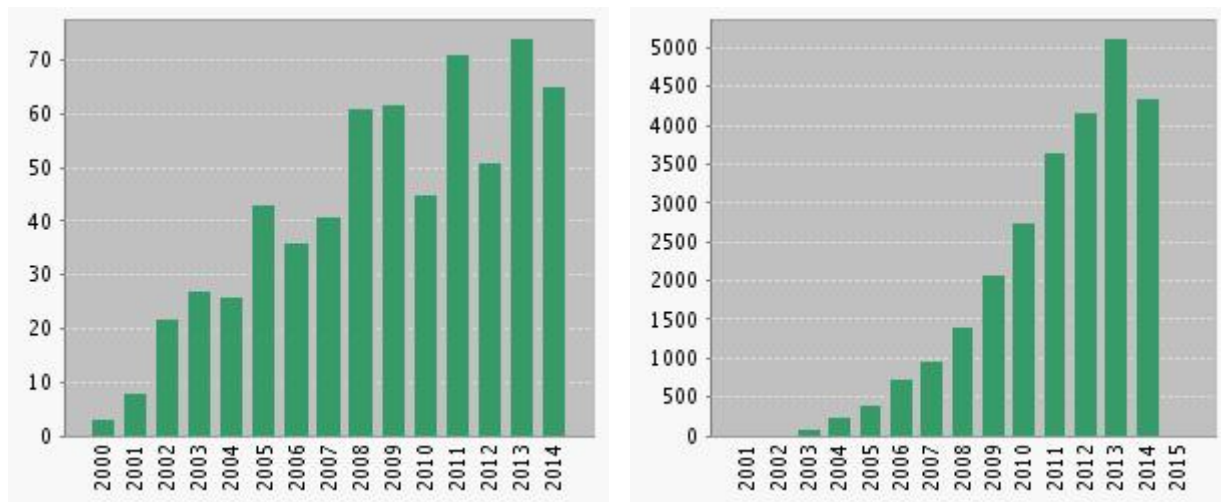


Fig. 1 Published papers (left) and number of citations (right) per year from the Tyndall Centre (source: ISI Web of Knowledge).

Special events and activities (documented in InTyndall Newsletter and www.tyndall.ac.uk)

2012

- Workshop on Climate Change and Trade, London (Jan)
- ITRC fast track analysis launch, London (Feb)
- Conference on Beyond Carbon: Ensuring justice and equity in REDD+, Oxford (March)
- Climate Week presence in exhibition, Norwich (March)
- Harold D. Lasswell Prize for climate policy evaluation in Europe
- PhD conference 2012, UEA, Knowledge Gap Climate Change Research: how are you tackling it? (April)
- Workshop on Beyond Two degrees, London (July)
- Assembly 2012, Cardiff, Behaviour change and innovation (Sept)
- Lloyds Science of Risk Prize for Climate change flooding and cliff erosion
- Presence at COP18 (Doha) (Dec)

2013

- PhD conference 2013, Cardiff, Connecting People, Planet and Places (April)
- ARCADIA final Stakeholder event, London (Oxford-led, May)
- Workshop on limits to growth in CO₂ emissions in China, Beijing (June)
- Workshop to assess the roles and feasibility of technologies in very low carbon futures, with the Dalton Nuclear Institute, London (July)
- Assembly 2013, UEA, Climate Change Scales of Action (Sept)
- Presence at COP19 (Warsaw) and side event on Global Carbon Budget 2013 including UEA and Manchester – Latest trends in CO₂ emissions and how to keep to 2 degrees (Nov)
- Event at the British Science Festival on urban engineering and adaptation to climate change, Newcastle (Sept)
- Workshop on Climate change and urban growth, Shanghai (Oct)
- Workshop on Behaviourally-realistic modelling, London (Dec)
- Radical Emissions Reduction Conference, London (Dec)
- Runner-up in Lloyds Science of Risk Prize for Changing social contracts in climate change adaptation

2014 (including planned)

- Special issue in Carbon Management on Radical Emission Reductions (Feb)
- PhD conference 2014, Manchester, Climate Change Research in Practice (April)
- Health a climate change workshop, London (April)
- European Science Open Forum Café Conversations, Copenhagen (June)
- UNFCCC Bonn Meeting (June)

- Conference on Global transitions to sustainable production and consumption systems, Shanghai (June)
- Conference on Access and Allocation in the Anthropocene, UEA (July)
- Assembly 2014, Cambridge (Sept)
- Tyndall travel emissions strategy (in prep)
- Proposal to host Future Earth Secretariat (European Hub awarded)
- Exhibition stand and side-event at COP20, Lima

Responses to Inquiries / Calls for Evidence

- Low-C growth links with China (ECCC)
- The impact of Shale gas on Energy Markets (ECCC)
- Maritime Strategy inquiry
- Climate: Public understanding and policy implications (Science and Tech. Select Committee)
- Review of the 4th C budget (CCC)
- Progress on C budgets (EAC)
- IPCC (ECCC)
- Low carbon innovation (ECCC)

Tyndall web visitors and press stories

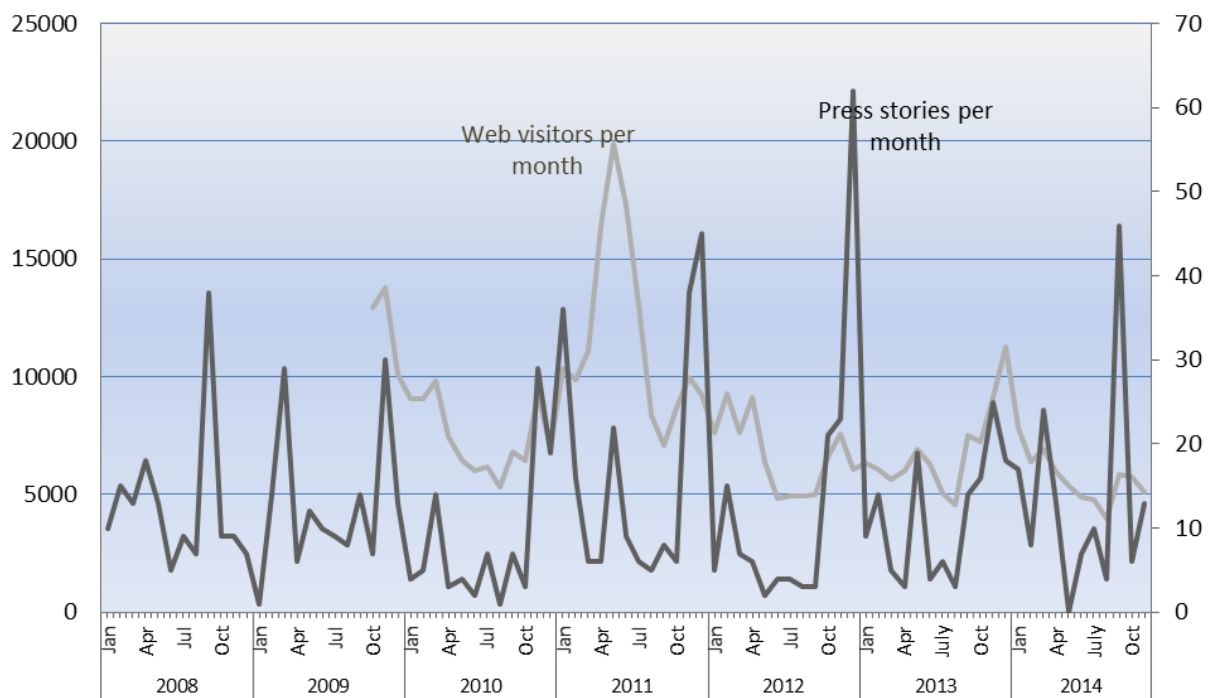


Fig. 2 Number of Tyndall web visitors (gray line, left axis) and unique press stories (black line, right axis).

Table 2. New medium or large-size projects since January 2012 (largest projects in blue):

Topic	Funder
Cambridge:	
ToPDAd- Adaptation strategies for EU cities and energy providers	EU FP7
Carbon CAP - Development of models and policies of consumption-oriented carbon emissions reductions	Unknown
Cardiff:	

CASPI: Low-carbon Lifestyles and behavioural Spillover. European Research Council	ERC
CONTAIN: The impact of hydrocarbon depletion on the Treatment of cAprocks within performance assessment for CO2 Injection schemes (CONTAIN).	EPSRC
eBRIDGE: Empowering E-Fleets for Business and Private Purposes in Cities. Intelligent Energy – Europe	IEE
PhD Studentship: The effects of storminess on coastal ecosystem services and well-being.	BESS/NERC
Habit discontinuity and travel behaviour.	SHELL
PhD Studentship: Eco-driving Habits.	DTC/SHELL
Energy Biographies: Network Engagement and Installation Costs	ESRC
PhD Studentship: Public discourses of low carbon homes	CardiffU
PhD Studentship: Public perceptions of electricity	ESRC DTC
PhD Studentship: Public perceptions of secondary climate impacts	CardiffU
The climate crunch	ESRC
Public perceptions of ocean acidification risks	NERC
Public acceptability, uncertainty and risk communication	NERC
CO2 Injection: short and long term behaviour at different spatial scales	EPSRC
Centre for Nanotechnology in Society, USNSF	US NSF
Manchester:	
SUPERGEN Bioenergy Hub	EPSRC
Biobridges (Bioenergy Project)	UoM
Fostering Interdisciplinary Research building upon synergies in Water-Food-Energy	UoM
DiSECCS: Diagnostic Seismic toolbox for the Efficient Control of CO2 Storage	EPSRC
Bioenergy value chains: Whole systems analysis and optimisation	EPSRC
Energy From Rice Straw	EPSRC
Whole System Impacts and Socio-economics of wide scale PV integration (WISE PV)	EPSRC
Shipping in Changing Climates	EPSRC
Challenges in Geological Storage for CCS	EPSRC
Newcastle:	
IBUILD - New business models for delivering local and urban infrastructure [including decarbonisation infrastructure].	EPSRC & ESRC
New Direction - Priming funds to set up a proof of concept for a long term urban monitoring and research 'laboratory'.	EPSRC
RAMSES - City scale integrated assessment. 1. Developing a high level EU wide cities climate risk analysis. 2. Extension of UIAF to include air quality/health; green infrastructure; surface water flooding; further development of ARCADIA supply chain disruption.	EU FP7
Blue/Green Cities - Understanding multiple benefits of green infrastructure. Newcastle providing surface water flood modelling.	EPSRC
FloodMemory - Modelling of multiple [i.e. clustered] flood events and recovery.	EPSRC
SINATRA - Flash flood modelling under current and future climates. Includes climate analysis of extreme convective events. Development of new 'shock capture' hydrodynamic models for flash flood modelling.	NERC
iSMART - Monitoring and risk assessment of full scale embankments to understand future climate risks to infrastructure	EPSRC

CARIWIG - Development of a weather generator for the Caribbean.	DFID (CDKN)
Evaluation of the Greening Wingrove Project aims: increased community understanding of climate change and the impacts their actions have on the environment and sustainability.	Workers' Education Association Nat. Lottery
Approaches to collaborative decision-making - Development of digital and interactive tools and collaborative processes to facilitate decision-making in contentious and/or multi-stakeholder situations.	EPSRC Impact Award & RAEng Ing. scheme
LAYERS - Catalyst grant to look at materials flows analysis of the "layers" from geological through to use/recycling of electric technology materials – with a focus on decarbonisation and adaptation technologies.	NERC
Southampton:	
Shipping in changing climates	EPSRC
UEA:	
Global Carbon Project Office	NERC
EuTRACE - European Trans-disciplinary Assessment of Climate Engineering	DGClimate
ADVANCE - Advanced Model Development and Validation for Improved Analysis of Costs and Impacts of Mitigation Policies	EU FP7
REFIT: Personalised Retrofit Decision Support Tools for UK Homes using Smart Home Technology	ESPRC
Integrated Marine Biogeochemical Modelling Network to Support UK Earth System Research - i-MarNet (pfact 8709)	NERC
TOPDAD - Tool Supported Policy Development for Regional Adaptation	EU FP7
HELIX - High Emission cLimate Impacts and eXtremes	EU FP7
IPCC Reviewing	DGClimate
TRANSIT - Transformative social innovation project	EU FP7
Fudan:	
Urban- and Regional-Scale Air Quality, Public Health, and (in later phases) Interactions Between Greenhouse Gas and Other Emissions	FudanU
Water Security in a Typical Chinese Basin in the Context of Global Climate Change.	FudanU
Climate Change and Urban Growth in China; Development of an Urban-Specific Infrastructure Assessment System for China. (Part I)	FudanU
Climate Change and Urban Growth in China; Development of an Urban-Specific Infrastructure Assessment System for China. (Part II)	
Exploring the Role of 'High Emitting Groups' in Accelerating the Transition to a Low Carbon Society	FudanU
The Development of Low Carbon Societies in Emergent Economies; Are There Useful Lessons for China?	FudanU
Generation of Low Carbon Fuels and Feedstocks.	FudanU
Migration and Climate Change.	FudanU
Prospects for High-Legitimacy Carbon Labelling in China.	FudanU
A First Step to Creating a CIAS-Based Integrated Assessment Model for China.	FudanU
Market-Based and Engagement-Innovation Initiatives to Support Chinese Sustainable Development	FudanU

Table 2. Publications in Full

From Web of Science, October 2013/November 2014 search terms ['Tyndall C' + 'Partner Institute'] and/or self-reported publications

Cardiff (Web of Science)

- Capstick, S. B. (2013). "Public Understanding of Climate Change as a Social Dilemma." Sustainability **5**(8): 3484-3501.
- Corner, A., L. Whitmarsh, et al. (2012). "Uncertainty, scepticism and attitudes towards climate change: biased assimilation and attitude polarisation." Climatic Change **114**(3-4): 463-478.
- Corner, A. J., Markowitz, E. and Pidgeon, N. F. (2014). Public engagement with climate change: the role of human values. Wiley Interdisciplinary Reviews: Climate Change
- Corner, A., Parkhill, K., Pidgeon, N., Vaughan, N.E. (2013) Messing with nature? Exploring public perceptions of geoengineering in the UK Global Environmental Change, **23** (5) pp. 938 - 947
- Hall, J. W., S. Brown, et al. (2012). "COMMENTARY: Proportionate adaptation." Nature Climate Change **2**(12): 833-834.
- Harris, A. J. L., **Corner, A.**, Xu, J., & Du, X. (2013). Lost in translation? Interpretations of the probability phrases used by the Intergovernmental Panel on Climate Change in China and the UK. Climatic Change, **121**, 415-425
- Pidgeon, N. (2012). "Climate Change Risk Perception and Communication: Addressing a Critical Moment?" Risk Analysis **32**(6): 951-956.
- Pidgeon, N., K. Parkhill, et al. (2013). "Deliberating stratospheric aerosols for climate geoengineering and the SPICE project." Nature Climate Change **3**(5): 451-457.
- Xenias, D. and L. Whitmarsh (2013). "Dimensions and determinants of expert and public attitudes to sustainable transport policies and technologies." Transportation Research Part a-Policy and Practice **48**: 75-85.

Manchester (Self-Reported)

- Ammar, Y., H. N. Li, Walsh, C. , Thornley, P. et al. (2012). "Desalination using low grade heat in the process industry: Challenges and perspectives." Applied Thermal Engineering **48**: 446-457.
- Ammar, Y., H. N. Li, Walsh, C., Thornley, P. et al. (2013). "Reprint of "Desalination using low grade heat in the process industry: Challenges and perspectives"." Applied Thermal Engineering **53**(2): 234-245.
- Anderson, K. (2012). "The inconvenient truth of carbon offsets." Nature **484**(7392): 7-7.
- Anderson, K. and A. Bows-Larkin (2012). "Executing a Scharnow turn: reconciling shipping emissions with international commitments on climate change." Carbon Management **3**(6): 615-628.
- Anderson, K. and A. Bows-Larkin (2012). "A new paradigm for climate change." Nature Climate Change **2**(9): 639-640.
- Anderson K L. (2012). "Offsetting Under Pressure". Nature Climate Change. 307
- Barrett, J. and K. Scott (2012). "Link between climate change mitigation and resource efficiency: A UK case study." Global Environmental Change-Human and Policy Dimensions **22**(1): 299-307.
- Bows-Larkin, A. and T. Smith (2012). "The (low-carbon) shipping forecast: opportunities on the high seas FOREWORD." Carbon Management **3**(6): 525-528.
- Bulkeley, H., L. Andonova, et al. (2012). "Governing climate change transnationally: assessing the evidence from a database of sixty initiatives." Environment and Planning C-Government and Policy **30**(4): 591-612.
- Chini N, Stansby P K. (2012). "Extreme values of coastal wave overtopping accounting for climate change and sea". Coastal Engineering. **65**: 27-37.
- Dendler, L. (2014) Sustainability Meta Labelling: an effective measure to facilitate more Sustainable Consumption and Production? Journal of Cleaner Production, 63, p. 74–83.
- Gilbert, P., Alexander, S., Thornley, P., Brammer, J. (2014) Assessing economically viable carbon reductions for the production of ammonia from biomass gasification Journal of Cleaner Production, 64, pp. 581-589
- Gilbert, P. (2014). "From reductionism to systems thinking: How the shipping sector can address sulphur regulation and tackle climate change". Marine Policy. **43**: 376-378.
- Gilbert, P. and A. Bows-Larkin (2012). "Exploring the scope for complementary sub-global policy to mitigate CO2 from shipping." Energy Policy **50**: 613-622.
- Gough, C. and P. Boucher (2013). "Ethical attitudes to underground CO2 storage: Points of convergence and potential faultlines." International Journal of Greenhouse Gas Control **13**: 156-167.

- Gough, C. and S. Mander (2012). "ARE WE NEARLY THERE YET? A REVIEW OF PROGRESS AGAINST CCS ROADMAPS IN THE UK." *Energy & Environment* **23**(2-3): 367-374.
- Gough, C, Boucher, P, (2012) "Mapping the ethical landscape of carbon capture and storage" *Poiesis & Praxis*, **3-4** (9):249-270
- Ingram J S , Wright H I, Aldred D, Barling D, Benton T G, Berryman P, Bows-Larkin A. 2013. "Priority research questions for the UK food system". *Food Security*. (5): 617-636.
- Jordan A, Schroeder H, Adger N, Anderson K L, Bows-Larkin A, Le Quere C, Joshi M, Mander S, Vaughan N, Whitmarsh L. (2013). "Beyond 2 degrees: the risks & opportunities of different options". *Climate Policy*.
- Mahdizadeh, H., P. K. Stansby, et al. (2012). "Flood Wave Modeling Based on a Two-Dimensional Modified Wave Propagation Algorithm Coupled to a Full-Pipe Network Solver." *Journal of Hydraulic Engineering-Asce* **138**(3): 247-259.
- Mander, S., C. Walsh, Gilbert, P., Traut, M., Bows-Larkin, A (2012). "Decarbonizing the UK energy system and the implications for UK shipping." *Carbon Management* **3**(6): 601-614.
- Maniatis, K., D. Chiaramonti, et al. (2012). "Framework and perspectives of industrial lignocellulosic ethanol deployment: Introduction to the 1st International Conference on Lignocellulosic Ethanol." *Biomass & Bioenergy* **46**: 1-4.
- Sharmina, M., K. Anderson, Bows-Larkin A, (2013). "Climate change regional review: Russia." *Wiley Interdisciplinary Reviews-Climate Change* **4**(5): 373-396.
- Starkey, R. (2012). "Personal carbon trading: A critical survey Part 1: Equity." *Ecological Economics* **73**: 7-18.
- Starkey, R. (2012). "Personal carbon trading: A critical survey Part 2: Efficiency and effectiveness." *Ecological Economics* **73**: 19-28.
- Traut M, Gilbert P, Walsh C, Bows-Larkin A, Filippone A, Stansby P K, Wood R. (2014). "Propulsive power contribution of a kite and a Flettner rotor on selected shipping routes". *Applied Energy*. (113): 362-372.
- Thornley, P. and P. Gilbert (2013). "Biofuels: balancing risks and rewards." *Interface Focus* **3**(1).
- Walsh, C. and A. Bows-Larkin (2012). "Size matters: Exploring the importance of vessel characteristics to inform estimates of shipping emissions." *Applied Energy* **98**: 128-137.
- Walsh, C. and P. Thornley (2012). "Barriers to improving energy efficiency within the process industries with a focus on low grade heat utilisation." *Journal of Cleaner Production* **23**(1): 138-146.
- Walsh, C. and P. Thornley (2012). "The environmental impact and economic feasibility of introducing an Organic Rankine Cycle to recover low grade heat during the production of metallurgical coke." *Journal of Cleaner Production* **34**: 29-37.
- Walsh, C. and P. Thornley (2013). "A comparison of two low grade heat recovery options." *Applied Thermal Engineering* **53**(2): 210-216.
- Warren, R., J. A. Lowe, et al. (2013). "The AVOID programme's new simulations of the global benefits of stringent climate change mitigation." *Climatic Change* **120**(1-2): 55-70.
- Wood, R., Bows-Larkin, A., Anderson K. L. (2012). "A one-way ticket to high carbon lock-in: the UK debate on aviation policy". *Carbon Management* **3** (6): 537-540.

Manchester Technical Reports

- Adams P, Bows-Larkin A, Gilbert P, Hammond J, Howard D, Lee R, McNamara N, Thornley E P, Whittaker C, Whitaker, J. "Understanding Greenhouse Gas Balances of Bioenergy Systems". September 2014.
- Anderson K L, Bows-Larkin A, Gilbert P, Mander S, Sidhu A, Traut M, Walsh C. "A new ship on the Horizon" - from the roadmapping workshop - devised and facilitated by members of the High Seas project: Sept 2013
- Anderson K L, Broderick J, Gilbert P, Kuriakose J, Roeder M, Bows-Larkin A, Le Quere C, Anger-Kraavi A. "Submission to EAC Inquiry: Progress on carbon budgets". May 2013.
- Anderson K L, Broderick J, Gilbert P. "Submission to House of Commons Energy and Climate Change Committee inquiry into "The Impact of Shale Gas on Energy Markets"". 2012.
- Bows-Larkin, A., McLachlan, C., Mander, S., Wood, R., Roeder, M., Thornley, P., Dawkins, E., Gough, C., O'Keefe, L., and Sharmina, M., 2014, The importance of non-CO₂ emissions in carbon management, *Carbon Management*, **5**, 2, 193-210,
- Bows-Larkin A, McLachlan C, Mander S, Wood R, Thornley E P, O'Keefe L, Roeder M, Roeder M, Dawkins E. "What's Cooking? Adaptation and mitigation in the UK food system". Sustainable Consumption Institute. July 2013.

Bows-Larkin A, Traut M, Gilbert P, Mander S, Walsh C, Anderson K L. "Aviation and shipping - privileged again? - Tyndall Centre Briefing note 47". December 2012

Gilbert P, Bows-Larkin A, Mander S, Traut M, Walsh C. "Submission to Maritime Strategy Inquiry". September 2014.

Gilbert P, Roeder M, Thornley E P. "Can the UK afford (not) to produce chemicals in 2050?". June 2014.

Gough, C, Mander, S, O'Keefe, L. "COOLTRANS (Dense Phase Carbon Dioxide Pipeline Transportation), WP5.2.1 Social impacts of the installation of pipeline networks - Interim Project Report". August 2012

O'Keefe, L, Gough, C, Mander, S. "COOLTRANS (Dense Phase Carbon Dioxide Pipeline Transportation), WP5.2.2: Public perceptions of CO₂ transport in pipelines - Interim Project Report". April 2013

Gough, C; O'Keefe, Laura; Mander, Sarah (2014) Public perceptions of CO₂ transportation in pipelines, [Energy Policy](#)

Manchester Reviews

Gilbert P, Bows-Larkin A. "All at sea: Nations responsibility to reduce shipping emissions". *Memoirs of the Manchester Literary & Philosophical Society*. v.149. 2012.

Manchester Books

Mander, S. "Understanding the challenges of CO₂ storage" : results of the CASSEM Project - co-authored Chapter 9 - describing work assessing the public perceptions of CCS carried out at Tyndall Manchester. Feb 2012

Low Carbon Energy Controversies – Edited by: Sarah Mander, Carly McLachlan, Clair Gough, and Dana Abi Ghanem, Thomas Roberts, Paul Upham and Philip Boucher. 2013

Working Papers

Credibility in climate change research: a reflexive view - Stella Nordhagen, Dan Calverley, Christopher Foulds, Laura Louise Thom, and Xinfang Wang - April 2012

Newcastle (Web of Science)

Ammar, Y., H. N. Li, et al. (2012). "Desalination using low grade heat in the process industry: Challenges and perspectives." [Applied Thermal Engineering](#) **48**: 446-457.

Ammar, Y., H. N. Li, et al. (2013). "Reprint of "Desalination using low grade heat in the process industry: Challenges and perspectives"." [Applied Thermal Engineering](#) **53**(2): 234-245.

Cinner, J. E., T. R. McClanahan, et al. (2012). "Vulnerability of coastal communities to key impacts of climate change on coral reef fisheries." [Global Environmental Change-Human and Policy Dimensions](#) **22**(1): 12-20.

Jordan, A., R. K. W. Wurzel, et al. (2013). "Still the century of "new" environmental policy instruments? Exploring patterns of innovation and continuity." [Environmental Politics](#) **22**(1): 155-173.

Mokrech, M., R. J. Nicholls, et al. (2012). "Scenarios of future built environment for coastal risk assessment of climate change using a GIS-based multicriteria analysis." [Environment and Planning B-Planning & Design](#) **39**(1): 120-136.

Walsh CL; Roberts D; Dawson RJ; Hall JW; Nickson A; Hounscome R. (2013). Experiences of Integrated Assessment modelling in London and Durban. [Environment and Urbanisation](#), 25 (2), 257-376

Walsh, C. and P. Thornley (2012). "The environmental impact and economic feasibility of introducing an Organic Rankine Cycle to recover low grade heat during the production of metallurgical coke." [Journal of Cleaner Production](#) **34**: 29-37.

Walsh, C. and P. Thornley (2013). "A comparison of two low grade heat recovery options." [Applied Thermal Engineering](#) **53**(2): 210-216.

Oxford (Web of Science)

Frame, D. J. and D. A. Stone (2013). "Assessment of the first consensus prediction on climate change." [Nature Climate Change](#) **3**(4): 357-359.

Fung, F., G. Watts, et al. (2013). "Using Large Climate Ensembles to Plan for the Hydrological Impact of Climate Change in the Freshwater Environment." [Water Resources Management](#) **27**(4): 1063-1084.

Hall, J. W., S. Brown, et al. (2012). "COMMENTARY: Proportionate adaptation." [Nature Climate Change](#) **2**(12): 833-834.

Jenkins, K., **Hall, J.**, Glenis, V., Kilsby, C., McCarthy, M., Goodess, C., Smith, D., Malleson, N., Birkin, M. (2014) **Probabilistic spatial risk assessment of heat impacts and adaptations for London** *Climatic Change*, **124** (1-2) pp. 105 – 117

Nicholls, R. J., I. H. Townend, et al. (2013). "Planning for long-term coastal change: Experiences from England and Wales." *Ocean Engineering* **71**: 3-16.

Shiogama, H., D. A. Stone, et al. (2013). "On the linear additivity of climate forcing-response relationships at global and continental scales." *International Journal of Climatology* **33**(11): 2542-2550.

Sussex (Self-reported)

David Ockwell, Ambuj Sagar and Heleen de Coninck (2014) "Collaborative research and development (R&D) for climate technology transfer and uptake in developing countries: Towards a needs driven approach" *Climatic Change*

Sussex Working Papers

Byrne, R., Ockwell, D., Urama, K., Ozor, N., Kirumba, E., Ely, A., Becker, S. and Gollwitzer, L.

(2014) *Sustainable energy for whom? Governing pro-poor, low carbon pathways to development: Lessons from solar PV in Kenya*, **STEPS Working Paper 61**, Brighton: STEPS Centre

Marshall, M., **Byrne, R. and Ockwell, D.** (2014) Gender and the construction of identity within climate technology innovation in Kenya, **STEPS Working Paper 62**, Brighton: STEPS Centre

Rolffs, P., **Byrne, R. and Ockwell, D.** (2014) *Financing Sustainable Energy for All: Pay-as-you-go vs. traditional solar finance approaches in Kenya*, **STEPS Working Paper 59**, Brighton: STEPS Centre

Jim Watson, **Rob Byrne, David Ockwell** and Michele Stua (2014) "Lessons from China: Building technological capabilities for low carbon technology transfer and development" Accepted by *Climatic Change*

Southampton (Self-reported)

Alvarado-Aguilar, D., Jimenez, J. and Nicholls, R.J. (2012) Flood hazard and damage assessment in the Ebro Delta (NW Mediterranean) to relative sea level rise. *Natural Hazards*, **62**, (3), 1301-1321.

Amos, C.L., Al-Rashidi, Thamer B., Rakha, Karim, El-Gamily, Hamdy and Nicholls, R.J. (2013) Sea surface temperature trends in the coastal ocean. *Current Development in Oceanography*, **6**, (1), 1-1

Arnell, N.W., Lowe, J.A., Brown, S., Gosling, S.N., Gottschalk, P., Hinkel, J., Lloyd-Hughes, B., Nicholls, R.J., Osborn, T.J., Osborne, T.M., Rose, G.A., Smith, P. and Warren, R.F. (2013) A global assessment of the effects of climate policy on the impacts of climate change. *Nature Climate Change*, **3**, 512-519.

Bosello, Francesco, Nicholls, Robert J., Richards, Julie, Roson, Roberto and Tol, Richard S.J. (2012) Economic impacts of climate change in Europe: sea-level rise. *Climatic Change*, **112**, (1), 63-81.

Brown, Sally, Nicholls, Robert J., Hanson, Susan, Brundrit, Geoff, Dearing, John A., Dickson, Mark E., Gallop, Shari L., Gao, Shu, Haigh, Ivan D., Hinkel, Jochen, Jiménez, José A., Klein, Richard J.T., Kron, Wolfgang, Lázár, Attila N., Neves, Claudio Freitas, Newton, Alice, Pattiaratchi, Charitha, Payo, Andres, Pye, Kenneth, Sánchez-Arcilla, Agustín, Siddall, Mark, Shareef, Ali, **Tompkins, Emma L.**, Vafeidis, Athanasios T., van Maanen, Barend, Ward, Philip J. and Woodroffe, Colin D. (2014) Shifting perspectives on coastal impacts and adaptation. *Nature Climate Change*, **4**, (9), 752-755.

Brown, Sally, Barton, M.E. and Nicholls, R.J. (2012) Human interference on soft cliff retreat: examples from Christchurch Bay, UK. *Quarterly Journal of Engineering Geology and Hydrology*, **45**, (4), 395-404.

Brown, Sally, Barton, M.E. and Nicholls, R.J. (2012) The effect of coastal defences on cliff top retreat along the Holderness coastline. *Proceedings of the Yorkshire Geological Society*, **59**, (1), 1-13.

Brown, S., Nicholls, R.J., Lowe, J.A. and Hinkel, J. (2013) Spatial variations of sea-level rise and impacts: an application of DIVA. *Climatic Change*

Brown, S. and Nicholls, R.J. (2013) High rise: costing climate change. *HydroLink*, **2013**, (2), 44-46.

Hall, J.W., Henriques, J.J., Hickford, A.J. and Nicholls, R.J. (2013) Systems-of-systems analysis of national infrastructure. *Proceedings of ICE - Engineering Sustainability*, **166**, (5), 249-257.

Hall, Jim W., Brown, Sally, Nicholls, Robert J., Pidgeon, Nick F. and Watson, Robert T. (2012) Commentary: Proportionate adaptation. *Nature Climate Change*, **2**, 833-834.

Hallegatte, Stephane, Green, Colin, Nicholls, Robert J. and Corfee-Morlot, Jan (2013) Future flood losses in major coastal cities. *Nature Climate Change*, **3**, 802-806.

- Hinkel, J., Nicholls, R.J., Tol, R.S.J., Wang, Z.B., Hamilton, J.B., Boot, G., Vafeidis, A.T., McFadden, Loraine, Ganopolski, A. and Klein, R.J.T. (2013) A global analysis of erosion of sandy beaches and sea-level rise: an application of DIVA. *Global and Planetary Change*, 111, 150-158.
- Linham, Matthew M. and Nicholls, R.J. (2012) Adaptation technologies for coastal erosion and flooding: a review. *Proceedings of the ICE - Maritime Engineering*, 165, (3), 95-112.
- Mokrech, M., Nicholls, R.J. and Dawson, R. J. (2012) Scenarios of future built environment for coastal risk assessment of climate change using a GIS-based multi-criteria analysis. *Environment and Planning B Planning and Design*, 39, (1), 120-136. (doi:10.1068/b36077).
- Narayan, S., Hanson, S., Nicholls, R.J., Clarke, D., Willems, P., Ntegeka, V. and Monbalieu, J. (2012) A holistic model for coastal flooding using system diagrams and the Source–Pathway–Receptor (SPR) concept. [in special issue: Sea Hazards] *Natural Hazards and Earth System Science*, 12, (5), 1431-1439.
- Nicholls, R.J. and Hanson, S. (2012) Fighting the flood. *Ports and Harbours*, 28-29.
- Nicholls, R.J., Townend, I.H., Bradbury, A., Ramsbottom, D. and Day, S. (2013) Planning for long-term coastal change: experiences from England and Wales. *Ocean Engineering*, 71, 3-16.
- Nicholls, R.J., Hanson, S., Lowe, J.A., Warrick, R.A., Lu, X. and Long, A.J. (2013) Sea-level scenarios for evaluating coastal impacts. *Wiley Interdisciplinary Reviews Climate Change*
- Nicholls, R.J., Hutton, C.W., Lazar, A.N., Rahman, M.M., Salehin, M. and Ghosh, T. (2013) Understanding climate change livelihoods in coastal Bangladesh. *HydroLink*, 2013, (2), 40-42.
- Nicholls, R.J. and Kebede, Abiy S (2012) Indirect impacts of coastal climate change and sea-level rise: the UK example. *Climate Policy*, 12, supplement 01, S28-S52.
- Wadey, Matthew P., Nicholls, Robert J. and Haigh, Ivan (2013) Understanding a coastal flood event: the 10th March 2008 storm surge event in the Solent, UK. *Natural Hazards*, 67, (2), 829-854.
- Wadey, Matthew, Nicholls, Robert J. and Hutton, Craig (2012) Coastal flooding in the solent: an integrated analysis of defences and inundation. *Water*, 4, (2), 430-459.
- Warren, R., Lowe, J.A., Arnell, N.W., Hope, C., Berry, P., Brown, S., Gambhir, A., Gosling, S.N., Nicholls, R.J., O'Hanley, J., Osborn, T.J., Osborne, T., Price, J., Raper, S.C.B., Rose, G. and Vanderwal, J. (2013) The AVOID programme's new simulations of the global benefits of stringent climate change mitigation. *Climatic Change*
- Whal, T., Haigh, I.D. , Woodworth, P.L., Albrecht, F., Dillingh, D., Jensen, J., Nicholls, R.J., Weisse, R. and Wöppelmann, G. (2013) Observed mean sea level changes around the North Sea coastline from 1800 to present. *Earth-Science Reviews*, 124, 51-67.
- Wöppelmann, Guy, Le Cozannet, Gonéri, de Michele, Marcello , Raucoules, Daniel , Cazenave, Anny, Garcin, Manuel , Hanson, S., Marcos, Marta and Santamaría-Gómez, Alvaro (2013) *Geophysical Research Letters*
- Zannutigh, B. Nicholls, R.J. Vanderlinden, J.P. Thompson, R. Bucharth, H. (2014) Coastal risk management in a changing climate. Butterworth Heinemann. pp.670.

UEA (Web of Science)

- Adelle, C. and A.J. Jordan (2014) Policy coherence for development in the European Union: Do new procedures unblock or simply reproduce old disagreements? *Journal of European Integration*, 36, 4, 375-91
- Adelle, C., A. Jordan, et al. (2012). "Proceeding in parallel or drifting apart? A systematic review of policy appraisal research and practices." *Environment and Planning C-Government and Policy* 30(3): 401-415.
- Adger, W. N., T. Quinn, et al. (2013). "Changing social contracts in climate-change adaptation." *Nature Climate Change* 3(4): 330-333.
- Alvain, S., C. Le Quere, et al. (2013). "Rapid climatic driven shifts of diatoms at high latitudes." *Remote Sensing of Environment* 132: 195-201.
- Andrews, O. D., N. L. Bindoff, et al. (2013). "Detecting an external influence on recent changes in oceanic oxygen using an optimal fingerprinting method." *Biogeosciences* 10(3): 1799-1813.
- Barrett, J., G. Peters, et al. (2013). "Consumption-based GHG emission accounting: a UK case study." *Climate Policy* 13(4): 451-470.
- Bateman, I. J., A. R. Harwood, et al. (2013). "Bringing Ecosystem Services into Economic Decision-Making: Land Use in the United Kingdom." *Science* 341(6141): 45-50.
- Benson, D. and Lorenzoni, I. (2014), Examining the Scope for National Lesson-drawing on Climate Governance. *The Political Quarterly*, 85: 202–211

- Benson, D., Jordan, A. (2014) Explaining task allocation in the EU: 'Retooling' federalism for comparative analysis, Journal of Common Market Studies, 52 (4) pp. 794 - 809.
- Benson, D. and A. Jordan (2013). "Is environmental management really more collaborative? A comparative analysis of putative 'paradigm shifts' in Europe, Australia, and the United States." Environment and Planning A **45**(7): 1695-1712.
- Benson, D., A. Jordan, et al. (2013). "Collaborative environmental governance: Are watershed partnerships swimming or are they sinking?" Land Use Policy **30**(1): 748-757.
- Benson, D., A. Jordan, et al. (2012). "Involving the Public in Catchment Management: An Analysis of the Scope for Learning Lessons from Abroad." Environmental Policy and Governance **22**(1): 42-54.
- Biermann, F., K. Abbott, et al. (2012). "Navigating the Anthropocene: Improving Earth System Governance." Science **335**(6074): 1306-1307.
- Biermann, F., K. Abbott, et al. (2012). "Transforming governance and institutions for global sustainability: key insights from the Earth System Governance Project." Current Opinion in Environmental Sustainability **4**(1): 51-60.
- Brouwer, S., T. Rayner, et al. (2013). "Mainstreaming climate policy: the case of climate adaptation and the implementation of EU water policy." Environment and Planning C-Government and Policy **31**(1): 134-153.
- Bulkeley, H., Jordan, A.J. Perkins, R. and H. Selin (eds) (2014) Governing Sustainability: Rio 2012 and the Road Beyond. Environment and Planning C **31**, 6, 958-1114.
- Bulkeley, H., A. Jordan, R. Perkins and H. Selin (2013) Governing sustainability: Rio+20 and the road beyond. Environment and Planning C, **31**, 6, 958-70.
- Bulkeley, H., L. Andonova, et al. (2012). "Governing climate change transnationally: assessing the evidence from a database of sixty initiatives." Environment and Planning C-Government and Policy **30**(4): 591-612.
- Chatterton, T., Wilson, C. (2014) The 'Four Dimensions of Behaviour' framework: a tool for characterising behaviours to help design better interventions (2014) Transportation Planning and Technology, **37** (1), pp. 38-61
- Cinner, J. E., T. R. McClanahan, et al. (2012). "Vulnerability of coastal communities to key impacts of climate change on coral reef fisheries." Global Environmental Change-Human and Policy Dimensions **22**(1): 12-20.
- Cloke, H. L., F. Wetterhall, et al. (2013). "Modelling climate impact on floods with ensemble climate projections." Quarterly Journal of the Royal Meteorological Society **139**(671): 282-297.
- Deryng, D., Conway, D., Ramankutty, N., Price, J., Warren, R (2014) Global crop yield response to extreme heat stress under multiple climate change futures *Environmental Research Letters* , **9** (3)
- Frame, D. J. and D. A. Stone (2013). "Assessment of the first consensus prediction on climate change." Nature Climate Change **3**(4): 357-359.
- Friedlingstein, P.; et al. Persistent growth of CO2 emissions and implications for reaching climate targets Nature Geoscience **7** Issue: 10 Pages: 709-715
- Gallagher, K. S., A. Grubler, et al. (2012). The Energy Technology Innovation System. Annual Review of Environment and Resources, Vol **37**. A. Gadgil and D. M. Liverman. Palo Alto, Annual Reviews. **37**: 137-162.
- Goulden, M. C., W. N. Adger, et al. (2013). "Limits to Resilience from Livelihood Diversification and Social Capital in Lake Social-Ecological Systems." Annals of the Association of American Geographers **103**(4): 906-924.
- Hall, J. W., S. Brown, et al. (2012). "COMMENTARY: Proportionate adaptation." Nature Climate Change **2**(12): 833-834.
- Houghton, R. A., J. I. House, et al. (2012). "Carbon emissions from land use and land-cover change." Biogeosciences **9**(12): 5125-5142.
- Lorenzoni, I. and Benson, D. (2014) 'Radical institutional change in environmental governance: explaining the origins of the UK Climate Change Act 2008 through discursive and policy streams perspectives'. Global Environmental Change. **29**: 10-21.
- Jones, M. C., S. R. Dye, et al. (2013). "Predicting the Impact of Climate Change on Threatened Species in UK Waters." Plos One **8**(1).
- Jones, M. C., S. R. Dye, et al. (2012). "Modelling commercial fish distributions: Prediction and assessment using different approaches." Ecological Modelling **225**: 133-145.

- Jordan, A., Rayner, T., Schroeder, H., Adger, N., Anderson, K., Bows, A., Le Quéré, C., Joshi, M., Mander, S., Vaughan, N., Whitmarsh, L. (2013) Going beyond two degrees? The risks and opportunities of alternative options Climate Policy, **13** (6) pp. 751 – 769
- Jordan, A.J. and Huitema (eds) (2014) Innovations in Climate Policy: The Politics of Invention, Diffusion and Evaluation. Environmental Politics, 23, 5, 715-925.
- Jordan, A. and E. Matt (2014) Designing Policies that intentionally stick: policy feedback in a changing climate. Policy Sciences, 47, 227-247.
- Jordan, A.J. and Huitema (2014) Innovations in Climate Policy: The Politics of Invention, Diffusion and Evaluation. Environmental Politics, 23, 5, 715-34.
- Jordan, A.J. and Huitema (2014) Innovations in Climate Policy: Conclusions and Future Directions. Environmental Politics 23, 5, 906-25.
- Jordan, A., M. W. Bauer, et al. (2013). "POLICY DISMANTLING." Journal of European Public Policy **20**(5): 795-805.
- Jordan, A., H. van Asselt, et al. (2012). "Understanding the Paradoxes of Multi-level Governing: Climate Change Policy in the European Union." Global Environmental Politics **12**(2): 43-+.
- Jordan, A., R. K. W. Wurzel, et al. (2013). "Still the century of 'new' environmental policy instruments? Exploring patterns of innovation and continuity." Environmental Politics **22**(1): 155-173.
- Joshi, M. M., A. G. Turner, et al. (2013). "The use of the land-sea warming contrast under climate change to improve impact metrics." Climatic Change **117**(4): 951-960.
- Le Quéré, C., et al (2014) Global carbon budget 2013 Earth System Science Data, **6** (1) pp. 235 – 263
- Li, Y., D. Conway, et al. (2013). "Rural livelihoods and climate variability in Ningxia, Northwest China." Climatic Change **119**(3-4): 891-904.
- Matt, E. (2012). "Complex Strategic Choices: Applying Systemic Planning for Strategic Decision-Making." Transport Reviews **32**(6): 805-806.
- Mokrech, M., R. J. Nicholls, et al. (2012). "Scenarios of future built environment for coastal risk assessment of climate change using a GIS-based multicriteria analysis." Environment and Planning B-Planning & Design **39**(1): 120-136.
- O'Neill, S. J., M. Boykoff, et al. (2013). "On the use of imagery for climate change engagement." Global Environmental Change-Human and Policy Dimensions **23**(2): 413-421.
- Parkes, B. L., F. Wetterhall, et al. (2013). "Assessment of a 1-hour gridded precipitation dataset to drive a hydrological model: a case study of the summer 2007 floods in the Upper Severn, UK." Hydrology Research **44**(1): 89-105.
- Peters, G. P., R. M. Andrew, et al. (2013). "COMMENTARY: The challenge to keep global warming below 2 degrees C." Nature Climate Change **3**(1): 4-6.
- Peters, G. P., G. Marland, et al. (2012). "CORRESPONDENCE: Rapid growth in CO2 emissions after the 2008-2009 global financial crisis." Nature Climate Change **2**(1): 2-4.
- Pidgeon, N., K. Parkhill, et al. (2013). "Deliberating stratospheric aerosols for climate geoengineering and the SPICE project." Nature Climate Change **3**(5): 451-457.
- Podhora, A., K. Helming, et al. (2013). "The policy-relevancy of impact assessment tools: Evaluating nine years of European research funding." Environmental Science & Policy **31**: 85-95.
- Porter, K.E., Hulme, M. (2013) The emergence of the geoengineering debate in the UK print media: A frame analysis Geographical Journal , **179** (4) pp. 342 - 355
- Rayner, T. and A. Jordan (2013). "The European Union: the polycentric climate policy leader?" Wiley Interdisciplinary Reviews-Climate Change **4**(2): 75-90.
- Russel, D., J. Turnpenny, et al. (2013). "Reining in the executive? Delegation, evidence, and parliamentary influence on environmental public policy." Environment and Planning C-Government and Policy **31**(4): 619-632.
- Russell, L. M., P. J. Rasch, et al. (2012). "Ecosystem Impacts of Geoengineering: A Review for Developing a Science Plan." Ambio **41**(4): 350-369.
- Sailley, S. F., M. Vogt, et al. (2013). "Comparing food web structures and dynamics across a suite of global marine ecosystem models." Ecological Modelling **261**: 43-57.
- Tebboth, M. (2014) Understanding intractable environmental policy conflicts. The village that would not fall into the sea Geographical Journal. **180** (3) pp. 224 - 235

- Turnpenny, J., D. Russel, et al. (2013). "The complexity of evidence for sustainable development policy: analysing the boundary work of the UK Parliamentary Environmental Audit Committee." Transactions of the Institute of British Geographers **38**(4): 586-598.
- Wang, J. X., S. Rothausen, et al. (2012). "China's water-energy nexus: greenhouse-gas emissions from groundwater use for agriculture." Environmental Research Letters **7**(1).
- Wanninkhof, R., G. H. Park, et al. (2013). "Global ocean carbon uptake: magnitude, variability and trends." Biogeosciences **10**(3): 1983-2000.
- Warren, R., J. A. Lowe, et al. (2013). "The AVOID programme's new simulations of the global benefits of stringent climate change mitigation." Climatic Change **120**(1-2): 55-70.
- Warren, R., R. M. S. Yu, et al. (2012). "European drought regimes under mitigated and unmitigated climate change: application of the Community Integrated Assessment System (CIAS)." Climate Research **51**(2): 105-U137.
- Watson, R. T. (2012). "The science-policy interface: the role of scientific assessments-UK National Ecosystem Assessment." Proceedings of the Royal Society a-Mathematical Physical and Engineering Sciences **468**(2147): 3265-3281.
- Weiland, S., V. Weiss, et al. (2013). "Introduction: Science in Policy Making." Nature + Culture **8**(1): 1-7.
- Wetterhall, F., F. Pappenberger, et al. (2012). "Conditioning model output statistics of regional climate model precipitation on circulation patterns." Nonlinear Processes in Geophysics **19**(6): 623-633.
- Williamson, R. and C. Le Quere (2013). "Interview with Professor Corinne Le Quere." Carbon Management **4**(3): 243-248.
- Wilson, C. (2012). "Up-scaling, formative phases, and learning in the historical diffusion of energy technologies." Energy Policy **50**: 81-94.
- Wilson, C., A. Grubler, et al. (2013). "Future capacity growth of energy technologies: are scenarios consistent with historical evidence?" Climatic Change **118**(2): 381-395.
- Wilson, C., A. Grubler, et al. (2012). "Marginalization of end-use technologies in energy innovation for climate protection." Nature Climate Change **2**(11): 780-788.
- Xenias, D. and L. Whitmarsh (2013). "Dimensions and determinants of expert and public attitudes to sustainable transport policies and technologies." Transportation Research Part a-Policy and Practice **48**: 75-85.
- Zeitoun, M., M. Goulden, et al. (2013). "Current and future challenges facing transboundary river basin management." Wiley Interdisciplinary Reviews-Climate Change **4**(5): 331-349.

Edited special issue

- Bulkeley, H., Jordan, A.J. Perkins, R. and H. Selin (eds) (2014) *Governing Sustainability: Rio 2012 and the Road Beyond*. Environment and Planning C **31**, 6, 958-1114.
- Jordan, A.J. and D. Russel (eds) (2014) *Embedding an Ecosystems Services Approach? The Utilisation of Ecological Knowledges in Decision Making*. Environment and Planning C, **32**, 2, 192-340.
- Jordan, A.J. and Huitema (eds) (2014) *Innovations in Climate Policy: The Politics of Invention, Diffusion and Evaluation*. Environmental Politics (in press)
- Jordan, A.J. and Huitema (eds) (2014) *Climate Policy Innovation: Sources, Patterns and Effects*. Global Environmental Change (in press).

UEA Books

- Bauer, M., A.J. Jordan, C. Green-Pedersen and A H  ritier (eds.) (2012) *Dismantling Public Policy: Preferences, Strategies and Effects*. Oxford University Press: Oxford, pp 225 + Index. ISBN 9780199656646.
- Jordan, A.J. and C. Adelle (2012) *Environmental Policy in the European Union: Contexts, Actors and Policy Dynamics* (3e). Routledge: London.
- He, Y., Pappenberger, F., Manful, D., Cloke, H., Bates, P., Wetterhall, F., Parkes, B. (2013) *Flood Inundation Dynamics and Socioeconomic Vulnerability under Environmental Change* Climate Vulnerability: Understanding and Addressing Threats to Essential Resources, **5** pp. 241 – 255
- Wurzel, R.K., Zito, A.R. and A.J. Jordan (2013) *Environmental Governance in Europe: A Comparative Analysis of New Environmental Policy Instruments*. Edward Elgar: Cheltenham. 285pp + Index, ISBN 9781849804660.

UEA Policy reports

- Russell, D., Jordan, A. and Turnpenny (2014) Written memorandum by Dr. Russel et al. In: House of Commons, Environmental Audit Committee (2014) An Environmental Score-card. Session, 2014-15, 5th Report, HC Paper 215. The Stationery Office: London.
- Jordan, A.J. (2014) What has the EU ever done for the UK environment? The ENDS Report, 472, June, page 10.
- Jacob, K., J. Ferretti, A. Guske, J. Turnpenny, A.J. Jordan and C. Adelle (2012) Sustainability in Impact Assessments: A Review of Impact Assessment Systems in Selected OECD Countries and the European Commission. SG/SD(2011)6/FINAL. 21 February 2012.
- Jordan, A.J. D. Benson, T. Rayner and C. Adelle (2014) Tyndall Centre for Climate Change Research. In: Her Majesty's Government (2014) Review of the Balance of Competences Between the UK and the EU, List of Evidence, Environment and Climate Change. HMG: London, pp. 782-99.
- Russel, D., Turnpenny, J., Jordan, A., Bond, A., Sheate, W., & Adelle, C. (2014) UK National Ecosystem Assessment Follow-on. Work Package Report 9: Embedding an Ecosystem Services Framework in appraisal: Key barriers and enablers. UNEP-WCMC, LWEC, UK.

Fudan (Web of Science)

- Wang, Cuicui; Chen, Renjie; Kuang, Xingya; Duan, Xiaoli; Kan, Haidong (2014). Temperature and daily mortality in Suzhou, China: A time series analysis. *The Science of the total environment*,466-467,985-90.
- Chen, Renjie; Zhou, Bin; Kan, Haidong; Zhao, Bin (2013). Associations of particulate air pollution and daily mortality in 16 Chinese cities: An improved effect estimate after accounting for the indoor exposure to particles of outdoor origin *ENVIRONMENTAL POLLUTION*,182,278-282.
- Meng, Xia; Ma, Yanjun; Chen, Renjie; Zhou, Zhijun; Chen, Bingheng; Kan, Haidong (2013). Size-Fractionated Particle Number Concentrations and Daily Mortality in a Chinese City *ENVIRONMENTAL HEALTH PERSPECTIVES*,121,1174-1178.
- Meng, Xia; Wang, Cuicui; Cao, Dachun; Wong, Chit-Ming; Kan, Haidong (2013). Short-term effect of ambient air pollution on COPD mortality in four Chinese cities *ATMOSPHERIC ENVIRONMENT*,77,149-154.
- Chen, Renjie; Wang, Cuicui; Meng, Xia; Chen, Honglei; Thach, Thuan Quoc; Wong, Chit-Ming; Kan, Haidong (2013). Both low and high temperature may increase the risk of stroke mortality. *Neurology*,81,1064-70.
- Wang Zong Shuang; Chen Ren Jie; Wu Ji Rao; Kan Hai Dong; Wu Gang; Wu Xue Fang (2013). Short-term Effects of Air Pollution on Mortality in a Heavily Polluted Chinese City *BIOMEDICAL AND ENVIRONMENTAL SCIENCES*,26,671-674.
- Wang, Xi; Chen, Renjie; Meng, Xia; Geng, Fuhai; Wang, Cuicui; Kan, Haidong (2013). Associations between fine particle, coarse particle, black carbon and hospital visits in a Chinese city *SCIENCE OF THE TOTAL ENVIRONMENT*,458,1-6.
- Wang, Lin; Du, Huanhuan; Chen, Jianmin; Zhang, Min; Huang, Xiaoying; Tan, Haobo; Kong, Lingdong; Geng, Fuhai (2013). Consecutive transport of anthropogenic air masses and dust storm plume: Two case events at Shanghai, China *ATMOSPHERIC RESEARCH*,127,22-33.
- Zha, Shuping; Zhang, Shuanqin; Cheng, Tiantao; Chen, Jianmin; Huang, Guanghan; Li, Xiang; Wang, Quanfang (2013). Agricultural Fires and Their Potential Impacts on Regional Air Quality over China *AEROSOL AND AIR QUALITY RESEARCH*,13,992-1001.
- Li, Ling; Chen, Jianmin; Wang, Lin; Melluki, Wahid; Zhou, Hourong (2013). Aerosol single scattering albedo affected by chemical composition: An investigation using CRDS combined with MARGA *ATMOSPHERIC RESEARCH*,124,149-157.
- Chen, Renjie; Peng, Roger.; Meng, Xia; Zhou, Zhijun; Chen, Bingheng; Kan, Haidong (2013). Seasonal variation in the acute effect of particulate air pollution on mortality in the China Air Pollution and Health Effects Study (CAPES) *SCIENCE OF THE TOTAL ENVIRONMENT*,450,259-265.
- Chen, Renjie; Zhang, Yuhao; Yang, Chunxue; Zhao, Zhuohui; Xu, Xiaohui; Kan, Haidong (2013). Acute Effect of Ambient Air Pollution on Stroke Mortality in the China Air Pollution and Health Effects Study *STROKE*,44,954-960.
- Leng, Chunpeng; Cheng, Tiantao; Chen, Jianmin; Zhang, Renjian; Tao, Jun; Huang, Guanghan; Zha, Shuping; Zhang, Meigen; Fang, Wen; Li, Xiang; Li, Ling (2013). Measurements of surface cloud condensation nuclei and aerosol activity in downtown Shanghai *ATMOSPHERIC ENVIRONMENT*,69,354-361.

- Ge Wen Zhen; Xu Feng; Zhao Zhuo Hui; Zhao Jin Zhuo; Kan Hai Dong (2013). Association Between Diurnal Temperature Range and Respiratory Tract Infections BIOMEDICAL AND ENVIRONMENTAL SCIENCES,26,222-225.
- Chen, Renjie; Wang, Xi; Meng, Xia; Hua, Jing; Zhou, Zhijun; Chen, Bingheng; Kan, Haidong (2013). Communicating air pollution-related health risks to the public: An application of the Air Quality Health Index in Shanghai, China ENVIRONMENT INTERNATIONAL,51,168-173.
- Geng, Fuhai; Hua, Jing; Mu, Zhe; Peng, Li; Xu, Xiaohui; Chen, Renjie; Kan, Haidong (2013). Differentiating the associations of black carbon and fine particle with daily mortality in a Chinese city ENVIRONMENTAL RESEARCH,120,27-32.
- Meng, Xia; Zhang, Yuhao; Zhao, Zhuohui; Duan, Xiaoli; Xu, Xiaohui; Kan, Haidong (2012). Temperature modifies the acute effect of particulate air pollution on mortality in eight Chinese cities SCIENCE OF THE TOTAL ENVIRONMENT,435,215-221.
- Chen, Renjie; Samoli, Evangelia; Wong, Chit-Ming; Huang, Wei; Wang, Zongshuang; Chen, Bingheng; Kan, Haidong (2012). Associations between short-term exposure to nitrogen dioxide and mortality in 17 Chinese cities: The China Air Pollution and Health Effects Study (CAPES) ENVIRONMENT INTERNATIONAL,45,32-38.
- Chen, Renjie; Kan, Haidong; Chen, Bingheng; Huang, Wei; Bai, Zhipeng; Song, Guixiang; Pan, Guowei (2012). Association of Particulate Air Pollution With Daily Mortality AMERICAN JOURNAL OF EPIDEMIOLOGY,175,1173-1181.
- Yang, Chunxue; Yang, Haibing; Guo, Shu; Wang, Zongshuang; Xu, Xiaohui; Duan, Xiaoli; Kan, Haidong (2012). Alternative ozone metrics and daily mortality in Suzhou: The China Air Pollution and Health Effects Study (CAPES) SCIENCE OF THE TOTAL ENVIRONMENT,426,83-89.
- Cao, Junji; Xu, Hongmei; Xu, Qun; Chen, Bingheng; Kan, Haidong (2012). Fine Particulate Matter Constituents and Cardiopulmonary Mortality in a Heavily Polluted Chinese City ENVIRONMENTAL HEALTH PERSPECTIVES,120,373-378.
- Cheng, Yuexin; Kan, Haidong (2012). Effect of the Interaction Between Outdoor Air Pollution and Extreme Temperature on Daily Mortality in Shanghai, China JOURNAL OF EPIDEMIOLOGY,22,28-36.

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