Summary research background and contact info. of potential supervisors for the GW4 NERC DTP with interests in the Climate Change/Impacts and Atmosphere-Ocean-Ice Themes

June 2014

Bristol

Alexandre Anesio is a Reader in Biogeochemistry. He has a degree in Biology/Ecology (Rio de Janeiro - Brazil) and a PhD in Limnology/Microbial Ecology (Lund - Sweden), which focused on photochemistry and microbial utilisation of organic carbon in lakes. During the last 12 years, he has combined biogeochemical and molecular approaches to demonstrate that microbial activity at the surface of glaciers and ice sheets are responsible for significant carbon and nitrogen fixation with implications for biogeochemical cycles at local and global scales. He has also demonstrated the links between microbial growth and albedo changes at the surface of glaciers and ice sheets, identifying microbial growth on ice as an important regulating factor of ice sheet wastage. Current projects include the investigation of the succession of microbial communities and biogeochemical processes of Arctic soils in recently deglaciated areas and the interactions between viruses and bacteria in cold environments.

Specific areas of expertise: 1) polar and alpine microbiology; 2) microbial ecology; 3) microbial diversity; 4) virus-bacteria interactions; 5) glacial biogeochemistry.

Publications: http://www.researcherid.com/rid/A-7597-2008

Web page: http://www.bristol.ac.uk/geography/people/person/alexandre-m-anesio/overview.html

Contact**:** a.m.anesio@bristol.ac.uk, tel: 0117 928 7436.

Sandra Arndt is a lecturer in the School of Geographical Sciences at the University of Bristol. She has a degree in environmental sciences (Universitaet Oldenburg, Germany) and a PhD in Geosciences/Geochemistry (Utrecht University, The Netherlands). Her research focuses on the development and application of models that are designed to advance our understanding of global biogeochemical dynamics and elucidate the environmental controls on past, present and future carbon cycling and climate. She is particularly interested in the diagenetic transformations in marine sediments on different spatial and temporal scales and their impact on global biogeochemical cycles and climate. In addition, she also studies the dynamics of carbon and nutrients along the land-ocean continuum and their influence on global biogeochemical cycles and climate. Current projects include developing efficient diagenetic moduls for Earth system models; exploring the influence of organic matter sulfurization on Cretaceous biogeochemical cycles and climate; investigating the link between organic matter composition and reactivity; identifying the main drivers of early diagenetic carbonate precipitation; quantifying estuarine carbon and nutrient fluxes on a global scale.

Specific areas of expertise: Early Diagenesis; Land-Ocean Continuum; Ocean Carbon Dynamics; Paleoclimate; Deep Biosphere; Biogeochemical Modeling (e.g. early diagenesis, estuary, Earth Ssystem)

More information is available at:

http://www.bristol.ac.uk/geography/people/sandra-arndt/index.html

Contact: s.arndt@bristol.ac.uk +44 (**0**) 117 954 5978

Jonathan Bamber is professor of physical geography and Director of the Bristol Glaciology Centre. He has a degree in physics (Bristol) and a PhD in glaciology/remote sensing (Cambs), which focused on radio echo sounding of Svalbard glaciers and the dielectric properties of ice. He has >30 years experience in the analysis of airborne & satellite data sets from the polar regions, specialising in the use of radar/laser altimetry and microwave remote sensing over the Greenland and Antarctic ice sheets and in combining these data with models of the cryosphere-climate system. He is a member of the Global Geodetic Observing System Science Team and NERC Panel Chair for Panel A (glaciology, geology). He has also worked on regional climate modelling of the polar regions and Himalaya using HadRM3 and on Arctic sea ice/atmosphere feedbacks. Current projects include Antarctic mass balance using a suite of satellite observations and Bayesian Hierarchical modelling of 4-D data sets; Himalayan glacier response to climate change and water resources impacts; Antarctic grounding lines from CryoSat 2, Greenland bedrock properties from ice penetrating radar; Arctic ice cap mass balance for satellite and model data.

Specific areas of expertise: 1) satellite and airborne remote sensing of snow, ice, topography and large water bodies; 2) laser and radar altimetry; Synthetic Aperture Radars; 3) digital elevation models; 4) glaciology: Greenland, Antarctica; 5) geodesy (general); 6) polar climatology including Arctic sea ice; 7) sea level response to ice mass changes

Publications: http://www.researcherid.com/rid/C-7608-2011

Web page: http://www.bris.ac.uk/geography/people/jonathan-l-bamber/overview.html

Contact: j.bamber@bristol.ac.uk, tel: 0117 331 4129.

Patricia Sanchez-Baracaldo is a Royal Society Dorothy Hodgkin research fellow in the School of Geographical Sciences. She is part of both the climate change and glaciology research groups. She has a degree in Biology (Los Andes) and a PhD from the University of California at Berkeley. She has over 15 years experience as an evolutionary biologist and has worked on a range of subjects ranging from plant evolution, molecular ecology, and microbiology. Her research on cyanobacteria has shown that oxygenic photosynthesis first evolved in freshwater environments; the colonization of marine environments occurred independently at different times in Earth's history. Her current research aims to understand the impact cyanobacteria (oxygenic photosynthesis) had on global biogeochemical cycles such as oxygen, nitrogen and carbon during the early Earth. She is also interested in understanding the evolution of cyanobacteria to cold extreme environments. Her interdisciplinary approach bridges between evolutionary biology and biogeochemical cycles to explain the early co-evolution of life and the Planet.

Specific research of research: 1) Co-evolution of photosynthesis and the biosphere, 2) Origin and evolution of photosynthetic eukaryotes, 3) Nitrogen cycling, 4) Evolution and adaptation of cyanobacteria to cold environments, and 5) Link between evolution of microbes and biogeochemical cycling.

Publications:http://www.bristol.ac.uk/geography/people/patricia-sanchez-baracaldo/publications.html

Webpage: http://www.bristol.ac.uk/geography/people/patricia-sanchez-baracaldo/index.html

Contact: p.sanchez-baracaldo@bristol.ac.uk Tel: (0117) 3318352

Paul Bates is a hydrologist by background, but has widespread research interests in risk, resilience, uncertainty, governance and decision-making in relation to natural hazards and global water issues. Paul's main science contribution has been to improve the prediction of flood inundation through the development of new computer models, the use of data from new airborne, satellite and ground sensors and through the better characterization of risk and uncertainty. He is Head of the School of Geographical Sciences and Professor of Hydrology at the University of Bristol. He is also the former Director of the University's Cabot Institute. He has held Visiting Scientist positions at Princeton University, Dept. of Civil Engineering, Laboratoire National d'Hydraulique, Paris and the EU Joint Research Centre, Ispra, Italy, and undertakes significant International collaboration, including work with the French National Space Agency (CNES), NASA, Instituto Nacional de Pesquisas da Amazônia in Brazil, as well as numerous universities in the US and Europe. He is a member of the Willis Research Network, the world's largest partnership between academia and the insurance industry which aims to help society better manage environmental risks at all scales from local to global. He is a member of the Mission Science Team for the NASA/CNES Surface Water Ocean Topography satellite mission. His most important research contribution to date has been the development of the algorithms underpinning the LISFLOOD-FP hydraulic model. This has led to fundamental advances in our knowledge of the fluid dynamics of floodplain flow and the development computationally efficient numerical methods to solve the resulting equations. The LISFLOOD-FP algorithms have been placed in the public domain as a shareware download and is currently in use at > 300 institutions globally.

Specific areas of expertise: Hydraulic Modelling; Uncertainty; Risk; Remote Sensing and Data Assimilation in Hydrodynamics, Fluid Dynamics of Floodplain Flows; Model-data comparison; Natural Hazards; Resilience; Decision Making

Publications: http://www.researcherid.com/rid/C-8026-2012

Web page: http://www.bristol.ac.uk/geography/people/paul-d-bates/

Contact: paul.bates@bristol.ac.uk; +44-(0)117-928-9108

Jon Bridle is a Senior Lecturer in Biology. He has a degree in Environmental Biology (Manchester), and a PhD in Evolutionary Genetics (Leeds). His research addresses two key questions: (1) To what extent can genetic variation within populations and species buffer the effects of climate change on biodiversity and ecosystem services?; (2) If local adaptation is crucial for population persistence, how should populations be managed to maximise evolutionary potential in key ecological traits? JB's group investigates the genetics of ecologically-relevant traits in insects and flowering plants, and their effect on fitness and interactions between species in the field. He has >15 years of experience in predicting ecological and evolutionary responses to environmental change, involving interactions with national, European and international scientific working groups groups such as DIVERTAS that advise on environmental policy. He is a member of NERC Peer Review College, and sits on the Steering Committee for the Cabot Institute, as well as being responsible for Public Engagement in Biology at Bristol. He also interacts with key NGOs and stakeholders through the Bristol Natural History Consortium Steering Committee.

Current projects*:* (1) Evolutionary responses to climate change in European butterflies at their Northern and Southern ecological margins; (2) Testing limits to local adaptation in rainforest *Drosophila* along altitudinal gradients; (3) The effect of climate change on phenology, particularly in pollination networks and habitat connectivity in time and space.

Specific areas of expertise: (1) Ecological genetics and the genomics of life history and mating traits; (2) Models of maximum rates of evolution at ecological margins; (3) Population genetic analysis of local adaptation; (4) Empirical studies of selection in natural populations.

Publications:http://research-information.bristol.ac.uk/en/persons/jon-bridle(3058fabb-1464-4e3b-ad5b-018f36517010).html

Webpage: http://www.bristol.ac.uk/biology/people/jon-r-bridle/

Contact: jon.bridle@bristol.ac.uk; Tel (office): 0117 928 7482

Heather Buss is a Lecturer in Biogeochemical Weathering in the School of Earth Sciences at the University of Bristol. She has BS and PhD degrees (Penn State) in Geosciences with concentrations in aqueous geochemistry and biogeochemistry. Prior to coming to Bristol, she was the Director of the Luquillo (Puerto Rico) Water Energy and Biogeochemical Budgets program for the US Geological Survey. She is involved in Critical Zone Observatory networks in the US and EU and is a co-investigator at the Luquillo CZO. Her research centres on the mechanisms and rates of the chemical and physical breakdown of rocks and minerals, specifically how these processes vary across a landscape and under different environmental conditions, how they impact mineral nutrient cycles, and the feedbacks between mineral weathering and microorganisms in soils. Current projects include determining the rates and mechanisms of weathering along deep bedrock-soil interfaces and the use of Mg and Li isotopes to trace biogeochemical processes in the critical zone.

Specific areas of expertise: 1) aqueous and soil geochemistry; 2) geochemical kinetics; 3) geomicrobiology; 4) metal stable isotopes; 5) deep soils; 6) electron microscopy; 7) tropical rock and soil weathering

Publications: http://www.researcherid.com/rid/M-1693-2013

Web page: http://www.bristol.ac.uk/earthsciences/people/person/heather-l-buss/overview.html

Contact: h.buss@bristol.ac.uk, tel: 0117 954 5401

Martin Genner is a Senior Lecturer in the School of Biological Sciences. He studied Marine Biology at the University of Liverpool, and studied for a PhD in fish ecology/evolution at the University of Southampton. His research interests relate to how environmental variability drives changes in species composition and abundance over ecological and evolutionary timescales. He has specific interests in two study systems, the marine fish assemblage of the European continental shelf, and the freshwater fish assemblage of East/Central Africa. Current projects include the effects of future climate change on fish assemblages of the European continental shelf, application of molecular methods to aid conservation of threatened African fishes, and the development of Tanzanian crater lake fishes as model systems for the study of vertebrate speciation. Specific areas of expertise: 1) analyses of long-term spatially-explicit ecological data, 2) predictive modelling of future species distributions, 3) phylogenetic approaches for reconstructing the evolutionary history of species/populations, 4) population genetic approaches for measuring gene-flow, 5) biodiversity and ecology of European fishes, 6) biodiversity and ecology of African freshwater fishes.

Publications: http://scholar.google.co.uk/citations?user=aqtuzqsAAAAJ&hl=en

Web page: http://www.bristol.ac.uk/biology/people/martin-j-genner/overview.html

Contact: m.genner@bristol.ac.uk, tel: 0117 928 9827.

Kate Hendry is a Royal Society University Research Fellow with an interest in developing and implementing novel geochemical archives for past nutrient cycling in marine systems, and understanding how nutrient cycling and distribution relates to present and past climatic change. KH carried out her postgraduate studies at Oxford University on coastal biogeochemistry, partly funded by the British Antarctic Survey/Antarctic Funding Initiative, including three field seasons at Rothera Research Station. Her PhD work focused on the analysis of trace metals in seawater, brines and biogenic materials from a seasonally sea-ice covered region. She continued on a NERC PDRA appointment at Oxford University (2008-2009), before being appointed as a postdoctoral scholar at Woods Hole Oceanographic Institution, US (2009-2011). Her more recent studies have focused on novel silicon isotope proxies, biomineralisation in sponges and diatoms, sponge taxonomy and biogeography, and a continuing an interest in high-latitude trace metal cycling. She is also a board member of Antarctic Science Ltd (from 2012), a committee member of the Geochemistry Group for the Geological Society (from 2014), and a member of the NERC Peer Review College (from 2012).

Specific areas of expertise: 1) isotope analysis by plasma mass spectrometry; 2) chemical oceanography; 3) palaeoceanography; 4) Southern Ocean biogeochemical cycling; 5) biogenic silica biomineralisation.

Publications: http://www.researcherid.com/rid/E-4793-2011

Web page: http://www.bristol.ac.uk/earthsciences/people/kate-r-hendry/index.html

Contact: K.Hendry@bristol.ac.uk

Alistair Hetherington is Melville Wills Professor of Botany at the University of Bristol. He was an undergraduate in St Andrews (Botany) and remained there for a PhD where he investigated the responses of plants to reduced oxygen. His primary focus is understanding how plants respond to changes in their environment and his work is centred on investigating how the aperture of the pores on the leaf surface known as stomata respond to changes in environmental variables. He is also interested in how changes in the environment control the number of stomata that develop on the surfaces of leaves.

His laboratory has expertise in cell physiology, signal transduction, molecular and cell biology. Techniques used include infrared thermal imaging, and confocal and conventional light microscopy. Current projects include identifying genes involved in 1) guard cell carbon dioxide signalling 2) guard cell responses to changes in atmospheric relative humidity 3) light-induced stomatal opening and 4) the role of the cuticle in the control of stomatal development in cereals.

Publications: http://www.bristol.ac.uk/biology/people/alistair-m-hetherington/publications.html

Web page: http://www.bristol.ac.uk/biology/people/alistair-m-hetherington/index.html

Contact: Alistair.hetherington@bristol.ac.uk

Ed Hornibrook is a biogeochemist specialising in the study of biosphere-atmosphere exchange of the trace gases methane (CH_4), carbon dioxide (CO_2), and nitrous oxide (N_2O). My research focuses on how these gases are produced and consumed in natural and anthropogenic environments, and the rates and mechanisms by which they are exchanged with the atmosphere. Stable isotopes are used in this work to 'fingerprint' trace gas sources and to investigate biophysical and geochemical processes. The stability of organic matter in the biosphere and its sensitivity to environmental change figure prominently in my research because of their links to trace gas cycles.

Ed.Hornibrook@bristol.ac.uk, 0117- 954 5404

Antonia Layard is Professor of Law. She has a BA, LLM and DPhil in Law (Oxford, LSE, Oxford) as well as a MPA/MPH in environmental policy and public health, specialising in environmental science (Columbia). Her work focuses on legal place-making and the creation of sustainable cities, although she also (through her PhD) has experience of working on regulatory toxicology and air pollution. Antonia is an academic member of the ESRC and the AHRC, on the Editorial Board of the Journal of Law and Society and has been co-opted onto the Socio-Legal Studies Association Executive Board.

Specific areas of expertise: (1) the regulatory context of climate change and air pollution; (2) sustainable urbanism, particularly the legal production of cities; and (3) sustainable neighbourhoods and local-placemaking.

Web page: http://www.bristol.ac.uk/law/people/antonia-layard/index.html

Contact: antonia.layard@bristol.ac.uk, tel 0117 954 5339

Dr Michael RF Lee has expertise in animal nutrition and livestock systems. He works closely with the Veterinary team at the University of Bristol and has had experience on numerous research grants in the area of grazing systems, feed quality and associated links with animal performance and quality of the final product. This work involved basic research under a BBSRC Institute Strategic Programme Grant at his previous employer IBERS investigating the plant-microbe ruminal interactome. Specifically how plant enzymes influence microbial metabolism in the rumen to improve nutrient use efficiency, limit green-house gas production and increase product quality. He also has experience with more applied research (Defra, Levy Boards) and working with industry on TSB grants associated with animal nutrition research. Dr Lee has authored 162 peer-reviewed papers and abstracts specialising on the impact of plant traits on animal performance, product quality and the role of ruminants in sustainable food production. Dr Lee has worked on quality traits associated with silage production, the impact of pathogens in livestock health and recently a Nature article on steps towards securing food security through sustainable livestock systems. He is currently a reader in Sustainable Livestock Systems and Food Security at the University of Bristol, School of Veterinary Science. He also holds a joint research position at Rothamsted Research North Wyke supported by a National Capabilities Research Grant (BBSRC) to carry out research on the North Wyke farm platform into sustainable grazing systems for ruminant livestock.

Specific areas of expertise: 1) livestock nutrition and production systems, 2) reducing emissions from livestock systems, 3) product quality of livestock products.

Andrew Orr-Ewing is Professor of Physical Chemistry, with broad interests in photochemistry and spectroscopy including applications to atmospheric science. He has a degree in Chemistry and DPhil in Physical Chemistry from the University of Oxford. His group has developed cavity ring-down spectroscopy (CRDS) instruments operating at wavelengths from the mid infra-red to the ultraviolet for measurement of trace atmospheric constituents such as volatile organic compounds, NO_2 and halogen oxides. He is currently exploring the use of IR spectroscopy for isotope ratio determination in gases such as methane and nitrous oxide. Laboratory based studies of photochemistry include measurement of quantum yields for photoproducts of formaldehyde and organic nitrates, and ongoing studies of the rates of reaction of Criegee intermediates from ozonolysis of alkenes (with Prof D.E. Shallcross). In collaboration with Prof J.P. Reid, he applies single-particle trapping and CRDS to the study of optical, physical and chemical properties of atmospheric aerosol.

Specific areas of expertise: (1) Atmospheric chemistry; (2) Molecular spectroscopy and photochemistry; (3) Cavity ring-down and cavity enhanced absorption spectroscopy; (4) Chemical reaction kinetics; (5) Laboratory studies of atmospheric aerosol.

Publications: http://www.bristoldynamics.com/publication-author/professor-andrew-orr-ewing/

Web page: http://www.bristoldynamics.com/

Contact: a.orr-ewing@bristol.ac.uk, tel: 0117 9287672

Rich Pancost is Professor of Biogeochemistry in the School of Chemistry and Director of the Cabot Institute. He has a degree in Geology (Case Western Reserve University) and a PhD in Geosciences (Penn State University). For over 20 years, he has studied how organisms adapt to environmental conditions and how this generates molecular and isotope signatures that can be preserved in rocks for hundreds of millions of years. Using these tools, he has investigated biogeochemical processes in a wide variety of ancient and modern environments. This research is inherently interdisciplinary, and Rich typically works with those employing alternative geochemical approaches, microbiologists or earth system modellers. In 2013, Rich became Director of the Cabot Institute which engages interdisciplinary approaches to address the major environmental challenges of the 21st century, from understanding the complex biogeochemical changes occurring in the Earth system to ensuring our food and water security. He is a Geochemical Fellow and holds an Advanced ERC award and a RS Wolfson Research Merit award. He serves on the Editorial Board of Geochimica Cosmochimica Acta as well as several other advisory boards as Director of the Cabot Institute (i.e. All Parliamentary Party Group on Climate Change). Current projects include reconstructing past hyrological and biogeochemical change during greenhouse climates; constraining the drivers of past ocean anoxia; and evaluating how wetland methane cycling responded to past changes in the Asian monsoon.

Specific areas of expertise: 1) development of new biomarker proxies for past climatic, environmental and biotic change; 2) reconstruction of past temperature and pCO_2 and determination of Earth system sensitivity; 3) catchment to sea processes and their role in the global carbon cycle; 4) the microbial signature of methanogenesis and methanotrophy as well as determining how methane cycling responds to rapid global warming; 5) the role of organic matter as a driver of redox processes, such as arsenic mobilisation; 6) geomicrobiology of extreme environments.

Web page: http://www.bris.ac.uk/chemistry/research/ogu

Contact: r.d.pancost@bristol.ac.uk, tel: 117 331 7244.

Ian Parkinson is a reader in geochemistry in the School of Earth Sciences at the University of Bristol and a member of the Bristol Isotope Group. He has degree in Geology (Notts.) and a Ph.D. in geochemistry (Durham). He has 20 years experience in using isotope and trace element geochemistry to quantify a variety of geological problems. Current interests include applying novel isotope techniques to understand the geochemical cycle of a number of elements (Cr, Sr and Os) in the modern oceans and to exploring how variations in past seawater chemistry are linked to weathering and climate change. Past seawater chemistry is primarily evaluated using carbonate samples (foraminifera, coccolithospores and ooids) and quantification of these proxies involves empirical and experimental studies of isotope/element fractionation between carbonates and seawater. He has also worked on developing geochemical models that link changes in riverine flux and carbonate precipitation to changes in seawater chemistry over interglacial/glacial timescales.

Specific areas of expertise: 1) isotope and trace element geochemistry; 2) thermal ionisation mass-spectrometry; 3) multi-collector inductivelycoupled- plasma mass-spectrometry; 4) development of proxies for understanding changes in seawater chemistry; 5) modelling of geochemical cycles in the oceans.

Publications: http://research-information.bristol.ac.uk/en/persons/ian-jparkinson(

5aadf4bf-d687-4422-bf73-558838b5f2b4)/publications.html

Web page: http://www.bristol.ac.uk/earthsciences/people/ian-jparkinson/overview.html

Contact: ian.parkinson@bristol.ac.uk, tel: 0117 954 3300.

Tony Payne is Professor of Glaciology in Bristol. He is a Lead Author on the Sea level chapter of the Fifth Assessment Report of the IPCC with specific responsibility for ice-sheet projections. He also acted as a contributing author on ice-sheet modelling for the Third (2001) Fourth (2007) Assessment Reports. He was a work package leader in the €10M EU project ice2sea, which aimed to predict the contribution of ice sheets and glaciers to global sea level over the next 200 years and involved 24 European and international partners. His projection work package involved eight partners and had over a quarter of the overall budget. He is well-known for his work on numerical modelling of ice sheets, and in particular, understanding the causes for the contemporary thinning of the ice sheets in Greenland and Antarctic and projecting their future contributions to sea level. He also has interests in regional-scale modelling of glaciers, and in coupled ice sheet and climate modelling with application to the understanding of past interglacials, deglaciation and Heinrich Events. Most recently, he has overseen the development of an adaptive-mesh model to handle the migration of ice-sheet grounding lines, and the coupling of this model to the UKESM. He would particularly welcome collaborations focussed on modelling the polar oceans and incorporating uncertainty estimations into projections of future sea-level.

Specific areas of expertise: ice sheet and glacier modelling; sea level projections; coupled icesheet-climate modelling; former ice sheets during glacial and interglacial periods; large-scale numerical modelling;

Publications: http://research-information.bristol.ac.uk/en/persons/a-j-payne%2806c469a1-ef93-4005-b05f-9720908f0408%29/publications.html

Overview: http://research-information.bristol.ac.uk/en/persons/a-j-payne%2806c469a1-ef93-4005-b05f-9720908f0408%29.html

Email: a.j.payne@bristol.ac.uk; telephone: 0117 331 4156

Andy Radford is a Reader in Behavioural Ecology in the School of Biological Sciences. He has a BA in Zoology (Cambridge), an MSc in Biology: Integrative Biosciences (Oxford) and a PhD in Zoology (Cambridge), which focused on conflict resolution and vocal communication in cooperatively breeding birds. His training is as a behavioural ecologist, with 15 years' experience running carefully designed and controlled experimental manipulations on natural populations of birds and mammals. In the last four years, in collaboration with Dr Steve Simpson (Exeter), he has also been researching the impacts of anthropogenic (man-made) noise on wildlife, especially fishes and marine invertebrates. Anthropogenic noise is a global pollutant now receiving increasing research attention after recognition in national and international legislation. Andy's projects in this area include experimental tests of behavioural, physiological and developmental effects, combined with acoustic assessments and, through collaborations, both noise-transmission and individual agent-based modelling. Work is conducted on a range of species, both in aquaria and increasingly at field sites in the UK and overseas (e.g. Australia, French Polynesia, France). Established and burgeoning links with industry, management and policy makers (e.g. Defra, Cefas, Marine Scotland) has resulted in funding, collaborative projects and shared expertise.

Specific areas of expertise: 1) design and implementation of carefully controlled experiments in lab and field settings; 2) behavioural and physiological measurements; 3) bioacoustics in both terrestrial and aquatic environments; and 4) responses of animals to environmental change.

Web page: http://www.bristol.ac.uk/biology/people/andy-n-radford/index.html

Contact: andy.radford@bristol.ac.uk, tel: 0117 9288246.

Jonathan Reid is professor physical chemistry, an EPSRC Leadership Fellow and is Director of the Bristol Aerosol Research Centre (BARC) based in the School of Chemistry. He has MSc degree in chemistry (University of Oxford) and a DPhil in energy transfer in gases and liquids (Oxford). He has extensive experience in developing novel single particle techniques for studying microphysical aerosol processes in controlled laboratory experiments using optical and electrodynamic traps. BARC currently operates 12 instruments for probing single aerosol particles and much of the ongoing research is focused on examining the properties and processes that atmospheric aerosol undergo. JPR was awarded the 2013 Corday-Morgan, the 2004 Marlow and 2001 Harrison Memorial Medals from the Royal Society of Chemistry. Current projects are focussed on examining the thermodynamic and kinetic factors that control the condensation of water on aerosol particles leading to the formation of cloud droplets, the oxidation kinetics of secondary organic aerosol, the optical properties of aerosol and how they evolve in time, and the factors that control the viability of airborne viruses and bacteria.

Specific areas of expertise: 1) Optical properties of aerosol particles and atmospheric optics; 2) Condensation and evaporation kinetics of volatile and semi-volatile components in aerosol including water; 3) Oxidation chemistry of secondary organic aerosol; 4) Ultraviscous and glassy organic aerosol and their phase behaviour; 5) Viability of airborne aerosolised bacteria/viruses; 6) Laboratory based techniques for studying single airborne aerosol particles.

Publications: http://www.chm.bris.ac.uk/~chjpr/Publications.html

Web page: http://www.chm.bris.ac.uk/~chjpr/index.htm

Contact: j.p.reid@bristol.ac.uk, tel: 0117 331 7388

David Richards is a Senior Lecturer at the University of Bristol, principally interested in the nature and timing of past climate change, focussing on the Quaternary period. He works on a wide range of deposits, especially stalagmites from caves, but also bone, coral and sediments, to obtain high-resolution records of past temperature, sea levels, vegetation change, faunal evolution. He collected an important suite of submerged speleothems from the Bahamas during his PhD and worked at the University of Minnesota with Larry Edwards and colleagues to provide some of the first high-precision U-Th analysis on speleothems for past sea levels. A focus on isotope dating techniques has continued and he is part of ongoing efforts to (1) calibrate the INTCAL 14C curves and (2) facilitate international U-Th inter-comparison project (with Univ. Oxford and NERC Isotope Geosciences). He is a founding editor of Quaternary Geochronology (from 2006).

Building on expertise in sea levels, cave deposits, karst landforms and geochronology, he now works on a Leverhulme project focussing on the timing of faunal evolution of deer on Mediterranean islands in collaboration with the Natural History Museum, London (Lister/Herridge) and colleagues on Sicily, Crete and Malta. This work is a continuation of a successful NERC grant (2009-2013) investigating dwarf elephant species. He is also interested in climate change and landscape evolution, taking advantage of U-Pb techniques that are under development with colleagues from NERC Isotope Geosciences, Keyworth.

Specific areas of expertise: U-Th, 14C and other dating techniques; modelling 14C in the earth system. Quaternary sea level change; chronological constraints and paleoclimate records from cave deposits.

Publications: http://www.researcherid.com/rid/B-7298-2008

Web page: http://www.bris.ac.uk/geography/people/david-a-richards/overview.html

Contact: david.richards@bristol.ac.uk, tel: 0117 9289828.

Matt Rigby is a NERC Advanced Research Fellow in the School of Chemistry, University of Bristol. He was previously a Research Scientist at the Massachusetts Institute of Technology, where he moved after completing his PhD in Atmospheric Physics at Imperial College London in 2008. Matt has written over 25 publications in subjects ranging from global trends in synthetic greenhouse gases to measurements of urban carbon dioxide. He is particularly recognised for his expertise in ÒinverseÓ modelling of atmospheric trace gas emissions using atmospheric measurements and chemical transport models. Matt is co-I and work package leader of the NERC-funded Global And Uk Greenhouse gas Emissions (GAUGE) consortium, which aims to quantify UK greenhouse gas emissions, and a member of the Advanced Global Atmospheric Gases Experiment (AGAGE), a global network that measures the atmospheric trends of over 40 greenhouse gases and ozone depleting substances.

Specific areas of expertise: 1) Atmospheric composition and chemistry; 2) Atmospheric chemical transport modelling; 3) Bayesian data assimilation methods; 4) Urban air quality and meteorology.

Publications: http://www.researcherid.com/rid/A-5555-2012

Web page: web.mit.edu/mrigby

Contact: matt.rigby@bristol.ac.uk, tel: 0117 33 17042

Laura F Robinson is a Reader in Geochemistry, with broad interests including ocean and environmental sciences. She did her undergraduate and graduate studies in the UK before moving to Caltech and then the Woods Hole Oceanographic Institution. Returning to the UK in 2011, she now works in the Earth Science Department at Bristol. Her laboratory research takes place in the Bristol Isotope Group, and her lab group will also use the new AMS facility at Bristol. Her field work campaigns include major Oceanographic cruises at high latitudes and equatorial regions. Current research directions include understanding the mechanisms behind the last major deglaciation, studying the controls on deep-water coral habitats and quantifying the rates and fluxes of oceanic processes both today and in the past.

Specific areas of expertise: (1) Marine Chemistry (2) Paleoceanography; (3) low temperature geochemistry (4) proxy development and biomineralisation; (5) deep-sea coral habitats

Publications: http://www.bristol.ac.uk/earthsciences/people/laura-f-robinson/publications.html

Web page: http://www.bristol.ac.uk/earthsciences/people/laura-f-robinson/overview.html

Contact: laura.robinson@bristol.ac.uk

Daniela Schmidt is a Reader in Research at the University of Bristol and the Head of the Global Change research theme within the Cabot Institute. She is an expert in the biotic reactions of calcifiers to climate change both in the modern era and in deep time, including the Paleocene-Eocene Thermal Maximum and the Pliocene. She and her research group exploit the geological and historical record of climate change to inform policy leaders on future climate change impact, in close collaboration with climate modellers, isotope geochemists and material sciences. She was Lead Author in IPCC WGII Ocean systems and the Summary for Policy Makers for the WGII. She has considerable experience of DSDP and ODP related science, both shore-based and as a shipboard participant. Current projected include "Global and local effects of long-term environmental change: A turtle's eye view; Evolution of Carbon Cycle Dynamics (eCCD); The pelagic record of ocean acidification since the beginning of industrialisation; Timing, causes and consequences of the decline in Pliocene pCO_2; Past records of ocean acidification - the Palaeogene hyperthermals).

Specific areas of expertise and interest 1) marine micropaleontology 2) in situ geochemical and structural analysis of biogenic carbonates 3) reaction of marine ecosystems to climate change and ocean acidification, 4) geological and historical ocean acidification events

Publications http://www.bristol.ac.uk/earthsciences/people/daniela-n-schmidt/publications.html

Web page http://www.bristol.ac.uk/earthsciences/people/daniela-n-schmidt/overview.html

Contact d.schmidt@bristol.ac.uk, tel 0117 9545414

Konstantinos Sergakis joined the School of Law in 2013. He holds an LL.B from the National and Kapodistrian University of Athens, an LL.M in International Business Law from University College London and a Ph.D from the University Paris 1 Panthéon-Sorbonne. He is the author of *The Transparency of Listed Companies in EU Law* (*Bibliothèque de l'Institut de Recherche Juridique de la Sorbonne- IRJS Éditions*, 2013). His book has already received the prestigious prize *Prix Solennel André Isoré* by the *Chancellerie des Universités de Paris* under the Presidency of the French Prime Minister as well as the 2011-2012 Special Grant from the Alexander S. Onassis Foundation. In 2013, he was appointed Affiliated Scholar of the Centre for the Law of Business and International Trade (CDACI) of the University of Montreal, Canada. He has participated in numerous international conferences and publishes regularly articles in English and French journals. He is also the editor of a presentation of EU Financial Law of the French Review *Bulletin Joly Bourse* and a permanent contributor to the International Review of Financial Services (RISF).

Specific areas of expertise: 1) Corporate Law; 2) Financial Law; 3) Corporate Governance; 4) Extra-Financial Reporting; 5) Corporate Social Responsibility.

Publications: http://research-information.bristol.ac.uk/en/persons/konstantinos-sergakis(95a6dec3-6d08-4445-bf6c-247aee12e3e0)/publications.html

Web page: http://www.bristol.ac.uk/law/people/konstantinos-sergakis/overview.html

Contact: Konstantinos.Sergakis@bristol.ac.uk, tel: 0117 954 5344.

Martyn Tranter is a low temperature, aqueous geochemist, specialising in biogeochemical reactions in the cryosphere. He also has expertise in worldwide stream and river water chemistry, particularly across North America and Europe, having been a consultant with the US Environmental Protection Agency in their Surface Water Acidification Program. MT has particular expertise in the linkage between hydrological processes and the chemical composition of runoff, the microbial mediation of chemical weathering and the potential of sediment to act as new sources of nutrient in cold environments. He is a formal International Collaborator of the NSF McMurdo Dry Valleys Long Term Ecological Research Program. His contribution to the Program has been to investigate biogeochemical processes on cold polar glacier surfaces, and to ascertain how they may impact on the wider Dry Valley ecosystem. This has stimulated great interest in cryoconite holes and how they may sequester nutrient, mostly in organic phases, since the periodic flushing of these supraglacial environments helps stimulate greater primary production in downstream ecosystems. Chemical processes in cryoconite holes and subglacial lakes are sensitive to interactions with biological and physical processes, which are climatically sensitive.

Specific areas of expertise: 1) low temperature aqueous geochemistry; 2) biogeochemical processes in the climatically sensitive cryosphere; 3) role of glaciers and ice sheets in global biogeochemical cycles.

Publications: http://www.researcherid.com/rid/E-3722-2010

Web page: http://www.bristol.ac.uk/geography/people/person/martyn-tranter/overview.html

Contact: m.tranter@bristol.ac.uk; tel: 0117 928 7871.

Jemma Wadham is Professor in Glaciology, with a background in glacier biogeochemistry and glacier hydrology. Her work has several main themes: 1) Chemical weathering beneath glaciers and ice sheets, 2) Biogeochemical cycling of macro and micro-nutrients and carbon in glacial systems and 3) Development and adaptation of sensing technologies for the access and remote monitoring of extreme icy ecosystems, including Antarctic Subglacial Lakes. She established the Low Temperature Experimental facility in Bristol in 2006 (http://lowtex.co.uk) within the School of Geographical Sciences, University of Bristol. LOWTEX is unique within the UK and one of just a few such facilities globally. It includes facilities for temperature controlled experimental research and biogeochemical analysis of ice, meltwaters and sediments, including 7 walk-in temperature controlled rooms, incubators and re-circulating chiller units, a microbiological genomics laboratory and a full analytical laboratory. It was recently augmented by the BIOGAS facility focused upon the extraction and analysis of biogenic gases in ice, rock and meltwaters. The latter includes a rock crushing facility for simulating glacial erosion and rock fracture. Recent projects include: tracing of meltwater flow

within ice sheets, quantifying and characterizing nutrient export from ice sheets and its downstream impacts on biological productivity and assessing ice sheets as a source of methane gas to the atmosphere. Her work is largely field/laboratory based in the Polar Regions, with most recent work based upon the Greenland and Antarctic Ice Sheets. She is now collaborating extensively with biogeochemical modellers within the School of Geographical Sciences, in order to determine the wider regional and global impacts of biogeochemical processes within glaciers and ice sheets.

Specific areas of expertise: a) field sampling and laboratory analysis of the biogeochemical properties of natural waters b) the role of ice sheets in global biogeochemical cycles, c) chemical weathering in the cryosphere, d) carbon cycling and methane hydrate formation beneath ice sheets, e) chemical sensing, including wireless sensors, in extreme icy ecosystems.

Publications: http://www.researcherid.com/rid/G-3138-2014

Web page: http://www.bristol.ac.uk/geography/people/jemma-l-wadham/

Contact: j.l.wadham@bris.ac.uk, +44(0)117 3314158

Thorsten Wagener is professor of water and environmental engineering and Director of the Water and Environmental Management Research Centre. He holds degrees in civil engineering (Siegen, Delft) and a PhD in the same subject from Imperial College London. His PhD focused on advancing hydrologic predictions in ungauged basins. He has over 15 years of research experience in the area of hydrologic modelling for a wide range of water resources applications. Current projects include the development of new methods for estimating uncertainty and risk in natural hazards, physically-based modelling of catchment scale processes, drought estimation and mitigation, and the integrated assessment of global change on water resources.

Specific areas of expertise: 1) Analysis and modelling of hydrologic systems; 2) risk, sensitivity and uncertainty analysis; 3) diagnostic evaluation of environmental models; 4) hydrologic predictions in data sparse regions; 5) integrated assessment of climate and land use change impacts on water resources; 6) scientific visualisation.

Publications: http://www.researcherid.com/rid/C-2062-2008

Web page: http://www.bristol.ac.uk/engineering/people/person/thorsten-wagener/index.html

Contact: thorsten.wagener@bristol.ac.uk

Matthew Watson is a Reader in Natural hazards. He has a first degree in Chemistry and Masters in Physics from the University of Leicester and a PhD from Cambridge (Remote Sensing of Tropospheric Volcanic Plumes). His research agenda focuses on two questions. Firstly: How do we better quantify emissions from volcanoes in order to understand (a) the information content they transmit from the subsurface, (b) their effects on the local, regional and global environment and (c) the risks they pose to aircraft? Secondly: How can we use volcanoes as natural analogues for large scale intervention to potentially mitigate some of the worst effects of global warming? He leads a diverse research group which has been responsible for several recent advances in:

- instrumentation able to image volcanic emissions over a range of wavelengths including invention of the UV SO_2 camera. The significance of this research is that imagery allows us to separate signatures caused by atmospheric dynamics from those describing volcanic processes whilst providing a two order of magnitude improvement in temporal resolution.
- improvement of detection of volcanic species from satellites. This research facilitates the use of satellite data in aircraft hazard mitigation and provides better source terms for climate and dispersion models.
- understanding the radiative properties and dynamics of solid phase mineral aerosol particularly from the perspective of understanding climate and volcanic ash cloud detection.
- understanding plume chemistry, particularly of S-bearing species allowing anthropogenic climate modulation to be disentangled from anthropogenic contributions.
- responsible innovation of geoengineering technologies

Specific areas of expertise: 1) satellite and ground remote sensing of volcanic emissions, 2) physical volcanology, 3) aviation hazard from volcanic ash, 4) climate engineering, 5) aerosol physics and chemistry

Publications: http://www.volcanicplumes.com/publications

Web page: http://www.volcanicplumes.com

Contact: matt.watson@bristol.ac.uk, tel: 0117 331 5009

Heather Whitney is an ERC Research Fellow in the School of Biological Sciences, University of Bristol. Her primary research focus is plant interactions; how the structure of the plant (particularly the plant surface) at the micro and nano-scale influences biotic (pollinators/herbivores) and abiotic (wettability/temperature) interactions.Currently her two main areas of research currently revolve around 1) the production and impact of iridescence in plants (the manipulation of light by plant structure), and 2) the production of signals by flowers and their perception by bumblebee pollinators. Both these areas of research have opened up new horizons in plant-animal interactions and bee sensory biology. She uses a multidisciplinary approach (encompassing plant development, animal vision and behaviour, biomimetics and physical optics). As part of her work at Bristol, she set up a bee behavioural laboratory in the School of Biological Sciences focusing on the interactions between floral form and bee behaviour, resulting in a wide range of collaborations, one of which (with Prof Daniel Robert) led to the discovery that floral electric fields could be detected by bumblebees. She also works in collaboration with NSQI on how the nano-surface of the plant can be modified to impact on its material properties.

Cardiff

Andreas Artemiou is a lecturer of Statistics in the School of Mathematics at Cardiff University. He has a Ph.D. in Statistics (2010) from the Department of Statistics at Pennsylvania State University. He moved to Cardiff University in September 2013 and before that he was an Assistant Professor of Statistics at Michigan Technological University (2010 -2013) spending 9 months as a New Researcher Fellow on the Statistics and Applied Mathematics Sciences Institute (SAMSI) for the program on "Statistical and Computational Methods for Massive Datastes" . His research interests evolve around dimension reduction. His main interests are supervised dimension reduction methodology for regression problems. He is also working on the philosophical aspects of unsupervised dimension reduction in regression. Moreover, he is utilizing kernel methods and machine/statistical learning methods to improve the existing methodology of dimension reduction. Finally, he is interested in applications of dimension reduction methodology to high-dimensional problems in other sciences, Earth, Ocean and Atmospheric Sciences as well as Biosciences and Engineering being some of them. He has a manuscript in progress with collaborators from the Department of Meteorology at Pennsylvania State University where dimension reduction methodology is applied to Atlantic storm data.

Departmental Website: http://www.cardiff.ac.uk/maths/contactsandpeople/profiles/artemioua.html

Website: http://www.cardiff.ac.uk/maths/subsites/artemiou/

Email: ArtemiouA@cardiff.ac.uk, Tel: +44(0)29 208 70616

Stephen Barker (SB) is a reader in paleoceanography and paleoclimate within the School of Earth and Ocean Sciences at Cardiff University. He has an undergraduate degree in geology (Edinburgh) and a PhD in ocean geochemistry and paleochemistry (Cambridge, thesis title: Planktonic foraminiferal proxies for temperature and pCO$_2$). SB specialises in the production and analysis of high resolution paleoceanographic records spanning various intervals of the Quaternary. Particular interest lies in the mechanisms of so-called abrupt climate change, which involves rapid shifts in the ocean/atmosphere system that can be traced globally (for example were these shifts forced by freshwater from decaying ice sheets or is an internal trigger responsible?). The interplay between abrupt climate change and the transitions between glacial and interglacial state (ultimately paced by changes in Earth's orbit) is also a key interest. SB also works on aspects of the global carbon cycle including glacial-

interglacial CO$_2$ storage, radiocarbon inventories, marine carbon fluxes and carbonate chemistry. Current projects include production of very long records of millennial-scale variability through the Mid- Late Pleistocene and using computer models to understand the role of abrupt climate change in glacial terminations.

Specific areas of expertise: 1) Paleoceanographic proxies (foraminiferal trace metal geochemistry, dissolution indices); 2) Timescales and chronology (radiocarbon, age models, stratigraphy); 3) Time series analysis (pattern analysis, commonality between records); 4) Interactions between ocean, atmosphere and ice on geologically abrupt (decadal to millennial) timescales; 4) Reconstructing paleo-ocean circulation; 5) Marine carbon chemistry (fluxes, storage, dissolution).

Publications: http://scholar.google.co.uk/citations?user=Y8Gq3I4AAAAJ

Web page: http://www.cardiff.ac.uk/earth/academic-staff/dr-stephen-barker/

Contact: barkers@cf.ac.uk phone: 02920 874328

Mike Bruford is Professor of Biodiversity and head of the Organisms and Environment Division in Cardiff School of Biosciences. He is a conservation biologist interested in understand the historical dynamics of animal species, especially those threatened with extinction, using molecular genetic data. He uses whole genome sequencing to establish changes in effective population size in the past and uses these data to infer the effects of climate change on habitat and animal populations using phylogeographic modeling from the late Miocene to the present day. Species studied range from peregrine Holarctic species such as the earthworm *Lumbricus rubellus* to closed canopy rainforest specialists such as the western lowland gorilla, okapi and Bornean orang-utan. He is currently working on methods to detect very recent (Anthropocene) climate-mediated changes in population size in key indicator species for ecosystem health and functioning through the NERC BESS- funded project DURESS. He is a core Panel member of NERC Panel E and the academic lead on the Welsh Governments Biodiversity Evidence Gaps Project. Mike helped to set up a now well-established field station in the Lower Kinabatangan Wildlife Sanctuary, Sabah, Malaysia, which is now run by Cardiff University.

Specific areas of expertise: 1) inferring past demographic processes using genomic data, linking these to climate change; 2) statistical phylogeography; 3) tropical ecosystems research; 4) biodiversity and conservation.

Publications: http://www.researcherid.com/rid/D-3750-2009

Web page: http://www.cardiff.ac.uk/biosi/contactsandpeople/stafflist/a- d/bruford-mike-prof-overview_new.html

Contact: brufordmw@cf.ac.uk, tel: 02920 874312.

José Constantine is a lecturer of geomorphology in the School of Earth & Ocean Sciences of Cardiff University. He has a degree in geological sciences (College of William & Mary, USA) and a PhD in process geomorphology (UCSB, USA), which focused on elucidating the controls on the production and evolution of floodplain lakes. He has >8 years experience in the analysis of river dynamics and evolution as well as in the controls on sediment flux from upland environments. Current projects include an assessment of river dynamics in the Amazon Basin, a quantification of vegetative controls on river habitat change in Borneo, and documentation of climate-change impacts on soil erosion across Great Britain. The latter project involves collaboration with the Met Office in an attempt to integrate a process-based model of soil loss with detailed climate-change modeling scenarios. Initial findings suggest the importance of vegetation in mitigating the effects of climate change, and the future work will investigate the limits of this negative feedback function.

Specific areas of expertise: 1) remote sensing analyses of river behaviour and floodplain development; 2) theoretical assessment of sediment transport dynamics; 3) controls on river habitat evolution; 4) process-based examination of the controls on upland soil loss across spatial and temporal scales.

Publications: http://www.cardiff.ac.uk/earth/academic-staff/dr-jos-constantine/publications/

Web page: http://www.cardiff.ac.uk/earth/academic-staff/dr-jos-constantine/

Contact: constantineja@cardiff.ac.uk, tel: 02920870642.

Eli Lazarus is a lecturer in Earth science in the School of Earth & Ocean Sciences at Cardiff University. He uses the analytical tools of complexity science to examine dynamics of coastal and terrestrial environments, with a particular interest in human activity (including agriculture, hazard mitigation, infrastructure development, and natural resource use) as a distinct process of change in environmental systems. He has experience developing numerical models for dynamical insight, and in converting archival records into geospatial data sets. In His research engages various methodologies, including empirical measurements of geospatial data (e.g. topographic lidar surveys), signal processing (e.g. wavelets and nonlinear timeseries techniques), analysis of archival records and qualitative information, and numerical modelling.

Specific areas of expertise: 1) physical coastal response to climate-driven changes in environmental forcing; 2) landscape response to climate change; 3) numerical modelling; 4) geospatial and timeseries analysis

Publications:http://www.cardiff.ac.uk/earth/academic-staff/dr-eli- lazarus/publications/

Web page:http://environmentaldynamics.wordpress.com/

Email:LazarusED@cardiff.ac.uk Phone: 02920 875 563

Carrie Lear is reader of palaeoceanography at Cardiff University and is the co-Theme Leader for the Biogeochemical Cycles Research Theme in the GW4+ DTP. She has a degree in Earth Sciences (Oxford) and a PhD in palaeoceanography (Cambridge), which pioneered the use of Mg/Ca palaeothermometry in Cenozoic aged samples. Carrie has participated in six research expeditions at sea, collecting both core-top and down-core sediment samples. Current projects include: Evaluating modelled ice sheet hysteresis; A North Atlantic perspective on Earth's Greenhouse-Icehouse Transition; Reconstructing Neogene ice volume and carbon dioxide variations; Carbon cycling across the Mid-Pleistocene Transition; Pleistocene water column structure in the Arctic.

Specific areas of expertise: 1) Cenozoic palaeoceanography, 2) trace metal proxies in biogenic carbonates.

Publications:
http://scholar.google.co.uk/citations?view_op=search_authors&mauthors=carrie+lear&hl=en&oi=ao

Web page: http://earth.subsite.cf.ac.uk/earth/academic-staff/dr-caroline-lear/

Contact: learc@cf.ac.uk, tel: 029 20 879004

Ian Hall is professor of palaeoceanography and is Head of School, School Earth and Ocean Sciences, Cardiff University (from Aug 2014). He has a degree in chemical oceanography and a PhD in biogeochemistry (Southampton/Institute of Oceanographic Sciences). He has >20 years experience in the generation of innovative high-resolution palaeoceaonographic and climate reconstructions. This involves the development, application and integrated analysis of sedimentary (e.g. sortable silt current speed proxy), isotopic (oxygen and carbon) and geochemical proxies (e.g. Pa/Th, Mg/Ca trace-element palaeothermometry). Current projects include: ocean change in the North Atlantic during the Late Holocene (annual to multi-decadal timescales), ice-ocean linkages and abrupt climate change during the last glacial, and the role of Agulhas Leakage in climate variability of the Pleistocene. The latter project includes an IODP leg (SAFARI-702) scheduled for drilling in 2016. He is a director of the Climate Change Consortium of Wales (C3W, http://c3wales.org/), chair of the NERC BOSCORF SC and member of the executive committee of the 'International Marine Process Reconstruction Study' (IMPRESS/IMAGESII) programme.

Specific areas of expertise: 1) applications of palaeoclimate proxy reconstruction; 2) marine sedimentology; 3) past ocean circulation; 4) Late Pleistocene and Holocene climate variability.

Publications: http://www.researchgate.net/profile/Ian_Hall3

Web page: http://www.cardiff.ac.uk/earth/academic-staff/professor-ian-r-hall/

Contact: hall@cardiff.ac.uk, tel: 029 20 875612

Peter Hargrave is a senior lecturer in Physics, and is Director of Innovation and Engagement for the School of Physics & Astronomy. He has over 17 years' experience in designing and building instrumentation for astronomy and Earth observation experiments, particularly satellite-based instrumentation. He has provided hardware for many satellites, including the Herschel Space Observatory, the Planck surveyor, and the James-Webb Space Telescope. He currently leads the Earth observation instrumentation group, and is providing hardware for the MWS (Microwave sounder) instrument on MetOp-SG, and the Feng-Yun-4 satellite. He has been funded by the UK Centre for Earth Observation Instrumentation & Space Technology to undertake a mission study for a novel instrument for observations of ice clouds and precipitation monitoring. Such an instrument will return essential climate variables (Ice Water Path, mean particle size, etc) to constrain global circulation models.

Specific areas of expertise: 1) Design and build of novel instrumentation. 2) Remote sensing techniques – particularly THz. 3) Data analysis & image processing. 4) Radiative transfer modelling.

Publications (incomplete): https://www.astro.cf.ac.uk/contactsandpeople/?page=full&id=167

Web page: https://www.astro.cf.ac.uk/contactsandpeople/?page=full&id=167

Contact: hargravePC@cardiff.ac.uk Tel: 029 2087 6682

Pablo Orozco-terWengel has been recently appointed as lecturer at the School of Biosciences (Cardiff University). He has a B.Sc. honours in Biology (Bogota, COL), a M.Sc. honours in Evolutionary Biology and Systematics (Amsterdam, NL), and is Dr. in Populationg Genetics (Vienna, AUT). His interest is in evolutionary biology and conservation using population genetics. He has experience in general molecular biology laboratory techniques (e.g. DNA extraction, PCR) as well as on the use of molecular markers (e.g. RFLP, AFLP, microsatellites) in both model organisms (i.e. *Drosophila* species) and wildlife (e.g. Andean Bears, Malagasy frogs). Additionally, he has experience in traditional sequencing (Sanger) and next generation sequencing (NGS), as well as in bioinformatics to handle NGS data, and in writing software

required for genomics. He has worked for the past six years in genomics using *Drosophila* and various livestock species to understand local adaptation and the effect of climate change on the genome using whole genome resequencing data.

Specific areas of expertise: 1) population genetics and phylogenetics; 2) bioinformatics; 3) livestock genomics; 4) genomic changes as a response to local adaptation.

Publications: http://www.researcherid.com/rid/D-1527-2011

Web page: http://www.pabloorozcoterwengel.nl/index.htm

Contact: orozco-terwengelpa@cardiff.ac.uk tel: 029 208 75206

Rupert Perkins is a Senior Lecturer in Marine Biosciences at Cardiff University. He has a degree in Environmental Biology (Essex) and a PhD in Aquatic Microbiology focussing on microalgal nutrient limitation. He has over 15 years of experience of working on algal photobiology, primarily using pulse amplitude variable chlorophyll fluorescence. This work has included both freshwater and marine ecosystems, as well as planktonic and benthic food webs and the ecosystem functions of organisms and communities within these systems. Work has included analysis of ice algal photophysiology to identify potential feedback loop controlling Greenland ice sheet (GrIS) albedo, thermal and desiccation stress on rocky shore intertidal microalgal communities, the effects of ocean acidification on coralline macroalgae and their associated microbial communities (UKOARP); hyperspectral imaging of microalgal and macroalgal photophysiology (NERC IoF), and the effects of increased rainfall and temperature on a coastal freshwater lagoon habitat (Cardiff Bay). Previous work has also looked at the important ecosystem function of microalgae in biostabilisation of sediments and hence their role in coastal realignment under the influence of rising sea level and increased storm activity.

Specific areas of expertise: 1) variable chlorophyll fluorescence, 2) algal photophysiology, 3) coastal benthic ecosystems, 4) freshwater food webs, eutrophication and nutrient limitation, 5) microalgal ecosystem function including sediment biostabilisation

Publications: http://scholar.google.co.uk/citations?user=GVNO2QYAAAAJ&hl=en

Web page: http://www.cardiff.ac.uk/earth/academic-staff/dr-rupert-perkins/research/

Contact:perkinsr@cf.ac.uk. 0044 (0)2920 875026

Paul Pearson is professor at the School of Earth and Ocean Sciences, Cardiff University. He has a degree in geology (Oxford) and PhD in micropalaeontology / palaeoclimate (Cambridge). He is interested in extracting climatic information from deep sea cores and sediments. He specializes in evolutionary and geochemical studies of planktonic foraminifera, and what they tell us about the long history of climate change on Earth. He has helped develop new proxies for determining past seawater pH and atmospheric carbon dioxide levels, and hence the history of the greenhouse effect. His

studies range from the Cretaceous period to Recent. Prof Pearson has sailed on several occasions with the Ocean Drilling Program. He has co-ordinated geological exploration and drilling programmes in coastal Tanzania and Java (Indonesia) where excellently preserved samples have been obtained, providing new insights into the history of tropical climate, for instance atmospheric CO_2 levels when the Antarctic ice cap first developed in the early Oligocene. He was contributing author to the Palaeoclimate chapter to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Working Group 1, 2013).

Specific areas of expertise: 1) Foraminifer taxonomy, biostratigraphy, and biomineralization; 2) evolutionary palaeobiology; 3) stable isotope geochemistry; 4) palaeoceanography; 5) Earth history. Publications: http://www.cardiff.ac.uk/earth/academic-staff/professor-paul-pearson/publications/

Web page: http://www.cardiff.ac.uk/earth/academic-staff/professor-paul-pearson/research/

Contact: pearsonp@cardiff.ac.uk, tel: 029 208 74579

Jennifer Pike is a Reader in Cardiff School of Earth and Ocean Sciences and Director of Undergraduate Admissions. She has a degree in Geology (Birmingham) and a PhD in palaeoclimate/palaeoceanography (Southampton) that focussed on reconstructing Late Quaternary ocean-atmosphere interactions in the Gulf of California, using marine diatom assemblages and scanning electron microscope-scale analysis of seasonally-resolved sediments. Her research has since shifted to the high latitudes where she has >15 years experience reconstructing Late Quaternary seasonal-scale ice-ocean-atmosphere interactions in Antarctica and she has also been involved in research into seasonal-scale records of sea ice from the Late Cretaceous Arctic Ocean. More recently, she has been developing the use of diatom silica oxygen isotopes as a proxy for past Antarctic glacial discharge to the coastal ocean. Currently, Jenny is a member of the

NERC Isotope Geoscience Facilities Steering Committee and part of the organising committee for the biennial Polar Marine Diatom Workshop series. She has been a past member of the NERC Peer Review College, Radiocarbon Facility Steering Committee, Secretary of The Micropalaeontological Society and Officer of the Challenger Society for Marine Science. Her on-going research includes: using diatom silica oxygen isotope records to investigate freshwater discharge into the ocean along the Antarctic Peninsula and East Antarctic margin; morphological variation of Antarctic marine diatoms in response to environmental forcing; and investigating the relationship between diatom abundance/evolutionary turnover and large-scale climate events in the Cenozoic Southern Ocean.

Specific areas of expertise: 1) marine diatom taxonomy and ecology; (2) marine diatom silica oxygen isotope analysis; (3) resin embedding of soft-sediments; (4) SEM- scale sediment fabric analysis.

Publications: http://www.researchgate.net/profile/Jennifer_Pike2/publications

Webpage: http://www.cardiff.ac.uk/earth/academic-staff/dr-jenny-pike/

Contact: pikej@cardiff.ac.uk; Tel: 029 2087 5181

Wouter Poortinga is a Reader in environmental psychology at the Welsh School of Architecture and the School of Psychology, Cardiff University. His research interests are in a wide variety of topics regarding human-environment interactions, including environmental risk perception (off climate change and nuclear power), sustainable behaviours and lifestyles, and housing, neighbourhoods and health. He has extensive experience in organising comprehensive surveys of public opinion towards future energy options and climate change, and contributed to a research synthesis of the literature on public attitudes to environmental change. He recently led a UKERC-funded project on public attitudes to nuclear power and climate change in Britain two years after the Fukushima accident. He also examined the role of environmental values and attitudes in household energy use, and contributed to the development of a Welsh environmental attitudes and behaviours segmentation model. Wouter is currently leading examining the health impacts of energy-efficiency improvements in low income neighbourhoods

Specific areas of expertise: 1) environmental risk perceptions; 2) public perception of climate change; 3) attitudes to energy and energy technologies; 4) environmental attitudes and behaviour; 5) health benefits of climate mitigation

Publications: http://www.cardiff.ac.uk/archi/staff/wouter-poortinga-pubs

Webpage: http://www.cardiff.ac.uk/archi/staff/wouter-poortinga

Contact: PoortingaW@cardiff.ac.uk; tel: 02920 874 755; twitter: @wouterpoortinga

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Phil Renforth is a lecturer in Engineering Geology at Cardiff University. His research focuses on carbon sequestration through mineral-solution interaction. He has a degree in Civil Engineering (Newcastle), and a PhD in geochemistry/environmental engineering (Newcastle), in which he investigated carbon accumulation in urban soils. His current work covers a broad range of carbon sequestration mechanisms including those that propose to chemically transform and sequester carbon dioxide in the ocean. He is generally interested working across the Earth Sciences/Engineering interface, and runs the soil mechanics lab in the School of Earth and Ocean Sciences.

Specific areas of research: 1) carbonate geochemistry (particularly in seawater), 2) weathering (silicate and carbonate), 3) carbon sequestration through mineral-solution reactions, 4) negative emission technologies, 5) Earth systems engineering.

Publications: http://scholar.google.co.uk/citations?hl=en&user=TaWhvvgAAAAJ

T. +44(0)29 208 79672, E. RenforthP@cardiff.ac.uk

Dimitrios Xenias is researcher in the Understanding Risk group, within the School of Psychology, Cardiff University. He studied Psychology, and his PhD is on Social Psychology. His research focuses on environmental and social psychology, and in particular how citizens/consumers perceive abstract risks such as climate change, how their choices and behaviours impact on the environment, and what can be done to mitigate these impacts. He is a member of the British Psychological Society, the Tyndall Centre for Climate Change Research and the Climate Change Commission for Wales, and a Research Affiliate of the Cardiff based Sustainable Places Research Institute. He is also a reviewer for six environment-related journals. His related current and past projects include two European projects on sustainable transport (projects eBRIDGE, and REACT), an industry funded project on changing driving habits, a UKERC project on smart grids development, and a project researching water consumption related behaviours.

Specific areas of expertise: 1) perceptions of, and reactions to climate change; 2) energy and water consumption attitudes and behaviours; 3) transport and travel behaviours; 4) behaviour change.

Publications: http://psych.cf.ac.uk/contactsandpeople/researchstaff/xenias.php

Web page: http://psych.cf.ac.uk/contactsandpeople/researchstaff/xenias.php

Contact : xeniasd@cardiff.ac.uk, tel : 02920 870714

Exeter

Neil Adger is Professor of Geography at the University of Exeter. His research uses multiple methods to examine impacts, adaptation and resilience to global environmental change. He was a founder the Tyndall Centre for Climate Change Research and led its Adaptation theme at School of Environmental Sciences at University of East Anglia. Neil is a member of the Resilience Alliance and was a Lead Author on the Millennium Ecosystem Assessment and on the recent Fifth Assessment of the Intergovernmental Panel on Climate Change in its assessment of the impacts on human security. His current research is funded through grants from NERC, ESRC, DFID and the National Institute for Health Research. This work focuses on ecosystem services and their human use, environmental change and health risks, options for adaptation to climate change and spatial dimensions of risk.

Specific areas of expertise: Ecosystem services – including valuation and policies for sustainability; Deltas and coastal ecosystems; Climate risks including heatwave and flood risk; Social science methods; Migration and demography; Ecological economics; Natural hazards

Publications:http://scholar.google.co.uk/citations?user=Adshs2wAAAAJ&hl=en&oi=ao

Web page:http://geography.exeter.ac.uk/staff/index.php?web_id=Neil_Adger

Contact: n.adger@exeter.ac.uk tel: 01392 722 649

Bob Beare is a Senior Lecturer at the University of Exeter. His research involves modelling the atmospheric boundary layer and its interaction with weather systems. He was lead author of the first intercomparison of Large-eddy simulation (LES) models for the stable boundary layer (Beare et al. 2006). The stable boundary layer is important for both weather and climate models in applications such as fog forecasting, polar temperatures and frost forecasting. In Beare and MacVean (2004), he quantified the resolution sensitivity of LES of stable boundary layers. The resolution sensitivity of LES is a key aspect of this project. Whilst at the Met Office (2001-2007), he also applied his research findings directly to operational weather forecasting. He made changes to the stable boundary layer parametrization in the Met Office Unified Model (MetUM), giving improvements in weather forecast skill (Brown et al 2008). Dr Beare also developed the high-resolution version of MetUM by comparing with the MetLEM (Beare et al 2007). Such an approach will be adopted in this project. Dr Beare continues strong research links with the Met Office from the University of Exeter. Recent PhD projects supervised include `Modelling Antarctic stable boundary layers' and `Air pollution modelling in transitional boundary layers' (Met Office CASE funded). He is PI on the NERC funded GREYBLS project: modelling GREY-zone Boundary LayerS. GREYBLS aims to improve high-resolution numerical weather prediction.

David Butler is professor of water engineering and co-director of the Centre for Water Systems at the University of Exeter. He graduated with a BSc in civil and structural engineering from Cardiff University and has an MSc and PhD in environmental engineering from Imperial College London. He is a chartered civil engineer and a fellow of the Institution of Civil Engineers, the Chartered Institution of Water & Environmental Management and the International Water Association. He specialises in urban water management and is a leading international exponent in the field with over 250 technical papers, in addition to 12 books, published reports and edited conference proceedings to his name. David specialises in sustainable water management, water conservation and recycling, integrated modelling of urban water systems, management of stormwater runoff and flooding, climate change impact and adaptation, and the water- energy nexus. He is currently an EPSRC established career research fellow working on developing and evaluating sustainable and resilient water infrastructure interventions to cope with climate and other extremes.

Web page: http://emps.exeter.ac.uk/engineering/staff/db242

Publications: http://emps.exeter.ac.uk/engineering/staff/db242/publications

Contact: d.butler@extere.ac.uk, tel: 01392 724064.

Peter Challenor is a professor in the Mathematics and Computer Science department of the University of Exeter. Peter is an environmental statistician mainly working in the uncertainty quantification of complex numerical models, including ocean and climate models. He was a co-I on the RCUK Managing Uncertainty in Complex Models (MUCM) and MUCM-2 projects and PI on the NERC funded RAPID-RAPIT project looking at the risk of the collapse of the overturning circulation in the Atlantic Ocean. He is a co-I on the NERC Arctic programme project 'Landslide-Tsunami' looking at the risk of a catastrophic tsunami generated by an underwater landslide. Peter's research interests cover methods for the estimation of uncertainty in complex systems, particularly large numerical models; the application of such methods to problems in oceanography and climate; environmental statistics in general and remote sensing of the oceans.

01392 726634 ; p.g.challenor@exeter.ac.uk

http://emps/exeter.ac.uk/mathematics/staff/pgc202

Mat Collins is the Joint Met Office Chair in Climate Change in the College of Engineering, Mats and Physical Sciences in Exeter. He currently leads the NERC-MoES funded SAPRISE project looking at the dynamics of the Indian Monsoon and the NERC PROBEC project looking at emergent constraints on future climate change. He was a Coordinating Lead Author on the IPCC 5th Assessment report chapter on long-term climate projections. He serves on the International CLIVAR Pacific Implementation Panel and is a member of the NERC Panel B.

Topics. Projections of large-scale climate change; global modelling, physical mechanisms, observational constraints, quantifying uncertainty. Couple atmosphere ocean processes; the El Nino Southern Oscillation, Pacific and Atlantic decadal variability, monsoons. Palaeoclimates with a focus on modelling

Tel: +44 (0)1392 723984

http://empslocal.ex.ac.uk/people/staff/mc369/

Peter Cox is Professor of Climate System Dynamics and leader of the *Climate Change and Sustainable Futures* theme at the University of Exeter. His personal research has focussed on interactions between the land-surface and climate, including the first climate projections to include vegetation and the carbon cycle as interactive elements. Prof. Cox was a lead-author on the *Intergovernmental Panel on Climate Change (IPCC)* 4th and 5th Assessment Reports. He is also a member of the Science Advisory Group for the UK *Department of Energy and Climate Change*, and the *NERC Science and Innovation Strategy Board* (*SISB*), as well as being co-chair of the *IGBP-AIMES* project. He was a member of the UK *Royal Society* expert groups on "Ground-level ozone in the 21st century" and "Geoengineering the climate", and is currently serving as a member of the working group on "Human resilience to climate change and disasters". Prof. Cox is listed as a highly-cited researcher in *Geosciences* (http://highlycited.com/).
Specific areas of expertise: Climate-carbon cycle feedbacks**,** Land-surface modelling**,** Dynamic Global Vegetation Models**,** Emergent constraints on Earth System sensitivities.
Publications: http://www.researcherid.com/rid/B-3299-2012
Web page: http://emps.exeter.ac.uk/mathematics/staff/pmc205
Contact: p.m.cox@exeter.ac.uk, tel: 01392 725220, mob: 07827 412572

Chris Ferro is a senior lecturer in statistics with research interests in the theory and application of statistical methods for forecasting. He is most interested in how we forecast extreme events and assess forecast performance, and his work is motivated primarily by weather and climate applications. After completing his PhD in statistical inference for extreme values at Lancaster University, he worked for four years in the meteorology department at Reading before joining the mathematics department at Exeter in 2007. He is a consulting editor for the Journals of the Royal Statistical Society, chaired the Society's Environmental Statistics Section, advised the BBC WeatherTest project, and was an invited expert on the European Centre for Medium-range Weather Forecasts Technical Advisory Committee Subgroup on Verification Measures.

http://emps.exeter.ac.uk/mathematics/staff/catf201

c.a.t.ferro@ex.ac.uk, 01392 724050

Claire Foullon, Proleptic Senior Lecturer - STFC Advanced Fellow in Heliophysics

Interests: Solar-Terrestrial Plasmas and Space Weather

 Email: c.foullon@exeter.ac.uk

 Web site: http://emps.exeter.ac.uk/staff/cf337

Pierre Friedlingstein, Professor of Mathematics

Interests: Global biogeochemical cycles and Earth System Modelling

Email: p.friedlingstein@exeter.ac.uk

Web site: http://emps.exeter.ac.uk/mathematics/staff/pf229

Dr Angela Gallego-Sala

Interests peatlands and climate change

Email address: A.Gallego-Sala@exeter.ac.uk

Web site: http://geography.exeter.ac.uk/staff/index.php?web_id=Angela_Gallego-Sala

Tamara Galloway is Professor of Ecotoxicology at the University of Exeter and also holds an honorary Chair at University of Exeter Medical School. Tamara's research focus is in understanding how organisms adapt and survive in polluted environments and she studies the health effects of some of the most pressing priority and emerging pollutants: including complex organics, plastics additives, metals and nanoparticles. She receives funding from a wide range of competitive sources including NERC, BBSRC, Wellcome Trust, Leverhulme Trust, medical charities and industry groups both in the UK and internationally. She is an expert member of several (inter)/national committees charged with environmental protection and the promotion of translational research, including the NERC Strategic Science and Innovation Board.

Key topics: How do organisms adapt and survive in polluted environments? What makes some organisms more susceptible than others? How can we use this information to [protect the environment?

Key words: Environment and human health, aquatic toxicology, nanotoxicology, microplastics, nanoplastics, persistent organic pollutants

t.s.galloway@exeter.ac.uk, tel 0-44-1392 263436

http://biosciences.exeter.ac.uk/staff/index.php?web_id=tamara_galloway

Roger Grimshaw is a Visiting Professor in Mathematics at the University of Exeter, and holds similar appointments at University College London and Loughborough University. He was a Professor in the Department of Mathematical Sciences in Loughborough University from 2000-2013. Prior to that he held professorial positions in Australia at UNSW and Monash University. In 1990 he was elected to the Australian Academy of Science, was award the ANZIAM medal in 2004, and was elected a Fellow of the Australasian Fluid Mechanics Society in 2012. He is an editor of several scientific journals and chief executive editor of the EGU journal Nonlinear Processes in Geophysics.

His main current research area is the development and application of model evolution equations to describe weakly nonlinear waves, especially internal solitary waves in the ocean and atmosphere. Other ongoing interests are solitary waves and exponential asymptotics, wave-mean flow interaction particularly for internal gravity waves, density-stratified shear flows, sub-inertial dynamics in coastal oceans, and oceanic and atmospheric large scale vortices.

Webpage: http://www-staff.lboro.ac.uk/~marhjg/

Contact: r.grimshaw@exeter.ac.uk

Paul Halloran is a Lecturer in climate science at the University of Exeter. Paul's primary research focuses on understanding the role of the oceans and marine carbon cycle within the Earth System on a variety of timescales. His degree and PhD were in the Department of Earth Sciences in Oxford, where working with Ros Rickaby, he examined ENSO change over the Pliocene, developed novel geochemical climate proxy techniques, and investigated the impact of ocean acidification on calcifying phytoplankton. After his PhD Paul moved to the Met Office Hadley Centre as a scientist, then senior scientist in ocean biogeochemical modeling. In the Hadley Centre Paul was heavily involved in the development, validation and application of the Earth System Model HadGEM2-ES. Working with this model, Paul and colleagues investigated the mechanisms behind novel biogeochemical climate feedbacks, the role of anthropogenic aerosols in recent climate change, reversibility in the earth system and more. Now at the university of Exeter Paul is bringing this range of Earth-system and climate science expertise together in a range of multidisciplinary projects.

Specific areas of expertise: The ocean carbon cycle. Oceanography. Ocean acidification . Earth System Modelling. Palaeoclimate reconstruction

Publications:http://geography.exeter.ac.uk/staff/index.php?web_id=Paul_Halloran&tab=pubs

Web page:http://geography.exeter.ac.uk/staff/index.php?web_id=Paul_Halloran

Contact: p.halloran@exeter.ac.uk, tel: +44 (0) 1392 725859

Stephan Harrison is Associate Professor of Quaternary Science at *Exeter University*. Before this he taught at *Oxford University Centre for the Environment*. Throughout 2014 he is in receipt of a *Leverhulme Research Fellowship* studying natural hazards and climate change. His PhD is in Quaternary Science, and he has over 25 years research experience in the field of mountain system responses to climate change. He has worked for fourteen field seasons in Patagonia, and for a number of years in the Tien Shan mountains of Kazakhstan, Bolivia, European Alps, Norway, Iceland and the Himalaya. Much of his work has involved reconstructing late Quaternary glacier and ice sheet fluctuations in Patagonia and the British Isles. His current research focuses on investigating the three-dimensional structure of the Patagonian Ice Sheet, and using Global Climate Models to assess the future behaviour of glacial and periglacial systems in arid mountains. Stephan also has strong policy interests in climate change. He is head of the *Climate Change Expert Committee* which advises the UK Health and Safety Executive on climate change risks for all nuclear sites in the UK. He has also been a member of the Environmental Research Groups of the Institute of Actuaries and the Emergency Planning Society. He has advised, UK, US, Indian, Georgian, Chilean and Romanian Governmental organisations on climate change adaptation and impacts. Stephan is the Director of *Climate Change Risk Management* (www.ccrm.co.uk) which was set up in 2002 to provide scientific advice on climate change for governments and businesses.

Specific areas of interest: Quaternary history of Patagonia. Glacial geomorphology of the British Isles. Glacial Lake Outburst Floods and climate change. Using climate models to investigate future melting of ice and rock glaciers . Climate change adaptation policy

Website: http://geography.exeter.ac.uk/staff/index.php?web_id=Stephan_Harrison

Anna Harper, Associate Research Fellow

Land-atmosphere interactions,

a.harper@exeter.ac.uk

http://emps.exeter.ac.uk/mathematics/staff/ah431

Hugo Lambert, Senior Lecturer in mathematics

Hugo's core interests are large scale atmospheric physics and climatology. Recent work has focused on radiation, the hydrological cycle and land-sea contrast. He is also interested in statistical climatology and climate change attribution, climate change and human behaviour, and techniques for creating and analysing large ensembles of climate models.

email: f.h.lambert@exeter.ac.uk

www: http://empslocal.ex.ac.uk/people/staff/fhl202/index.html

Dr Anne Le Brocq

Interests: Ice sheet modelling & reconstruction, ice sheet subglacial hydrology, Remote Sensing & GIS applications in glaciology.

Email address: a.lebrocq@exeter.ac.uk

Web site: http://geography.exeter.ac.uk/staff/index.php?web_id=Anne_Le_Brocq

Tim Lenton is a Professor of Climate Change and Professor of Earth System Science at the University of Exeter. He has a degree in natural sciences (Cambridge), a PhD in environmental sciences (UEA, 1998), and 15 years of subsequent research experience in global biogeochemical cycles, feedbacks, and Earth system modelling. His research focuses on understanding the behaviour of the Earth as a whole system and developing the corresponding theory. His PhD was on what regulates the nutrient balance of the ocean and the oxygen content of the atmosphere. He collaborated extensively with James Lovelock in the development of the Gaia theory and Daisyworld models. Tim worked for 6 years as an Earth system modeller at the Centre for Ecology and Hydrology in Edinburgh, where he coordinated the GENIE project, which pioneered the use of Grid computing in Earth system modelling. He returned to UEA in 2004 as a Reader and then Professor (2007), where he led two QUEST projects. His work identifying the tipping elements in the climate

system received the Times Higher Education Award for Research Project of the Year 2008. He has also been awarded a Philip Leverhulme Prize in 2004, a European Geosciences Union Outstanding Young Scientist Award 2006, the BA Charles Lyell Award Lecture in 2006, the Geological Society of London William Smith Fund 2008, and a Royal Society Wolfson Research Merit Award 2013. He has more than 90 peer-reviewed papers and a book with Andrew Watson 'Revolutions that made the Earth' (OUP, 2011).

Specific areas of expertise: Global biogeochemical cycles; Earth system modelling; Geochemistry; Dynamical systems; Feedback mechanisms; Tipping points; Geoengineering; Evolutionary ecology; Gaia hypothesis

Web page: http://geography.exeter.ac.uk/staff/?web_id=Timothy_Lenton

Contact: t.m.lenton@exeter.ac.uk Tel: 01392 724608

Chris Perry is a Professor in Physical Geography and currently Director of Research for Geography at Exeter. Chris has >20 years' experience of working on the geomorphology and sedimentology of tropical coral reefs, mangroves and shallow marine carbonate systems. Specifically, his research addresses fundamental questions about the response of coral reefs and reef islands to environmental and climatic change, and the geomorphologic processes that control the evolution of tropical coastal and marine sedimentary environments. Key areas of current research are aimed at (1) improving understanding of rates and styles of coral reef growth, with a specific focus on terrestrial sediment-influenced nearshore environments; (2) on better understanding the timing of reef island development and on the sedimentary links between reefs and reef islands; and (3) on quantifying rates of coral reef and marine carbonate production. This research is conducted at sites across both the Indo-Pacific and Caribbean reef-building regions. Chris also Geoscience Editor for *Coral Reefs*, is a Member of the Natural Environment Research Council, Peer Review College, and is Chair of *REEForm*, the International Association of Geomorphologists Working Group on 'Reef and reef landform responses to climatic and environmental change'.

Specific areas of expertise: Coral reef geomorphology, marine carbonate production, carbonate sedimentology

Publications: http://exeter-tropical-marine-research.weebly.com/professor-chris-perry.html

Web page: http://geography.exeter.ac.uk/staff/index.php?web_id=Chris_Perry

Contact: c.perry@exeter.ac.uk, tel: 01393 723334

Markus Mueller, Lecturer in Applied Mathematics

Interests: mathematical wave modelling, wave measurement technologies, wave prediction, modelling, optimisation and control for wave energy conversion,

environmental impacts of marine energy/technologies

email: m.mueller@exeter.ac.uk

web site: http://www.exeter.ac.uk/esi/people/mueller/

Dr Saffron O'Neill

Interests: interdisciplinary projects linking to the social science dimensions of climate variability and climate change; particularly in communication (including social media, the role of the IPCC, visual communication) and public engagement with adaptation (particularly to floods, wildfire or sea level rise)

Email address: s.o'neill@exeter.ac.uk

Web site: http://saffrononeill.wordpress.com/

Dr Emily Paremain

Mathematics and statistics in climate science - CliMathNet

E.Paremain@exeter.ac.uk

www.climathnet.org/

Dr Steven Palmer

Interests: Ice sheets and polar ice caps

s.j.palmer@exeter.ac.uk

https://geography.exeter.ac.uk/staff/index.php?web_id=Steven_Palmer

Anna Rabinovich is a Senior Lecturer in Psychology in the University of Exeter. Her research explores pathways towards environmental sustainability from a vintage point of social psychology. In particular, she has explored the role of temporal focus in promoting sustainability, group process that lead to environmental action, and responses to feedback on group and individual sustainability performance. In addition, Anna has conducted work on effective ways of communicating climate change science, and in particular risk and uncertainty. Her work is based on the understanding that sustainable use of natural resources cannot be attained without harnessing psychological processes involved in individual and group decision-making.

Webpage: http://psychology.exeter.ac.uk/staff/index.php?web_id=Anna_Rabinovich

Publications: http://psychology.exeter.ac.uk/staff/index.php?web_id=Anna_Rabinovich&tab=pubs&view=date

Contact: a.rabinovich@ex.ac.uk

Rebecca Pearce is an Associate Research Fellow in Geography at the College of Life and Environmental Sciences, University of Exeter and Co-ordinator of the CogNovo Marie Curie Doctoral Training Programme at the University of Plymouth. Rebecca's research interests are focused on sustainable development and lifestyles and the human impacts on and reactions to climate and natural resources – risks, decision-making, adaptation and mitigation. Rebecca's current RCUK-funded research looks at historic drought and water scarcity events in the UK and the socio-economic impact of these events. Rebecca has 10+ years of experience working in the public and third sectors on environmental policy and sustainability. Rebecca provides career development support to 39 PhD students, whose projects span interests as diverse as robotics, neuroimaging, arts-based practices, water engineering, computer sciences, behaviour change, and sustainable development. Rebecca is also a trained Science Communicator with experience in radio, television, print media and film.

Practical areas of expertise: Classic Grounded Theory, Qualitative data analysis, Oral History Recording, Public Engagement & Outreach, Student support and career development

e-mail r.pearce@exeter.ac.uk tel (mob) 07812404175

Indrani Roy, Research Fellow

Email:i.roy@exeter.ac.uk

Web: http://emps.exeter.ac.uk/staff/ir227/

Interests: solar variability, QBO (**Q**uasi-**B**iannual **O**scillation), ENSO (**E**l-**N**iño **S**outhern **O**scillation), other major modes of climate variability, stratosphere-troposphere coupling, climate change, atmosphere- ocean coupling and Monsoon.

Dragan Savic is the UK's first Professor of Hydroinformatics having held this post at the University of Exeter since 2001. He specialised in water and environmental systems for his undergraduate, MSc and PhD degrees.

His research interests cover the interdisciplinary field of Hydroinformatics, which transcends traditional boundaries of water/ environmental sciences, informatics/ computer science (including Artificial Intelligence, data mining and optimisation techniques) and environmental engineering. Applications are generally in the environmental science areas, including water resources management (both quality and quantity), flood management, water & wastewater systems and environmental protection & management.

His work has concentrated on the theoretical development and application of Artificial Intelligence methods that have been applied to many fields of environmental science. For example, a significant advance has been made in the development of a general methodology for modelling and optimisation of water supply and wastewater systems. He has also pioneered a new, superfast flood modelling methodology based on Cellular Automata that allows flood risk assessment to be carried out on a continental scale. Prof. Savic has published over 400 research/professional papers and reports, co-authored 24 books and book chapters and holds two patents. With over 7,000 citations to his name (source: Google Scholar), Prof. Savić is among the top 10 most cited scholars in the world in the areas of 'water resources' and 'hydroinformatics':

http://scholar.google.co.uk/citations?user=piEJXtcAAAAJ&hl=en

d.savic@exeter.ac.uk

Dr Ute Schuster is a Senior Research Fellow in the College of Life and Environmental Sciences at the University of Exeter. She is a marine biogeochemist specialising in the study of the variability of the marine carbon cycle through observations and numerical techniques. She is a member of the observational group at

Exeter that specialises in making and interpreting oceanic measurements of carbon cycle parameters of highest accuracy and precision. Ute's core research aims to understand the biogeochemical drivers of the changes observed in the marine carbon cycle, both the exchange of CO_2 with the atmosphere at the sea surface, as well as the transport of carbon in the ocean interior. She is a member of the Scientific Steering Group of the International Ocean Carbon Coordination Project (www.ioccp.org), and leads the Atlantic section in the Surface Ocean CO_2 Atlas (www.socat.info). Ute is actively involved in the UK projects RAGNARoCC (www.greenhouse-gases.org.uk/ragnarocc) and the Ocean Acidification Programme (www.oceanacidification.org.uk), and the EU projects CARBOCHANGE (carbochange.b.uib.no), INGOS (www.ingos-infrastructure.eu), GREENCYCLES II (www.greencycles.org), GEOCARBON (www.geocarbon.net), and FixO3 (www.fixo3.eu).

Specific areas of expertise: Marine carbon cycle, Marine biogeochemistry, Biogeochemical/physical drivers of marine carbon cycle variability, Ocean and atmosphere observations

Web page http://geography.exeter.ac.uk/staff/index.php?web_id=Ute_Schuster

Contact: U.Schuster@exeter.ac.uk

James Screen is a NERC Research Fellow in the College of Engineering, Mathematics and Physical Sciences, University of Exeter. He has a BSc in Environmental Science (Lancaster), a MSc in Applied Meteorology and Climatology (Birmingham) and a PhD in climate science (UEA), that focused on coupled atmosphere-ocean-ice variability in the Antarctic-Southern Ocean region. His post-doctoral research, first at the University of Melbourne and now at Exeter, has taken an Arctic focus, including diagnosing the causes and mechanism of Arctic amplification, and modeling the atmospheric impacts of sea ice loss. His current research focuses on understanding of how the dramatic retreat of Arctic sea ice will impact weather and climate in the northern hemisphere mid-latitudes, and of the physical processes that govern these interactions. More broadly, he is interested in the drivers of mid-latitude weather variability, especially extreme events, and how these are influenced by natural climate variability and human-induced climate change.

Specific areas of expertise: Climate variability and change. Polar climate: Arctic, Antarctic. Arctic sea ice and its role in the climate system. Climate modeling. Statistical climatology

Publications: http://scholar.google.co.uk/citations?user=7vPkBVsAAAAJ

Web page: http://emps.exeter.ac.uk/mathematics/staff/js546

Contact: j.screen@exeter.ac.uk

Tim Taylor, Lecturer in Environmental and Public Health Economics

Economics of the environment - including valuation of climate change/pollution issues (largely using contingent valuation/choice experiments), economic instruments and policy analysis (including cost-benefit analysis)

Timothy.J.Taylor@exeter.ac.uk

Website: http://medicine.exeter.ac.uk/about/profiles/index.php?web_id=Tim_Taylor&tab=profile

John Thuburn is professor of Geophysical Fluid Dynamics at the University of Exeter. His research interests include numerical methods for atmosphere and ocean modelling, geophysical fluid dynamics, and climate dynamics. For nearly 15 years he has been collaborating with the Met Office on the development of numerical methods for their Unified Model for weather and climate prediction, and his post is part funded by the Met Office under the Met Office Academic Partnership (MOAP). A recurring theme of his research is the need for numerical models to respect key physical properties such as conservation and balance. He has contributed to the development of ENDGame, a new dynamical core that is due to be introduced for operational forecasting in 2014. He is also involved in the GungHo project, a Met Office - NERC - STFC collaboration to develop a dynamical core ready for use on massively parallel supercomputers on the 5-10 year timescale.

For a list of publications see https://emps.exeter.ac.uk/mathematics/staff/jt221/publications

Geoff Vallis is professor of Mathematics at the University of Exeter. He has a Ph.D. from Imperial College London, and spent many years in the United States, including 15 years at Princeton University, before coming to Exeter in 2013. His fundamental interests lie in trying to understand the climate of the Earth, with emphasis on the large-scale circulation of the atmosphere and ocean. He has published over 100 papers and two books, incluiding the well-known text *Atmospheric and Oceanic Fluid Dynamics* (Cambridge Univ. Press).

Particular interests: Climate dynamics. Geophysical fluid dynamics including large-scale circulation of the atmosphere and ocean, Dynamics of planetary atmospheres.

Web page: http://emps.exeter.ac.uk/mathematics/staff/gv219

Email: g.vallis@exeter.ac.uk

Daniel Williamson is a lecturer of Statistics in the mathematics department at the University of Exeter. He has a masters degree in Mathematics (Durham) and a PhD in Statistics which focused on decision analysis and policy support methodology for adaptation and intervention problems in complex systems that are studied using computer models, such as the Earth's climate. His research interests mainly involve uncertainty quantification for computer models, the field of study that seeks to quantify the uncertainties present when studying aspects of the real world using computer models. He is a leading expert in uncertainty quantification problems in climate science and oceanography, with work in the design of ensembles, emulation of climate models and time series output of models, calibration of models using emulators, emulating linked hierarchies of models and in quantifying structural uncertainty. He is also interested in general foundations and methods in subjective Bayesian analysis. He is a member of the Environmental Statistics Section of the Royal Statistical Society.

Specific areas of expertise: Decision theoretic approaches to policy support for complex systems studied using computer models. Uncertainty Quantification. Emulation for OGCMs and AOGCMs of multiple resolution. Ensemble design. Calibration of climate models with history matching. Structural error quantification. Subjective Bayesian methods

Publications: http://emps.exeter.ac.uk/mathematics/staff/dw356/publications

Contact: d.williamson@exeter.ac.uk

Beth Wingate, Professor of Mathematics.

Interests: Oceans, climate, and mathematics

Email: b.wingate@exeter.ac.uk

General Interests at:
http://people.exeter.ac.uk/bw290/Beth_A_Wingate/Research_Projects/Research_Projects.html

Two Specific Projects at: http://emps.exeter.ac.uk/mathematics/research/cgafd/postgraduate/projects/

Prof. Nigel Wood (Met Office & University of Exeter)

Design and development of dynamical cores for unified models of the atmosphere.

Email: nigel.wood@metoffice.gov.uk

Web site: http://www.metoffice.gov.uk/research/our-scientists/dynamics/nigel-wood

Bath

Ben Adams is lecturer in Mathematical Biology in the Department of Mathematical Sciences at the University of Bath. He has a BSc in maths (York) an MSc in environmental modelling (UEA) and a PhD in Earth System modelling (Heriot-Watt, CEH Edinburgh) which focused on biological feedback systems. Since then his research has been concerned with mechanistic modelling of infectious disease epidemiology and evolution. He is particularly interested in vector-borne diseases and how their epidemiological and evolutionary patterns are influenced by environmental factors such as temperature, rainfall and land use.

Specific areas of expertise: mechanistic mathematical modelling in epidemiology, ecology and evolution.

Publications http://people.bath.ac.uk/ba224/publications.html

Web page: http://people.bath.ac.uk/ba224/index.html

Contact: b.adams@bath.ac.uk, 01225 386320.

Chris Blenkinsopp is a lecturer in water engineering and a member of the Water, Environment and Infrastructure Resilience (WEIR) research group at the University of Bath. He has a degree in Civil Engineering (Nottingham) and PhD in coastal hydrodynamics (Southampton) which focussed on air entrainment, splash and energy dissipation in breaking ocean waves. Chris has over 10 years' experience working in both academia and industry as a coastal engineer. Chris's research focusses mainly on field and laboratory measurements of coastal processes with particular interests in sediment transport on beaches, nearshore hydrodynamics, marine renewable energy and remote sensing. Current projects include an Australian Research Council (ARC) Discovery project investigating medium to long term shoreline change under sea-level rise; an ARC project looking at the shear stresses beneath wave runup on beaches and coastal structures; and an externally-funded project which will use fixed LiDAR stations to measure beach evolution in real time with the aim of elucidating the slowly occurring beach recovery process.

Specific areas of expertise: 1) remote sensing of coastal processes; 2) swash zone sediment transport; 3) nearshore hydrodynamics; 4) air entrainment by breaking waves; 5) marine renewable energy

Web page: http://www.bath.ac.uk/ace/people/blenkinsopp/

Contact: c.blenkinsopp@bath.ac.uk, tel: 01225 366715 / 07757 990429

Chris Budd is Professor of Applied Mathematics at the University of Bath, Professor of Mathematics at the Royal Institution and the Vice-President for the Institute for Mathematics and its Applications (IMA) responsible for Communications and Outreach. Chris is also co-director of the recently established EPSRC/LWEC CliMathNet network, which has as its aim to bring together mathematicians, climate scientists and policy makers interested in the science and the impact of climate change. His research interests include the theory, application and computation of nonlinear problems with special interest in problems which arise in industry. Much of Chris's recent work has been on the development of accurate adaptive mesh numerical methods for solving partial differential equations, with particular applications to numerical weather prediction and data assimilation.

Specific areas of expertise: Numerical weather prediction, data assimilation, dynamical systems, mathematical modelling, PDEs, public engagement

Web page: http://people.bath.ac.uk/mascjb/

Contact: mascjb@bath.ac.uk   Tel: 01225 386241

David Coley is Professor of Low Carbon Design and Director of the Energy and the Design of Environments (EDEn) research centre in the Department of Architecture & Civil Engineering at Bath. His main research interests are in finding out why people, buildings and cities use energy and how little they could. He was PI of EPSRC's Prometheus project which examined how buildings and cities should be designed to survive future climate challenges, and how to create representative time series of future weather . He is currently PI of EPSRC's ENLITEN project (funded under the BuildTEDDI programme) which is examining ways to reduce energy use in buildings through digital innovation and changes to tariff structures. In his work for the TSB, he regularly examines why buildings and their occupants fail to work together to provide a successful cost-effective low-energy environment. He has worked extensively with commercial companies in the built environment including Corus (Tata), Mowlem, Carillion, Bam, NPS, and with local authorities. He was the driving force behind the UK's first major zero-carbon Passivhaus building.

Specific areas of expertise: 1) future weather; 2) low energy buildings.

Publications: http://www.bath.ac.uk/ace/people/coley/#group_article

Web page: http://www.bath.ac.uk/ace/people/coley/#group_article

Contact: d.a.coley@bath.ac.uk,   Tel: 01225385531

Jonathan Dawes is a Reader in Applied Mathematics and Royal Society University Research Fellow at the University of Bath where he is also Deputy Director of the Centre for Networks and Collective Behaviour. He was awarded his PhD from Cambridge where he held a Junior Research Fellowship at Trinity College. His research could be broadly described as 'applied dynamical systems' and takes a qualitative, modelling viewpoint of problems, often involving continuum mechanics and/or biological processes. His recent research has included the formation and dynamics of localised states in driven dissipative pattern-forming systems and the dynamics of nonlinear differential equations in the presence of symmetry.

His current work includes applications of these ideas to problems in plant ecology, population dynamics, and liquid crystals.

Publications: http://people.bath.ac.uk/jhpd20/publications/

Web page: http://people.bath.ac.uk/jhpd20/

Contact: j.h.p.dawes@bath.ac.uk, tel: 01225 386223

Melina Freitag is a lecturer in Applied Mathematics at the University of Bath. She has a degree in Mathematics, an MSc in Applied Mathematics and a PhD in Numerical Analysis. She has been working on Numerical Linear Algebra, Inverse Problems, Data Assimilation and Applications.

Specific areas of expertise: Numerical Linear Algebra, Inverse Problems and Data Assimilation, in particular: 1) Iterative Methods for Eigenvalue Problems and Linear Systems; 2) Matrix Theory and Applications; 3) Krylov Subspace Methods and Preconditioners; 4) Model Order Reduction.

Publications: http://scholar.google.co.uk/citations?user=iE4t4WcAAAAJ&hl=en

Webpage: http://people.bath.ac.uk/mamamf/

Contact: m.freitag@maths.bath.ac.uk

Martin Fullekrug: The main theme of Martin's research programme is the observation of the Earth's atmosphere in the context of global climate change by use of electromagnetic remote sensing tech-nology. For example, lightning discharges within thunderstorms, sprites above thunderstorms, the impact of energetic charged particles on the Earth's atmosphere and associated processes in near-Earth space are of particular interest. The research is generally embedded in international research programmes, e.g., collaborational studies are carried out with the upcoming satellite mis-sions such as TARANIS (CNES) and ASIM (ESA). The research applies classical electrodynamics to the Earth's atmosphere and it is based on building new instruments, using the latest technology, to carry out novel experiments and data analyses which lead to new theoretical interpretations at the edge of current knowledge. As such the research is focussed on engineering challenges to ex-tend the leading edge in monitoring the Earth's atmosphere to assess the state of mankind's habitat and its variability in the context of global climate change.

Web page: http://people.bath.ac.uk/eesmf/

Contact: eesmf@bath.ac.uk   Tel: 01225 386053

Paula X. Kover is a senior lecturer at the dept. of Biology and Biochemistry at the University of Bath**. She is originally from Brazil, where she obtained a Bsc. in Ecology and Mres. in Genetics. Her PhD in Evolution is from Indiana University, USA. Throughout her career she worked in different aspects of plant adaptation to biotic and abiotic components of the environment. In particular, we are interested in understanding how genetics interacts with an organism's ecology to determine the evolution of traits under natural selection. To reach this goal we investigate the genetic basis of evolutionary relevant traits such as flowering time, plant architecture and seed traits under different environments. We also use a direct approach to determine the adaptive value of candidate genes, using experimental evolution and simulated climate change. To study genetic and ecological effects we perform research in both field and laboratory settings.

Publications: http://www.bath.ac.uk/bio-sci/contacts/academics/paula_kover/

Web page: http://www.plantresearch-bath.org/evolution-and-conservation/dr-paula-kover/
Contact: p.x.kover@bath.ac.uk Tel:0122 5385059

Jaime Martinez-Urtaza joined the University of Bath in February 2014, working at the Department of Biology and Biochemistry. My research interests have been focused on the study of food and waterborne diseases and, in particular, the effects of climate on human pathogens. Previously, I have been working at the European Centre for Disease Prevention and Control (ECDC) in Sweden on climate change and infectious diseases, group leaded by Jam Semenza, and we have developed a tool for forecasting the risk of Vibrio infections (cholera and non-cholera infections) in relation to environmental conditions.
https://e3geoportal.ecdc.europa.eu/SitePages/Vibrio%20Map%20Viewer.aspx
A great part of my past and ongoing research has been carried out in tropical areas and in particular in Peru, where we are studying the effects of El Niño on pathogens and diseases in collaboration with the National Institute of Health in Peru. My particular approach is the use of remote sensing data, mainly satellite data, to gain a better understanding of the epidemiology of these diseases modelling and mapping climate and disease data. And even a more complex situation is the combination of this approach with the introduction of genomic data from pathogens to track the movement of organisms around the globe in phase with climate patterns and oceanic events.

Web page: http://www.bath.ac.uk/bio-sci/contacts/academics/jamie_martinez-Urtaza/

Contact: J.L.Martinez-Urtaza@bath.ac.uk   Tel: 01225 384292

Paul Milewski is a Professor of Applied Mathematics at University of Bath and co-director of the EPSRC funded SAMBa Centre for Doctoral Training. He received a Ph.D. in Mathematics from M.I.T. in 1993 and has been working in various aspects of waves in fluids since. He has held positions at Stanford University and University of Wisconsin-Madison. His ongoing research includes (1) The mathematics of interfacial internal waves including wave breaking and fluid mixing. (2) Surface capillary-gravity waves, the generation of wind ripples and associated problems (3) Surface waves under floating ice sheets (4) Faraday instabilities of free surfaces, and wave-droplet interactions in this context (5) Equatorial atmospheric wave interaction. (6) Hyperbolic systems in free surface problems and (7) Mathematical Biology and in particular models of swarming and chemotaxis.

Specific areas of expertise: Numerical methods for nonlinear dispersive wave problems, geophysical fluid mechanics, mathematics of nonlinear waves, dynamical system methods in waves, mathematical modelling in fluids and mathematical models in swarming.

Recent Publications: http://opus.bath.ac.uk/view/person_id/6035.html

Web Page: http://www.bath.ac.uk/math-sci/contacts/academics/paul-milewski/

Contact: p.a.milewski@bath.ac.uk

Danielle Wain is a Lecturer in Water Quality Engineering at the University of Bath since February 2013. Her research interests are in physical limnology and oceanography, specifically field-based studies of processes that generate turbulence and mixing in lakes and the ocean. Her PhD work at Iowa State University (USA) focused on turbulence in lakes, where transport of sediments, nutrients, and oxygen is limited by thermal stratification. Her dissertation included the first 3D mapping of an intrusion generated by boundary mixing in a lake, and estimates of the associated offshore mass transport, She then completed a postdoctoral position in the Ocean Physics Department at the Applied Physics Laboratory at the University of Washington (USA) followed by a postdoctoral fellowship funded by the European Space Agency at the AirSea Laboratory at the National University of Ireland at Galway. Her primary research areas are investigating how turbulence is generated by internal waves (ranging from high frequency waves to lower frequency internal seiches and internal tides), how internal waves interact with lake boundaries and submarine canyons in the ocean, and how internal waves drive offshore mass transport.

Specific areas of expertise: 1) measuring and analyzing turbulence in stratified flows using velocimetry and turbulent microstructure; 2) utilizing fluorescent tracer studies to determine transport pathways in aquatic systems; 3) interpretation of mooring data for internal wave studies.

Webpage (with publications): http://www.bath.ac.uk/ace/people/wain/index.html

Contact: d.j.wain@bath.ac.uk

Jason Wolf is Professor Evolutionary Genetics. His research is focused on the evolutionary genetics of complex traits, especially the influence that frequently ignored or under-appreciated sources of genetic variation have on the genotype-phenotype relationship and how this, in turn, influences evolutionary processes. He integrates theoretical, computational and empirical quantitative and population genetic techniques to examine questions including the evolutionary genetics of pleiotropy, maternal effects, genomic imprinting and social evolution. His lab uses a number of different systems for empirical analyses, including plants, mice and social amoebae. He is Core Panel Member for NERC (Panel E - Population Genetics and Evolution), a member of the BBSRC Pool of Experts, and a member of the MRC Strategic Skills Fellowships Panel. He is also Associate Editor for *Genetics*.

Specific areas of expertise: 1) quantitative genetics; 2) population genetics; 3) genetic architecture of complex traits; 4) social evolution; 5) genomic imprinting and epigenetics; 6) evolutionary modelling

Publications: http://scholar.google.co.uk/citations?user=cgNtLw8AAAAJ

Web page: www.evolutionarygenetics.org

Contact: j.b.wolf@bath.ac.uk, Tel: 01225.385.012