



Risky Business: Assessing the Risks from Weather and Climate

Old Council Chamber, Wills Memorial Building, University of Bristol, BS8 1RJ

Wednesday 11 April 2018

Extreme weather events can have a significant impact on human health, property and local economies. The economic cost associated with such events is borne by local and national governments, private insurance, business, and individuals. In order to limit such costs it is necessary to understand what risks exist and provide reliable forecasts of when extreme weather related events may occur. Good communication between the forecasters, emergency planners and first responders is critical to limiting the impact of extreme weather events on local economies. Anticipated climate change may alter the frequency and severity of these risks requiring adaptation and new strategies for assessing and responding to extreme weather events. We present a series of talks on the types of risks that exist, the economic costs associated with extreme weather, ongoing efforts to forecast and communicate such risks to limit their impact and how climate change may require us to adapt our response to extreme weather events.

Meeting Chair | Dr Patrick Timko, RMetsS Welsh Local Centre

Rapporteur | Dr Michaela Bray, Cardiff University

14:00	Welcome	Patrick Timko RMetsS Welsh Local Centre
14:05	The Weather Risk Management: is it a Research Area for Meteorologists or for Economists	Alessandro Pezzoli University of Turin
14:40	Extreme Weather Public Health Guidance for Wales	Kristian James Public Health Wales
15:15	Operational Flood Forecasting	Matthew Winter Flood Forecasting Centre
15:50	Coffee/Tea Break	
16:20	Skilful European Climate Predictions and Improved Estimates of Current Meteorological Risk	Dr Nick Dunstone Met Office Hadley Centre
16:55	Are Sudden Changes in the Cover of Valuable Saltmarshes Linked to Climate Change?	Dr. Martin Skov Bangor University
17:30	Informal Discussion	
17:55	Meeting Close	

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This meeting is part of the Royal Meteorological Society National Meetings programme, open to all, from expert to enthusiast, for topical discussions on the latest advances in weather and climate. Non-members are welcome to attend these meetings.

For more information, please visit www.rmets.org

ABSTRACTS AND BIOGRAPHRIES

The Weather Risk Management: is it a Research Area for Meteorologists or for Economists

Prof Alessandro Pezzoli, DIST, Politecnico di Torino and Università' di Torino

ABSTRACT | In the last years, there have been relevant advances in seasonal forecasting techniques and methods. New types of climatic services have risen in relation to these long-term forecasts and more are expected in the future. This presentation analyzes a climate-sensitive industry, like offshore wind farm and its potential sensitivity to different skill levels of seasonal forecasts. Two ideal wind farms located on areas with different predictability are considered: the Caribbean Sea and the North Sea. A case study, based on the available literature, constitute the input of a cost-benefit analysis. Moreover, a model evaluates the economic impact on several configurations of wind farms and for different levels of skill. Through a series of simulations, the work captures the uncertainty in random variables, as turbine failure rates and downtimes due to harsh weather conditions. A preliminary assessment of using this service has been calculated.

Co-Authors:

Giulia Scaringi, DIST, Politecnico di Torino and Università' di Torino

Vito Frontuto, Dipartimento di Economia e Statistica "Cognetti de Martis", Università' di Torino

BIOGRAPHY | Prof Alessandro Pezzoli has a Master Degree in Civil Engineering – Hydraulic Option (Politenico di Torino - Italy) and a PhD in Meteorology and Oceanography (Université de Toulon - France). He is Senior Lecturer in Weather Risk Management for the MBA in Environmental Economics and in Meteo-Hydrology Risk Assessment for the MSc in Geography and Regional Development of the University of Turin. He was Visiting Professor in the Escuela Superior Politecnica del Litoral (Guayaquil – Ecuador) in “Modelaje Ambiental” for the MSc Climate Change as well as in the Escola Politecnica – Universidade de Sao Paulo (San Paolo – Brazil) in “Marine Processes” for the PhD Civil Engineering. He has a large expertise in Applied Meteorology and Applied Climatology considering its research about the analysis of the adaptation’s strategies and socio-economics impacts of natural hazards generated by the extreme weather situations. He is author and co-author of 102 publications in National and International Journals, in National and International Conference. He participated in different research’s programs among which it remembers the “Rede Litoral Project” (Analysis of the Climate Change effect in the Sao Paolo area and Santos coastal zone - Brazil), “Prometeo Project” (analysis of the Climate Change effect in the urban area of Guayaquil – Ecuador), COOPI-Chaco Paraguayan (analysis of the Climate Change effect on the drought’s patterns in the Chaco Paraguayan – Paraguay), UniCoo – Etiopia (analysis of the gender effect on the water’s use in the Ethiopia face to Climate Change effect), AICS-ANADIA2 (Early Warning System for flood protection in the Sirba basin – Niger) and AICS-ONE HEALTH (Early Warning System for a multidisciplinary approach to protect health and resilience of the pastoral communities in North Kenya). He is Associate Fellow of the Royal Institute of Navigation (AFRIN), Fellow of the Royal Geographical Society (FRGS) and Fellow of the Royal Meteorological Society (FRMetS). He is certified Project Management Professional (PMP) by the Project Management Institute (PMI)..

Extreme Weather Public Health Guidance for Wales

Kristian James, Principal Environmental Public Health Specialist, Public Health Wales

ABSTRACT | Weather and climate have always affected human health. Now, climate change is altering weather and climate patterns that have been relatively stable. The consequential impacts of climate change related effects are well documented and present a significant and emerging threat to public health and wellbeing across the globe including Wales. It is likely that climate change will bring increasingly frequent and severe heat waves and extreme weather events, as well as a rise in sea levels. These events have the potential to affect human health in both direct and indirect ways. Timely public health information can enable individuals and communities to take action to help protect themselves, their neighbours, friends and relatives from avoidable health problems. Information in advance, during and after extreme weather events can support health and social care professionals (working in hospitals, care facilities, nursing homes etc) care for people at risk. Successful public health interventions depend upon good and timely communication between all partner organisations. Public Health Wales provides alerts and advice when extreme weather events occur or are forecast.

Co-author:

Huw Brunt, Consultant in Environmental Health Protection, Public Health Wales

BIOGRAPHY | Kristian has been employed as a Principal Environmental Public Health Specialist at Public Health Wales since May 2014. He is a Chartered Environmental Health Practitioner. Before joining Public Health Wales he worked for several local authorities in Wales, as an EHO and manager of pollution control, pest control and dog warden teams. He has been an active member of a number of all-Wales expert groups including pollution control, environmental permitting, environmental noise and air quality. He obtained his Master of Public Health in 2009 and holds diplomas in acoustics, pest control and management.

Operational Flood Forecasting

Matthew Winter, Flood Forecasting Centre

ABSTRACT | The Flood Forecasting Centre (FFC) is a joint partnership between the Met Office and the Environment Agency, located within the Met Office in Exeter. The FFC was created in response to the review of the 2007 Summer Flooding, which hit Gloucestershire and Worcestershire especially hard. The centre provides strategic level flood risk assessment and advice for England and Wales, forecasting the risk of flooding from all sources over a five day period. This presentation gives an overview of the FFC, the flood risk matrix we use operationally for assessing flood risk, the challenges we face and a brief look at some of our future improvements.

BIOGRAPHY | Matt has worked as an Operational Meteorologist at the Met Office since 2003. Initially his role involved working with civilian and defence customers across the UK and overseas, including deployment to most of the main military conflict zones of the past decade. Matt joined the Flood Forecasting Centre early in 2013 and has worked as a Hydrometeorologist since, with firsthand experience of operational flood forecasting during some of the most recent severe flood events. He achieved 'Chartered Meteorologist' with the Royal Meteorological Society in 2015 and has completed the QCF Level 6 in Flood Forecasting. Matt has also recently been on secondment working with the UNHCR, advising on severe weather impacts affecting south-east Europe during the refugee crisis.

Skilful European climate predictions and improved estimates of current meteorological risk

Dr Nick Dunstone Scientific Manager in Climate Dynamics, Met Office Hadley Centre

ABSTRACT | I will outline the latest developments in European seasonal to interannual climate prediction, including the newly realised skill in predicting the North Atlantic Oscillation (NAO) which is key to predicting the risk of European winter climate extremes. The large ensembles of high-resolution model output used in such near-term climate prediction can also be used to assess the current risk of extreme events. Using these large model ensembles we typically have 40 times more data than observations over the recent decades. This allows us to identify unprecedented extreme events and hence calculate the current dynamical risk of extreme events. The results of this novel use of near-term prediction data were used in the recent UK government National Flood Resilience Review.

BIOGRAPHY | Nick joined the Met Office Hadley Centre in 2008 after completing a PhD in Astrophysics at the University of St Andrews. He has worked on a number of topics around initialised seasonal to decadal climate prediction. He currently leads the Climate Dynamics group within the Monthly to Decadal Climate Prediction area.

Are sudden changes in the cover of valuable saltmarshes linked to climate change?

Dr Martin W Skov, School of Ocean Sciences, Bangor University, Anglesey, Wales

ABSTRACT | Coastline ecosystems, including salt marshes, naturally protect our shores against erosion and flooding – a facility that the government wants to safeguard for the future. Yet, marshes can undergo sudden and dramatic shifts in position and area cover, which influence natural coastal protection. This presentation asks: what causes these shifts, are they climate linked and how common are they; and what are the implications of marsh area shifts to the other natural benefits that people get from marshes: carbon sequestration, recreational space and the sense of wellbeing? Will coastal marshes drown with rising sealevel, and with them their natural benefits? The presentation draws on long-term, large-scale historical data and experimental research to answer these questions.

Co-Authors:

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BIOGRAPHY | Dr Martin Skov is a marine ecologist. He is a Senior Lecturer with Bangor University, with 20 years' experience in coastal environmental research. His work has strong emphasis on coastal resilience to change and its implications to society. Recent and current research includes emphasis on coastal flooding, carbon sequestration and area shifts in saltmarshes and mangroves. He leads the 6-institutional research consortium RESILCOAST (<http://nrm-lcee.ac.uk/resilcoast/index.php.en>) on coastal resilience, coastal protection, ecology and policy. In the multi-disciplinary CoastWEB project he examines human wellbeing relations with flood protecting marshes (<http://www.pml.ac.uk/Research/Projects/CoastWEB>). Past work research on the role of biodiversity in regulating the provisioning of natural benefits from coastal ecosystems (NERC, CBESS) and flood protection (EU, THESEUS).

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