Conference Abstracts & Biographies

6B – Marine Hazards and Wellbeing

Chair: Johanna Forster, University of East Anglia

Session Abstract:

Environmental change from acute extreme shocks as well as from long-term historical changes, have implications for people and communities that depend on natural resources. Marine ecosystems are prime examples of vulnerable social-ecological systems at risk from multiple environmental changes, such as sudden catastrophic weather events and natural hazards, and chronic biodiversity loss and fish stock decline. Without appropriate management of both long-term and sudden changes in the marine environment, the wellbeing of people and communities that depend on marine ecosystems are severely compromised. This panel draws on case studies from the UK, Caribbean, Pacific and Indian Ocean; where fishing and coastal island communities have been identified as particularly vulnerable due to their exposure to multiple hazards and changes in the marine environment. The papers include research on large-scale hurricane impacts on Caribbean island fisheries sectors; community responses and cultural learning associated with cyclones in Mauritius; and exploring the influence of historical risk management for wellbeing of island communities. Through an interactive format, and encouraging cross-paper discussion, we present findings from a diverse yet thematically related set of papers exploring the nature of vulnerability and wellbeing of coastal communities at risk from changes in their marine environment. Our discussion will focus on the themes of hazards and wellbeing for marine-dependent communities and ask; how can at-risk coastal communities and sectors be effectively supported?

Living between coastal hazards and steep slopes: colonial history and exposure in Dominica

Carole White, University of East Anglia, UK

Abstract:

Like other Caribbean islands, Dominica is vulnerable to multiple hazards that can occur simultaneously including hurricanes, earthquakes, flooding, rain, fires, seismic and volcanic activity. Dominica's population is concentrated on the low lying part of the coast, due to its topography which includes nine active volcanoes and dense forest covering half of the island. Land tenure has been profoundly shaped by colonisation in several ways – especially in the 18th and 19th century - and this continues to determine people's exposure to natural hazards. Dominicans are vulnerable to coastal hazards including storm surges from tropical cyclones as well as frequent seismic and geothermal activity resulting in loss of housing and livelihoods. Inland settlements built on steep slopes are at risk of landslides, particularly as Dominica ranks among the wettest islands in the Eastern Caribbean with an annual rainfall of over 400 inches (10,000 mm). Findings are presented from villagers who were evacuated and have had to establish new homes, following the devastating effects of Tropical Storm Erika in 2015 which caused damage and loss estimated at US$483 million, equivalent to 90% of Dominica's GDP; and from other sites where squatting in dangerous areas where flooding, landslides and access issues are common due to a lack of planning and support. In 2017, Dominica was hit hard by Hurricane Maria, causing loss of life and 90% damage to infrastructure. As Dominica starts to rebuild itself for the second time in the last five years, this presentation reflects on the historical factors which continue to shape exposure, vulnerability and responses to natural hazards today.

Societal implications of hurricanes on Caribbean island marine-dependent livelihoods
Johanna Forster, University of East Anglia, UK

Abstract:
There is increasing concern over the consequences of environmental change for people and communities that depend on already fragile marine resources, given the mounting evidence of sustained over-exploitation and climate change impacts on marine systems. In order to explore the social implications and potential resilience of marine-dependent livelihoods to environmental change, interviews with fishers and marine-based tourism operators in the Caribbean island of Anguilla were undertaken, to identify the impacts of historical hurricane events (Hurricane Luis in 1995 and Lenny in 1999) on marine livelihoods, the perceptions of resource-users and their potential adaptability to future change. For both sectors of resource-users, there is evidence that they have diversified livelihoods to achieve financial security, which may provide resilience to future hazard events or resource variability. In addition, specific behavioural changes that have been developed following previous hurricane events, e.g. removal of fish pots during hurricane months, or bringing boats to shore, indicate fishers' flexibility to changing conditions. However, strong personal and cultural attachment to occupations, particularly among fishers, may hinder resilience. Additionally, the reliance of all of these marine resource-users on the climate-dependent tourism industry may undermine their capacity to cope with future environmental change and hazards. These problems are widespread throughout the Caribbean, and have been most recently brought to the forefront of policy and research agendas following Hurricanes Maria and Irma in 2017. To conclude, recent work drawing on the impacts of these hurricanes on the neighbouring islands of Dominica and Antigua highlights shared and ongoing issues for marine-dependent livelihoods in the region.

History and hazard: Tracing historical roots of hazard exposure in Vanuatu
Clare Shelton, University of East Anglia, UK

Abstract:
Vanuatu experiences numerous hazards, including seismic and volcanic activity, landslides, coastal flooding and tropical cyclones. Since 1964, at least 22 tropical cyclones have caused infrastructure damage or fatalities, including 2015's Cyclone Pam displacing up to 70% of the population and causing significant damage. Hazard exposure is multifaceted and can be traced to political, social and cultural processes rooted in Vanuatu's colonial history. One of these is the contentious issue of land tenure, historically with European settler and exploitation colonialism regarding land as a commodity, creating tensions with traditional views of land and natural resources as integral to community well-being and identity. These competing views contributed to a push for independence from joint British and French colonial administrations in the 20th century. Findings are presented from a case study of rural ni-Vanuatu communities examining the influence and manifestation of some of these processes and their role in community well-being and exposure to multiple terrestrial and marine hazards.

Helices of hazard: tropical cyclones in Mauritius as 'extreme' weather events and the importance of a longue durée approach

Rory Walshe, King's College London & University College London, UK

Abstract:

Tropical cyclones are a considerable threat to the people, economy and environment of Mauritius, with intense cyclones having an approximate return interval of 8/15 years. It is suggested that the strength of cyclones will increase with climate change, and that recent events are directly caused by climate change. However, the instrumental record is short and there is relatively little known about community memory and learning from cyclones, either from a current or historical standpoint. Critically, while community awareness of environmental risk is shown to be present in Mauritius and key to the capacity to response, the levels and distribution of this knowledge is almost entirely unknown.

In order to adequately understand community response to cyclones, this research suggests that it is essential to first understand the *longue durée*, since the prerequisites and conditions for any so called 'natural' disaster, trace their origins far into the distance, in both time and space. To address this, the research conducts a multidisciplinary methodological approach, which deploys a combination of interviews with archive research to illustrate not only the past experience and impact of tropical cyclones in Mauritius, but equally importantly, the determinants of social and cultural learning from disasters. The early results of this research are presented here, including practical examples of cycles of memory (and forgetting), institutional pathways of vulnerability and cultural responses. This has broad implications for the modern attribution of climate change impacts, as well as adaptation and disaster risk reduction.