PROCEEDINGS

7th Early Career Researchers' National Forum & Workshop
University of Melbourne
7-9 May 2012

Australian Climate Change Adaptation Research Network for Settlements and Infrastructure

ACCARNSI 7TH NATIONAL ECR FORUM AND WORKSHOP PROGRAM

Day 1: Monday 7 May 2012

9.00	
9.15	Forum Welcome: ACCARNSI Network Convenor Associate Professor Ron Cox
	The effects of climate change on the development of harmful algal bloom: management of lakes and reservoir water quality
9.30	
	Regenerative Public Space and Urban Heat Island Effect. Mitigation and Adaptation Strategies in Three Selected Cities: Dubai, London and Sydney
9.50	
	The Insurance Council of Australia's Building Resilience Rating Tool: Providing the tools for a Climate Adapted Built Environment
10.10	
10.30	Discussion lead by Associate Professor Ron Cox
10.45	
	Climate Change Adaptation: The Development of an Adaptation Evaluation Metric (AEM)
11.15	
	Great
11.35	

3.30	WORKSHOP 'Testing the suitability of innovative adaptation tools and research to the local government sphere'
5.00	DAY 1 WRAP UP & CLOSE
6.30	GROUP DINNER Meet at Cure Bar and Eatery, 164 Rathdowne St Carlton

Day

INFRASTRUCTURE

Anna RIGOSI
University of Adelaide, SA

ABS

PLANNING & POLICY

Alianne RANCE
University of Melbourne, EcoLogical Water Solutions, VIC

alianner@elws.com.au

CLIMATE CHANGE ADAPTATION:
THE DEVELOPMENT OF AN ADAPTATION EVALUAT

AB

COASTAL SETTLEMENTS

Marcello SANO
Griffith University, QLD

m.sano@griffith.edu.au

ADAPTING COASTS TO CLIMATIC FUTURES

Marcello Sano

Abstract:
The final aim of research looking at the impacts of climate change in coastal communities is to inform the development of specific adaptation options. These should combine a range of elements: (i) coastal policies and regulations (ii) infrastructure and design standards for coastal protection, (iii) economic instruments and insurance markets and (iv) coastal communities engagement mechanisms. For instance, the adaptation of policies and regulations can facilitate the implementation of new technological options in infrastructure design (e.g. floating breakwaters for marinas), or the adoption of new economic incentives (e.g. compulsory insurances for construction in erosion risk areas). These should be coupled with stakeholder awareness and engagement programs, to be considered as adaptation options themselves. With these ideas in mind, we have been working in the last two years in developing and testing a range of techniques in different locations across Queensland, Australia, with the final aim of informing the identification of suitable adaptation options for coastal communities under threat from sea level rise, coastal erosion and extreme events such as tropical cyclones. Thes include (i) the use of suburb-level mapping to identify vulnerability hotspots (ii) the assessment of the effect of sea level rise on storm surges and extreme beach erosion on vulnerable locations (iii) the development and testing of systems thinking and bayesian modelling techniques to explore adaptation options and adaptive capacity, (ii) the use of scenario planning to test adaptation options and (iv) the development of compendiums of adaptation options to support councils decisions.

COASTAL SETTLEMENTS

Tayanah O'DONNELL
University of Western Sydney, NSW

Tayanah80@hotmail.com

PLANNING FOR SEA LEVEL RISE:
LEGAL AND GOVERNANCE ISSUES EXPLORED IN A COMPARATIVE CASE STUDY

Tayanah O'Donnell

Abstract:
Since 2007, climate change discourse has shifted significantly in focus on adaptation contra mitigation strategies. As a result, there has been a renewed focus within Australian planning law and policy to address suspected outcomes due to climate change, events such as increased precipitation (and therefore flood events), increased bush fire risk and intensity, and sea level rise, in an attempt to alleviate, or

COASTAL SETTLEMENTS

Murray HERRON
Deakin University, VIC

jmher@deakin.edu.au

LOOKING FOR SANITY IN COASTAL PLANNING DECISIONS

Murray Herron, David Jones & John Rollo

Abstract:
The future of coastal development in Victoria is an important and topical issue in land use planning. Over the past decade the Australian coastline has had to deal with two phenomena. The first is the rise in popularity of the lifestyle option known of sea change (i.e. individuals either moving to or retiring to the coast) the second is the ongoing and long term effect of climate change on the Australian coastline.

The high value of waterfront property has created a high demand for development and has placed considerable pressure on the environment. In recent times the Victorian State Government has assumed planning control over certain coastal areas in Victoria (e.g., Narrawong in Glenelg Shire). In addition, the concept of sustainable development is coming under increased pressure as more and more individuals desire the coastal lifestyle. The current trend in land use planning is to favour urban and tourism developments which increase the negative impact and also the costs of shore protection from natural hazards such as coastal erosion and flooding.

The aim of this research is to compile a Decision Support System to assist in optimizing future land use policy along Victoria's coast line, with respect to current and projected population growth rates. The system draws on the simulated effects from data gathered over a 20 year period.

Land use patterns are used as a measure to quantify coastal development. Different coastal development policies are simulated and the changes in the land use patterns are analyzed.

The impact of different policies on the socio-economic and environmental contest of the areas will be modelled and the potential effects of climate change will be included in the simulation. The goal of this research is to highlight the capabilities of the DSS model when simulating the effects of different development polices in conjunction with climate change on the future coastal land use patterns in Victoria.

SOCIAL INCLUSION

GavinPOCOCK
Deakin University, VIC

Gavin.pocock@gmail.com

INDIGENOUS CLI/ENDI/E/EET / /eL.GEgpIC

EMERGENCY MANAGEMENT/RISK MANAGEMENT

Rhiannon NIVEN
University of Adelaide, SA

Rhiannon.niven@adelaide.edu.au

FLOOD RISK MANAGEMENT: PRELIMINARY RESULTS OF THE EXPERIENCE OF SOUTH-EAST QUEENSLAND, 2011

Rhiannon Niven

Abstract:
In January 2011, significant flooding occurred across Eastern Australia, with catastrophic impacts particularly felt in South-East Queensland. There were multiple deaths, billions of dollars of private property and infrastructure damage, and thousands of people displaced from their homes in the capital city of Brisbane and the surrounding regions. As a result, several inquiries were undertaken catalysing both changes in policy and litigation issues in the insurance industry, and general flood risk and emergency management. Such an event has instigated wider discussions regarding the methodologies used to manage flood risk, and the further climate change impacts on settlements and infrastructure. This research will explore the experiences and governance mechanisms of those affected by the January 2011 event in South-East Queensland. Special attention will be given to the experience of Grantham in the Lockyer Valley Regional Council and their relocation response. A mixed methods approach was undertaken using semi-structured interviews with key stakeholders and documentary analysis. Preliminary results will be presented as part of a wider international comparison, particularly the USA and Europe, on flood risk management for settlements, and a discussion on climate change mitigation and adaptation options for planning and policy.

EMERGENCY MANAGEMENT/RISK MANAGEMENT

Ingrid JOHNSTON
University of Tasmania, TAS

Ingrid.johnston@utas.edu.au

CLIMATE CHANGE ADAPTATION IN THE SOUTH PACIFIC: RESPONSES TO NATURAL DISASTERS IN FIJI AND TONGA

Ingrid Johnston

Abstract:
Small island developing nations in the South Pacific are at the forefront of the effects of climate change, and part of this is a predicted increase in frequency and intensity of natural disasters such as tropical cyclones in this region. This research seeks to investigate the need for and capacity of the disaster responses to adapt to climate change. From the perspectives of the Governments, NGOs who provide aid, and the affected communities, this project will identify who is making decisions about how and what to respond to; and which responses are helpful and which may be harmful to the communities they are trying to assist.

EMERGENCY MANAGEMENT/RISK MANAGEMENT

Asif QUMER GILL
University of Sydney, NSW

Asif.qumer@sydney.edu.au

TRUSTED COMMUNITY CLOUD FOR DISASTER MANAGEMENT

Asif Qumer Gill

Abstract:
Disaster management (DM) requires efficient and reliable DM infrastructure and resources for the sourcing, storage, management and distribution of large amount of real-time data (e.g. geospatial, sensor, satellite, video feeds etc.), which is key to support the collaboration and coordination activities of different organizational units and the community at different levels. Disasters are unpredictable events and the need to provision additional computing infrastructure can be variable. The emergence of on-demand elastic cloud technology transcends the conventional systems approach to DM, which sometimes may fail due to the spike in the demand for additional computing infrastructure and resources. The core benefit of cloud technology is that it allows the quick and elastic provisioning of on-demand computing infrastructure and resources required to respond and manage a disaster such as power, storage, memory, servers and information systems as services. However, before jumping on the cloud bandwagon, it is important for organizations to assess their current operating environment and operational readiness for the cloud migration. We have developed a context-aware cloud adaptation (CACA) framework to enable organizations to understand their current operating environment and their operational readiness prior to proceed with the adoption of cloud technologies. We are currently using and validating CACA framework at NSW Emergency Information and Coordination Unit (EICU) for investigating how closed-box Trusted Community Cloud infrastructure and resources can be used to support the dynamic nature of a disaster as it evolves.

EMERGENCY MANAGEMENT/RISK MANAGEMENT

Sophie MILLIN
RMIT, VIC

Sophie.millin@rmit.edu.au

FLEXIBLE GUIDANCE TO LOCAL GOVERNMENT ADAPTATION PLANNING

Hartmut Fuenfgeld & Sophie Millin

Abstract:
This presentation discusses an innovative and flexible guidance tool for adaptation planning at the local scale, called the Adaptation Navigator. The web-based application aims to be directly relevant and applicable to adaptation policy development and practice in assisting local government in Victoria.

Many activities are affected by climate, and decisions taken to manage the associated risks. As climate changes so too will risk (Willows and Connell, 2003). This will have an effect on the outcome of a wide range of decisions affecting settlements and infrastructure. Decision-makers need to be aware of these risks when planning for the future and will require a diverse range of information and guidance to do this.

It is widely acknowledged that climate adaptation planning needs to occur at a local scale because it is the scale at which impacts occur and where most adaptation will take place. The direction of the approach is also important. While some aspects of adaptation planning can be facilitated using top-down decision-making, they can also neglect the complexity that bottom-up approaches attempt to include. The Adaptation Navigator therefore focuses on a bottom-up approach for building organisational capacity for adaptation planning from within an organisation.

Many adaptation toolkits and step by step guides exist, but most are too rigid to be operationalised effectively. They offer little guidance on local adaptation planning processes to accommodate the range of climatic and non-climatic risks that decision-makers face in their varied local situations. The development of the Adaptation Navigator has focused on providing generic guidance on adaptation as a continuous, iterative process, which can easily be modified and tailored for local adaptation planning.