


BOOK OF PROCEEDINGS



AUSTRALIAN CLIMATE CHANGE ADAPTATION RESEARCH NETWORK FOR SETTLEMENTS & INFRASTRUCTURE

EARLY CAREER
RESEARCHER
ELEVENTH NATIONAL
WORKSHOP AND FORUM



UNIVERSITY OF CANBERRA
15 - 17 FEBRUARY 2016

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ACCARNSI 11TH NATIONAL ECR FORUM AND WORKSHOP PROGRAM

DAY 1 Monday 15 February 2016: University of Canberra
University of Canberra - Bruce Campus, Building 24 Room 2

11.00	<i>MORNING TEA ON ARRIVAL</i>
11.15	ECR FORUM WELCOME: Associate Professor Ron Cox, <i>Network Convenor, ACCARNSI</i>
11.30	GUEST PRESENTATION: Planning in and for the Region Professor Barbara Norman, <i>Director, Canberra Urban & Regional Futures, University of Canberra</i> and Professor Bill Maher, <i>Institute of Applied Ecology, University of Canberra</i>
12.30	<i>LUNCH</i>
1.30	Developing a sense of place: interviewing for community views Tayanah O'Donnell, <i>University of Canberra, ACT</i>
1.50	Climate change challenges and the Queensland Affordable Housing Programme (QAHP) Andrew Venning, <i>University of the Sunshine Coast, QLD</i>
2.10	Modelling for Integrated Regional Infrastructure Planning Li Meng, <i>University of South Australia, SA</i>
2.30	Discussion of key themes lead by Associate Professor Ron Cox
2.50	<i>AFTERNOON TEA</i>
3.20	The end-point of adaptation: What are the implications of 'climigration' for spatial planning? Tony Matthews, <i>Griffith University, QLD</i>
3.40	Supporting sustainable regional development through improved governance and institutional design Lain Dare, <i>University of Canberra, ACT</i>
4.00	Impact of Extreme Climate Events on Agricultural Productivity and Profitability Matthew Peck, <i>Griffith University, QLD</i>
4.20	Discussion of key themes lead by Professor Barbara Norman
4.40	DAY 1 CLOSE
7.00	GROUP DINNER: Jamie's Italian, 125 Bunda St Canberra Civic Booking is under O'Donnell, meet at restaurant

DAY 2 Tuesday 16 February 2016: University of Canberra
University of Canberra - Bruce Campus, Building 24 Room 2

8.45	<i>TEA AND COFFEE ON ARRIVAL</i>
9.00	The effects of building facades on outdoor microclimate – Framework for in-situ observations Jonathan Fox, <i>University of New South Wales, NSW</i>
9.20	Water demand of heterogeneous urban vegetation Hamideh Nouri, <i>University of South Australia, SA</i>
9.40	Evaluating the thermal performance of urban green infrastructure at local scale: A methodology framework Carlos Bartesaghi Koc, <i>University of New South Wales, NSW</i>
10.00	Discussion of key themes lead by Associate Professor Ron Cox
10.15	<i>MORNING TEA</i>
10.35	An overview of financing models for coastal protection in Australia Dan Ware, <i>Griffith University, QLD</i>
10.55	Visualisation methods for linking scientific and local knowledge of climate change impacts Scott Lieske, <i>University of New South Wales, NSW</i>
11.15	A conceptual Climate Resilience Framework (CRF) for sustainable development focusing flood and drought: Investigating the dimensions of Input Uncertainty Syed Abu Shoaib, <i>University of New South Wales, NSW</i>
11.35	Climate change impacts on Stormwater Asset Operation Chris Drummond, <i>University of New South Wales, NSW</i>
11.55	Discussion of key themes lead by Associate Professor Ron Cox
12.15	<i>LUNCH</i>
12.40	FIELD TRIP: Depart University of Canberra for New Parliament House
12.55	FIELD TRIP: Arrive New Parliament House
1.50	FIELD TRIP: Depart New Parliament House for Capital Wind Farm
2.50	FIELD TRIP: Arrive Capital Wind Farm
4.00	FIELD TRIP: Depart Capital Wind Farm for Lerida Estate Winery
4.30	FIELD TRIP: Arrive Lerida Estate Winery
5.30	FIELD TRIP: Depart Lerida Estate Winery for Canberra
6.15	FIELD TRIP: Arrive back in Canberra Civic
6.15	DAY 2 CLOSE

**DAY 3 Wednesday 17 February 2016: University of Canberra
University of Canberra - Bruce Campus, Building 24 Room 2**

9.15	<i>TEA AND COFFEE ON ARRIVAL</i>
9.30	GUEST PRESENTATION: Perspectives from the Region Peter Bascomb, <i>General Manager, Palerang Shire Council</i>
10.00	GUEST PRESENTATION: The Science Policy Interface Katie Eberle, <i>Director, Climate Adaptation, Department of Environment</i>
10.30	<i>MORNING TEA</i>
10.45	Tourism and climate change adaptation: just one more issue for sustainable tourism destinations? Brian Weir, <i>University of Canberra, ACT</i>
11.05	Adapting whale watching to climate change – a case study from the east coast of Australia Olaf Meynecke, <i>Griffith University, QLD</i>
11.25	Tasmanian Regional Climate Adaptation 'Lessons learned and what happens next. "Or what it is really like at the coal face." Katrina Graham, <i>Hobart City Council, TAS</i>
11.45	Discussion of key themes lead by Professor Rodger Tomlinson
12.00	<i>LUNCH</i>
12.45	WORKSHOP: National Adaptation Research Plan (NARP) Review Session 1: Current State of Play Facilitated by Associate Professor Ron Cox, <i>Network Convenor, ACCARNSI</i>
1.30	WORKSHOP: National Adaptation Research Plan (NARP) Review Session 2: Filling in the Gaps Facilitated by Associate Professor Ron Cox, <i>Network Convenor, ACCARNSI</i>
2.30	<i>AFTERNOON TEA</i>
3.00	WORKSHOP: National Adaptation Research Plan (NARP) Review Session 3: Group summaries Facilitated by Associate Professor Ron Cox, <i>Network Convenor, ACCARNSI</i>
4.00	WORKSHOP: National Adaptation Research Plan (NARP) Review Reflections and Wrap Up by Professor Barbara Norman
4.15	ECR FORUM CLOSE & VOTE OF THANKS: Associate Professor Ron Cox, <i>Network Convenor, ACCARNSI</i>

Tayanah O'DONNELL

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DEVELOPING A SENSE OF PLACE: INTERVIEWING FOR COMMUNITY VIEWS

Tayanah O'Donnell

Abstract:

Recent perspectives on urbanised human settlement are seeing a re-emergence of the people-place nexus as critical to long term sustainability (Parker, 2015). Such re-emergence has significant implications in the context of social, economic and environmental perspectives on places, with sustainability often the justification for urban consolidation and change (Gray, Gleeson and Burke, 2010; Bunker, Holloway and Randolph, 2005). Within such urban context the physical environment can be spatially dissected into discrete parts, identities, of the city as a whole and in this context, the outer residential suburbs can provide a rich field from which to explore the prevalence of perspectives on valuing places (McCrea and Walters, 2012). This presentation will discuss the above in the context of Tuggeranong, a southern ACT suburb, and a project currently underway in which one-on-one, semi-structured, interviews have been used to explore community understandings of place.

Andrew VENNING

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CLIMATE CHANGE CHALLENGES AND THE QUEENSLAND AFFORDABLE HOUSING PROGRAM (QAHP)

Andrew Venning, Tim Smith, Andrew Young & Amanda Kennedy

Abstract:

Climate change challenges the Queensland Affordable Housing Programme (QAHP), exacerbated by rapid population growth and demographic change in the already identified sensitive landscape of SE Queensland (SEQ). Three QAHP built environment developments and their cohort become the focal point for this thesis, which performs a penetrating analysis not blurred by a false planning dichotomy. It is an analysis bound to the concepts of meaning, object, affordance, residential features, vulnerability and the social-built environment interface. A theoretical approach that grasps the reciprocity of the tangible and intangible interrelationships between individuals, groups of individuals and the built environment. It reveals through a juxtaposition of declaratory policy instruments and theory, primary desired achievements for the QAHP. Three of which, in light of climate change vulnerability are noticeably constrained; inclusion, wellbeing and liveability. The QAHP cohort experiences neglect by planning legislators and decision makers who are bound to a stationarity framework. Through the predictive power of a three step inquiry legal model, legal mechanisms are suggested, which enhance inclusion, access, wellbeing and liveability and restrain climate change vulnerability for the QAHP cohort.

LI MENG

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MODELLING FOR INTEGRATED REGIONAL INFRASTRUCTURE PLANNING

Li Meng

Abstract:

Urban form is one of the key factors influencing carbon emissions from human settlements. Australian cities have been historically designed with a spread urban form, so that infrastructure provision now comes at high costs when compared to high density cities. Residents living in such a spread urban area tend to prefer larger lot sizes and to drive private cars to all destinations. Transforming into a higher density urban, urban planners face challenges in estimating travel demand and in forecasting social and environmental impacts generated from the new urban form. There is a need to investigate a policy tool that can assist urban planners and policy makers in designing urban policy accounting for feedback from households and firms, using modern analytical tools such as dynamic traffic assignment, and applying quantitative assessment criteria and scales. This study is developing a new integrated transport and land use modelling system (based on the current Metropolitan Adelaide Strategic Transport Evaluation Model (MASTEM)) by utilizing a conventional four-step travel demand model (Cube Voyager) with an econometric land use model (Cube Land). The outcomes of the study are expected to explain and forecast the behaviour of urban actors such as investors, households, firms or travellers (on the basis of the random utility discrete choice method); analyze individual and group travel behaviour; estimate environmental impacts and rationality in social factors to achieve sustainability in acceptable travel reduction strategies, and explain land use activities and land market segmentation with an explicit treatment of prices in land use and transport development.

Tony MATTHEWS
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THE END-POINT OF ADAPTATION: WHAT ARE THE IMPLICATIONS OF ‘CLIMIGRATION’ FOR SPATIAL PLANNING?

Tony Matthews & Ruth Potts

Abstract:

The phenomenon of ‘climigration’ is an emerging and increasing challenge for contemporary planning. Climigration refers to community relocation undertaken in response to climate change impacts. It is a form of assisted migration because it occurs in a planned and structured way with the assistance of government agencies. This paper depicts climigration as an emerging spatial issue with unique features and fundamental differences to other forms of resettlement. Climigration is characterized as an end-point of climate change adaptation in the context of planning because it inherently requires the wholesale relocation of communities. This research links climigration to planning and discusses how articulation of the concept may be brought into the discipline. Findings from a systematic literature review of case studies where community relocations occurred in response to climate-induced threats are then provided. Drawing upon these, the paper critically examines planning factors with critical, moderate or negligible influences on relocation success. The factors are synthesized into a best practice framework to guide planning practice in successfully responding to climigration now and into the future. Two key conclusions are provided. First, planning regimes have central roles to play as agencies of government in instances of climigration. Second, responding to climigration will require planners to engage in substantial collaboration with stakeholders, including affected residents, emergency services and various other government agencies.

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SUPPORTING SUSTAINABLE REGIONAL DEVELOPMENT THROUGH IMPROVED GOVERNANCE AND INSTITUTIONAL DESIGN

Lain Dare

Abstract:

Sustainable development within regional Australia is both crucial and complex. Shifting political imperatives, a changing climate, and transitioning demographics create dynamic challenges for regional communities. Intertwined, social, economic and environmental pressures separately and jointly impede opportunities for sustained innovative development that offers real benefit to communities. This paper unwraps the realities of these multiple challenges using two case studies to highlight the diversity of approaches to sustainable development in regional Australia. Using empirical data we explore the range of development approaches adopted by local government and other public and private sector actors. An analysis of policy networks within the case study communities highlights the complexity of decision-making within regional Australia due to various arrangements of multi-level governance and associated institutional rules. With this understanding of the governance environment we identify the critical dilemmas affecting economic and social development, and explore the barriers inhibiting innovative development. With this comprehensive understanding of how our case study communities make, or implement, policy decisions, we identify opportunities for improved democratic processes to create an environment that enables effective leadership and motivation for innovative and sustainable community futures.

Matthew PECK

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IMPACT OF EXTREME CLIMATE EVENTS ON AGRICULTURAL PRODUCTIVITY AND PROFITABILITY

Matthew Peck & Afshin Ghahramani

Abstract:

Extreme climate events are challenging for Australian agricultural systems, imposing significant damage on commodities of primary industries. More than a decade ago, it was of major concern that a potential change in climate will increase extreme events, now in recent years there are evidences of an increase in the frequency and intensity of such events e.g. in the Western Australian wheat belt. To confirm this statement, a trend analysis of historical extreme events was undertaken using case studies. We examined the types and characteristics of climate extremes that had an effect on agricultural industries and their likely impact in the near future of 2030. It was evident that changes to the occurrence and intensity of extreme climatic events have occurred. The responses of wheat to extreme climate events were biophysically modelled to determine the effect on productivity and profitability. Both agricultural productivity and profitability are expected to become increasingly more effected. Future projections determined that both the frequency and intensity of extreme climatic events may change in Western Australia.

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THE EFFECTS OF BUILDING FACADES ON OUTDOOR MICROCLIMATE – FRAMEWORK FOR IN-SITU OBSERVATIONS

Jonathan Fox

Abstract:

For architects to adopt microclimatic design principles – for the mitigation of and adaptation to future impacts of climate change and urbanization – they require diagnostic tools and predictive information about the microclimate effects of building design at spatial scales relevant to their decision-making. The use of ground-based sensor platforms enables observations of micrometeorological processes governing urban surface-atmosphere exchange at the individual building scale. Knowledge of these scale-dependent processes both strengthens the relevance of building climatology in the design of more sustainable cities and improves predictions of climate-sensitive design by quantifying the impact of individual design decisions on climate variables. This paper describes an innovative experimental framework for ongoing urban microclimate research which aims to statistically infer predictive relations between the thermo-radiative properties of representative building facades and observed outdoor surface, air and mean radiant temperatures in three Australian cities. The experimental design accounts for the temporal, spatial, thermal and radiative effects of a facade's structure and fabric using ground-based high-resolution infrared thermography, multispectral sensors, observed outdoor thermal comfort parameters and micrometeorological measurements managed on a geographical information system (GIS) platform. The use of GIS facilitates integration between the overlapping scales of building, canyon and precinct climatology to enhance climate-sensitive urban planning and design. By relating discrete thermo-radiative contributions of building facades to unique architectural design parameters – using novel multi-sensor and digital spatial mapping platforms – this research develops new observational and analytical techniques to advance the key challenge for climate-sensitive design at all scales: that of linking physical characteristics of urban elements to intentional climate modification. By representing the real complexity of urban effects, in-situ observations are crucial to this endeavour.

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WATER DEMAND OF HETEROGENEOUS URBAN VEGETATION

Hamideh Nouri, Simon Beecham, Paul Sutton & Edward Glenn

Abstract:

Finding a valid approach to measure the water requirements of mixed urban vegetation is a challenge. Evapotranspiration (ET) is the main component of a plant's water requirement. A better understanding of the ET of urban vegetation is essential for sustainable urbanisation. Despite promising technologies and sophisticated facilities, ET estimation of urban vegetation remains insufficiently characterized. We reviewed the common field, laboratory and modelling techniques for ET estimation. We opted for 3 approaches of ET estimation: 1) an observational-based method of WUCOLS, 2) a field-based method of Soil Water Balance (SWB) and 3) a Remote Sensing-based method. These approaches were applied to an experimental site to evaluate the most suitable ET estimation approach for an urban parkland. To determine in-situ ET, 2 lysimeters and 11 Neutron Moisture Meter probes were installed. Based on SWB principles, all input water (irrigation, precipitation and upward groundwater movements) and output water (ET, drainage, soil moisture and runoff) were measured monthly for 14 months. We examined the capability of RS to estimate ET for urban vegetation. Image processing of MODIS images enabled modelling of the relationship between urban vegetation and vegetation indices derived from satellite images. Our results indicate that ET by MODIS was very close to the SWB estimate, while WUCOLS estimated the total water requirement 26% lower than the SWB estimate and 37% lower than the amount actually added including the drainage fraction. We conclude that remote sensing-based method can provide accurate estimates of urban water requirements in mixed urban vegetation.

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EVALUATING THE THERMAL PERFORMANCE OF URBAN GREEN INFRASTRUCTURE AT LOCAL SCALE: A METHODOLOGY FRAMEWORK

Carlos Bartesaghi Koc, Paul Osmond & Alan Peters

Abstract:

There is ample evidence of the climatic benefits provided by green infrastructure; however the optimal amount, composition and spatial distribution necessary to maximise the cooling potential of different GI typologies is unclear. Further research at higher spatial resolutions and at the local scale is also required since current climatological research has mainly focused on the mesoscale. This research proposes a new methodology for a more accurate and precise evaluation of thermal performance of GI using a combination of field measurements and airborne remote sensing. Its novelty lies in the combination of functional, morphological and configurational indicators and the estimation of evapotranspiration rates by adapting agro-meteorological models applied to highly heterogeneous urban settings using a GIS-based approach. This methodology includes: (a) the selection and cataloguing of sites using local climate zones (LCZ), (b) the classification and analysis of existing conditions based on a new green infrastructure typology, (c) the spatial and statistical analysis of indicators allocated to different typologies, and (d) formulation of a new assessment model. Future stages of the research will concentrate on testing and validating this method, using Sydney as the case study. Bankstown, Canterbury and Chatswood have been selected as potential sites due to their geographic location, urban characteristics and data availability. The research project is also intended to provide climate experts with protocols to evaluate, compare and communicate the evidence in a more standardised way, and propose guidelines and recommendations for urban designers and policy makers.

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AN OVERVIEW OF FINANCING MODELS FOR COASTAL PROTECTION IN AUSTRALIA

Dan Ware

Abstract:

Funding coastal protection works in Australia has traditionally been achieved through the allocation of public funds by Local and State government alone or in partnership. When protection works provide a benefit to private landowners, the process for reaching agreement to fund such projects is the source of significant tension between State and Local Governments and between foreshore property owners who directly benefit from the project and other rate payers.

For Local Government the relatively large cost of coastal protection projects can introduce political risks of accusations of bias towards foreshore property owners by other ratepayers, and places strain on available capital. State Governments are equally reluctant to provide funding due to the perceived risk that it may establish a precedent that could become unmanageable across large stretches of coastline. This tension between parties delays and adds planning costs, compounding the already contested nature of many coastal protection projects.

This research is part of an endeavour to understand the potential role of non-government finance for coastal protection projects in Australia. Through the development of a theoretical framework, which includes public goods theory, public private partnerships and ecosystem services, this paper compares a series of case studies within Australia where non-government financing has been used to fund coastal protection works.

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VISUALISATION METHODS FOR LINKING SCIENTIFIC AND LOCAL KNOWLEDGE OF CLIMATE CHANGE IMPACTS

Scott N. Lieske, Kari Martin, Ben Grant & Claudia Baldwin

Abstract:

Spatial decision support systems and spatial planning more broadly must be able to help communities confront the combined effects of climate change: flooding, sea level rise, storm surge, and severe weather events in coastal areas. The goal of this research is to extend ideas about the role of geographic visualization in generating a societal response to top-down inaction on changing climate by testing methods and evaluating the effectiveness of geographic information-based tools for developing 3D scenes within a participatory process. The engagement process took place within an Australian coastal community where residential development and infrastructure are vulnerable to flooding, sea level rise and storm surge. This research employed and assessed multiple visual methods including geographic visualization to illustrate the impacts of climate change on the study area. Participant assessment indicated all methods employed were beneficial but 3D visualization was the most effective method for knowledge exchange.

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A CONCEPTUAL CLIMATE RESILIENCE FRAMEWORK (CRF) FOR SUSTAINABLE DEVELOPMENT FOCUSING FLOOD AND DROUGHT: INVESTIGATING THE DIMENSIONS OF INPUT UNCERTAINTY

Syed Abu Shoaib, Lucy Marshall & Ashish Sharma

Abstract:

A good understanding of the climate resilience system is vital to empower society to get ready for the future. Growing populations, shrinking resources, varying weather patterns and extreme events in consolidation with water scarcity and varying crop yields will all put pressure on societies. The merely certain entity is that the climate and weather in the upcoming years will endure to have a complexity of uncertainty and unexpected event will frequently embrace us. Hydrologic processes embedded with uncertainty are driven by climate inputs at a wide range of spatial and temporal scales. Climate variability and change are, thus, key factors to be considered in hydrologic modeling. With the anticipated impacts of climate change on hydrology and water resources, especially in the form of extreme hydrologic events (e.g. floods and droughts), there is an increasing need to define how resilient the existing approaches are for hydrologic modeling and prediction as well as the associated water, environmental, and socio-economic planning and management actions. To improve climate resilience, input uncertainty needs to be quantified. Therefore, a conceptual Climate Resilience Framework (CRF) is presented with the consideration of climate extremes, resilience function and different input parameter. Multi-model hydrological framework is shown as part of quantifying input variability. How input variability (especially precipitation) may change the streamflow variability is analyzed and showed as the spectrum of variation with different scenario. This framework can be used in coastal planning and management process.

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CLIMATE CHANGE IMPACTS ON STORMWATER ASSET OPERATION

Christopher Drummond, Doug Anderson, Grantley Smith & Matthieu Deiber

Abstract:

Stormwater assets in east coast Australia cities and towns are presently under pressure from increasing catchment urbanisation and population growth. Furthermore, climate change projections indicate increases in rainfall intensities, runoff volumes and sea levels. As a result, the capacity of these systems to cope with future climate change needs to be assessed.

The challenge for stormwater planners and engineers is understand the complexity of existing stormwater assets and to assess their vulnerability to projected changes to tailwater levels, flow rates and flow regime. To predict future responses, it is crucial to understand the complex internal flow patterns associated with stormwater channel junctions and separations. It is often difficult to establish numerical models that accurately capture this complex three-dimensional flow and thus predict the impact that climate change projections and urbanization could have on a system. In these situations, construction of a scaled physical model closes the gap and provides accurate predictions on how hydraulic structures will operate and their resilience to change.

This presentation will showcase learnings from analysis of four hydraulic physical models undertaken at the UNSW Australia Water Research Laboratory.

The models indicate that many of these systems are particularly sensitive to small changes in tailwater conditions that can cause the flow modes to change and hydraulic efficiencies to reduce.

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TOURISM AND CLIMATE CHANGE ADAPTATION: JUST ONE MORE ISSUE FOR SUSTAINABLE TOURISM DESTINATIONS?

Brian Weir

Abstract:

Climate change presents a particular challenge to human settlements, but also on human activities in those places and landscapes. Tourism is all about travel to specific places and landscapes (Weaver & Lawton 2014). Given this characteristic, tourism is also almost uniquely vulnerable to changes in its operating ‘environments’, whether they be political, social, economic or physical (Leiper 2004). But tourism has also proven repeatedly to be a resilient and adaptable business sector (Bramwell & Lane 2007, 2011), and one both adept at developing business-level responses, *and* at pursuing government and other support for effective sector-level responses to challenges from its operating ‘environments’ (Dredge & Jenkins 2007; Buckley 2012).

Climate change is a particular challenge to tourism, impacting as it is expected to do on its physical, social, economic **and** physical ‘environments’ (Scott et al. 2012). But *both* because of its vulnerability and adaptability, tourism presents an interesting case study to examine Australian climate change adaptation for settlements and infrastructure.

Building on the author’s doctoral research, this paper discusses these issues for Canberra, Australia. It first describes Canberra’s tourism industry, then presents forecasts on expected climate change for the city and likely impacts on city tourism, before considering climate change adaptation policy and planning responses in place and proposed.

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ADAPTING WHALE WATCHING TO CLIMATE CHANGE – A CASE STUDY FROM THE EAST COAST OF AUSTRALIA

Jan-Olaf Meynecke, Russell Richards & Oz Sahin

Abstract:

Whale watching is a billion dollar industry worldwide. One of the most popular species for whale watching is the Humpback whale (*Megaptera novaengliae*). The migratory corridors, feeding, resting and calving sites, which are used for whale watching may be influenced by changing ocean currents and water temperatures. Whales are responding through a shift in migration time, behavior, abundance and distribution. Here we developed a heuristic model to evaluate the effects of climate change on the whale watch tourism on the east coast of Australia. Different scenarios were tested to provide an understanding of the socio-economic response. We integrated multiple drivers including climate change (e.g. length of season, temperature), policy (e.g. number of boats), ecology (e.g. number of whales age structure) and socioeconomic (e.g. number of tourists, fuel price) to evaluate the changes. We then developed a Bayesian Belief network model from the systems conceptualisation on which basis stakeholders identified a priority issue (Profitability). The structure and the quantification of this model was provided by the stakeholders and a sensitivity analyses was carried out to help identify important intervention points for the industry. Overall, our research illustrates how such a modelling process can assist local tourism operators and authorities in making rational management decisions within a holistic or systems- based framework. Our study also revealed a lack of management instruments to develop natural resource-based tourism in Australia.

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TASMANIAN REGIONAL CLIMATE ADAPTATION 'LESSONS LEARNED AND WHAT HAPPENS NEXT. "OR WHAT IT IS REALLY LIKE AT THE COAL FACE."

Katrina Graham

Abstract:

Local government is acknowledged as having the most significant role in adapting to climate change across its assets and services, alongside working with communities enabling them to adapt and respond to impacts. It is recognised that collaboration and cooperation by councils embeds more efficient and effective outcomes and enhances resilience across municipal boundaries.

To this end Think South, Tasmanian Climate Change Office and Local Government Association of Tasmania, funded by the Australian Government and the City of Hobart, collaborated on the pilot Regional Climate Change Adaptation Project (RCCAP) with 12 southern Tasmanian councils. RCCAP then delivered abridged versions to the 17 councils of the north west and north east regions.

Through RCCAP, and informed by the Antarctic Climate Ecosystems CRC Climate Futures Tasmania, who were engaged to develop municipal climate profiles at 10 km², 29 corporate climate adaptation plans were prepared. These included risk assessments (identifying over 1000 actions) and adaptation actions. Synthesis of risks developed strategic governance actions common to councils to assist in implementation and reduce liability. Senior management workshops sought project engagement and legitimisation and workshops with operational staff identified realistic and implementable actions. Common risks and adaptation risks, actions and themes identified were elevated to regional strategies underpinning by regional action plans for implementation.

The project represents the first step in adaptation planning enabling councils to understand issues and responses needed at strategic governance and operational levels. There have been significant learnings including: knowledge of needs and resourcing, and broad-based barriers structural and institutional facing Councils.

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