UNISDR
The United Nations Office for Disaster Risk Reduction

UNISDR Scientific and Technical Advisory Group Case Studies – 2014

Building climate resilience to reduce disasters across Tasmania, Australia

The problem

Extreme weather events are not new to Australia; recent examples include Cyclone Yasi flooding in Queensland and Victoria in 2011 and the Victorian Black Saturday bushfires in 2009. Tasmania, the island state of Australia, was recently impacted by a prolonged nationwide heat wave[1] and bushfires[2] in 2013. A changing, more variable climate requires the emergency management and disaster preparedness sectors to have access to high–quality projections of future climate so that they can plan appropriately for incidents that are likely to become more frequent in the future. However, global climate models, such as those reported upon by the Intergovernmental Panel on Climate Change (IPCC), do not provide the level of regional detail required by the disaster–related sector to create effective plans and policies to build resilience to climate change.

The science

The ***Climate Futures for Tasmania*** project undertook a program of high–resolution climate modelling[3,4] and analysis[5,6] to provide information at the level of detail required to assess Tasmania's changing exposure to climate–related natural disasters. The project provided world–leading, fine–scale climate projections for Tasmania by downscaling six global climate models (figure 1) to generate climate change information from 1961 to 2100.

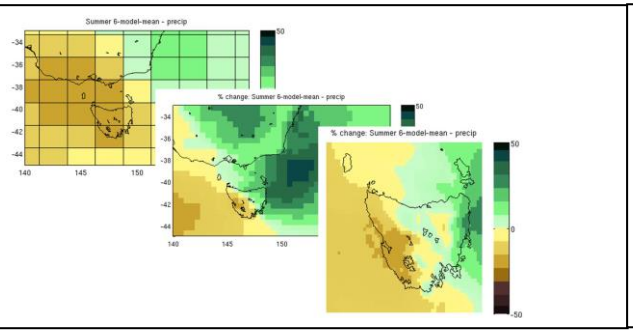

Figure1: Climate Futures for Tasmania modelling steps – from the global to the local scale. Plots show percentage change in summer rainfall.

The application to policy and practice

The *Climate Futures for Tasmania* project is unique in Australia in that it focused from its inception on the delivery of policy–ready climate information through engagement with local communities, state–wide industries and local and state government. It recognised that the impacts of climate change cut across many sectors and communities, and thus assembled an interdisciplinary collaboration to analyse and interpret the new climate change projections for Tasmania[7]. The project was led by the University of Tasmania and included the Tasmanian Government, the Tasmania State Emergency Service (SES), Hydro Tasmania, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Geoscience Australia and the Bureau of Meteorology. This multi–sectorial engagement achieved end–user specific research that delivered highly practical and usable climate adaptation information direct to its stakeholders. This strategy has resulted in ongoing impact long after the completion of the project, largely driven by its integration into state policy through the continued engagement of the external stakeholders in the project structure, management, research and outreach activities. The information created by the project was summarised in a purpose–written, policy–ready document for the Tasmanian Planning Commission to inform the development of the Commission's Regional Planning Strategy, and the output has been used to inform government reports and policy documents. In collaboration with the Southern Tasmanian Councils Authority, the project delivered specific climate change information for 29 council areas across Tasmania, providing information at the municipal–scale.

Did it make a difference?

Since 2010, *Climate Futures for Tasmania* has produced a series of products, reports and summaries[8] reflecting the specific information required by the participating end–user groups. The Tasmanian Government has stated that *Climate Futures for Tasmania* is their most important source of climate change information[8]. It has achieved comprehensive integration into government and industry policy so that it now forms an essential part of Tasmania's climate change strategy[9,10] and has been adopted by Tasmania's state owned energy generation[12] and distribution[13] companies for climate risk management.

The project also worked closely with Tasmania's disaster management and planning organisations, enabling regional information on the likely changes to the frequency, intensity and magnitude of extreme events – including flood risk, heat waves, bushfires, wind hazard and tidal storm surge – to be included in the *2012 Tasmanian State Natural Disaster Risk Assessment*[14]. The project continues to use the climate modelling output to assess the impacts of climate change on bushfire risk in collaboration with the SES[15] and is developing tools for the communication of risk to support policy implications of climate change. The project was awarded the national 2012 Resilient Australia Awards[16] and the National Climate Change Adaptation Research Facility (NCCARF) also recognised the project as an exemplar case study for climate change Adaptation Good Practice (figure 2) in Australia[17].

Figure 2: NCCARF Adaptation Good Practice (AGP): Climate Futures for Tasmania

[1] http://www.climatecouncil.org.au/angry-summer
[2] http://www.theguardian.com/world/interactive/2013/may/26/firestorm-bushfire-dunalley-holmes-family
[3] Corney SP, Bennett JC, et al. (2013). Performance of downscaled regional climate simulations using a variable-resolution regional climate model: Tasmania as a test case. Journal of Geophysical Research, 118: 1–15
[4] Bennett JC, Grose MR, et al. (2014). Performance of an empirical bias-correction of a high-resolution climate dataset. International Journal of Climatology, 34: 2189–2204
[5] White CJ, McInnes KL, et al (2013). On regional dynamical downscaling for the assessment and projection of future temperature and precipitation extremes across Tasmania, Australia. Climate Dynamics, 41: 3145–3165
[6] Grose MR, Corney SP, et al. (2012). A regional response in mean circulation and rainfall from projected climate warming over Tasmania, Australia. Climate Dynamics, 40: 2035–2048
[7] http://www.acecrc.org.au/Research/Climate%20Futures
[8] http://www.dpac.tas.gov.au/divisions/climatechange/adapting/climate_futures
[9] http://www.dpac.tas.gov.au/__data/assets/pdf_file/0020/212762/2020_Climate_Change_Strategy.pdf
[10] http://www.dpac.tas.gov.au/__data/assets/pdf_file/0009/174834/Adapting_to_climate_change_in_Tasmania.pdf
[12] http://www.hydro.com.au/environment/climate-change
[13] http://www.dpac.tas.gov.au/__data/assets/pdf_file/0019/216316/Aurora_Energy_-_Adaptation_Case_Study.pdf
[14] http://www.ses.tas.gov.au/assets/files/EM%20Publications/disaster_resilience/2012%20TSNDRA%20Report.pdf
[15] Fox–Hughes P, Harris RMB, et al. (2014) Future fire danger climatology for Tasmania, Australia, using a dynamically downscaled regional climate model. International Journal of Wildland Fire, 23(3): 309–321
[16] http://www.em.gov.au/DisasterResilientAustralia/Pages/2012ResilientAustraliaAwards.aspx
[17] http://www.nccarf.edu.au/localgov/case-study/climate-futures-tasmania

Authors: Dr CJ White (School of Engineering, University of Tasmania/Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC)), Dr SP Corney (ACE CRC), S Gaynor (University of Tasmania), Dr TA Remenyi (ACE CRC), A Heath (Tasmania State Emergency Service (SES)), Prof NL Bindoff (ACE CRC)