Co-production of sea-level rise information for coastal hazard adaptation: The Sunshine Coast Council

Kathleen McInnes
CSIRO Climate Science Centre, Oceans and Atmosphere
(Acknowledgement: Gary Duffey, Sunshine Coast Council)

WCRP Coastal Practitioner Workshop 22 February 2022
In 2016, the Queensland Government & the Local Government Association of Queensland (LGAQ) launched QCoast2100 Program, providing over $13.2 million to assist Queensland coastal councils develop Coastal Hazard Adaptation Strategies (CHAS) for their communities.

The Sunshine Coast Council, identified a need to inform the community engagement and decision-makers with regard to:
1) current scientific knowledge relating sea level rise, and
2) the suitability of various sea level rise projections to inform long-term planning for coastal hazards.

CSIRO was commissioned to undertake a review of the current state of sea level science.
Co-production of knowledge

• Queensland’s State Planning Policy requires the determination of coastal hazard areas using a sea level rise projection of 0.8m for 2100 and, in order to utilise the outputs from the CHAS to inform land use planning, council will determine coastal hazard areas using this sea level rise projection.

• Feedback during community consultation revealed some stakeholders believed the sea-level rise projection mandated in the State Planning Policy did not represent the upper limit for sea-level rise for 2100. They advocated for a high-end sea-level rise projection.

• In order to inform these community conversations council was seeking to understand:

1. Current scientific knowledge with regard sea level rise and the implications of this knowledge with regard to determining an upper limit for sea-level rise for 2100;

2. High-end sea-level rise scenarios with regard to their purpose, advantages, limitations and, with regard to the Queensland context, their suitability for use to identify hazard areas for long-term planning;

3. The key risks associated with the using different sea level rise projections to identify hazard areas for long-term planning; and

4. When it is likely that there will be a high level of scientific certainty with regard to identifying an upper limit for sea-level rise for 2100.
Sea-level Rise Review

• Factors contributing to sea-level rise
  - Ice sheets, glaciers, terrestrial storage, vertical land movement. Ocean density, atmospheric and ocean circulation, spatial redistribution due to changes in rotation-gravity (fingerprints)

• Methods for projecting sea-level rise
  - Review of methods, e.g. physical models, semi-empirical models, expert elicitation. Review of IPCC assessed SLR projections. Sources of SLR for Australia

• Summary of sea level information for Australia
  - Trends and regional projections

• Key uncertainties
  - Acceleration, time-of-emergence, response of Antarctica, risk-based approaches to SLR projections, Delta Commission, Thames Barrier, NOAA

• Recommendations
  - It was recommended that the CHAS, be developed such that it can readily be revised to consider guidance of future IPCC assessment reports
Summary

• Sunshine Coast CHAS was adopted
• Directly informed by work with the CSIRO
• Includes review provisions but progressing science that is inconsistent with State planning policy will still be problematic
• Used sensitivity scenarios to inform the CHAS as it is a non-statutory document
• The sensitivity analysis for the CHAS used storm tide, HAT (permanent inundation/estuarine erosion) and open coast erosion scenarios assuming 1.1 m of SLR from “present day” to 2100
• The CHAS is now being used to inform the new Planning Scheme. This requires a separate ‘fit for purpose’ risk assessment as defined by State planning policy
Thank you

Kathleen.mcinnes@csiro.au