

Northern Australia Joint Select Committee - Cyclone Reinsurance Pool
Answers to questions on notice
Bureau of Meteorology

Committee: Northern Australia Joint Select Committee
Inquiry name: Cyclone Reinsurance Pool
Hearing date: Friday 25 November 2022
Question Date: Friday 25 November 2022
Question Type: Spoken

Senators asked:

1. Senator McDONALD: All right. On notice, could you provide something that this committee could take away as far as what would assist with upgraded gear or maintenance of gear or whatever it might be so that we have good data?
Dr Stone: Certainly.
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2. Senator ALLMAN-PAYNE: Just following on from that, and totally irrespective of what we're defining as cyclone-related flooding, in terms of the insurance question, even though we're not getting more cyclones generally, are we seeing an increased length of time and increased rainfall coming as a consequence of cyclones? Is the notion that cyclones are hanging around for longer as lows a phenomenon or is that just something that it feels like we're seeing?
Dr Stone: I can't answer that, I'm sorry. I'll take that one on notice. We certainly see—it's very clear—it depends which part of the country are you talking about, but extremes of dryness and wetness are certainly an occurrence
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3. Senator DEAN SMITH: Dr Stone, on notice could you provide some further information about why the bureau doesn't think that the preponderance of cyclones will head south on the east coast? That would be valuable. Dr Wallace, we talked briefly about the annual average loss being 776 million and the plausible maximum loss. I think I've got that characterisation right.
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Answer:

1.

In 2022 two New South Wales inquiries and one Queensland inquiry into the February and March 2022 floods identified, and made consistent recommendations regarding flood warning infrastructure challenges. Challenges considered across the inquiry reports include:

- The current rain and river gauge network is not fit for purpose, with issues around gauge location, ownership and maintenance, and a lack of coordination.
 - For example, Queensland's 3200 (approximate) rainfall and river gauges are owned and operated by more than 60 entities.
- There is a need to enhance approach, technology and infrastructure for flood warning, and the most sophisticated and up to date rain data infrastructure should be made available.
- There are radar coverage gaps in flood-prone parts of New South Wales (NSW).

The 2022 NSW Flood Inquiry report (released 18 August 2022) recommended the NSW Government work with the Australian Government to transfer ownership and maintenance responsibility for as many gauges as possible to the Bureau of Meteorology (Bureau), upgrade radar capability to ensure overlapping coverage and redundancy, and make real-time flood warnings available publicly via a smartphone app.

The NSW Parliamentary Select Committee on the Response to Major Flooding across New South Wales report (released 9 August 2022) recommended the NSW Government advocate for the Bureau to review its rain data infrastructure and flood modelling tools to ensure forecasting locations, rain and flood gauges and other infrastructure are appropriately placed, maintained, and updated.

The 2022 Queensland Inspector-General of Emergency Management's South East Queensland Rainfall and Flooding Event February to March 2022 Review report (released 12 October 2022) recommended Queensland Reconstruction Authority and the Bureau investigate options for the consolidation of ownership, renewed capital, and maintenance in the flood warning network (rain and river gauges), in consultation with flood warning infrastructure asset owners.

2.

Cyclones and lows are highly variable and, as such, it is difficult to discern trends from historical data relating to cyclone duration and rainfall (intensity and totals) associated with cyclones and lows.

Our understanding of the physics of the atmosphere, however, suggests a number of plausible scenarios in response to a warming climate:

- Rainfall associated with Tropical Cyclones, and all other severe storms such as East Coast Lows, is expected to be heavier when meteorological conditions are suitable. This is likely in large part because of the increased moisture holding capacity of a warmer atmosphere.
- For the foreseeable future, the overall number of Tropical Cyclones impacting Australia is likely to be similar to now, with the possibility that we will see slightly fewer such storms in our region. This is consistent with observed trends.
- The proportion of storms with higher windspeeds is likely to increase.
- Sea level rise will increase the risk of storm surge inundation from Tropical Cyclones, and all other severe storms such as East Coast Lows.

While it is theoretically possible that a warmer atmosphere will slow the movement of weather systems such as tropical cyclones, resulting in heavier rainfall in areas exposed to these weather systems, there is little evidence of such changes in the historical record.

3.

The most recent global-level information on projected future occurrence of tropical cyclones was published in the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) in 2021.

It provides some evidence of a poleward expansion in tropical cyclone regions in the north western Pacific. However, such a change has not been clearly observed in the Australian region to date, and there is low confidence in the projection of such changes in the Australian region.