

Are eastern Australia's catastrophic floods really a one-in-1,000 year event?

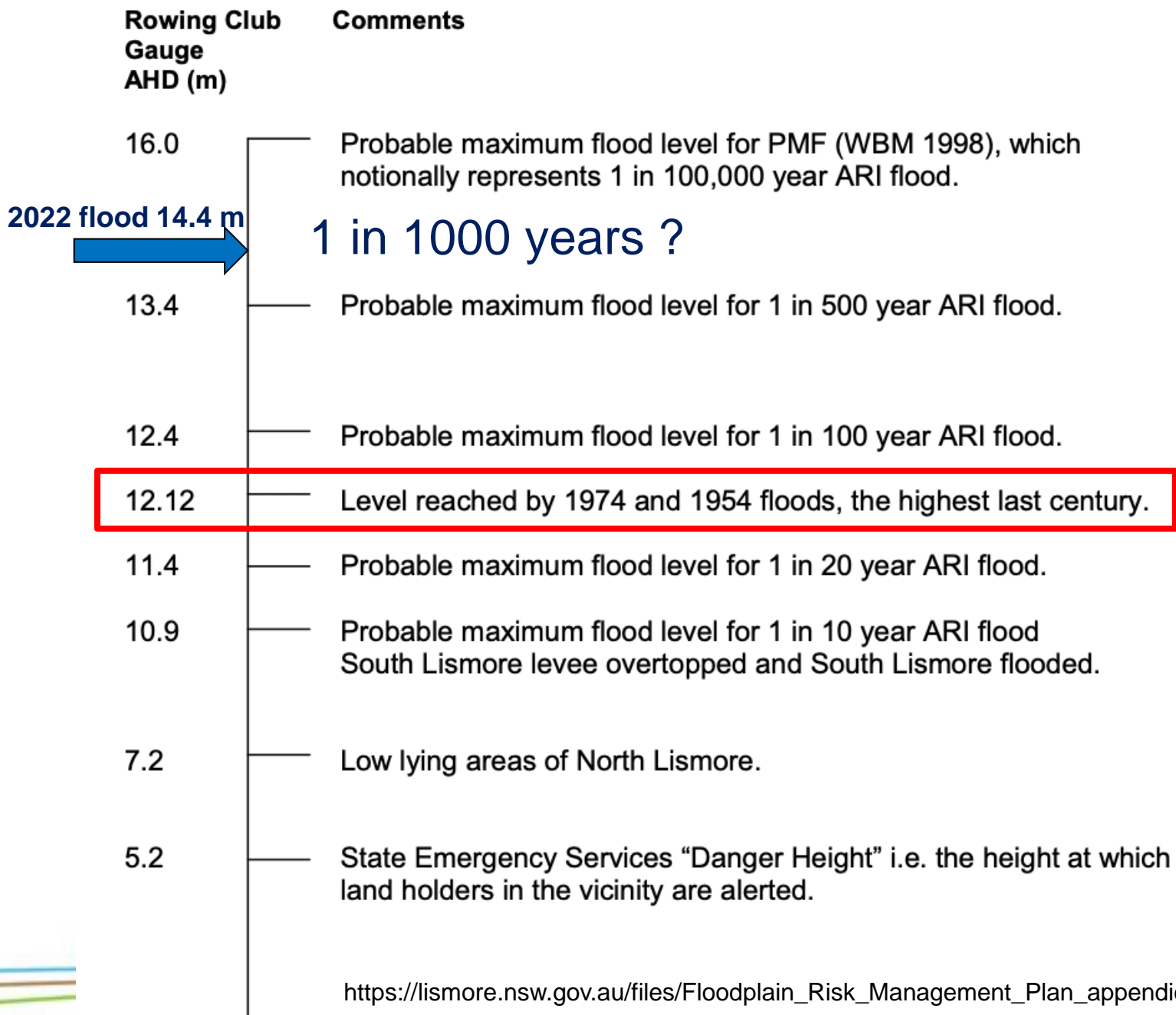
Guardian Fri 4 Mar 2022 03.30 AEDT

The New South Wales premier, Dominic Perrottet, made headlines earlier this week when he described [the record-breaking rain](#) that swamped the north of the state before moving south to Sydney as a “one-in-1,000-year event”.

The mayor of Ballina shire council, Sharon Cadwallader, told the ABC that town [was expecting a one-in-500-year flood](#) before it was inundated on Wednesday.


<https://www.theguardian.com/australia-news/2022/mar/04/are-eastern-australias-catastrophic-floods-really-a-one-in-1000-year-event>

Figure A: Representation of flood levels at Lismore



Rainfall at Tunchester, near Lismore

Duration (hours)	Duration (day)	Observed (mm)	1 in 500	1 in 1000	1 in 2000
24 hours	1	437	404	437	470
48 hours	2	565	538	584	629
72 hours	3	619	594	641	688
96 hours	4	626	621	668	733
120 hours	5	709	635	681	727
144 hours	6	837	642	688	733
168 hours	7	857	645	691	736



Rainfall Intensity, Frequency Duration (IFD) data available everywhere in Australia
<http://www.bom.gov.au/water/designRainfalls/revised-ifd/>

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What this means:

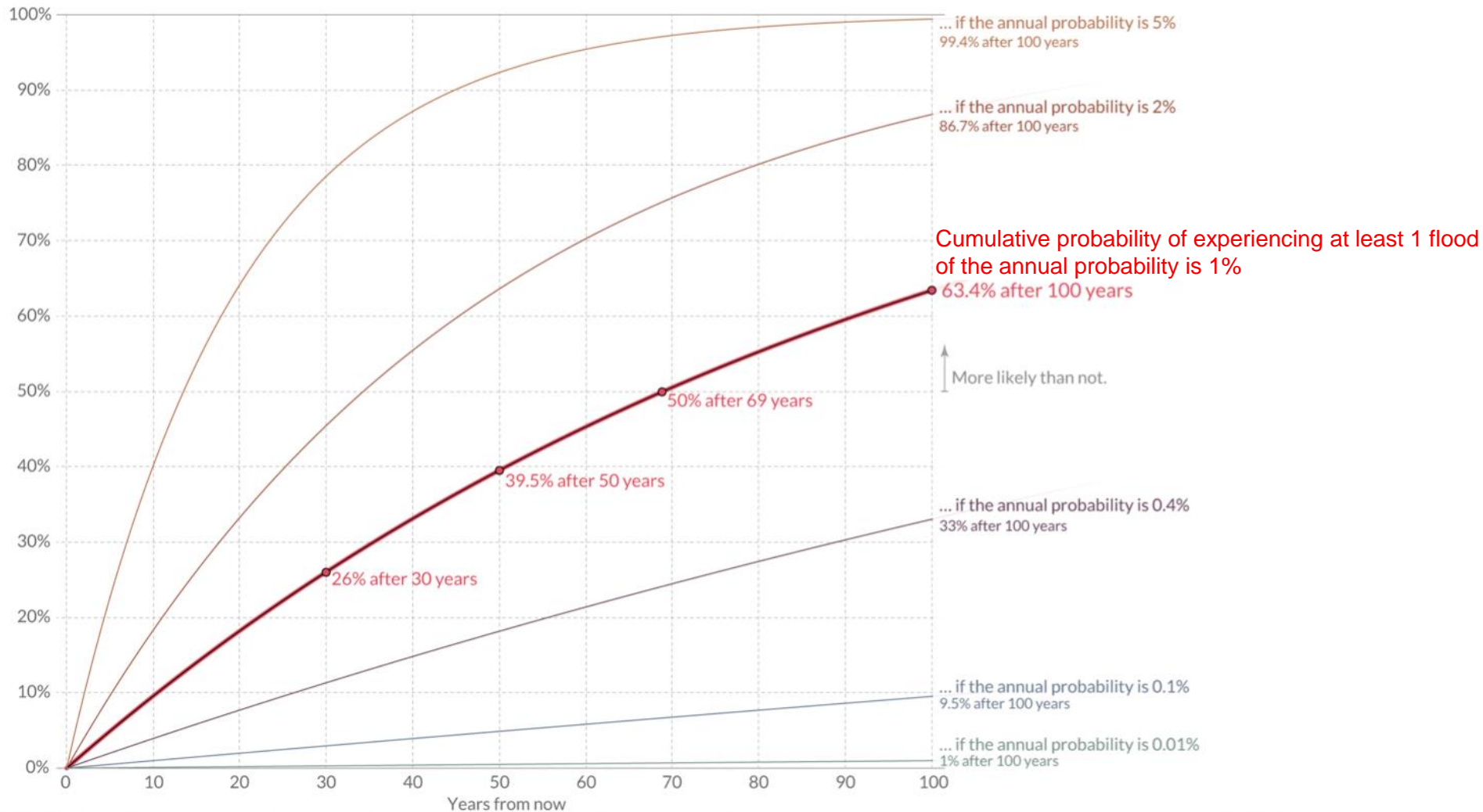
The event has a probability of 1 in 1000 (0.1%) of happening in any year.

Like tossing a 1000 – sided dice once a year.
If it comes up 1000 you get a that flood

This also means the average time between occurrences is 1000 years

BUT the flood could happen any time

What do the various annual probabilities for flooding imply for the cumulative probability over time?



Even smart people are confused



Record rainfall on Australia's east coast last week destroyed dozens of research projects in greenhouses at the University of Queensland (UQ)...UQ's greenhouses (above) also flooded in 2011; they were rebuilt at the same site because administrators believed the flood was a once-in-a-century event

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