

Practical implementation of ARR Climate change chapter

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Other Updates

- ARR Datahub being updated to reflect new chapter
- Development site for a week
- <https://data-dev.arr-software.org/>
- Old factors will move to Legacy site

Median Preburst Depths and Ratios
 Other Preburst Depths and Ratios
 Climate Change Factors
 Select All
 Baseflow Factors

Submit Query

	Losses SSP1-2.6	Losses SSP2-4.5	Losses SSP3-7.0	Losses SSP5-8.5
2020	1.04	1.04	1.04	1.04
2030	1.04	1.05	1.05	1.05
2040	1.05	1.05	1.06	1.06

SSP2-4.5

Year	<1 hour	1.5 Hours	2 Hours	3 Hours	4.5 Hours	6 Hours	9 Hours	12 Hours	18 Hours	>24 Hours
2020	1.14	1.13	1.12	1.11	1.1	1.1	1.09	1.08	1.08	1.08
2030	1.18	1.17	1.16	1.14	1.13	1.12	1.11	1.11	1.1	1.1
2040	1.22	1.2	1.19	1.17	1.16	1.15	1.14	1.13	1.12	1.12
2050	1.26	1.24	1.22	1.2	1.19	1.18	1.16	1.15	1.14	1.14
2060	1.3	1.27	1.25	1.23	1.21	1.2	1.19	1.18	1.16	1.16
2070	1.33	1.3	1.28	1.26	1.24	1.22	1.21	1.19	1.18	1.17
2080	1.37	1.33	1.31	1.28	1.26	1.24	1.22	1.21	1.2	1.19
2090	1.39	1.36	1.33	1.3	1.27	1.26	1.24	1.23	1.21	1.2
2100	1.41	1.37	1.35	1.32	1.29	1.27	1.25	1.24	1.22	1.21

Loss Factors

Initial Loss (Adjustment Factors)

	Losses SSP1-2.6	Losses SSP2-4.5	Losses SSP3-7.0	Losses SSP5-8.5
2020	1.02	1.02	1.02	1.02
2030	1.02	1.02	1.02	1.03
2040	1.03	1.03	1.03	1.03
2050	1.03	1.03	1.04	1.04
2060	1.03	1.04	1.04	1.05
2070	1.03	1.04	1.05	1.06
2080	1.03	1.05	1.06	1.07
2090	1.03	1.05	1.07	1.08
2100	1.03	1.05	1.07	1.09

Continuing Loss (Adjustment Factors)

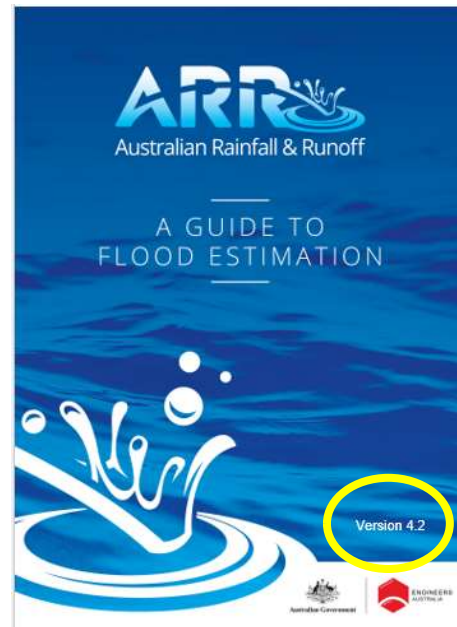
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ARR Guideline

- Very minor updates to other chapters that directly refer to Book 1 Chapter 6 to remove inconsistencies
- Might be some left as over 300 uses of climate change
- Introduction of Version numbers

List the minor changes to the following chapters for consistency

Book 1 Chapter 4 Section 15.1
 Book 1 Chapter 4 Section 16.1
 Book 1 Chapter 5 Section 10.4
 Book 2 Chapter 1 Section 3
 Book 2 Chapter 3 Section 3
 Book 6 Chapter 5 Section 5
 Book 8 Chapter 7 Section 7
 Book 9 Chapter 6 Section 4.2
 Book 9 Chapter 6 Section 4.6



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Impact of guidelines of flood planning levels and design

- Need for widespread testing on the impacts of the chapter changes on design flood estimation
- Based on idea of National test data set as per Babister et al (HWRS 2023) developed test catchment set
- Development of a dataset of 400 catchments:
 - NSW losses work catchments (WMAwater) -202
 - QLD catchments based on (Babister and Babister 2022) -162
 - Some Victorian catchments -26
 - Synthetic urban catchments -9 locations, 3 sizes
- Coauthors of the work presenting – M Babister, B Jamali, H Babister, F Bodenlenz, N Dunning

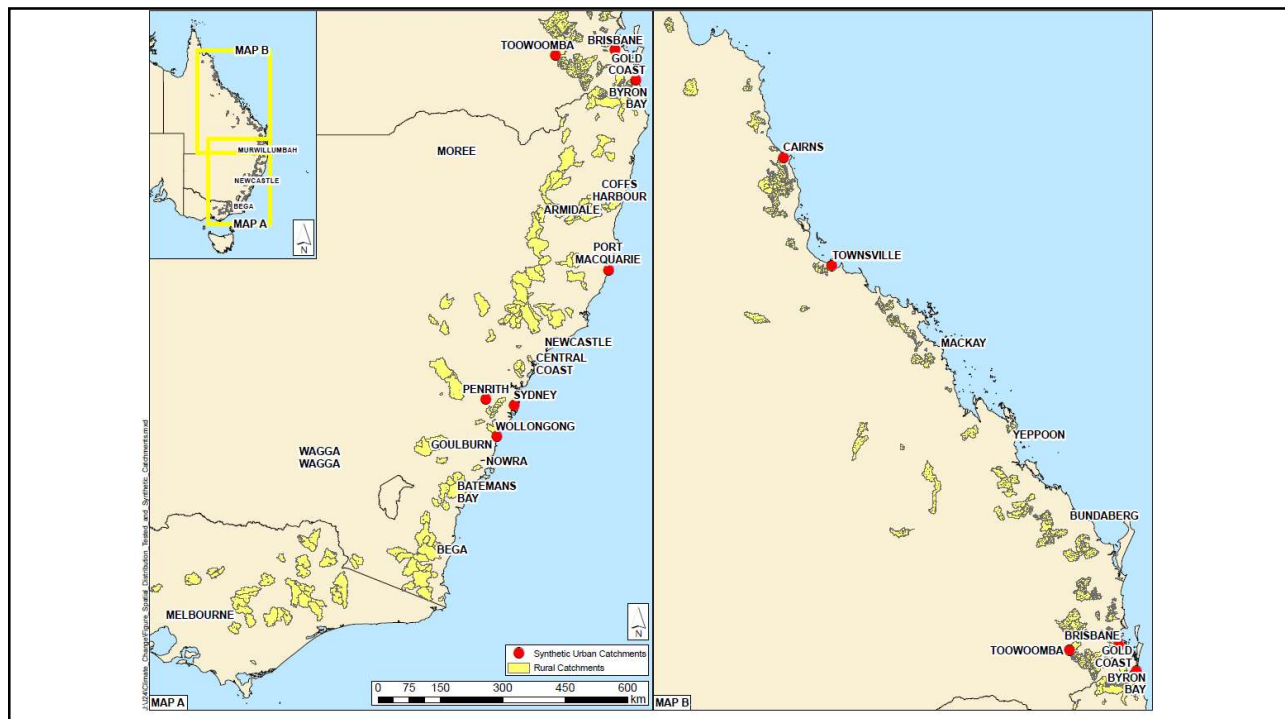
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Method

- Size range 10-1000km²
- Developed WBNM models of all catchments to the gauge
- Run all duration and AEP



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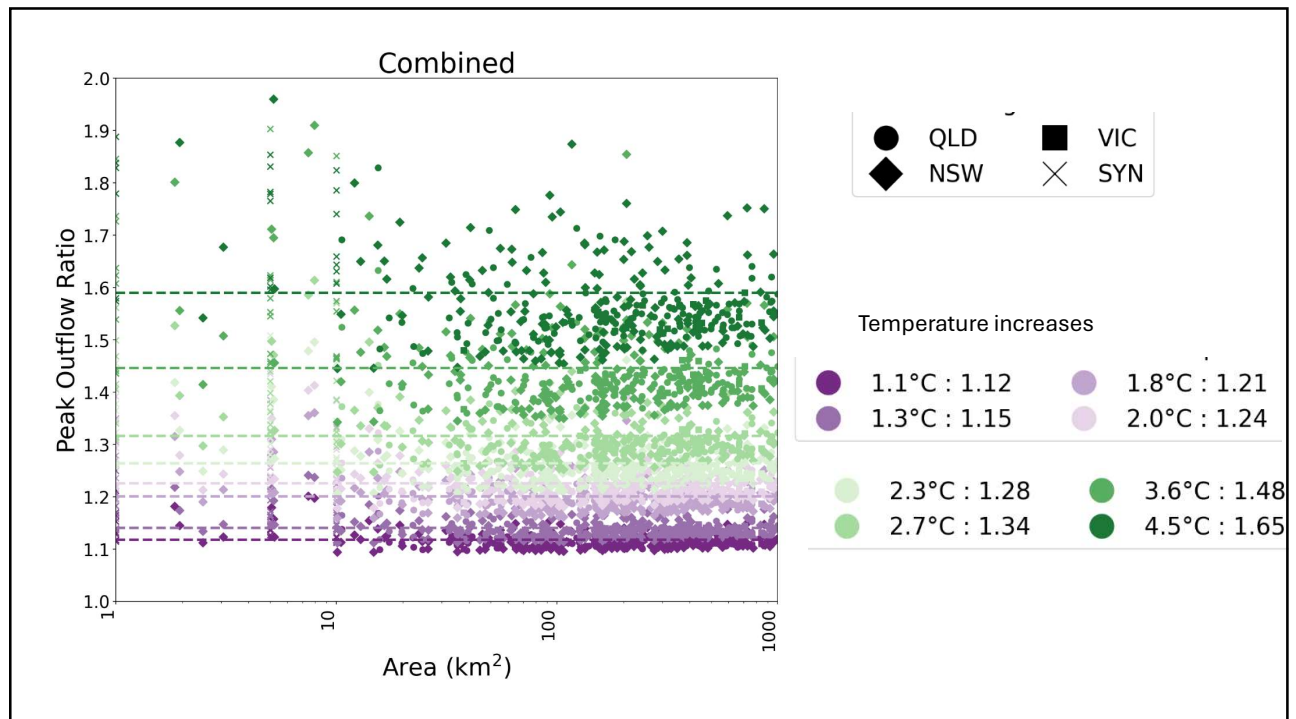


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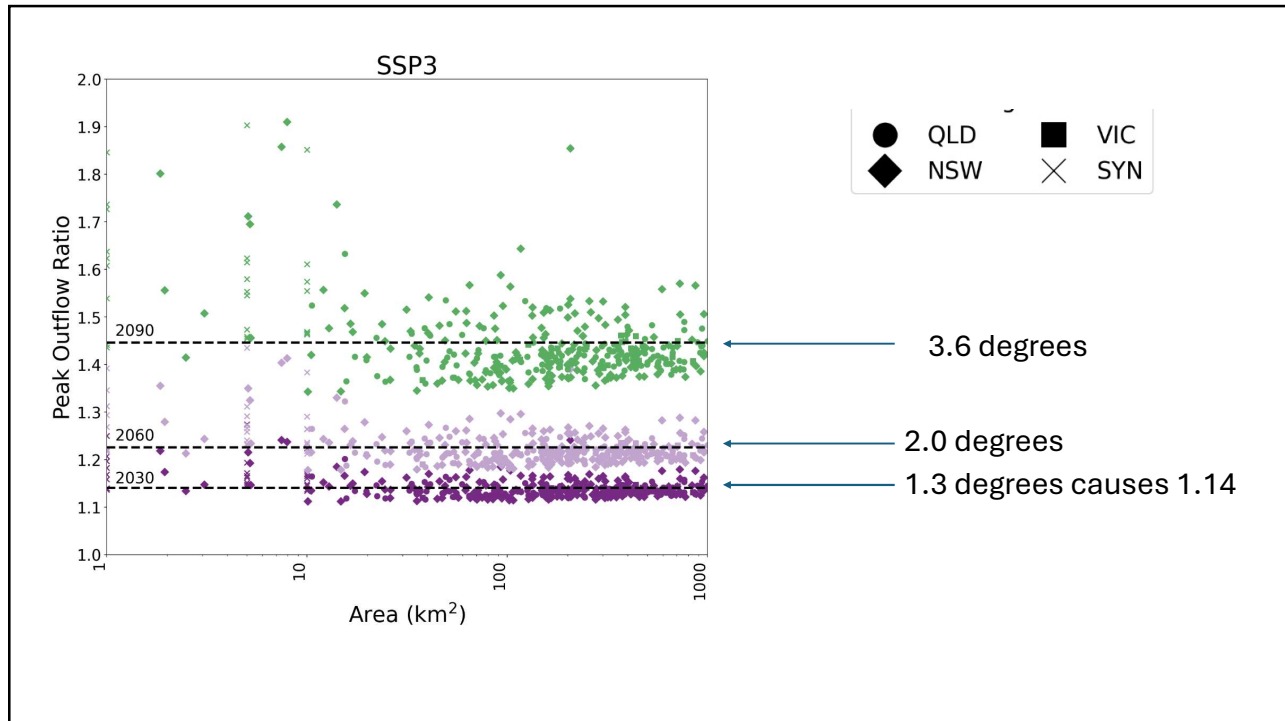
Scenarios tested

- Historic - (2016 IFD - instrument record)
- 2030, 2060, 2090
- 8 temperature increases
- Note temperature increases are from the draft
- This presentation focuses on the 1% AEP but all considered

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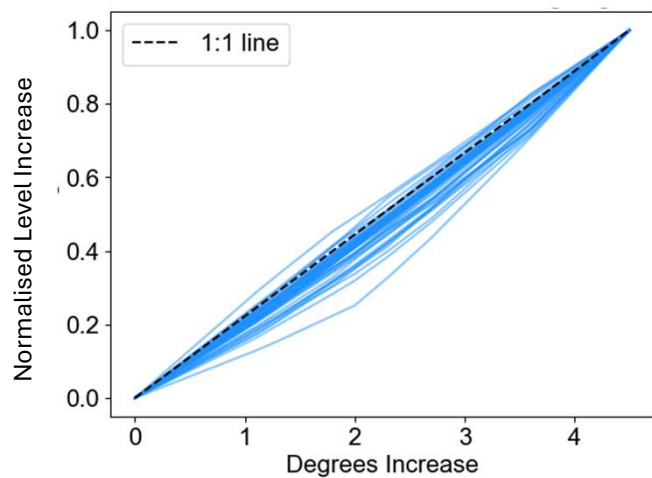
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Changes in planning level

- For gauges in NSW with high quality rating curves
- Looked at change is 1% level to see how FPL might change
- 0.2 to 2m (most 0.3-1m) for a 4.5 deg temp increase
- While magnitude of changes are very location dependent we see very linear increase with temperature



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- To assess impacts of guideline without the having to run models
ccc.wmawater.com.au

Increase in 1 in 100 AEP catchment average rainfall under climate change

