

# Sea-Level Rise and Risk Assessment

John Hunter

Antarctic Climate & Ecosystems Cooperative Research Centre,  
Australia

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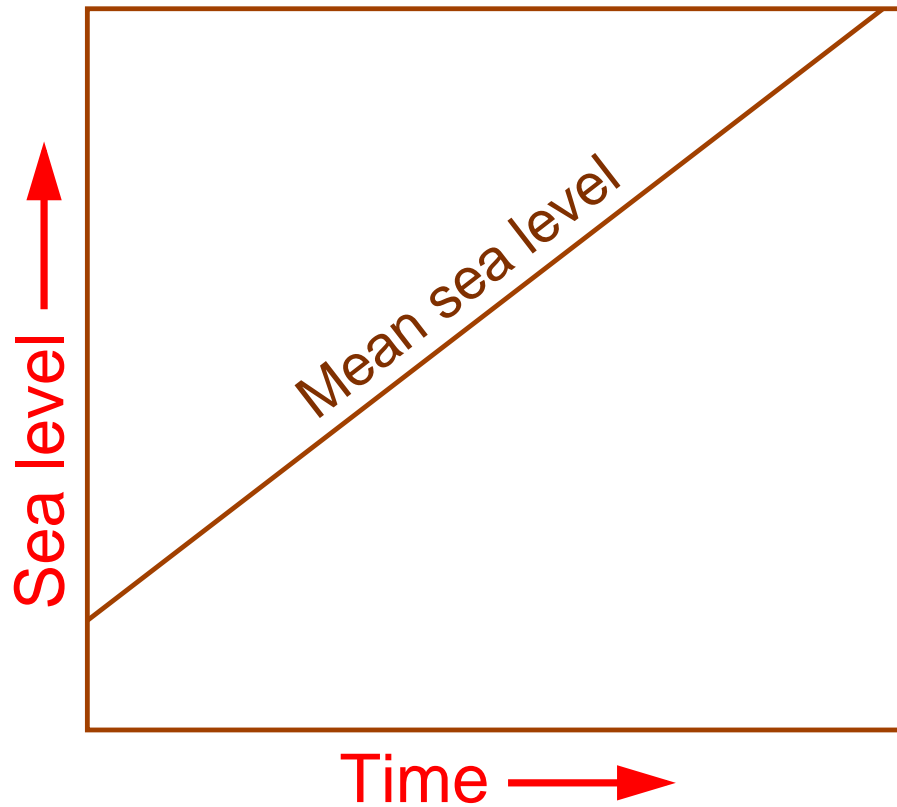
Deltas in Times of Climate Change

Rotterdam, September 2010

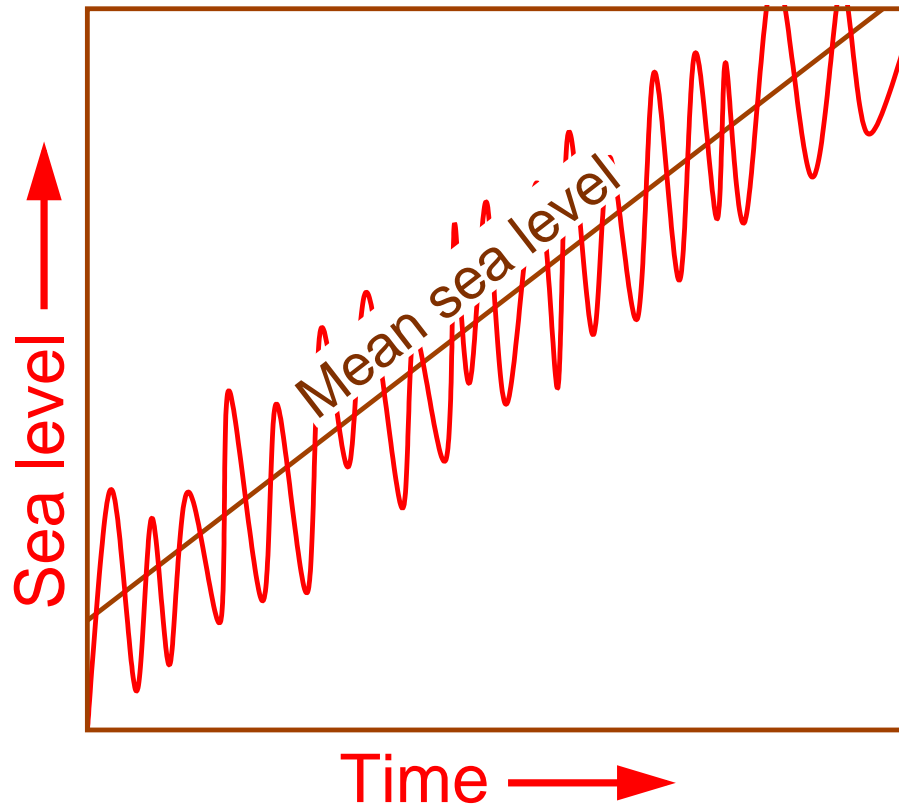


ANTARCTIC CLIMATE  
& ECOSYSTEMS  
COOPERATIVE RESEARCH CENTRE

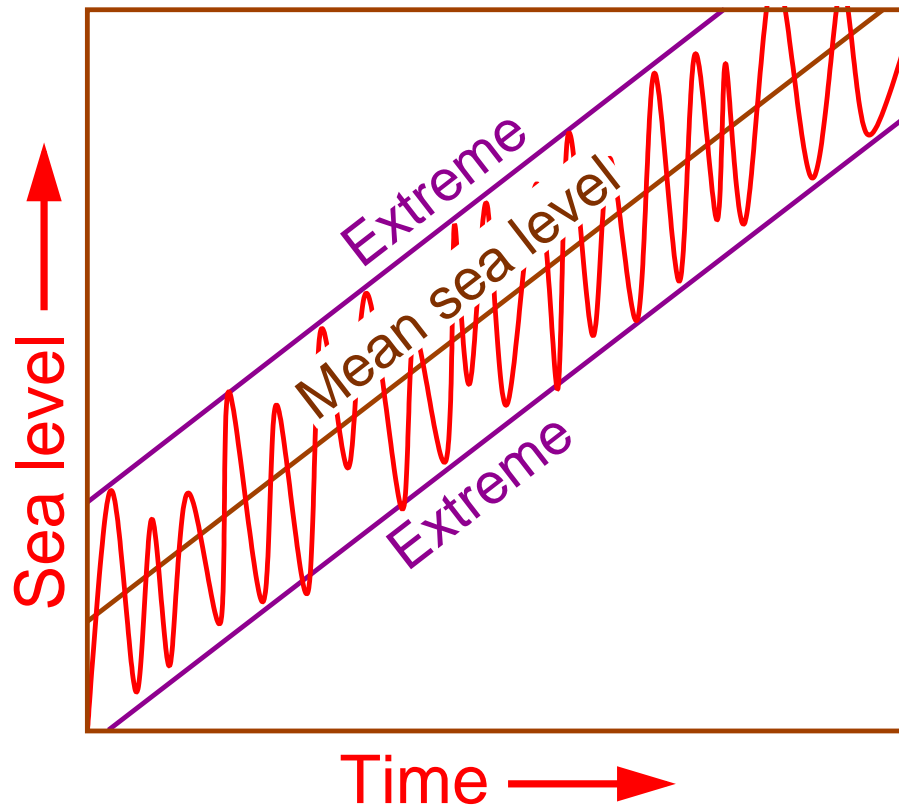
# Changes of Mean Sea Level and Extremes



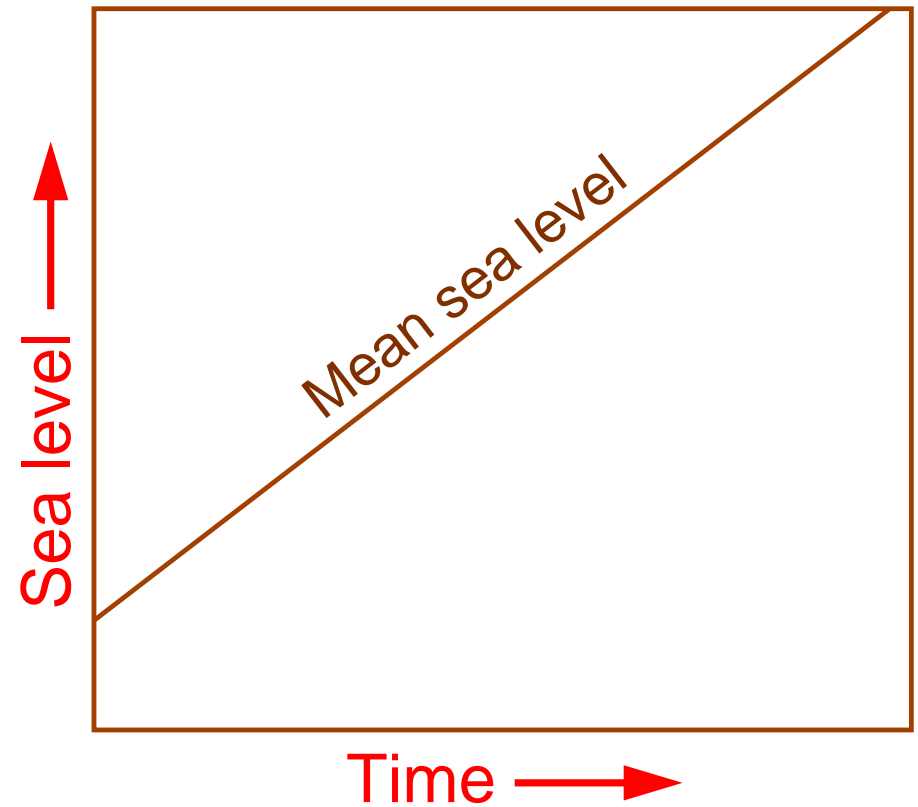
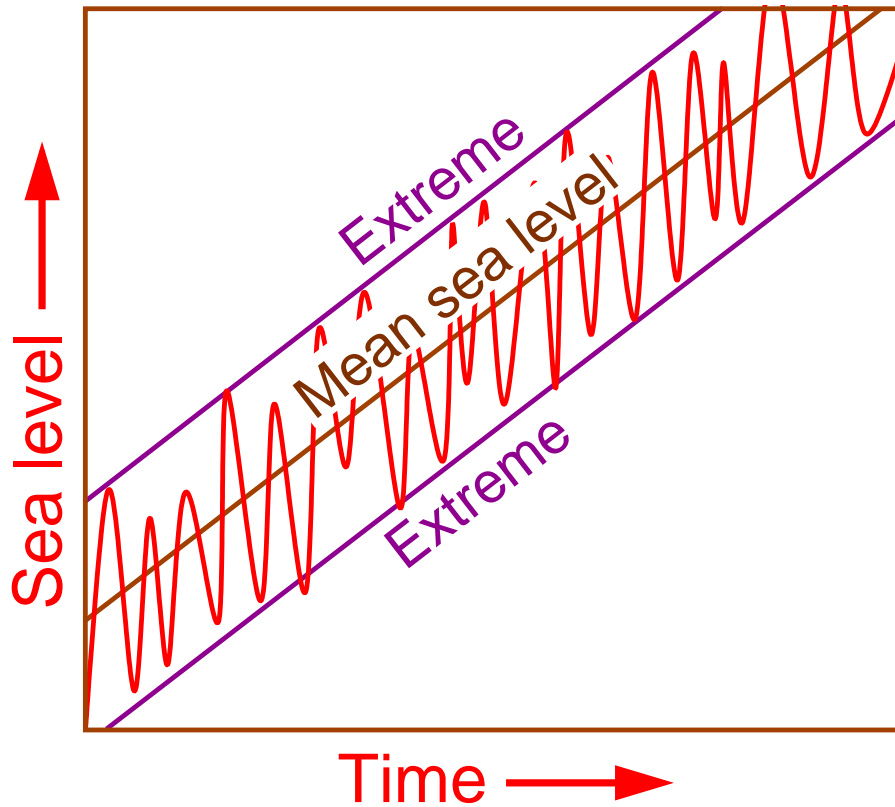
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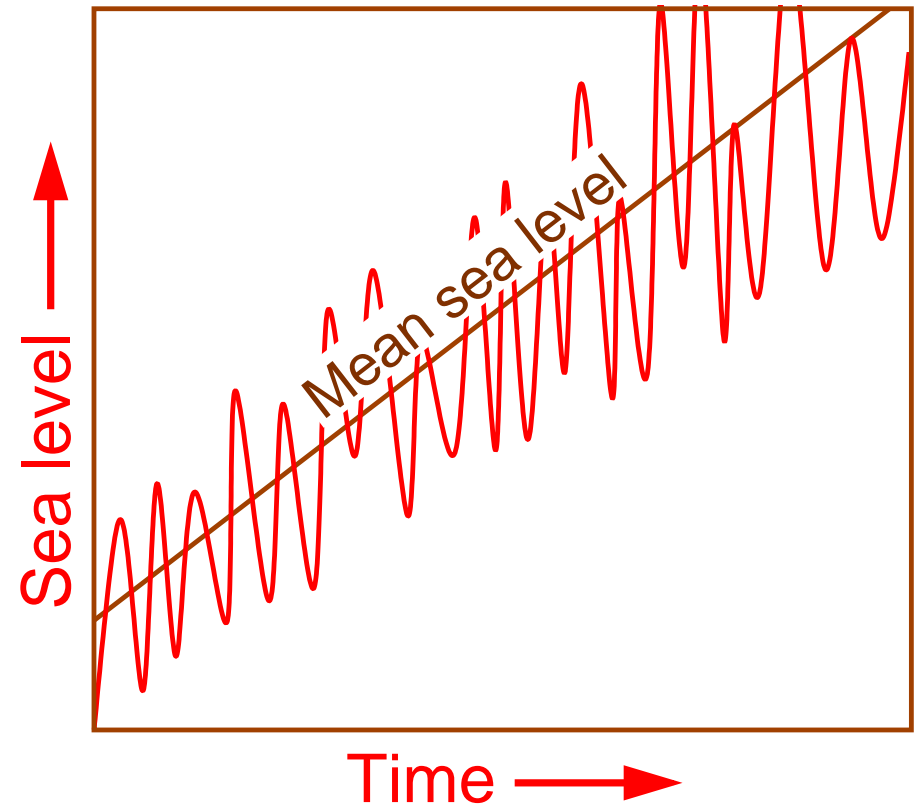
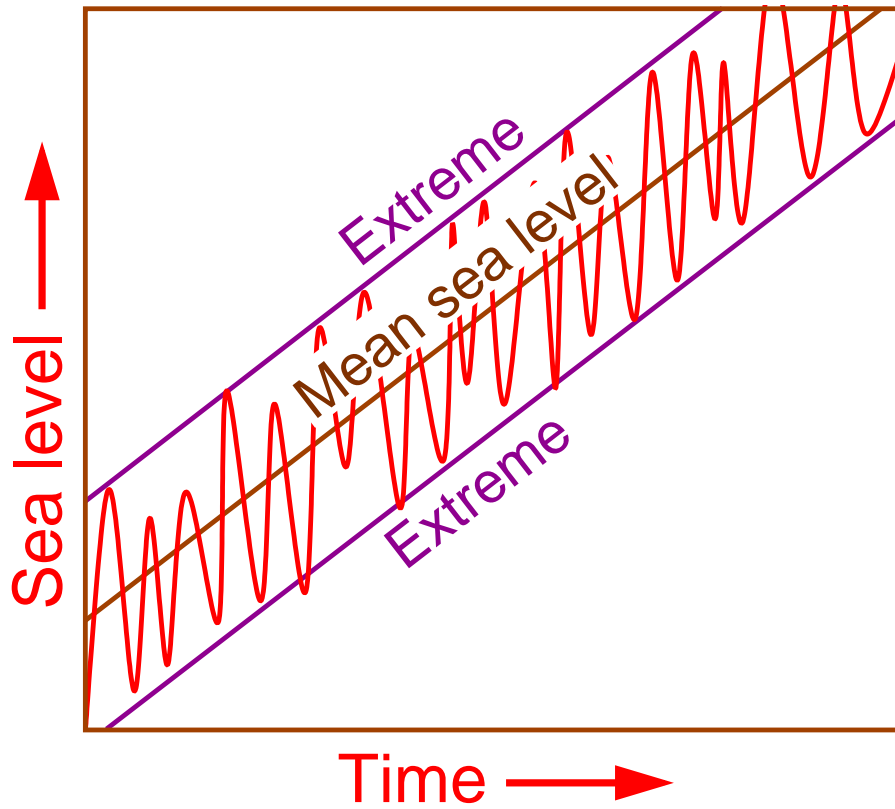
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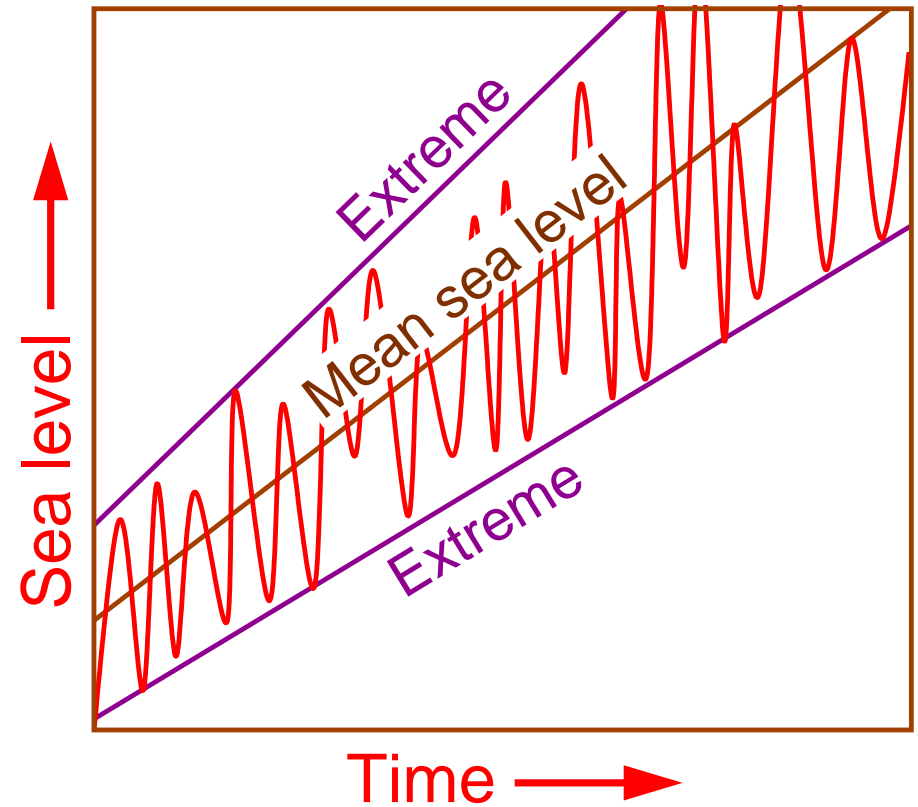
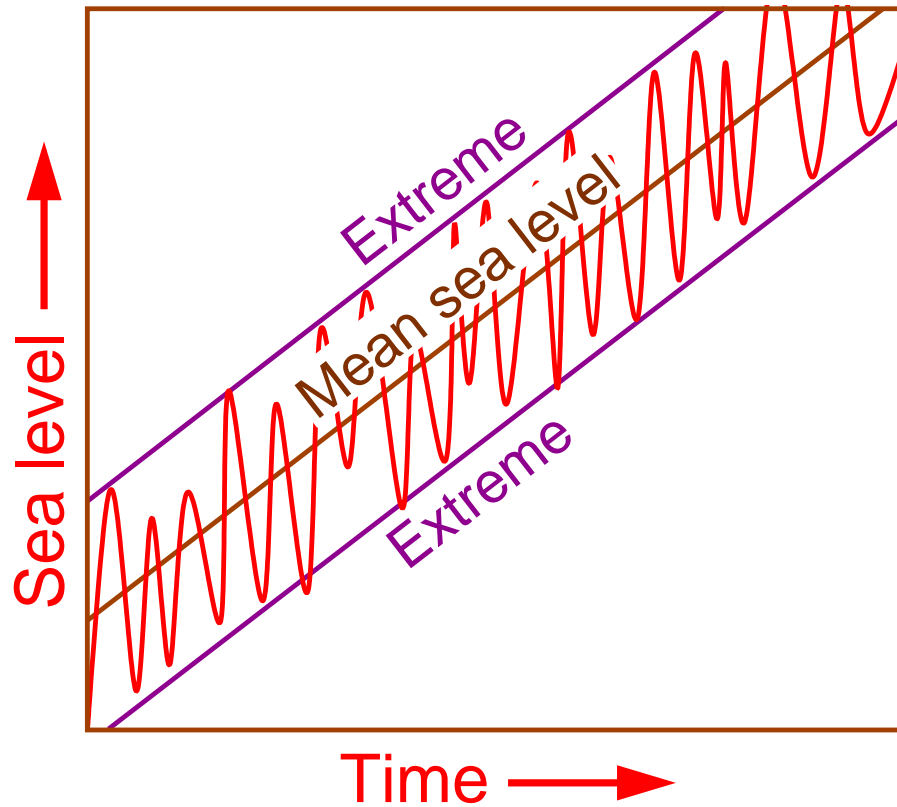
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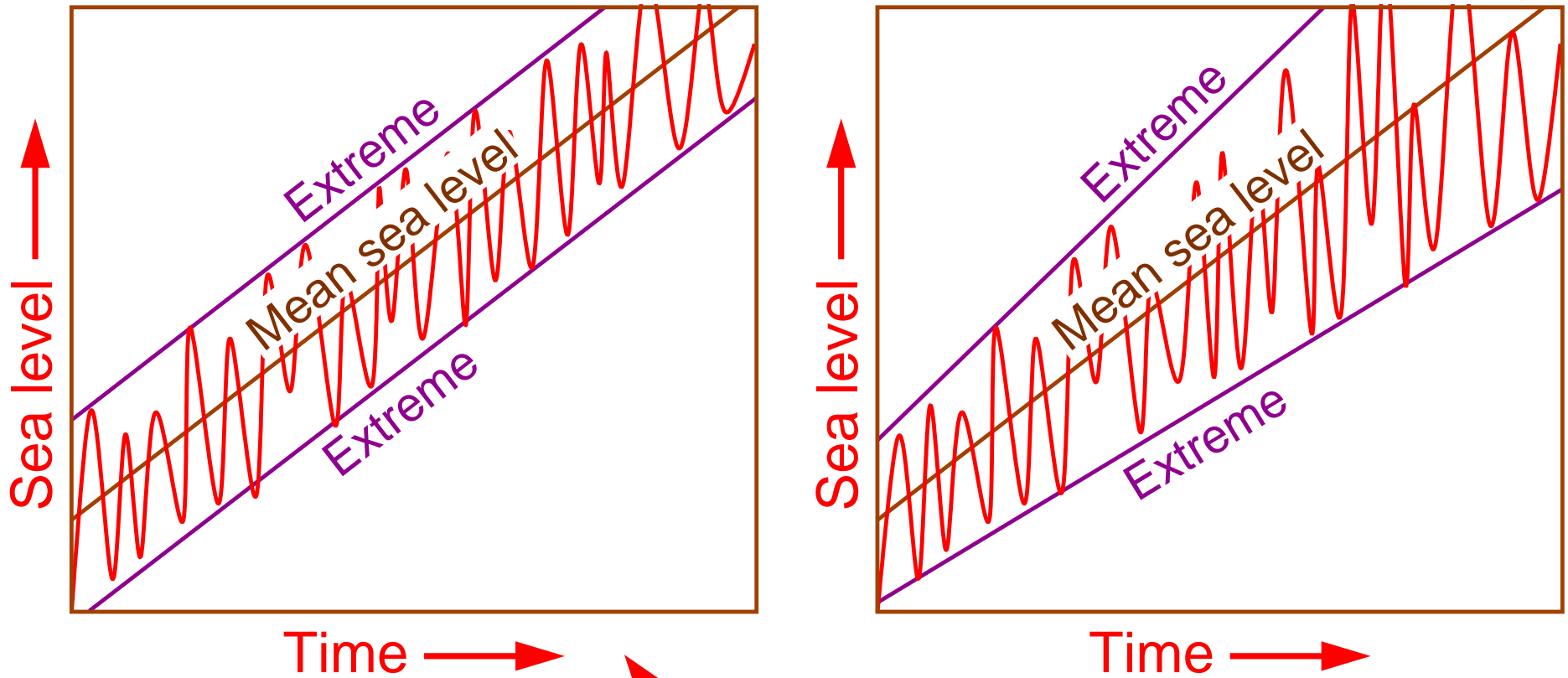
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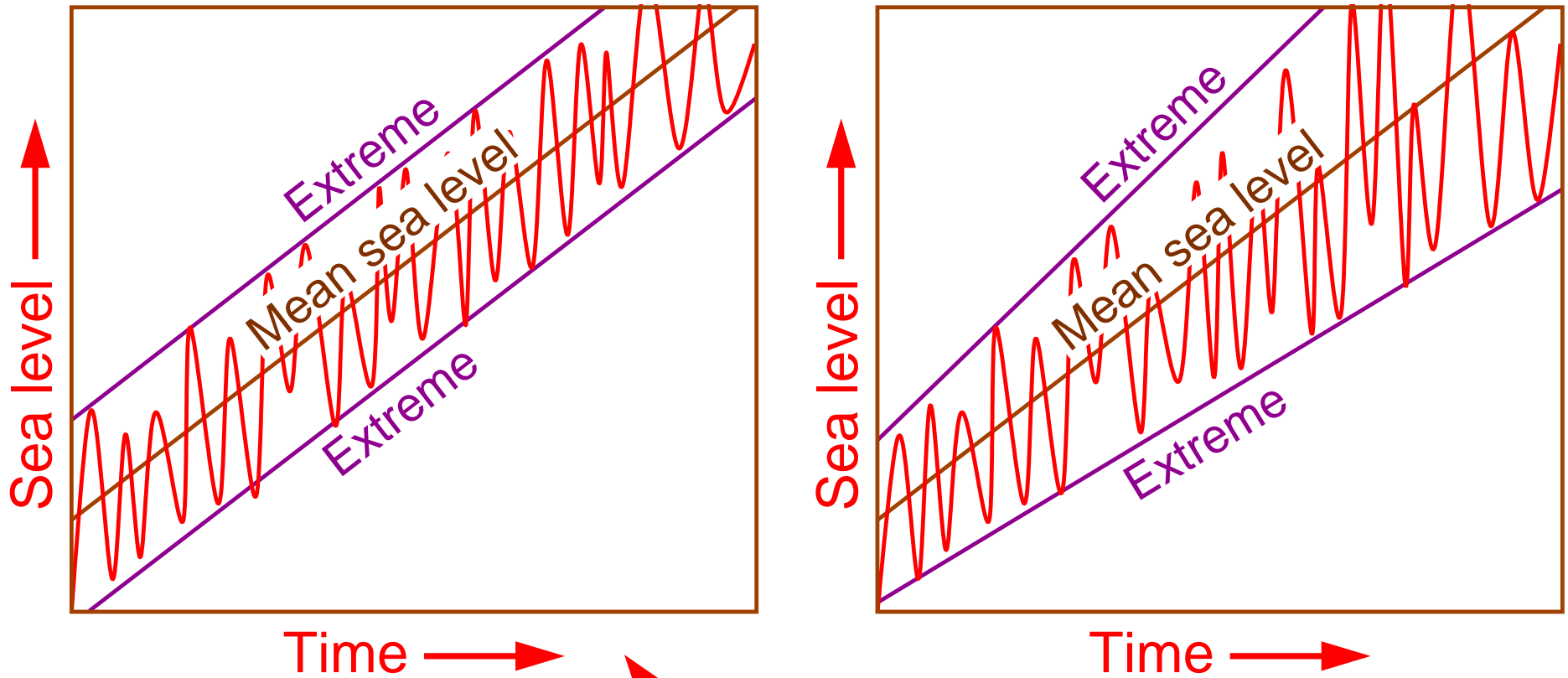
# Changes of Mean Sea Level and Extremes



This is generally the dominant mechanism



# Changes of Mean Sea Level and Extremes



But future mean sea level is very uncertain

# Two Uncertainties



[commons.wikimedia.org](https://commons.wikimedia.org) (Alexander Dreyer)

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Highest sea level  
over asset life  
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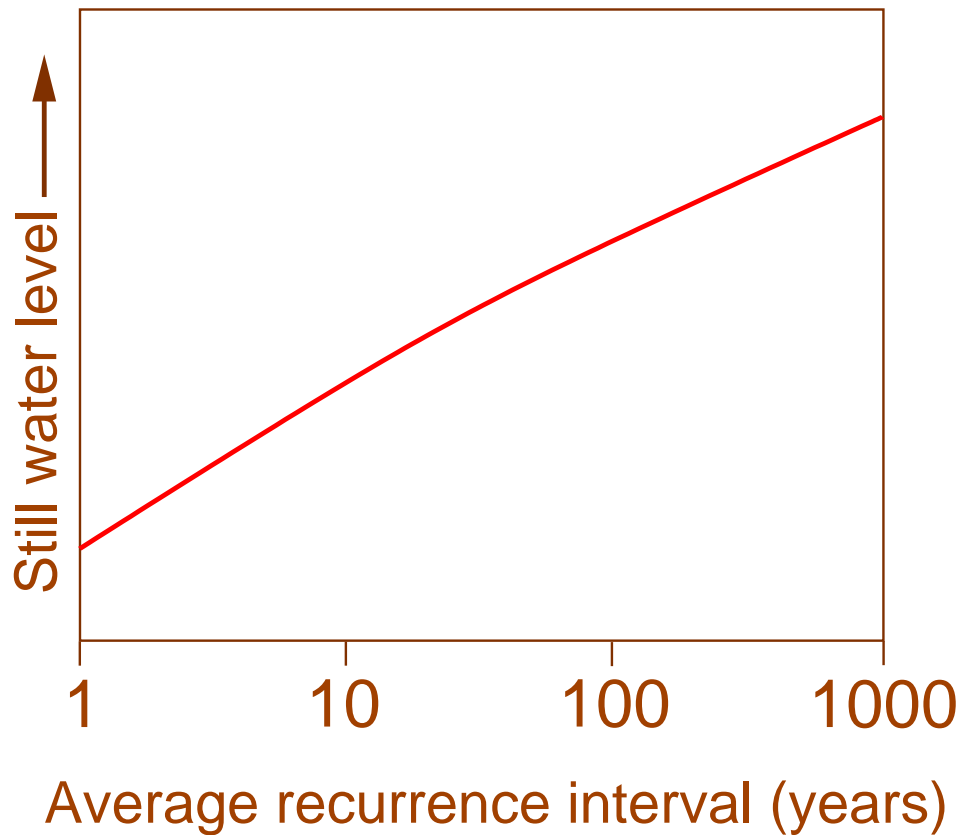
HIGHEST SEA LEVEL OVER ASSET LIFE = RED + BROWN

# The Relationship Between ARI and Exceedance Probability

Two equivalent ways of looking at **present** sea-level extremes:

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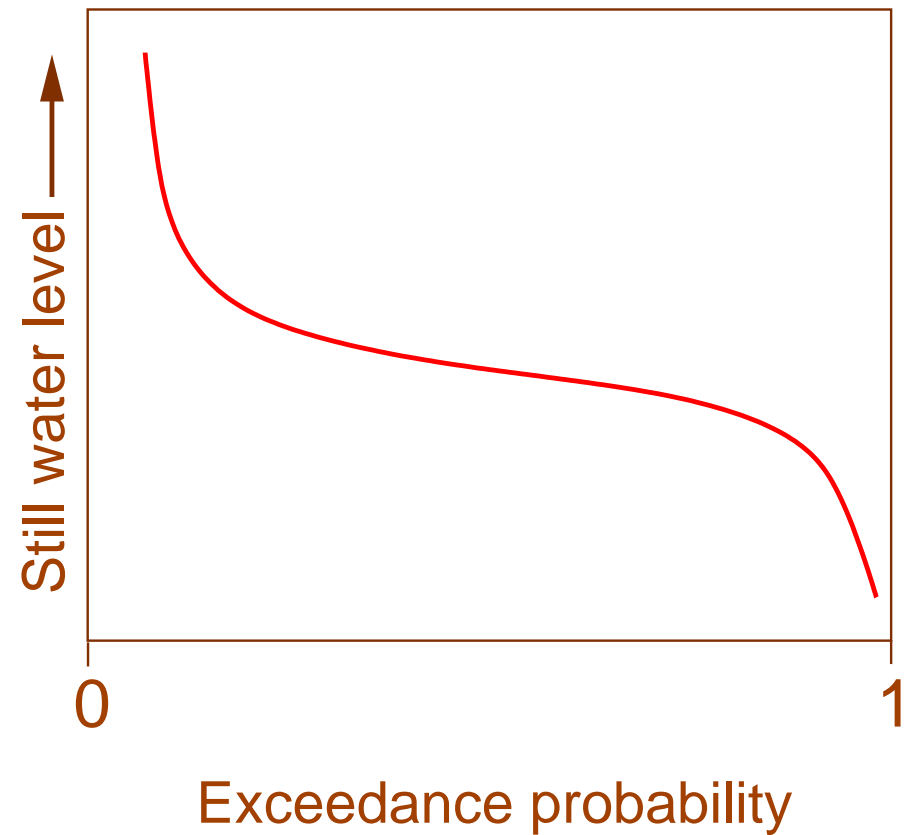
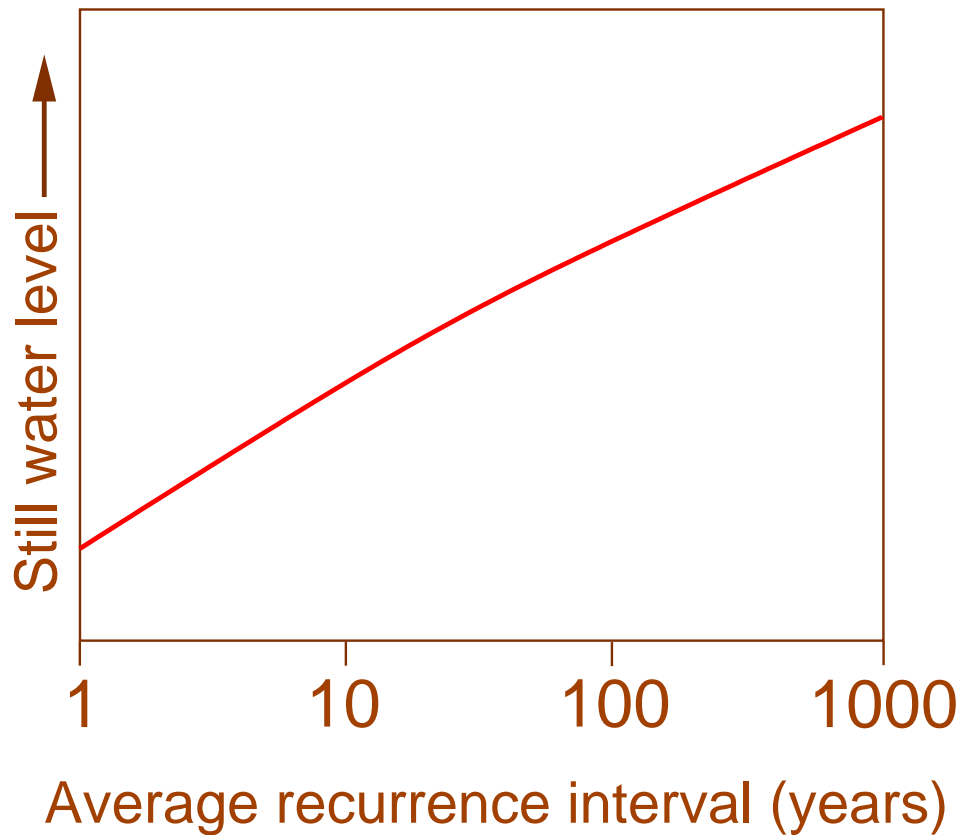
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For an asset life of 10 years, say:

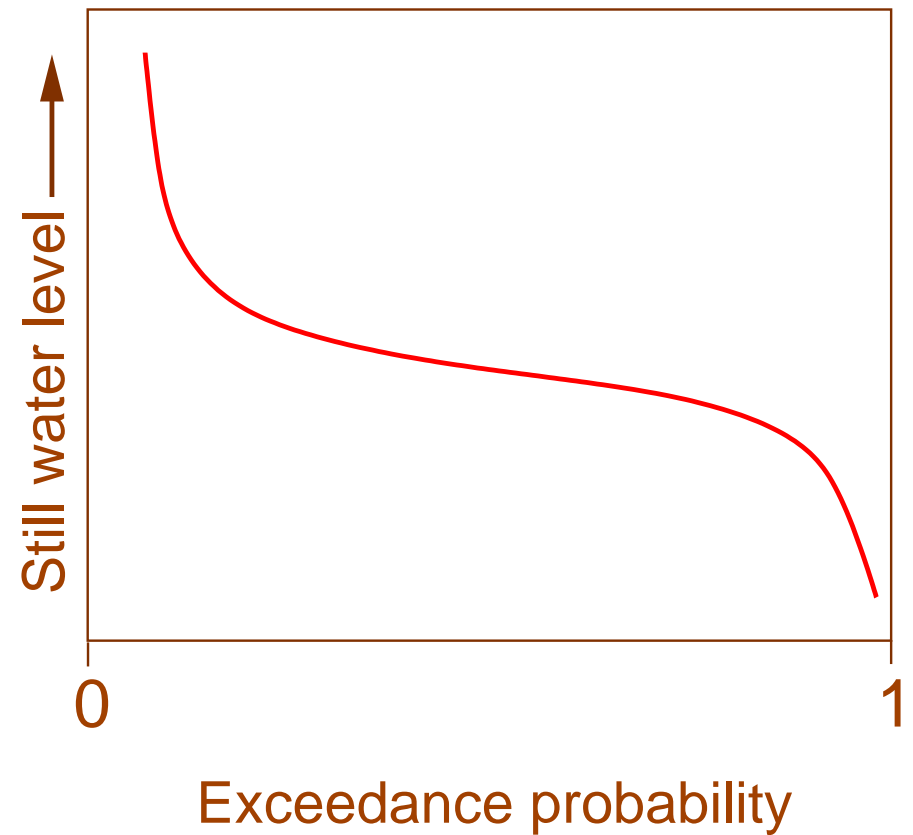
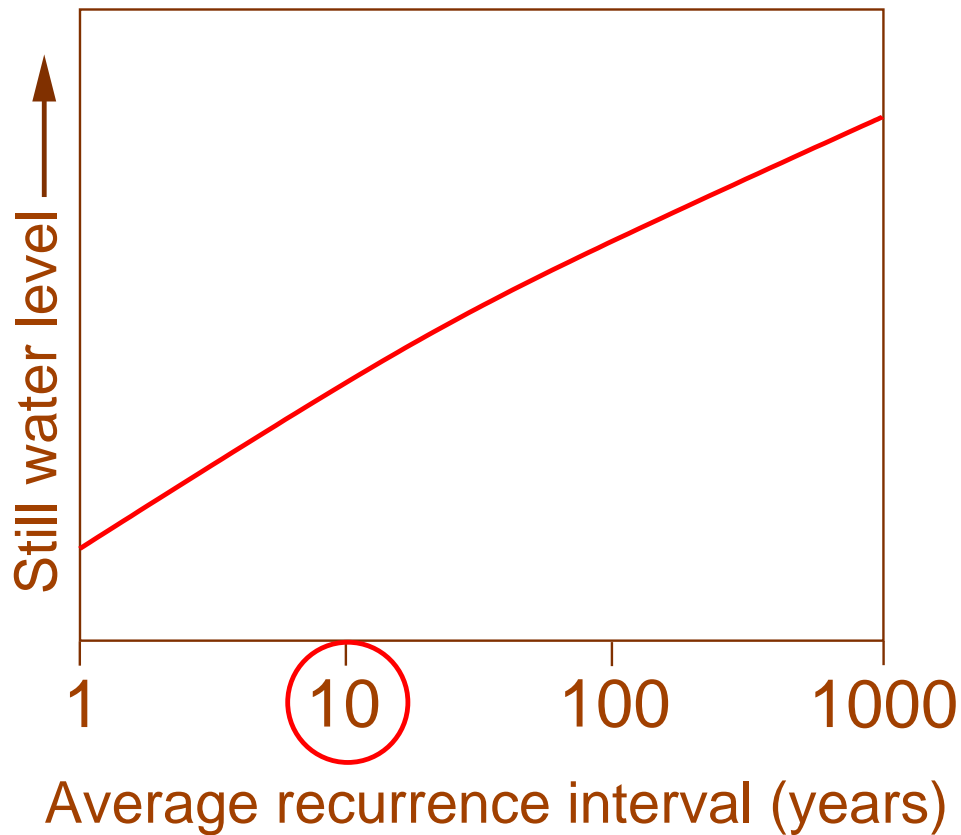




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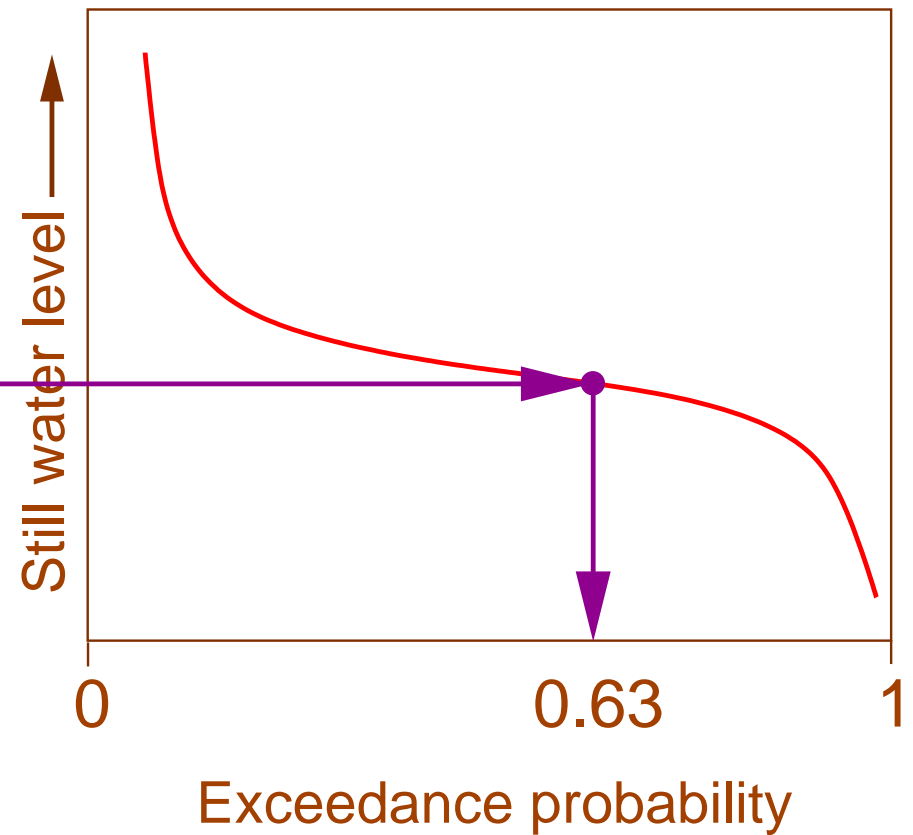
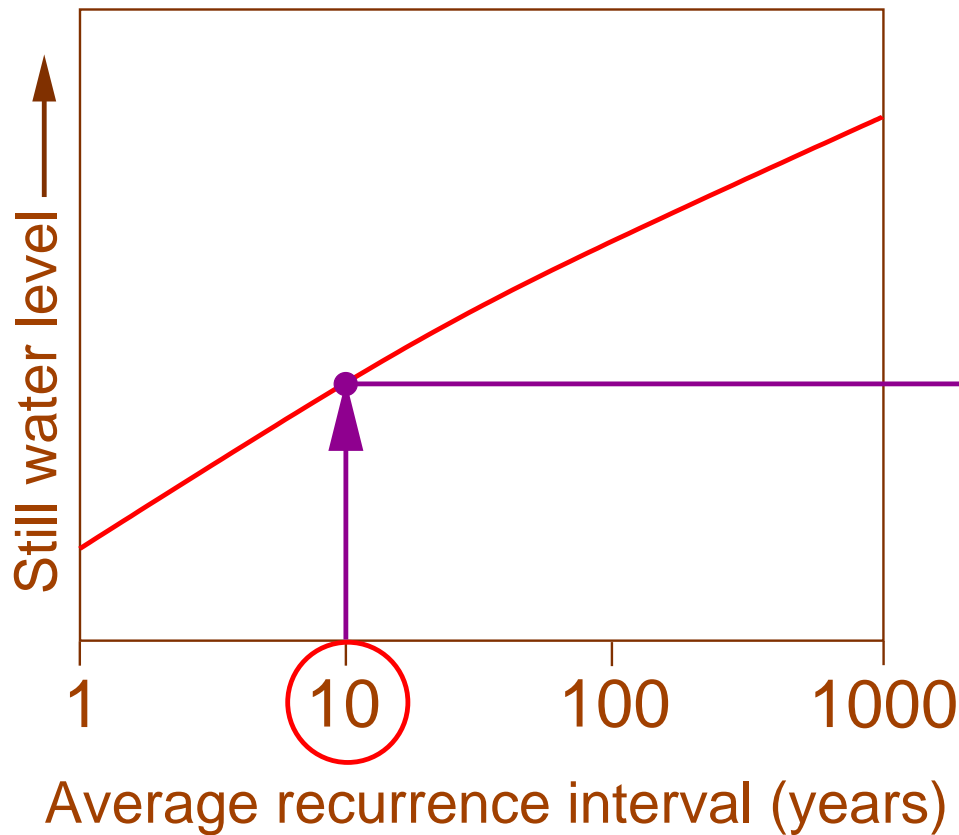
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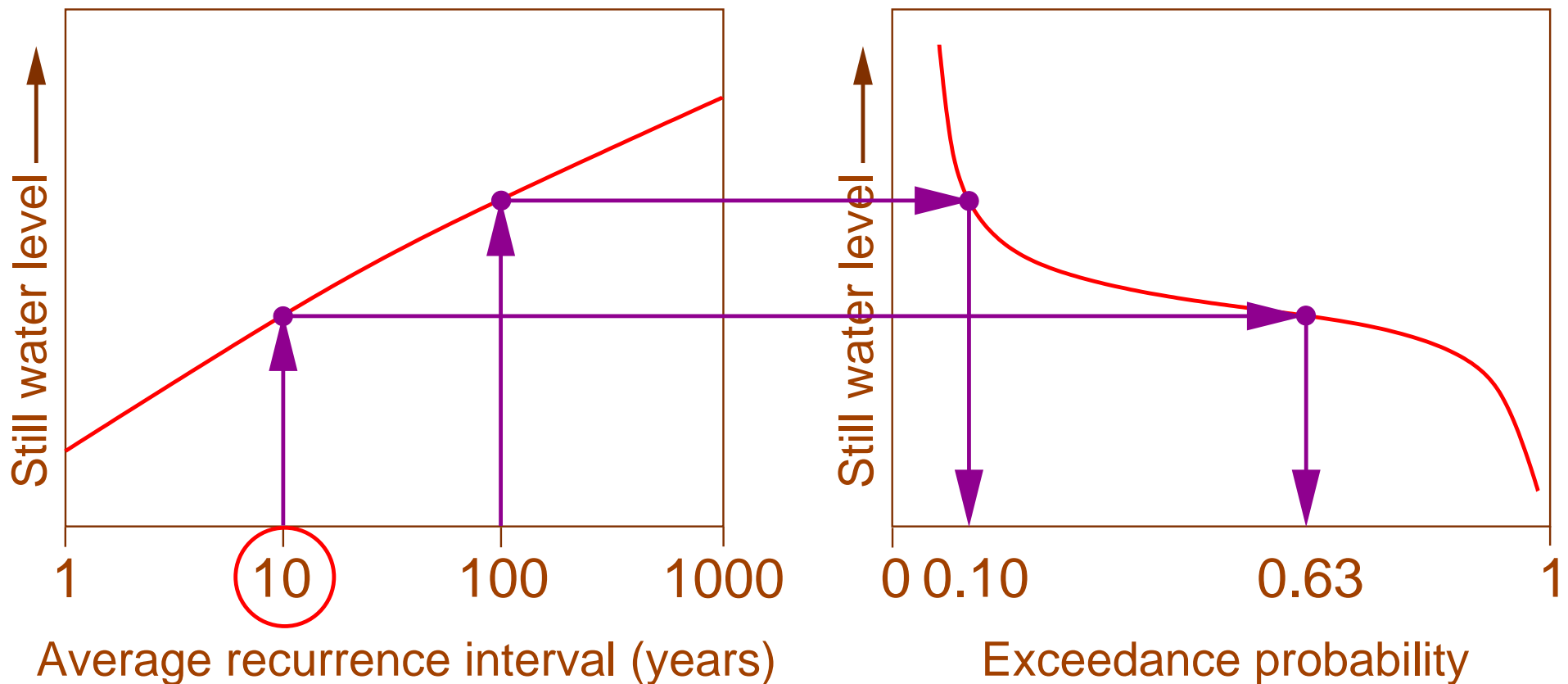
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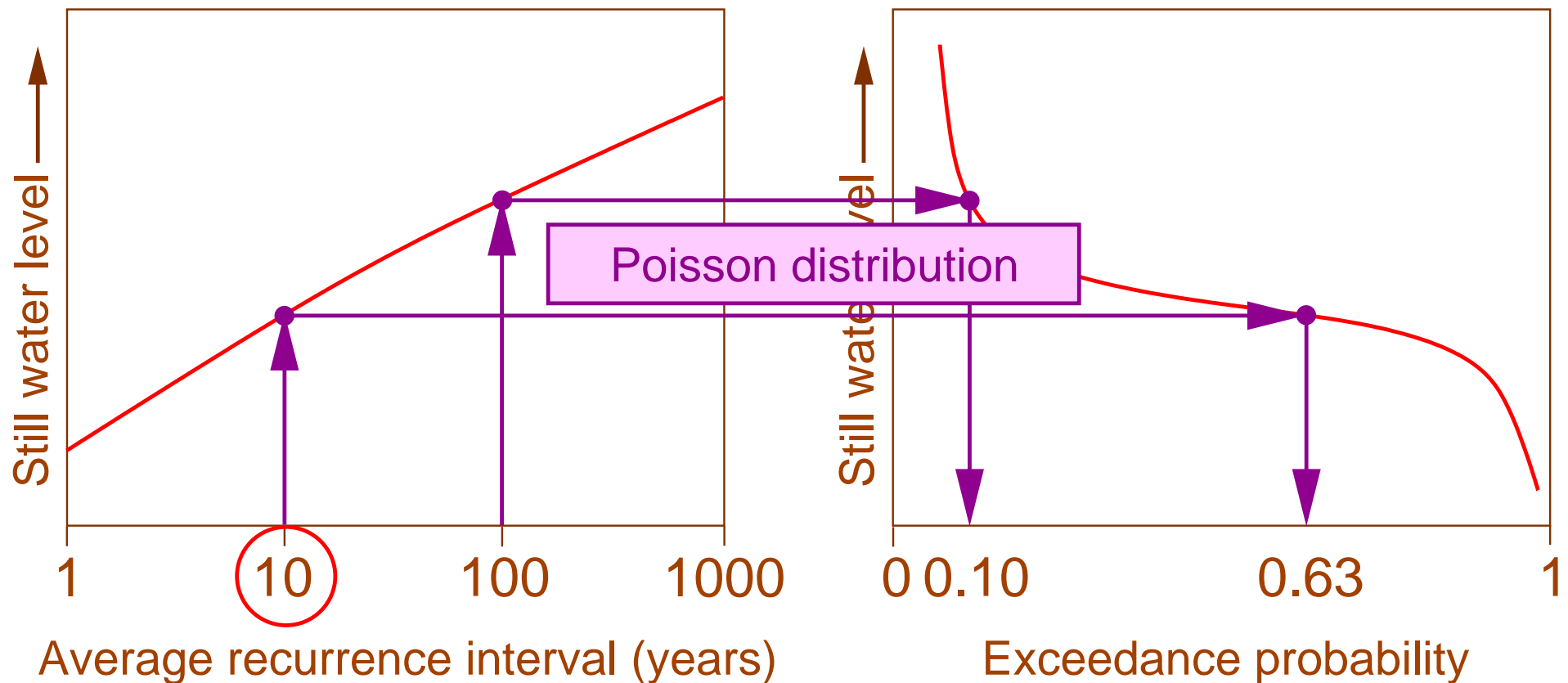
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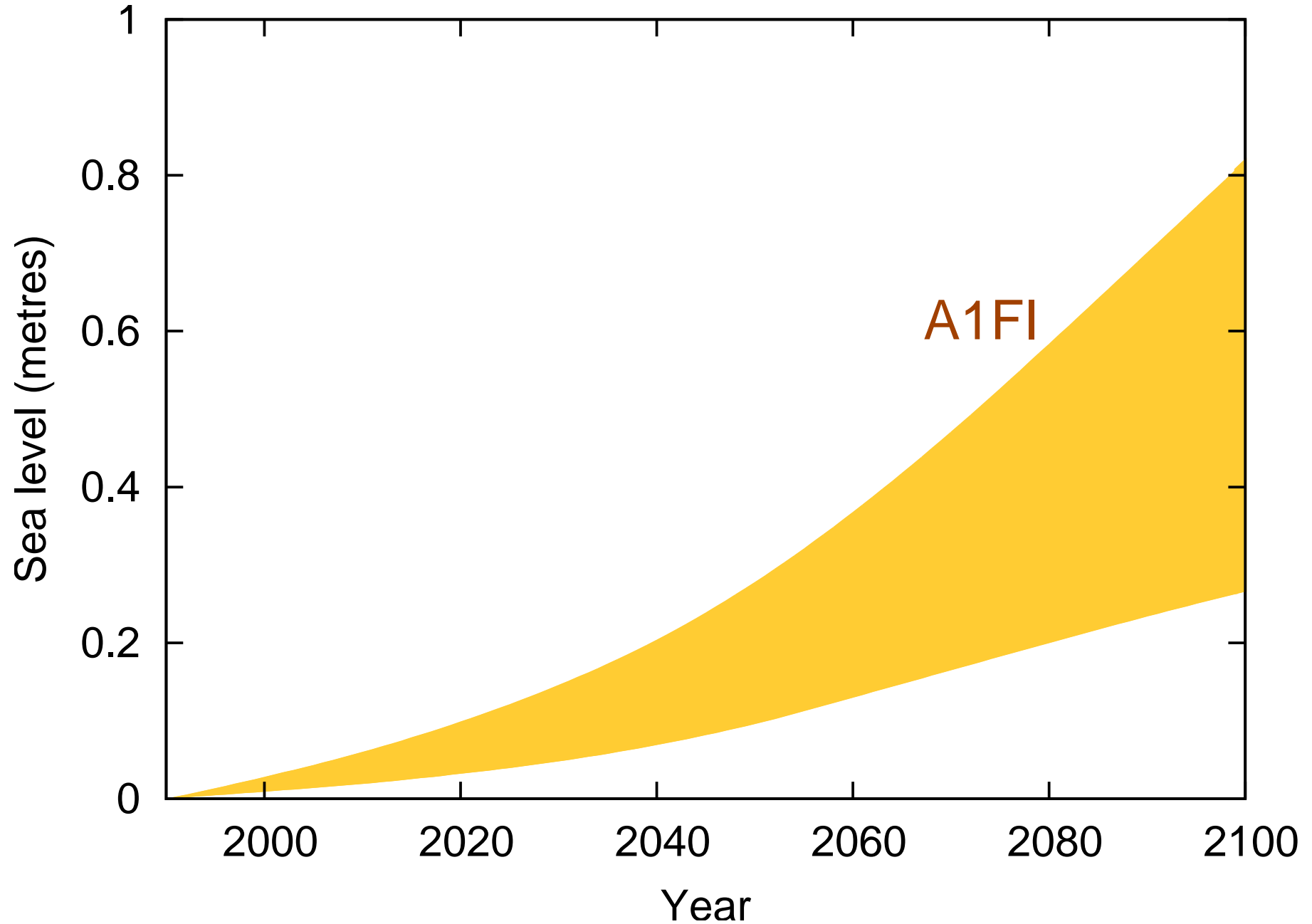
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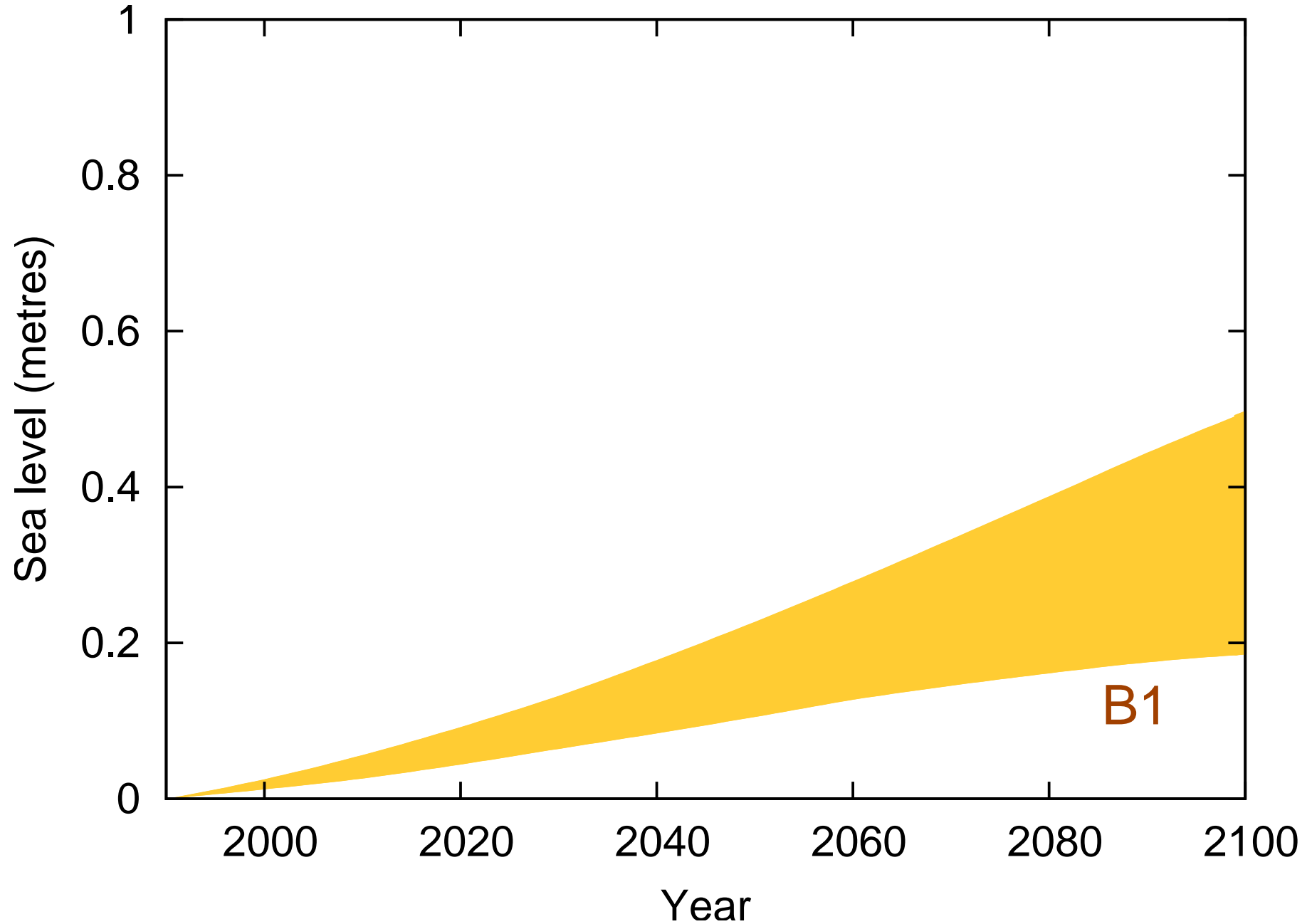
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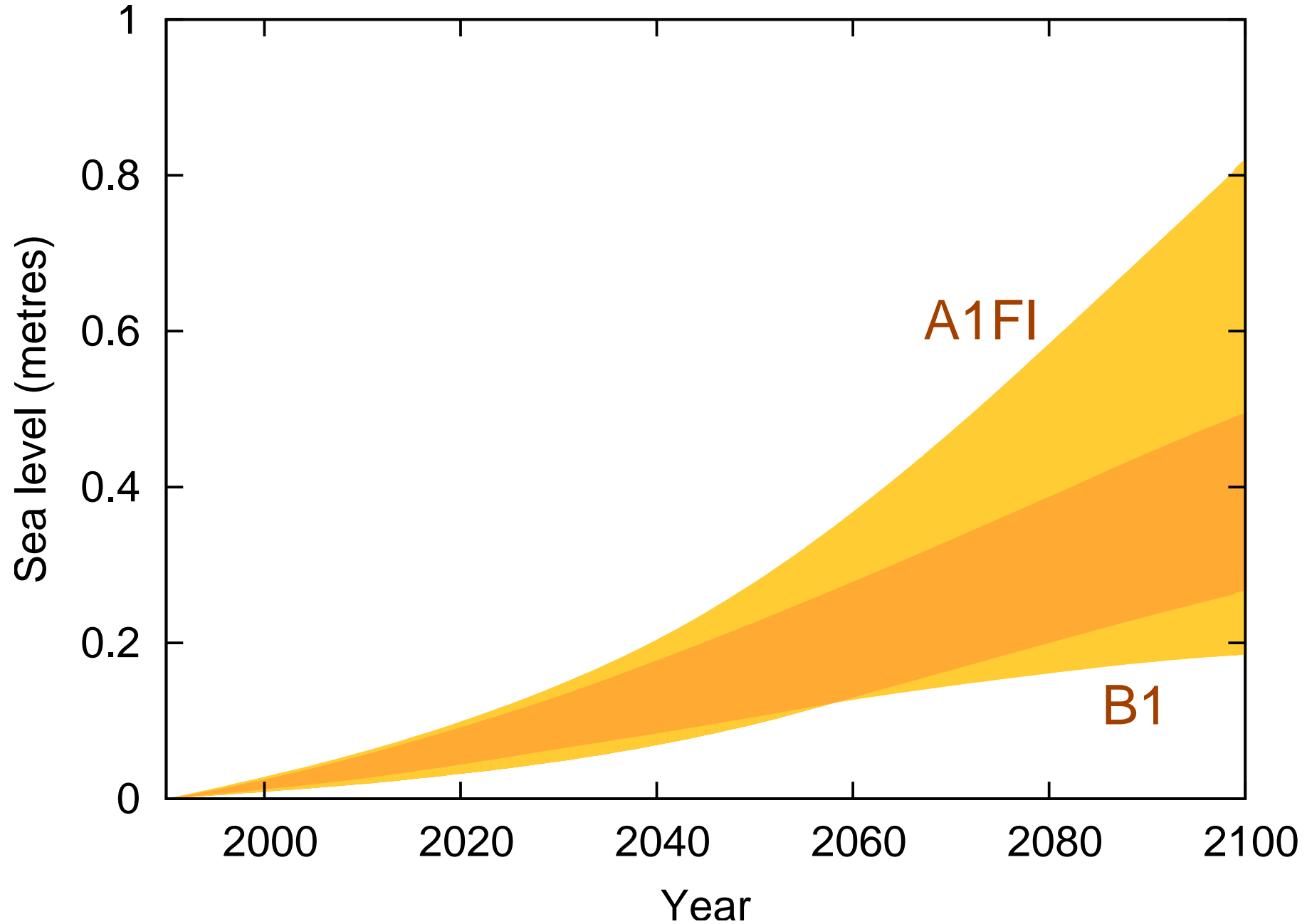
# IPCC Projections of Sea-Level Rise



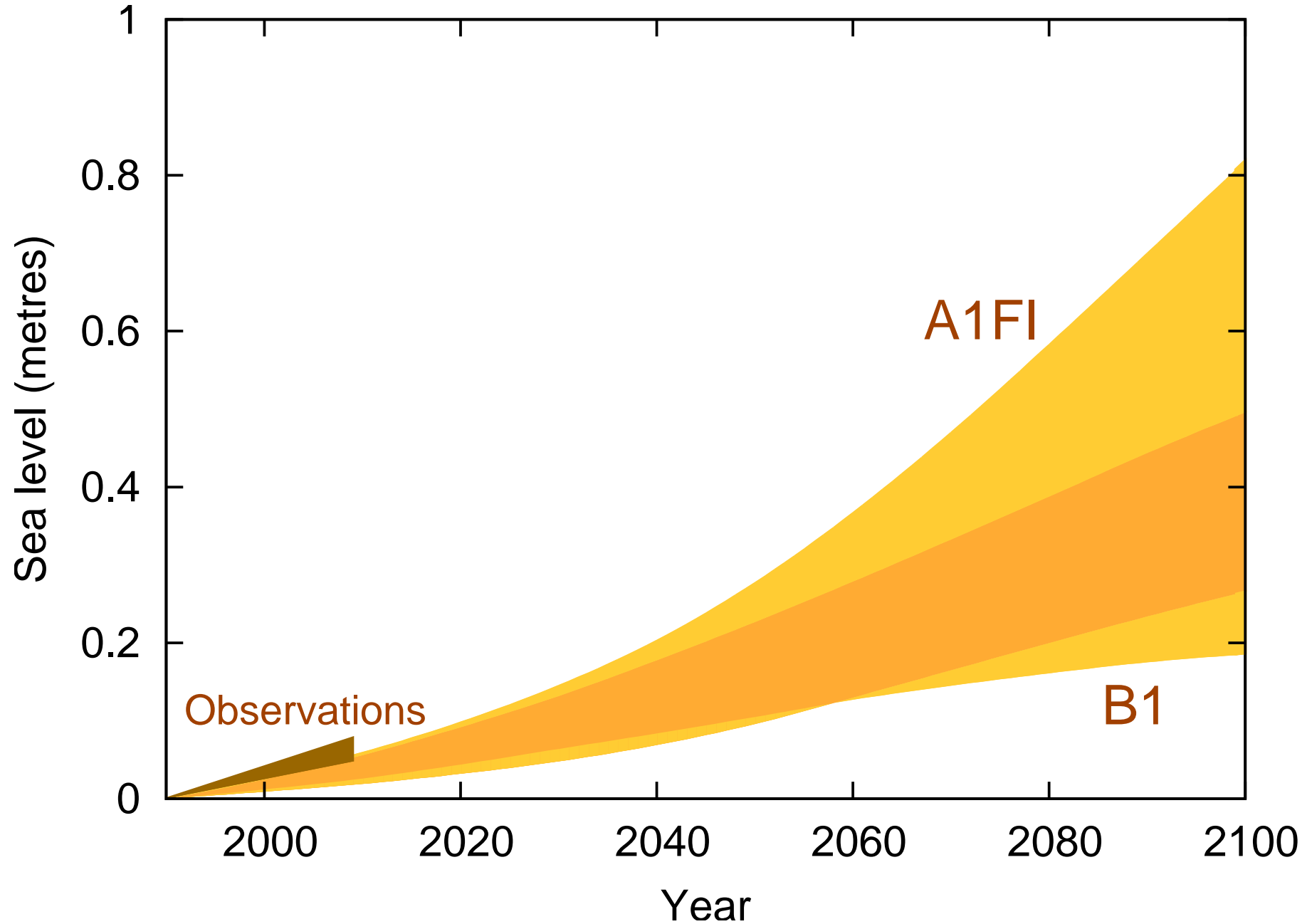
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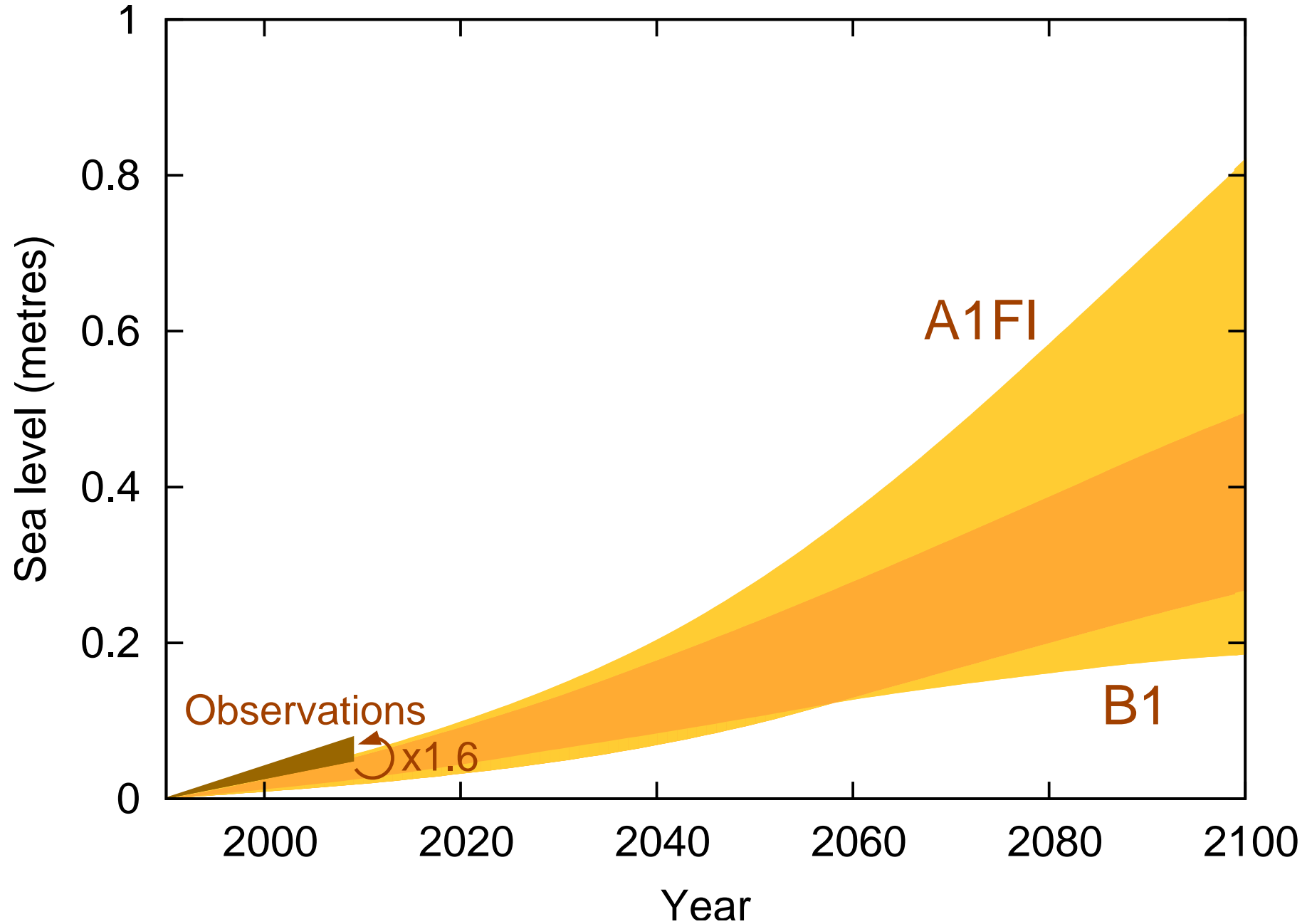


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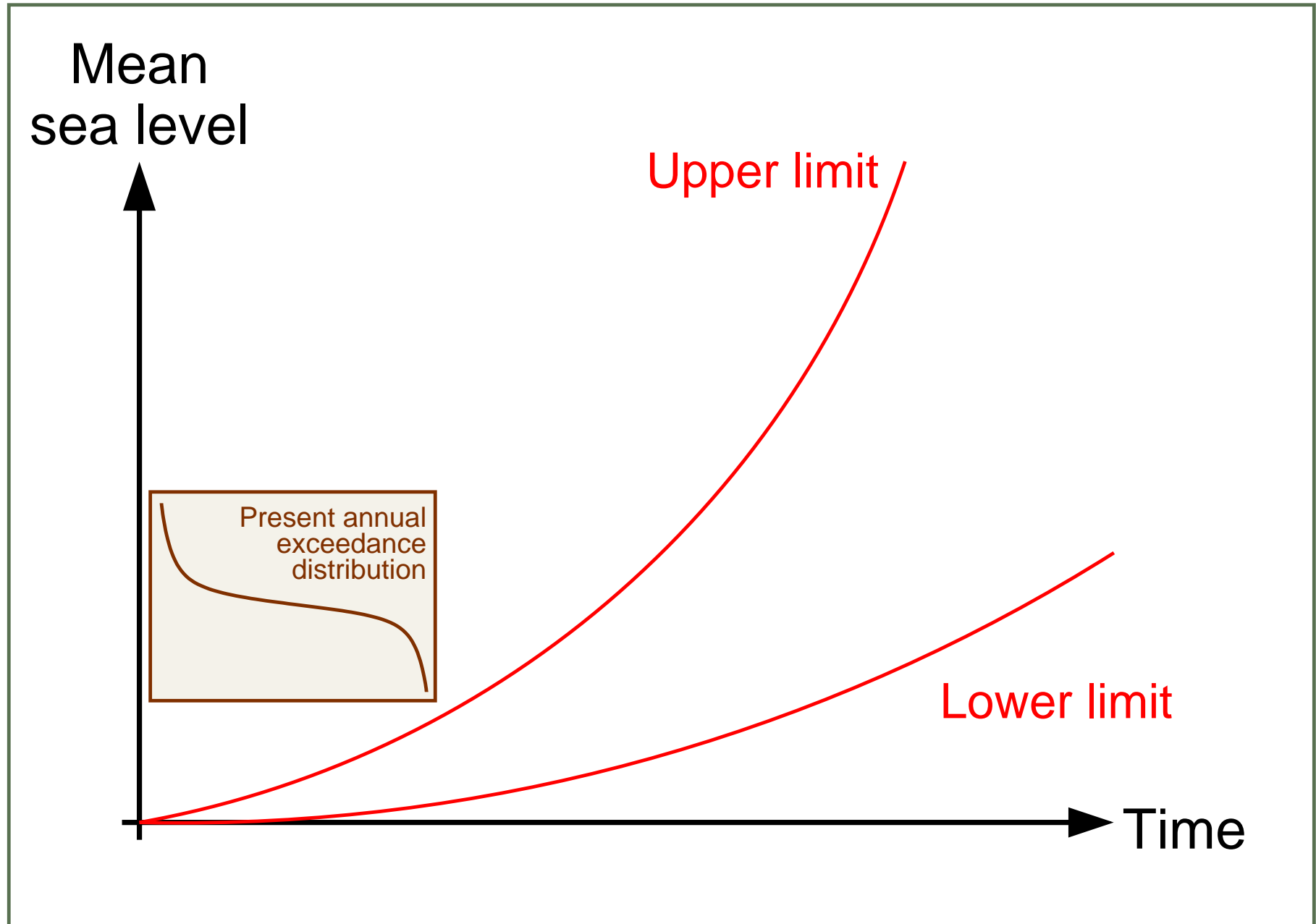
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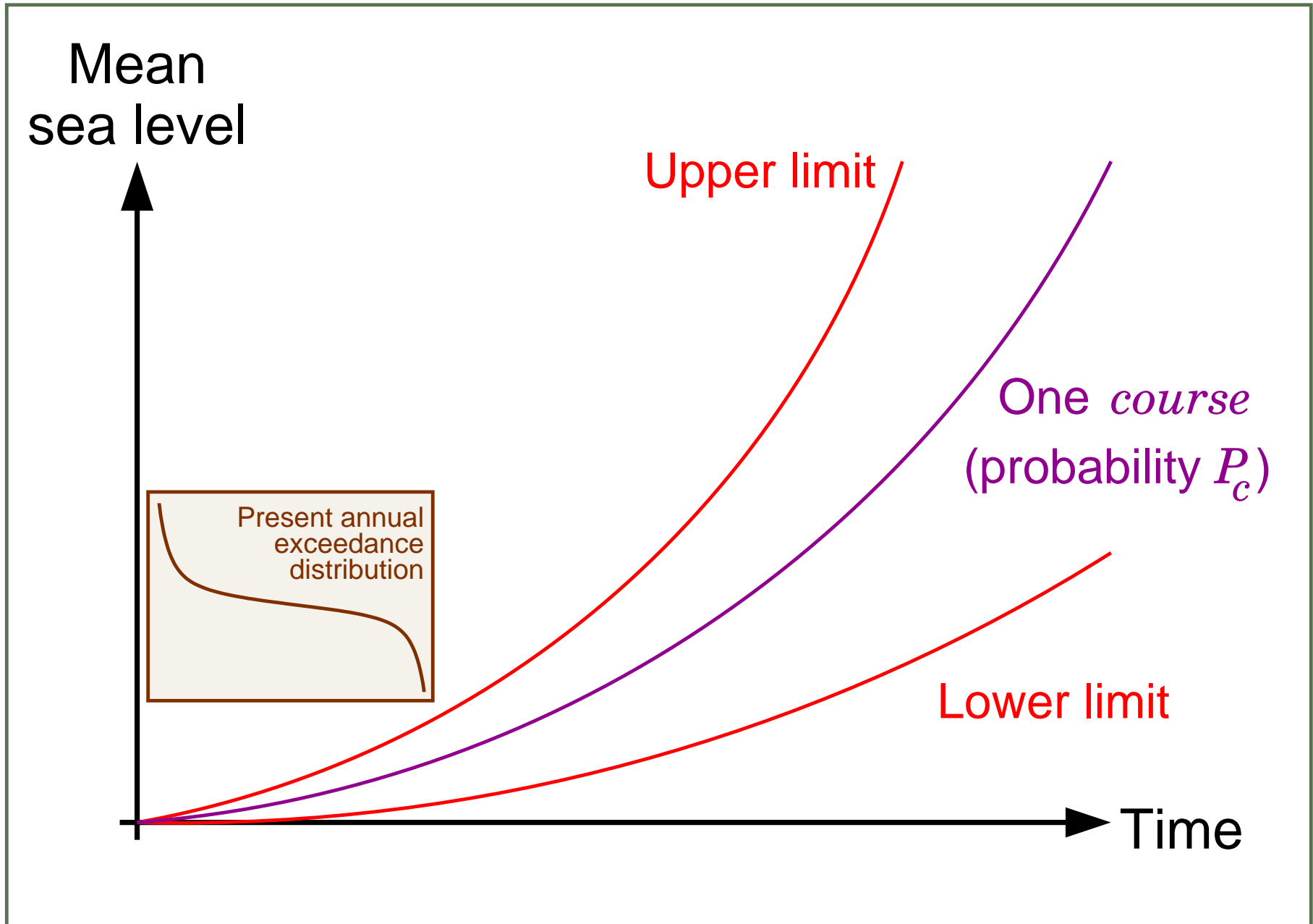
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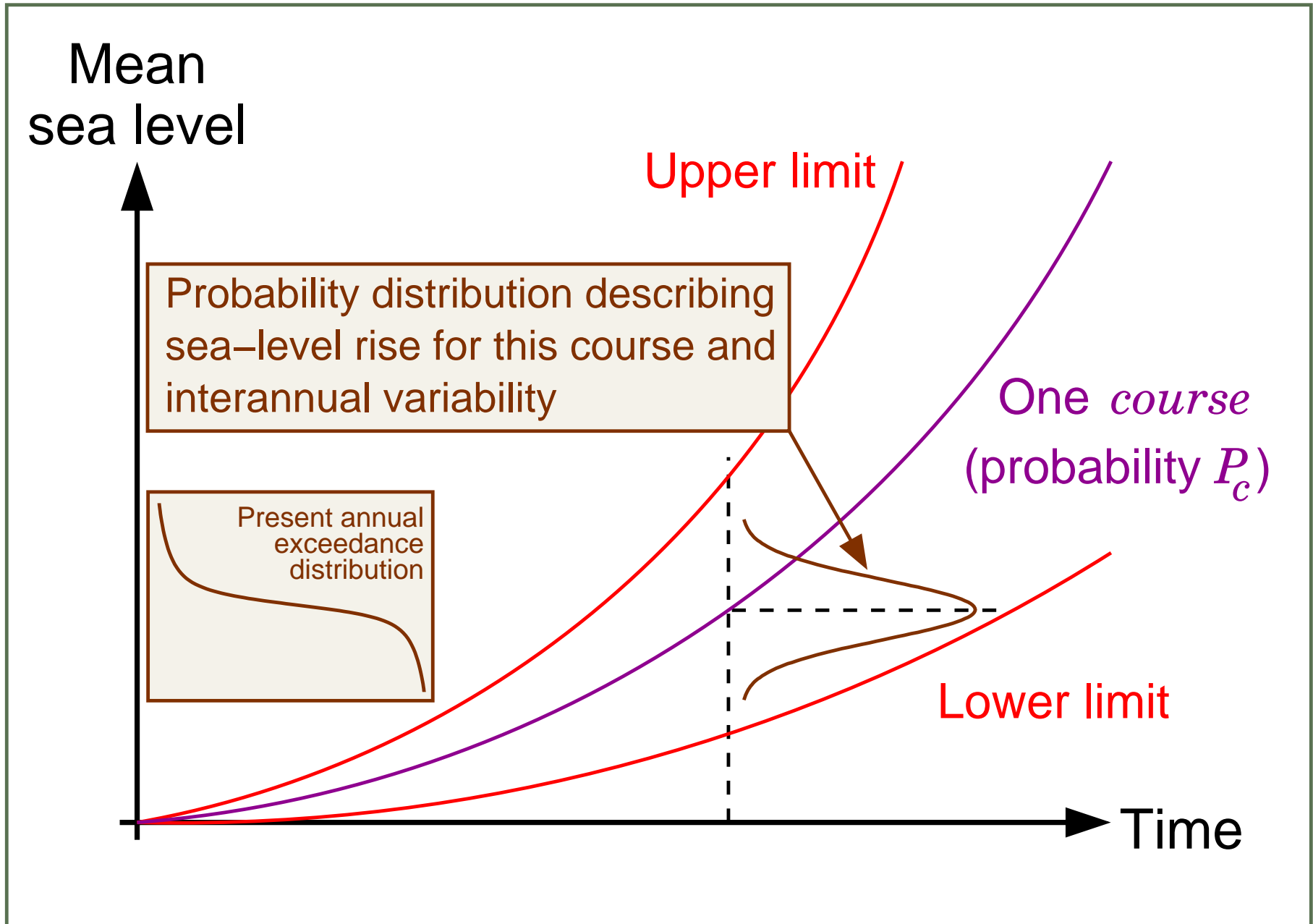
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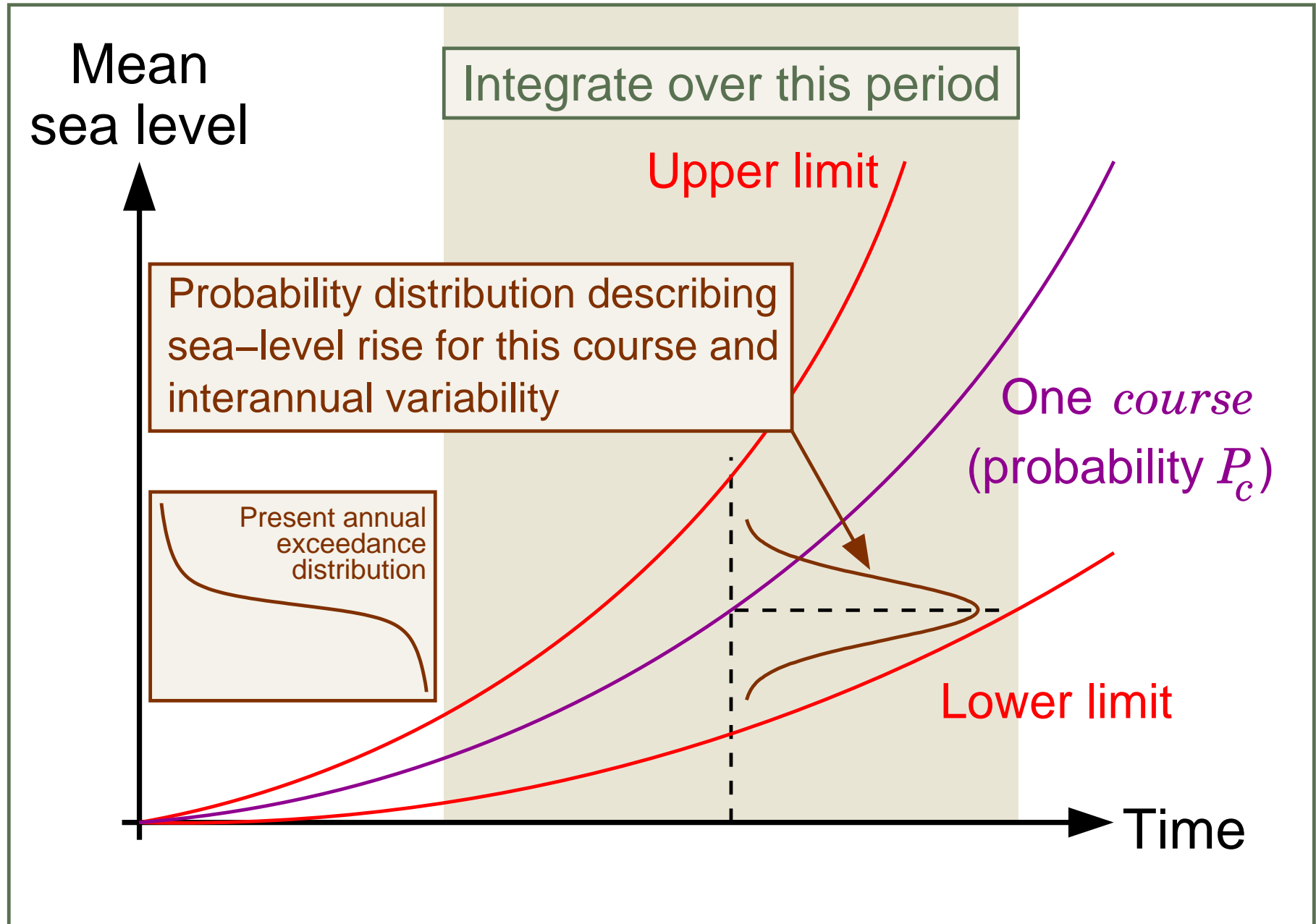
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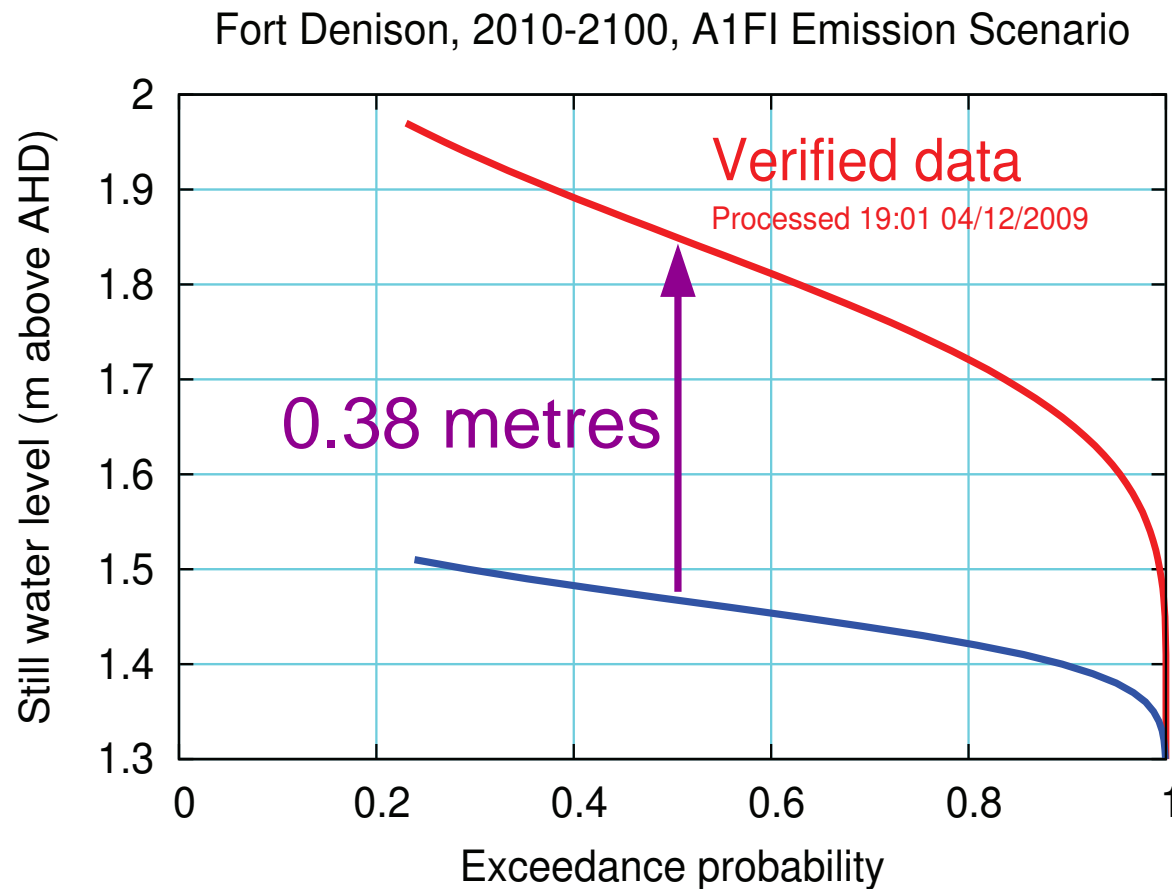
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# Likelihood of Flooding at Fort Denison

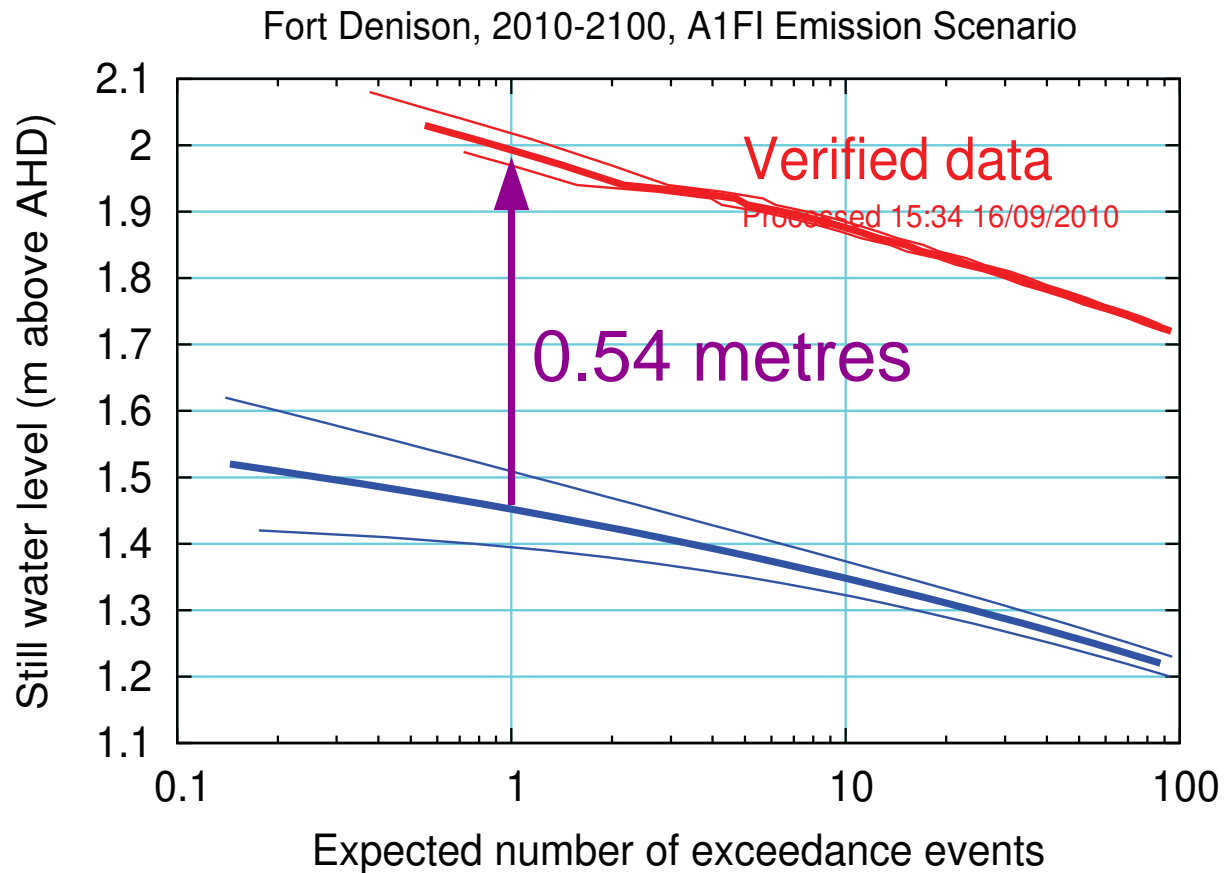


Red curve: exceedance probability for 2010–2100 inclusive under conditions of rising sea level

Blue curve: exceedance probability for 91–year period with mean sea level held constant at 2000 value

Read Important Information for advice on the use of this plot

# Expected Number of Exceedances at Fort Denison



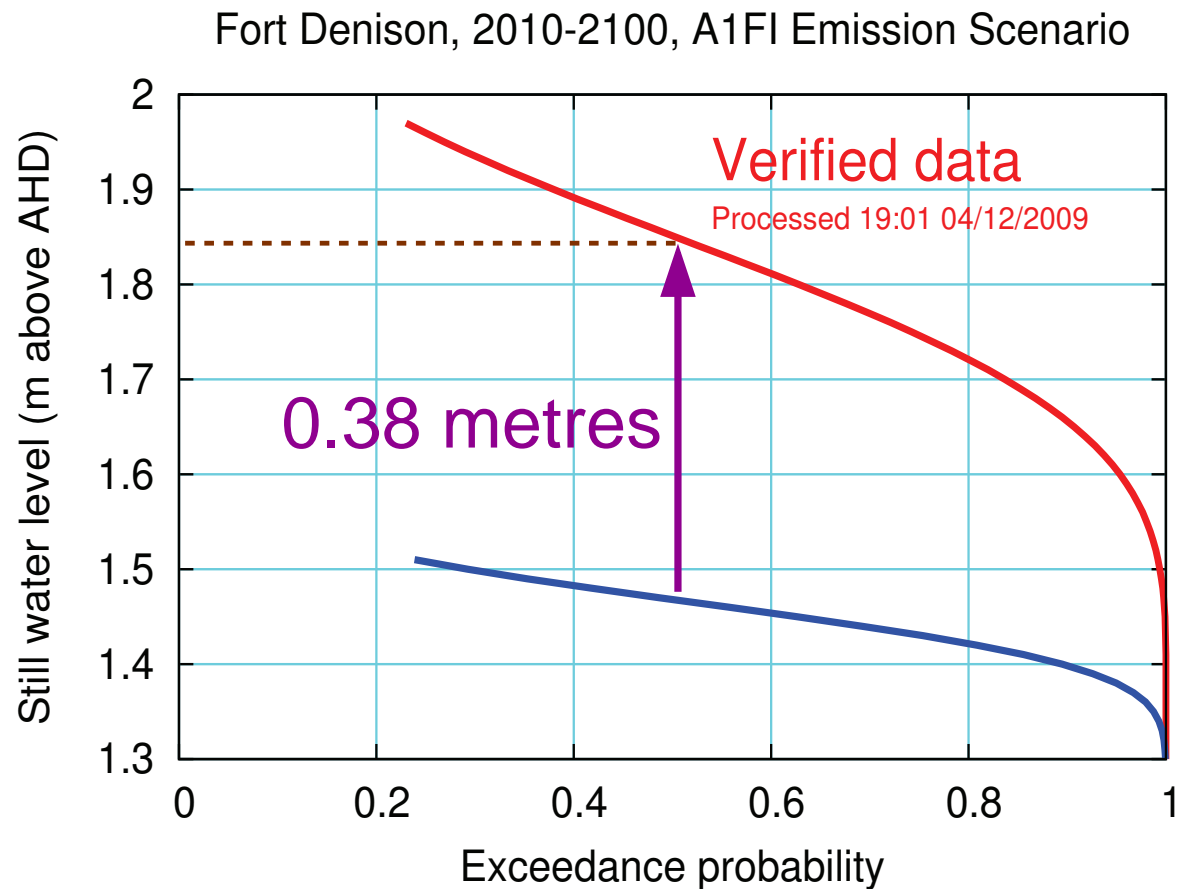
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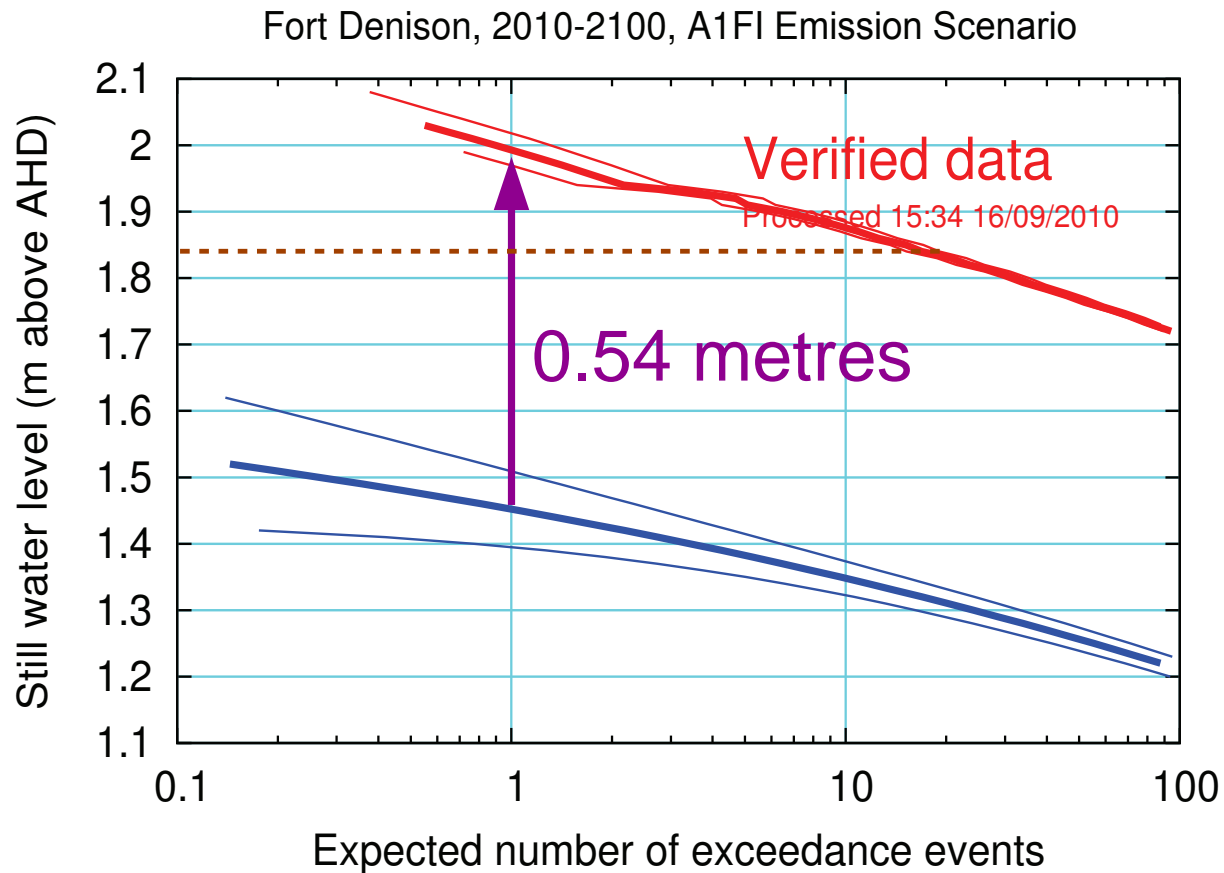


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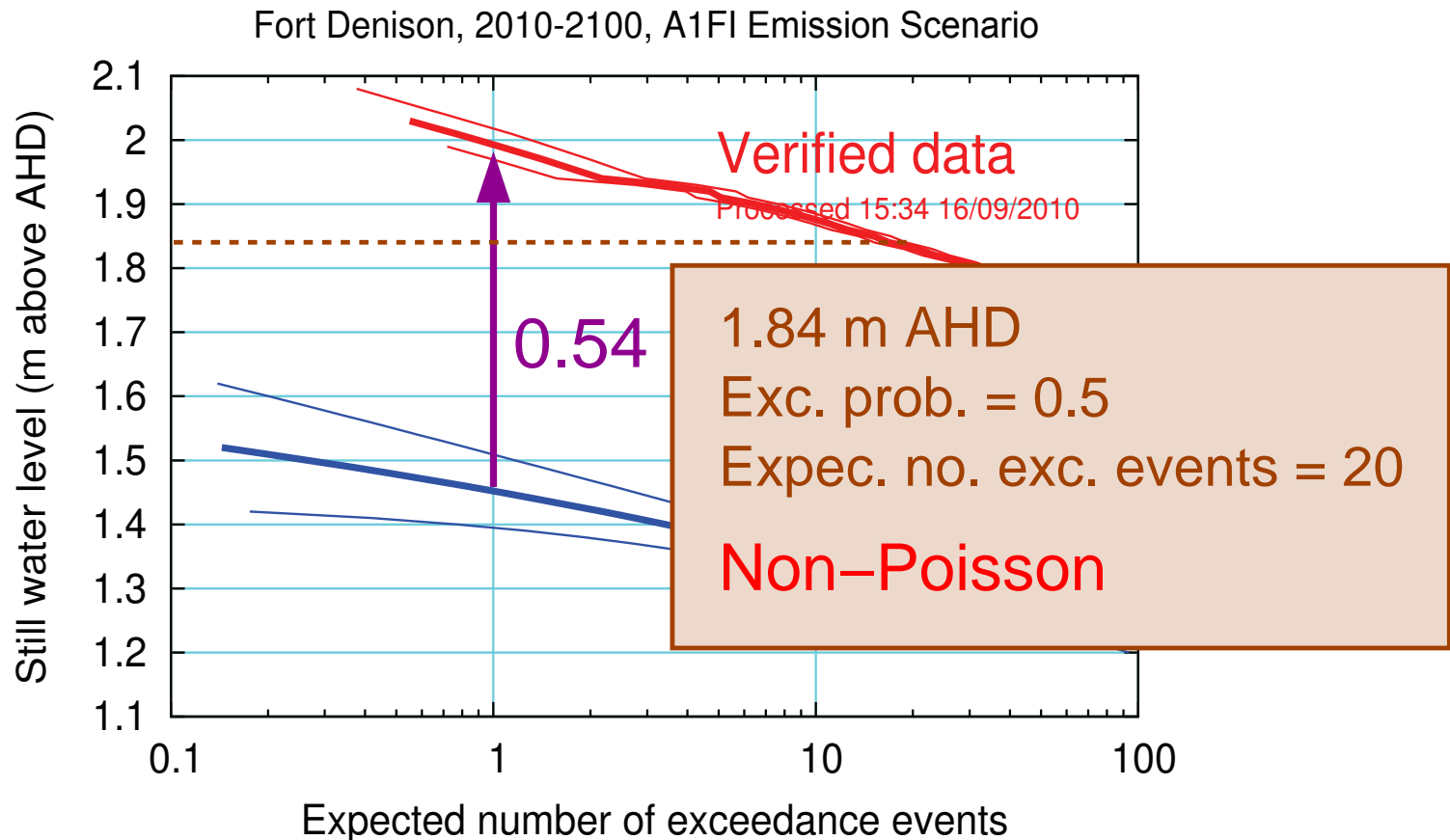


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recommended metric



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# Questions?

