

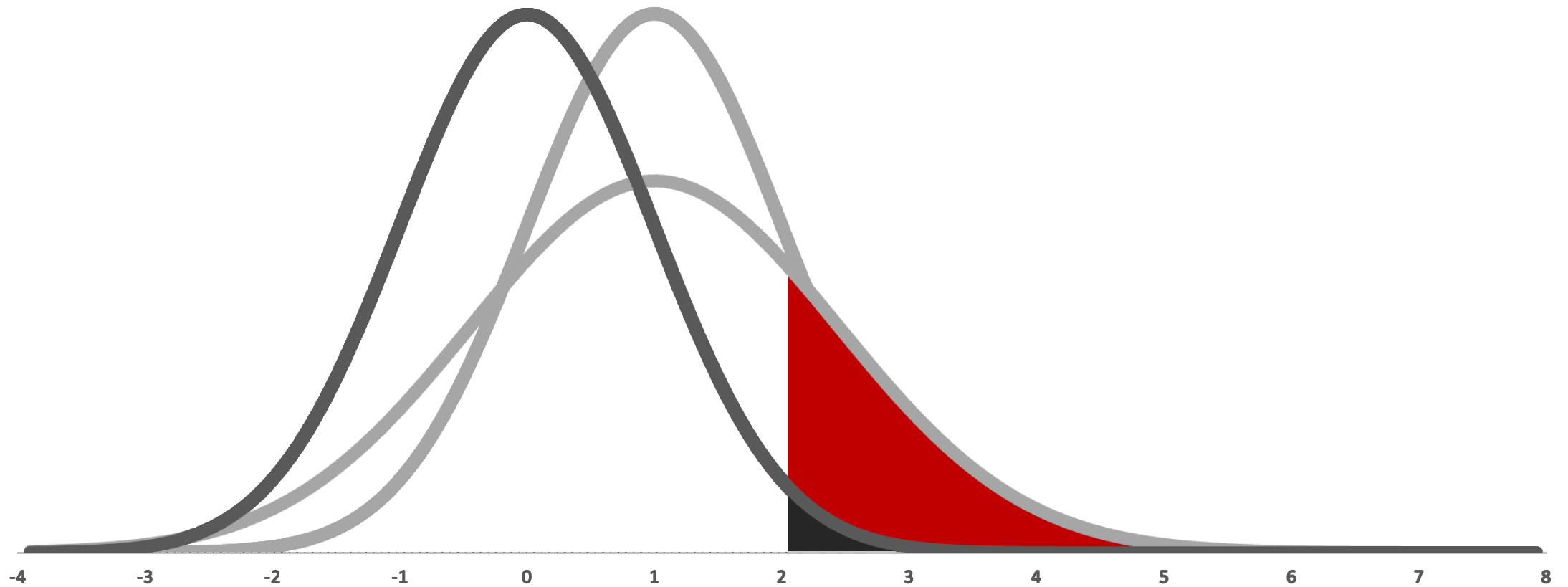
TIME TO FAILURE IN INFRASTRUCTURE

(Infrastructure Retreat)



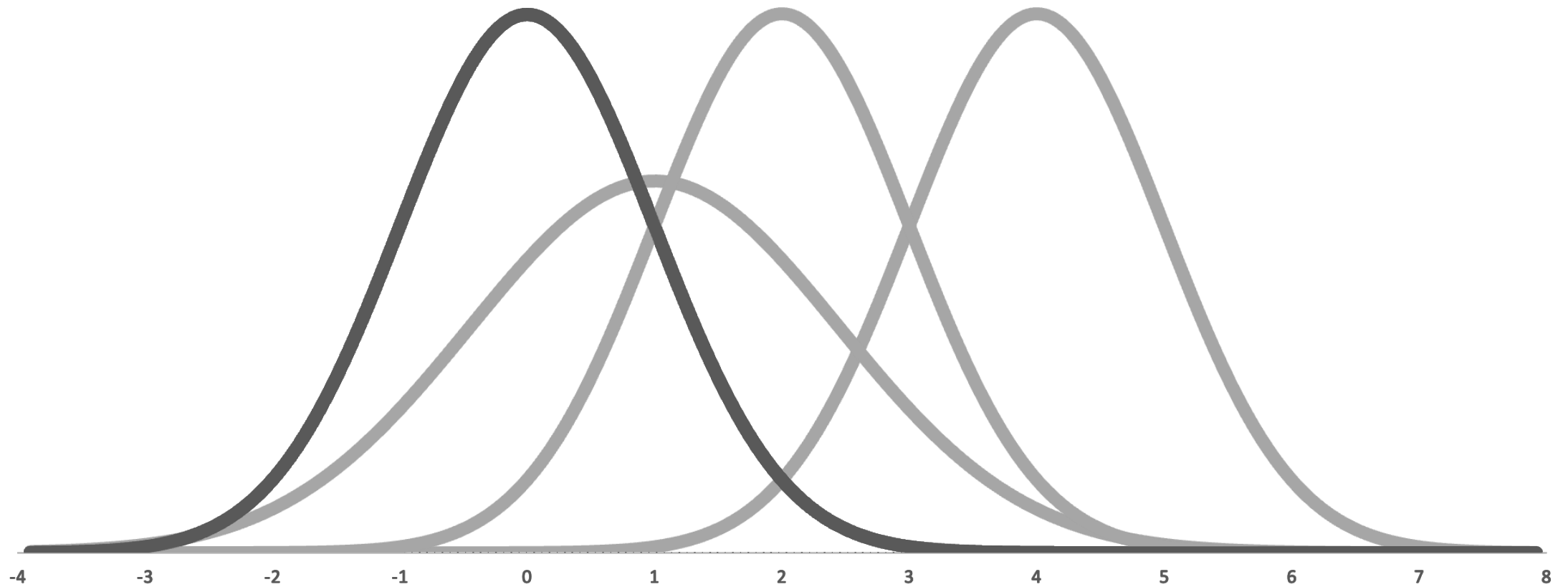
Climate Change is Shifting Hazard Probabilities

Temperature, Sea Level, Precipitation, Storm Surge...



Climate Change is Shifting Hazard Probabilities

Temperature, Sea Level, Precipitation, Storm Surge...



Probability of Exceedance

Probability of Exceedance

$$= 1 - (1 - \text{AEP})^{\text{YEARS}}$$

Building Code

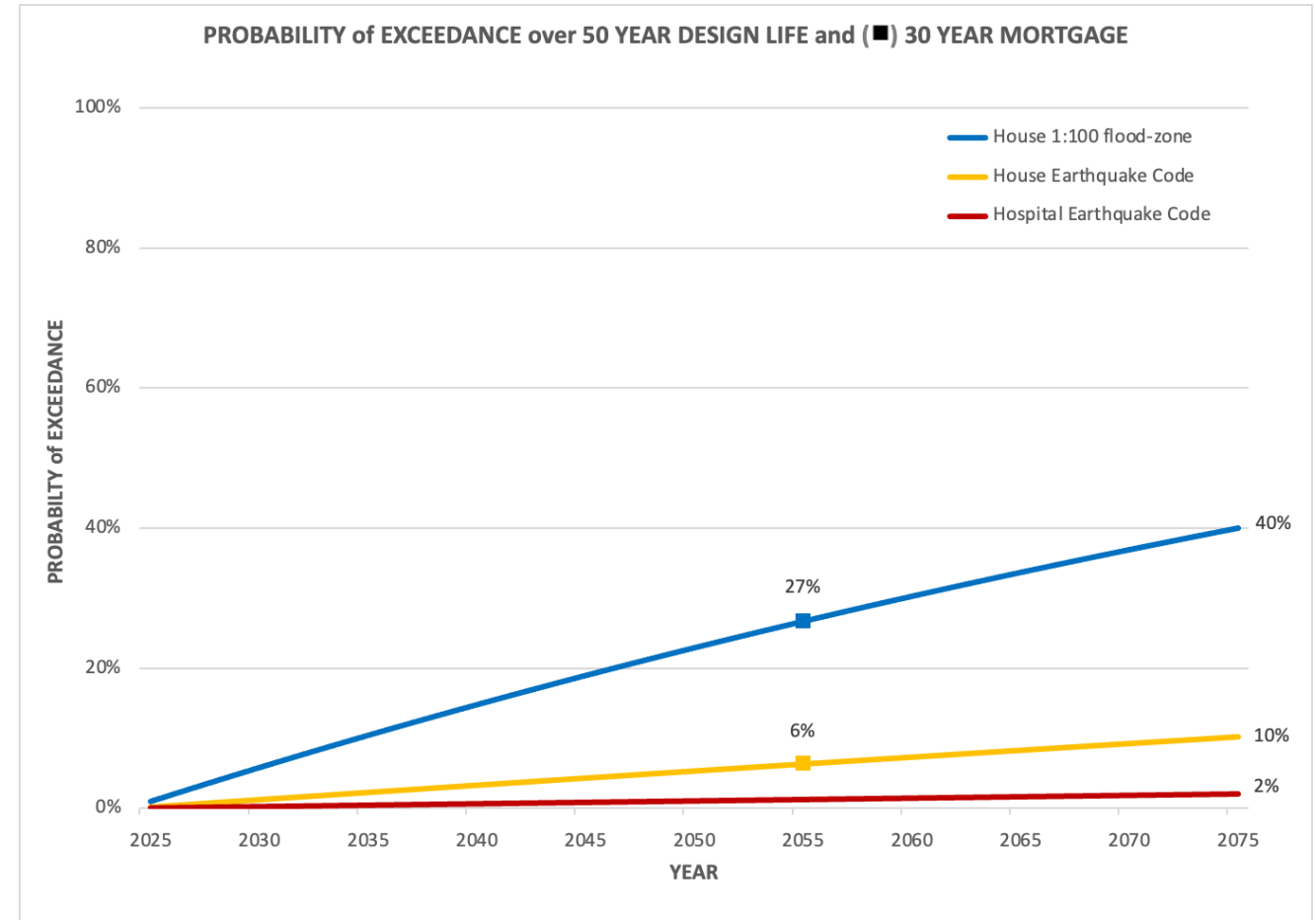
Residential ARI 1:475
Hospitals ARI 1:2500

Historical Development

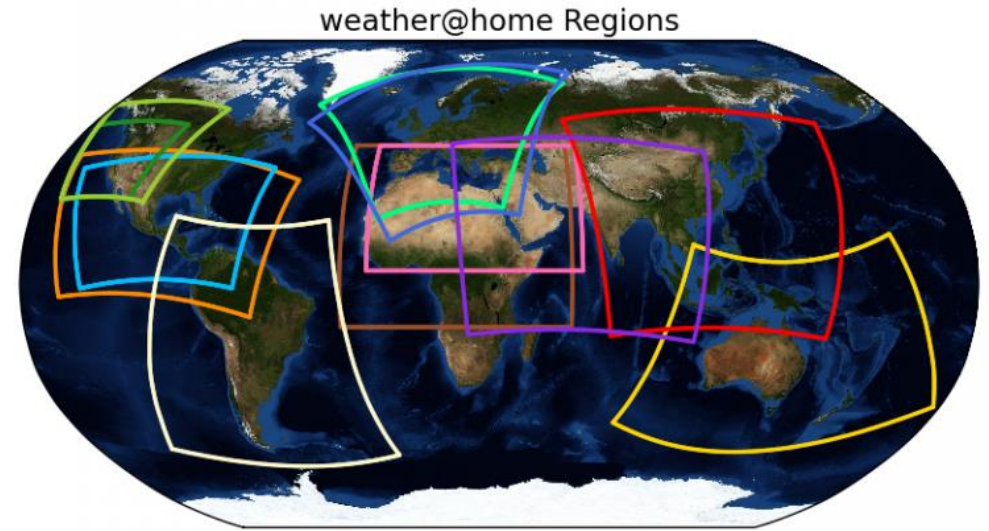
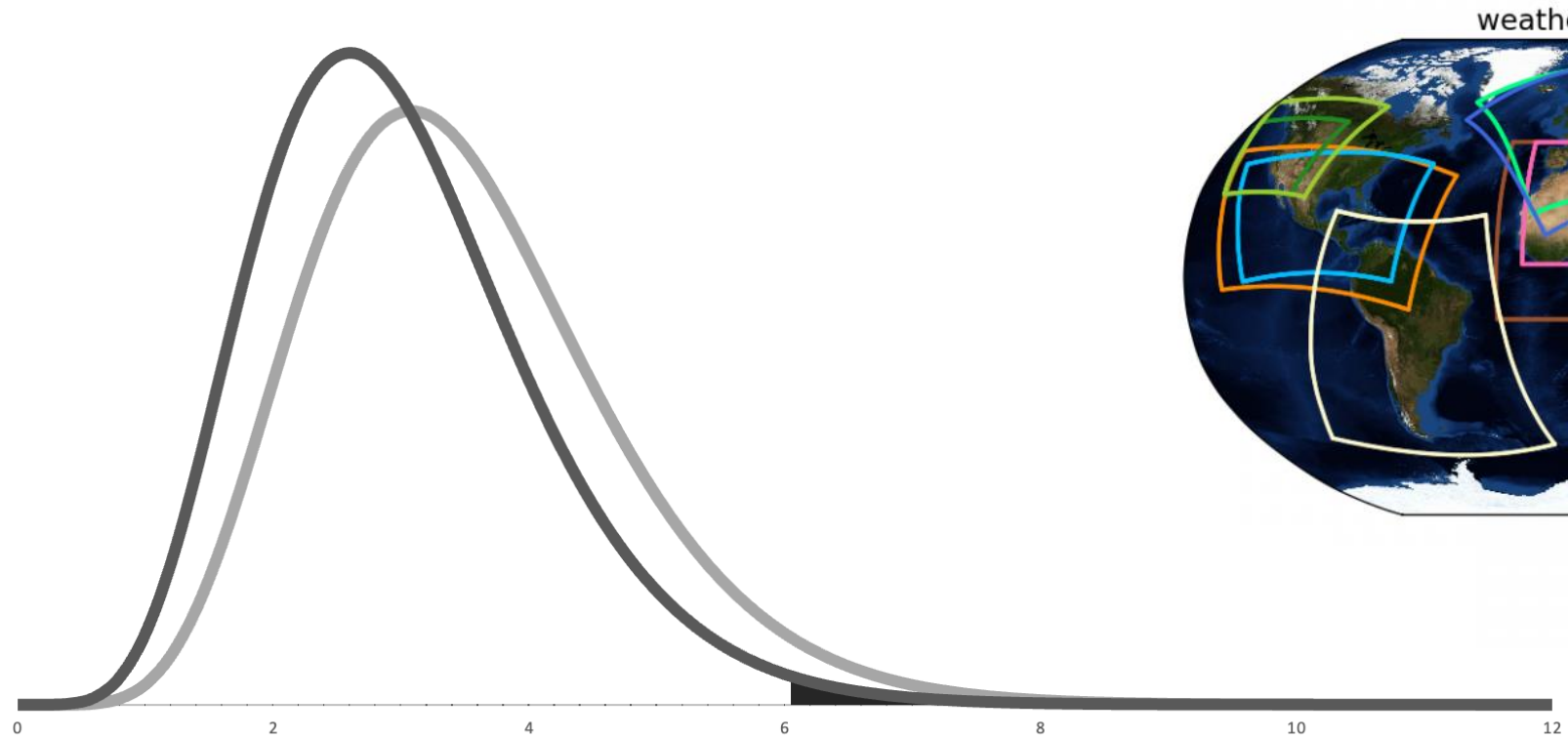
Floodplain 1% AEP

Service Level

Stopbank 1% AEP



Aotearoa River Discharge: Gumbel Distribution



Duct Tape modeling chain

Atmospheric model(s)

+

Hydrological model

+

Infrastructure service levels

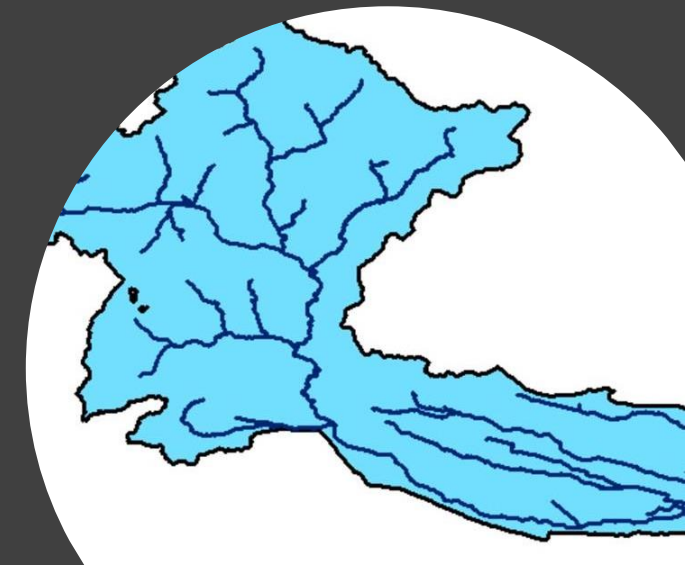
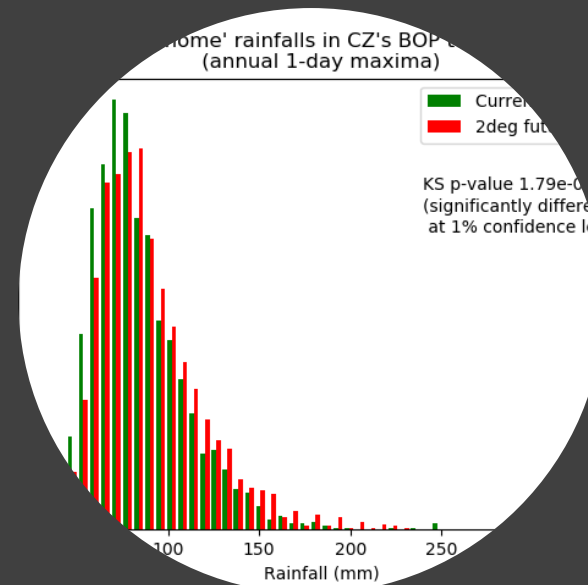
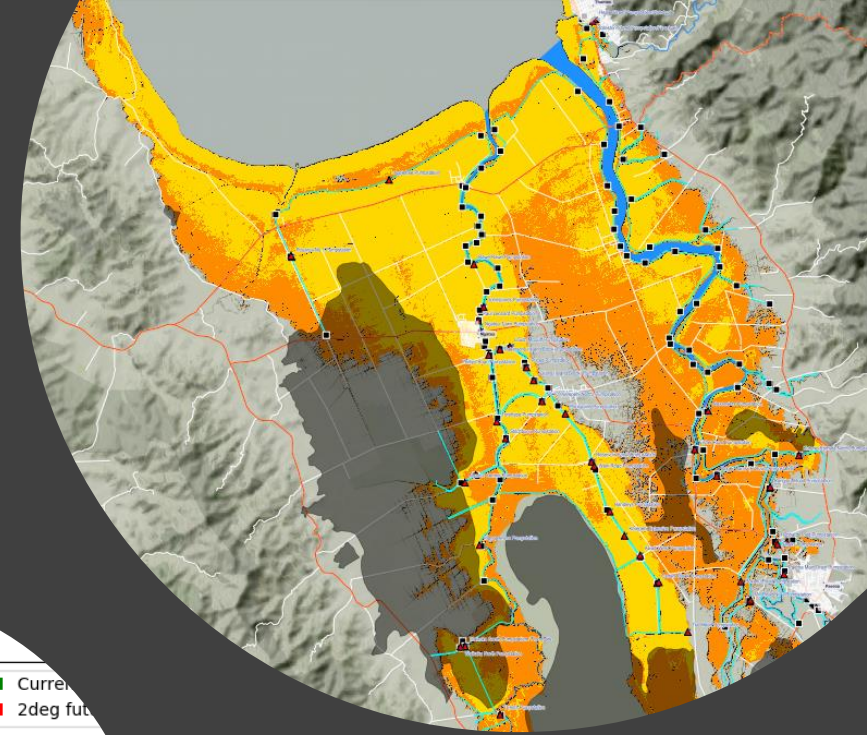
+

Financial hurdles

=

Time to Failure due diligence

whakahura



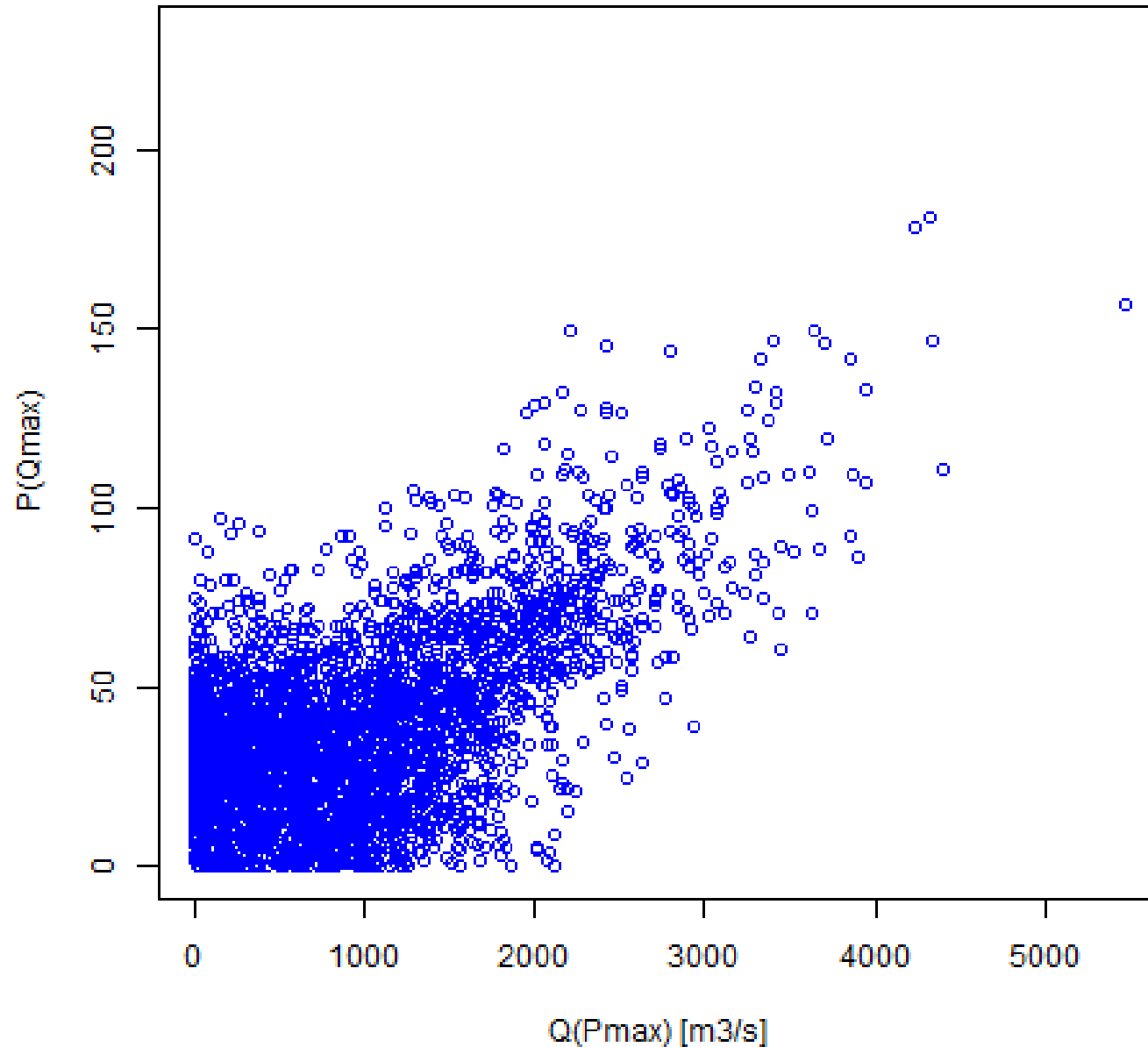
atmospheric
model



hydrological
model



Current



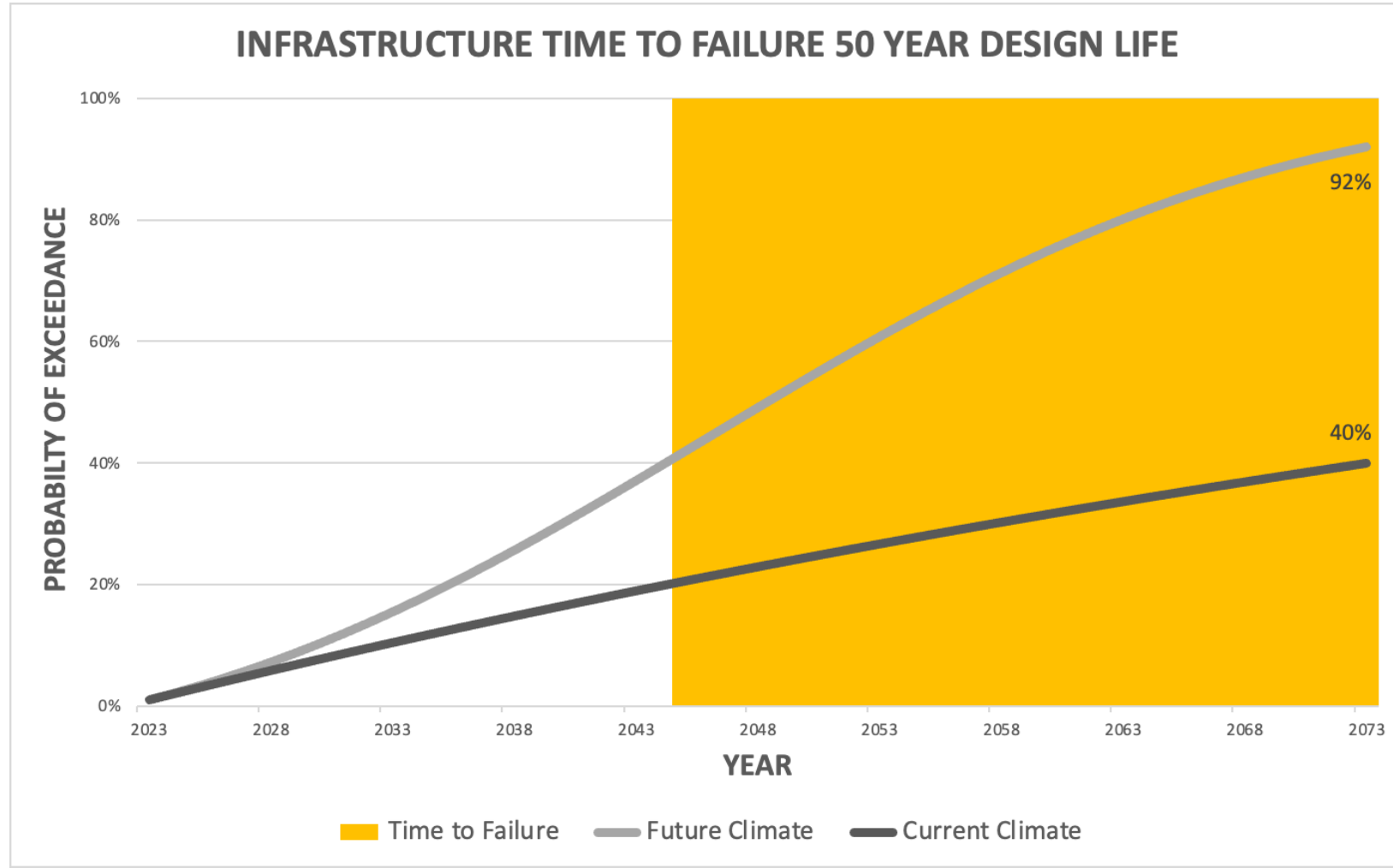
Maximum
Precipitation

$\neq$

Maximum
Discharge

whakahura

Probability of Exceedance under Climate Change

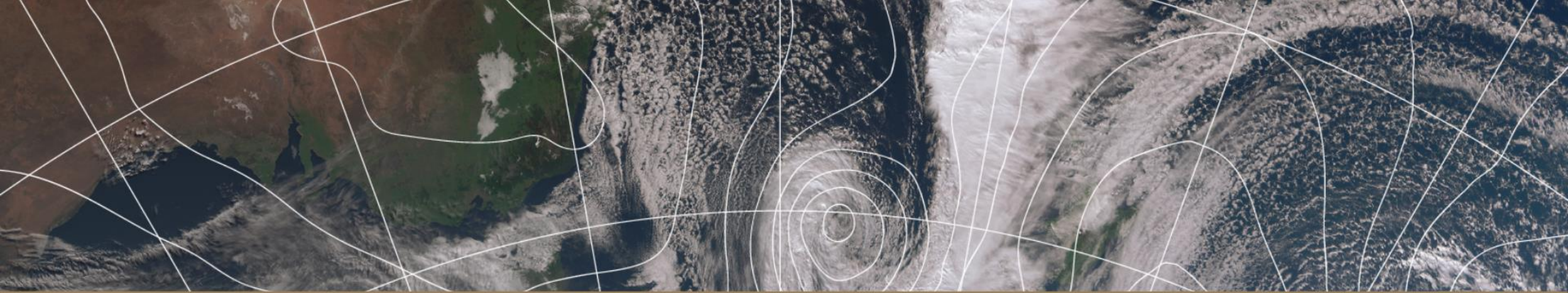


Location B:
100% AEP
100% AEP Event
(1:10 ARI)
by 2050

whakahura

QUESTIONS?





whakahura

extreme events and the emergence of climate change

