

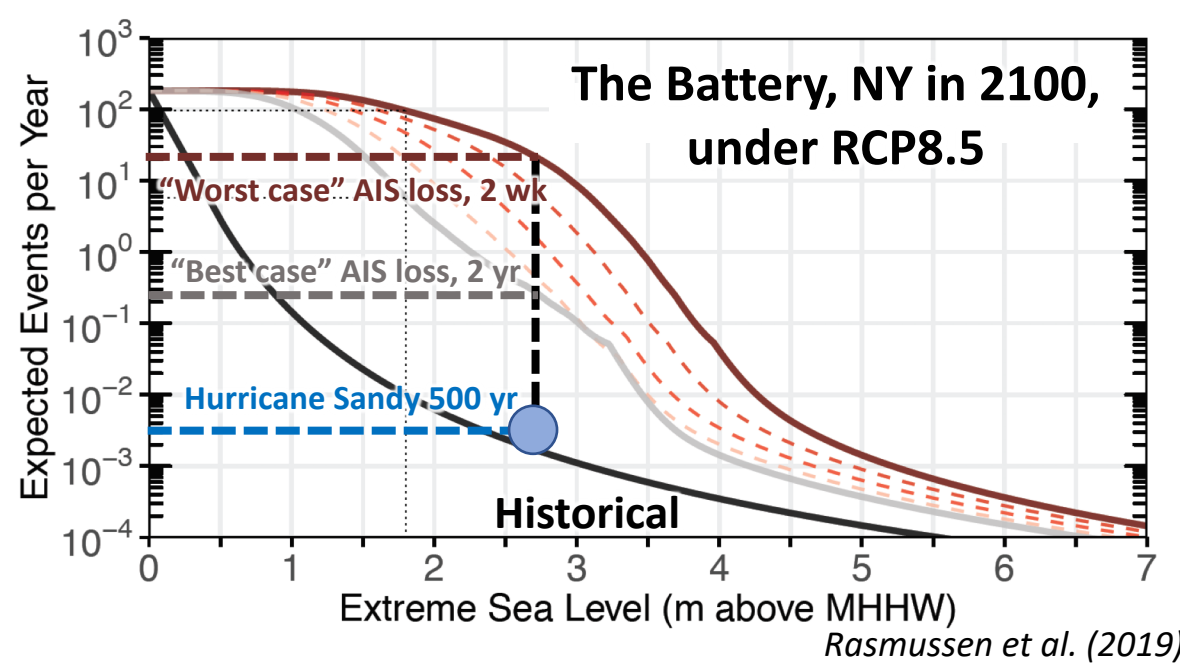
Storylines in Last Interglacial Antarctic Ice-Sheet Mass Loss

Inform Future Extreme Sea Levels

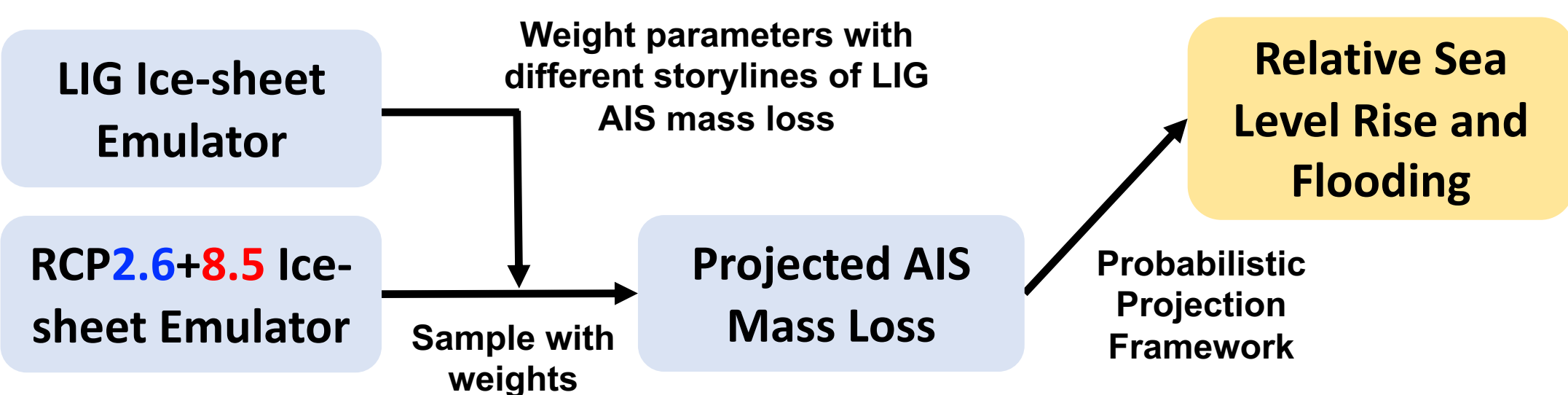
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Motivation & Question

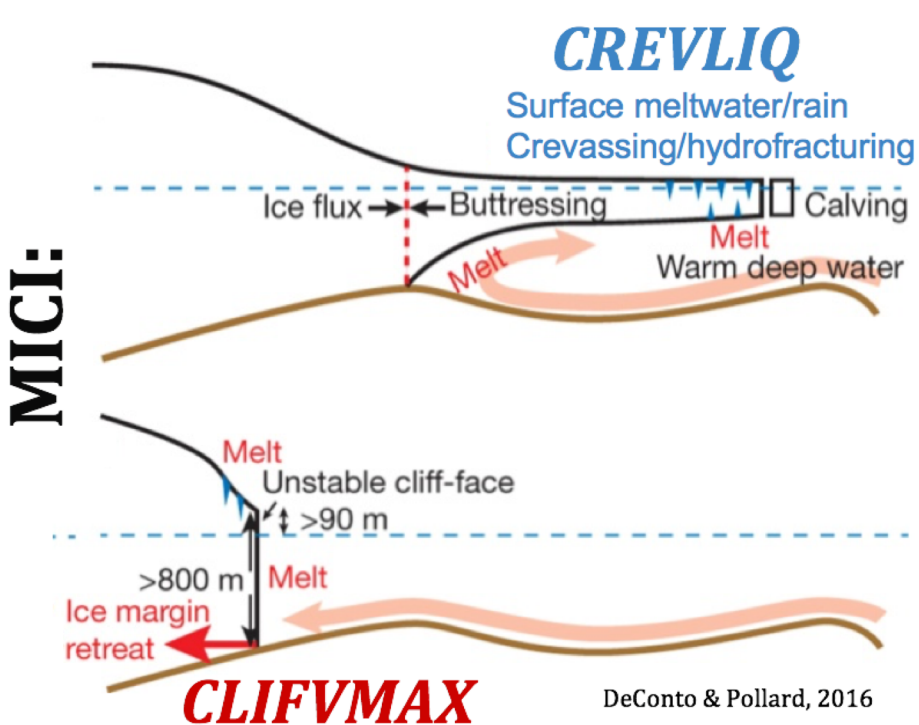


How do different Last Interglacial (LIG) Antarctic Ice Sheet (AIS) storylines influence future flooding projections?



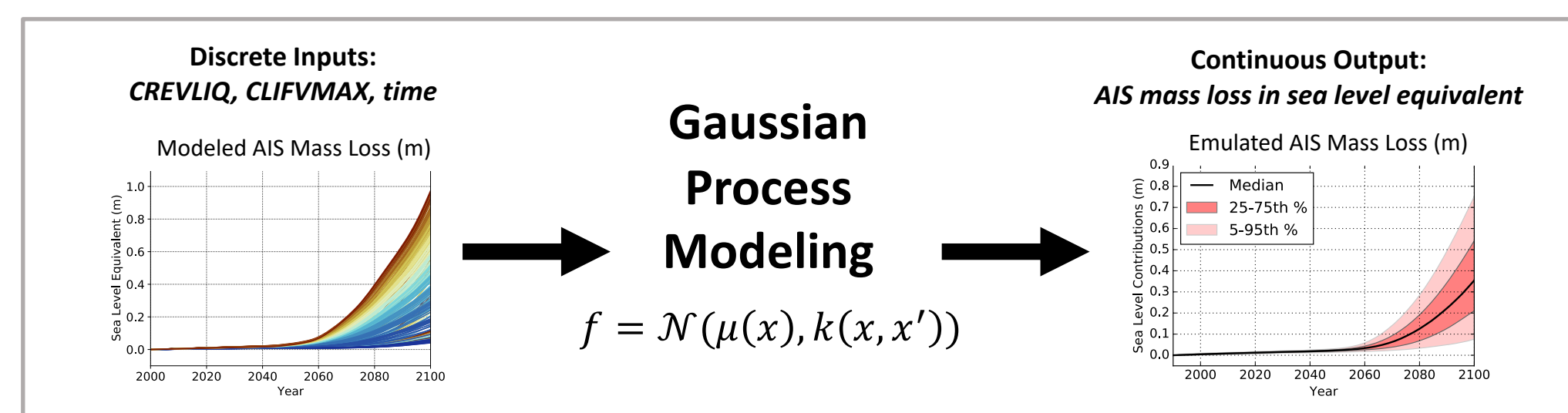
Ice-sheet Instability & Emulation

Marine Ice Cliff Instability



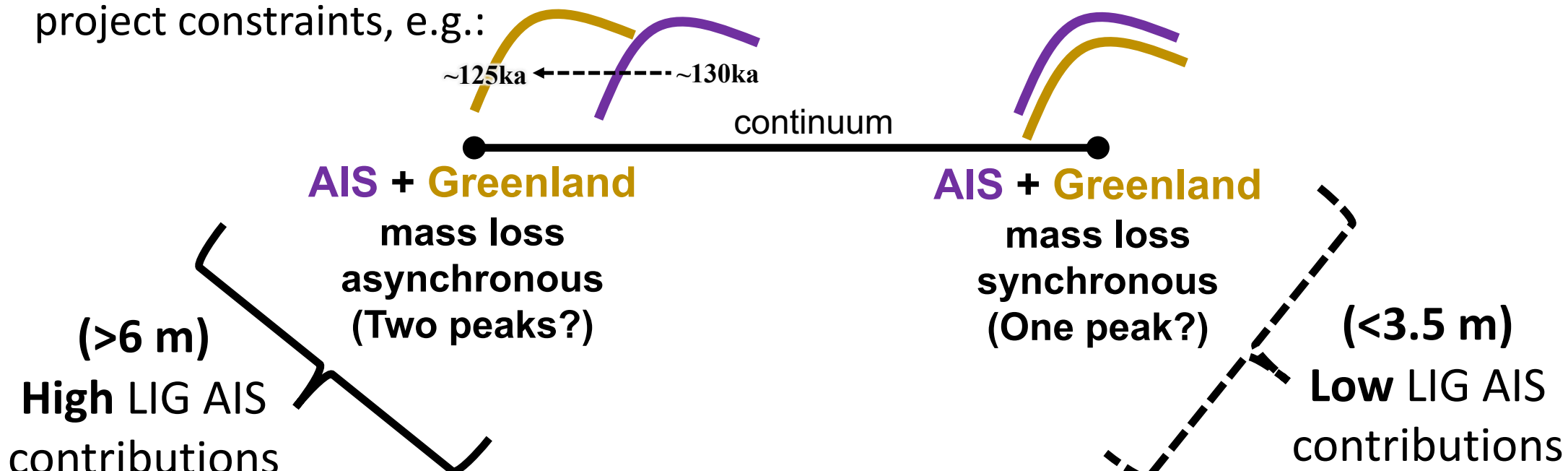
- CREVLIQ**: Proportional sensitivity of model hydrofracturing to surface liquid (m per (m/yr)²)
- CLIFVMAX**: Maximum rate (km/yr) of horizontal cliff wastage once an ice cliff becomes mechanically unstable

We emulate three Penn. State University ice-sheet model ensembles run with these two parameters: LIG and low/high future emissions scenarios (RCP2.6+8.5)

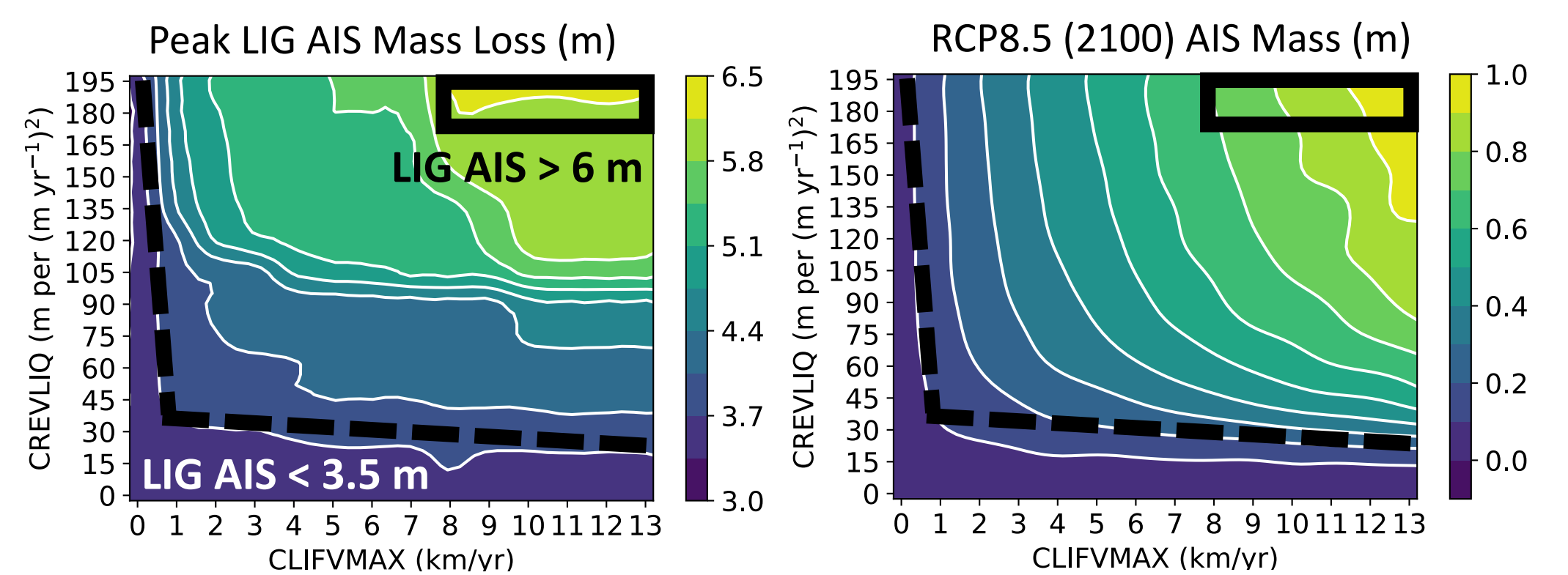


LIG Storylines

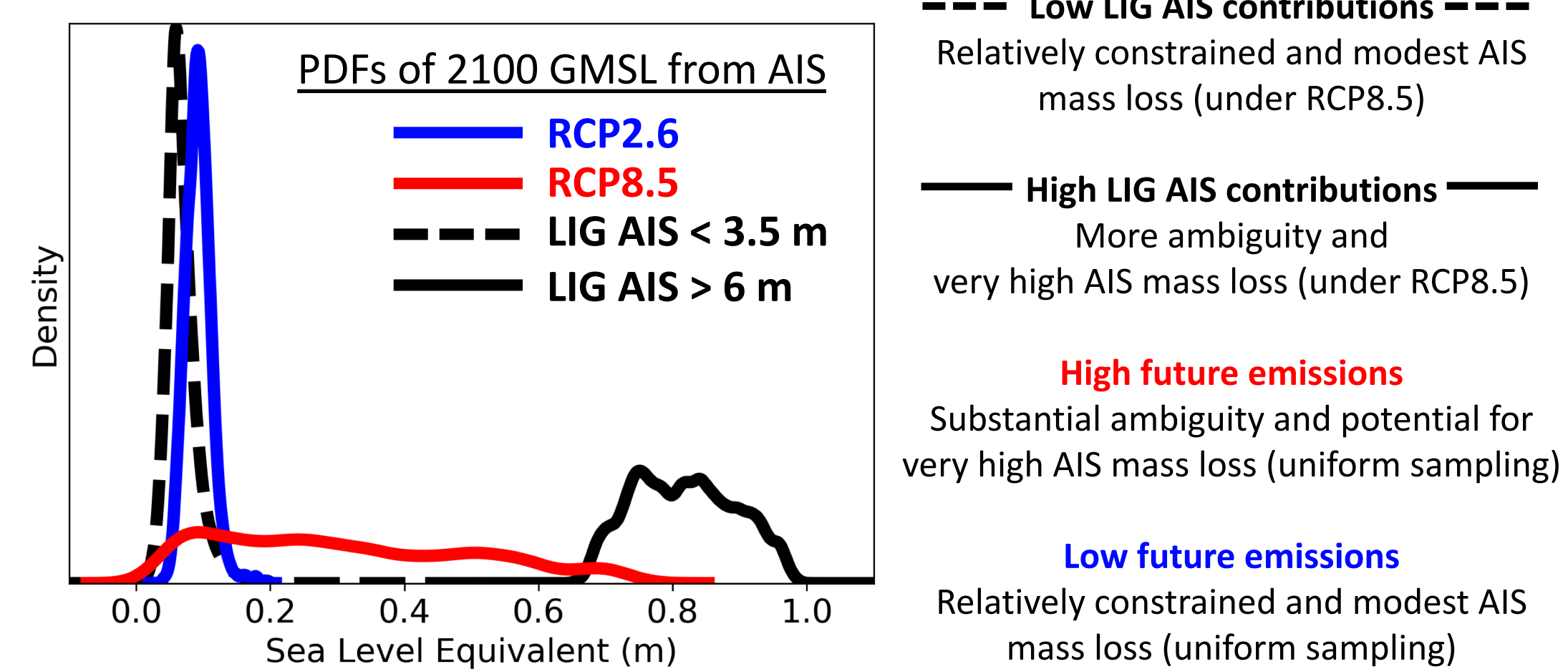
For a fixed peak LIG GMSL (~6–9 m above present, Dutton et al. 2015), the assumed relative contributions of each ice-sheet strongly influence future project constraints, e.g.:



Emulated AIS Mass Loss

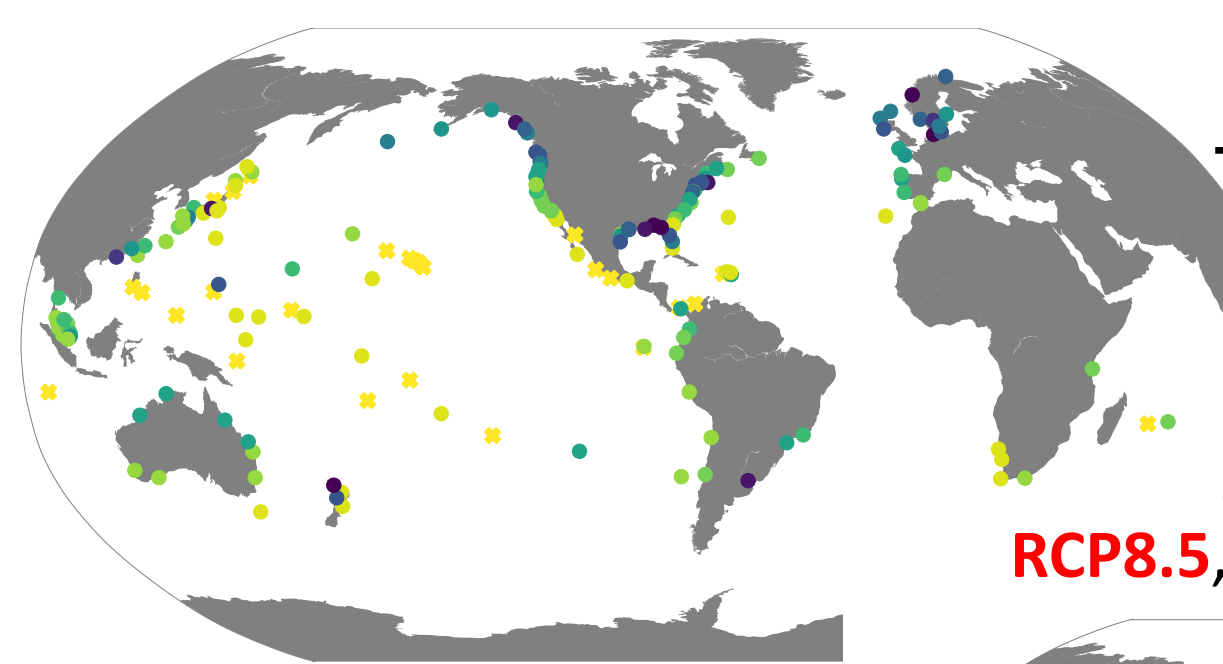


Parameter likelihoods from high/low storylines of LIG AIS mass loss are used to weight RCP8.5 samples, producing probability distributions of future AIS mass loss:



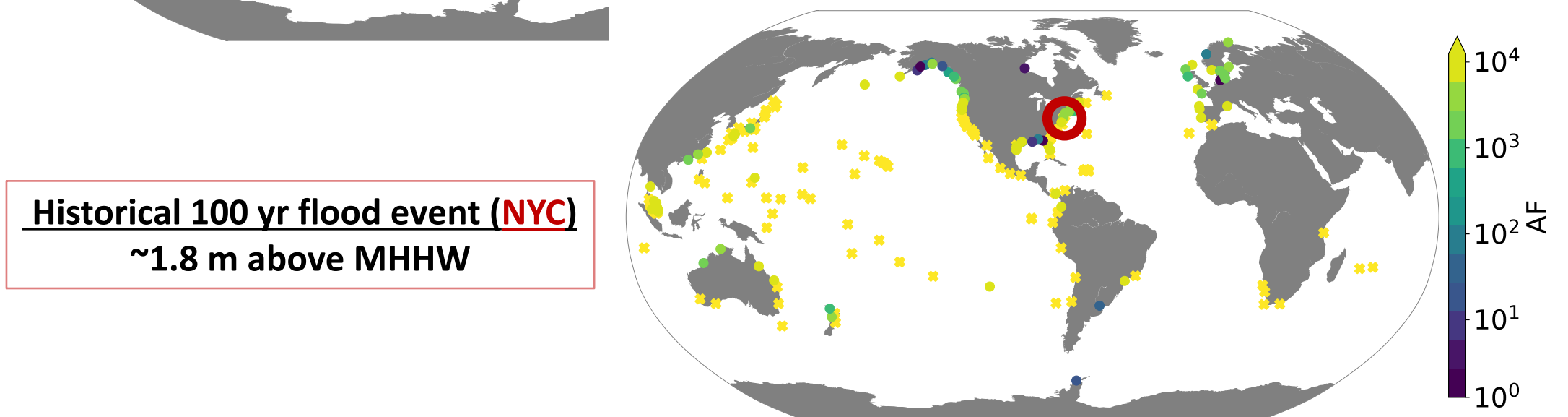
Flooding Hazards in 2100

RCP2.6, 100-yr Events in 2100



Amplification Factor =
Expected number of exceedances after SLR
Historical number of exceedances

RCP8.5, 100-yr Events in 2100



Flooding Hazards, New York City (2100)

