

Climate change is increasing the risk of a California megaflood

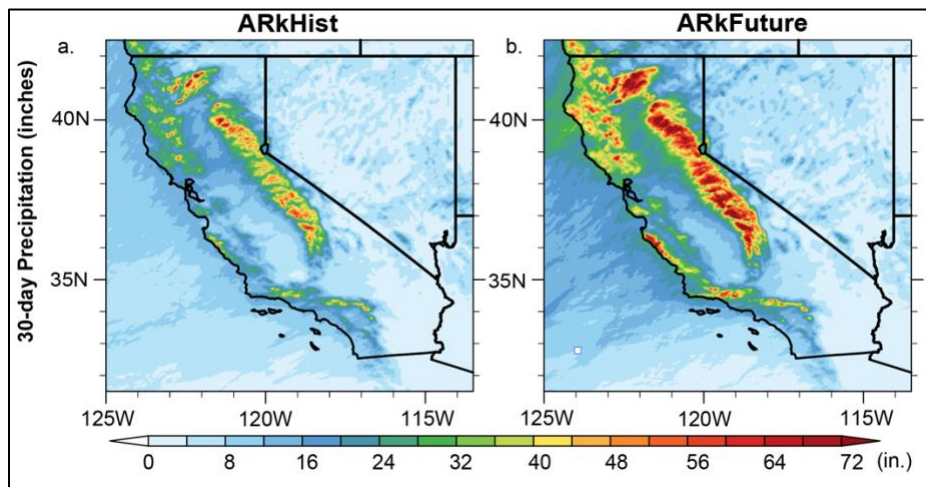
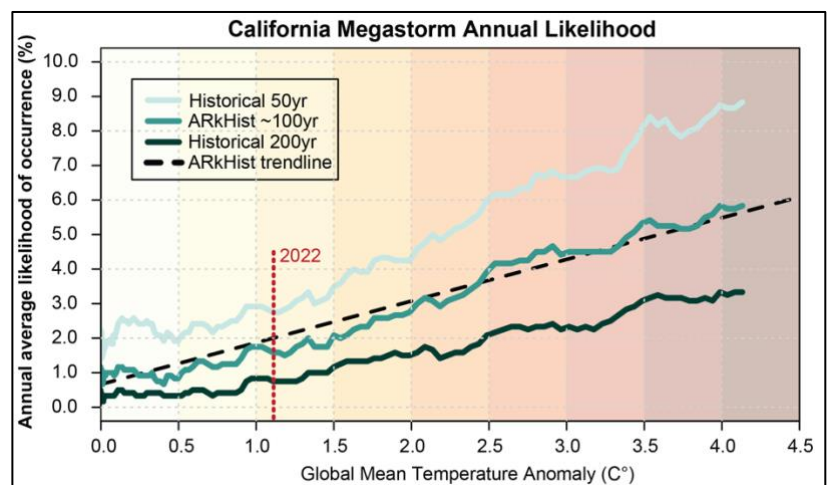


Figure 1. 30-day precipitation accumulation during historical (ARkHist) scenario and warmer future (ARkFuture) scenario. The maximum precipitation at the wettest location in California is ~85 inches in ARkHist, and ~126 inches in ARkFuture. Overall, precipitation in the ARkFuture scenario is about 45% higher than in the ARkHist scenario. The regions of greatest precipitation increase between the two scenarios are the Sierra Nevada, Coast Ranges, and southern Cascades.

Key Points:

- Building on the original (2011) ARkStorm scenario, which aimed to understand the implications of a present-day California megastorm, the ARkStorm team developed two new climate-aware scenarios: a historical (ARkHist) & warmer future scenario (ARkFuture), collectively called ARkStorm 2.0 (**Figure 1**).
- Climate change over the past century has doubled the risk of an extreme winter storm sequence capable of causing widespread, severe flooding.
- Each additional degree of global warming will substantially increase the likelihood and magnitude of plausible California megaflood events (**Figure 2**).
- Despite recent prevalence of drought, California must also prepare for the considerable and growing risk of a catastrophic flood event.

Figure 2. Annual likelihood of occurrence of a California “megastorm” of different magnitudes (with approximate historical recurrence intervals of 50, 100 (ARkHist), and 200 years denoted by green curves) at different levels of global warming. To put this into historical context: the Earth has so far warmed by about 1.1°C since 1850. This suggests that climate change has already doubled the contemporary risk of a megastorm event, and that additional warming in the coming decades will further increase that risk.



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