



## **The predicted circulation response to global warming and implications for regional hydroclimate.**

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A critical aspect of human-induced climate change is how it will affect regional hydroclimate around the world. To leading order, the increased ability of the atmosphere to hold moisture as it warms, intensifies moisture transports, making sub-tropical dry regions drier and mid- to high latitude wet regions wetter. But regional changes in hydroclimate will also depend on how the atmospheric circulation responds to warming.

Here, the predictions of the future of the mid-latitude circulation by the current generation of global climate models will be discussed, with a particular focus on circulation changes that impact on regional hydroclimate. In the Northern Hemisphere winter, stationary wave changes are a leading order effect and impact on both North American and European hydroclimate. However, in certain regions, models exhibit considerable diversity in this response, motivating the need for improved understanding of the mechanisms involved and the reasons behind such a model spread. This is particularly true in the Pacific-North American sector during winter and so the mechanisms involved in circulation changes in this region and the reason for the inter-model spread will be discussed in detail.