

How much does Clausius-Clapeyron law predict humidity and precipitation change under global warming in the Mediterranean region?

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Extreme precipitation has been proposed to scale with the precipitable

water content in the atmosphere. Assuming constant relative humidity, this implies an increase of precipitation extremes at a rate of about 7/degC globally as indicated by the Clausius-Clapeyron relationship. In this study, we examine the projected change and scaling of atmospheric humidity and precipitation in the Mediterranean region with respect to temperature using HyMeX/MED-CORDEX regional climate simulations, and give physical reasons causing departure from Clausius-Clapeyron scaling.