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Future changes of summer monsoon characteristics and evaporative demand over Asia in CMIP6 simulations

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Future greenhouse warming is expected to influence the character of global monsoon systems. However, large regional uncertainties still remain. Here we use 16 CMIP6 models to determine how the length of the summer rainy season and precipitation extremes over the Asian summer monsoon domain will change in response to greenhouse warming. Over East Asia the models simulate on average on the earlier onset and later retreat; whereas over India, the retreat will occur later. The model simulations also show an intensification of extreme rainfall events, as well as an increase of seasonal drought conditions. These results demonstrate the high volatility of the Asian summer monsoon systems and further highlight the need for improved water management strategies in this densely-populated part of the world.