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Intense precipitation extremes in a warmer climate: results from CMIP5 models

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In this work the authors investigate possible changes in the intensity of extreme precipitation events under a warmer climate, using the results of a set of 20 climate models taking part to the Coupled Model Intercomparison Project phase 5 effort (CMIP5). Future changes are evaluated as the epoch difference between the last four decades of the 21st and the 20th Century assuming the Representative Concentration Pathway RCP8.5 scenario. As a measure of the intensity associated with extreme precipitation events, we use the difference between the 99th and the 90th percentiles. Despite a slight tendency to underestimate the observed extreme precipitation intensity, the considered CMIP5 models well represent the observed patterns during both summer and winter seasons for the 1997-2005 period. Future changes in average precipitation are consistent with previous findings based on CMIP3 models. CMIP5 models show a projected increase for the end of the twenty-first century of the intensity of the extreme precipitations, particularly pronounced over India, South East Asia, Indonesia and Central Africa during boreal summer, as well as over South America and the southern Africa during boreal winter. These changes are consistent with a strong increase of the column integrated water content availability over the afore mentioned regions.