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A New Assessment of the East Asian Summer Monsoon in the Future Climate

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The East Asian summer monsoon (EASM) change under the global warming scenarios is investigated using the IPCC AR4 climate models. The previous approach to this task is to utilize the results from just one specific model or multi-model ensemble. In this study, the climate models that performed well in the 20th century climate simulations are only selected through the composite, EOF, and cyclostationary EOF methods and Taylor diagram analysis. The changes in the EASM climate in the future are compared with the all-member ensemble mean result and the composite fields from worse climate models. The amplitude and spatial variations of the monsoon related variables (precipitation, surface air temperature, Z500, winds at 850 and 200 hPa, tropical Pacific SST, etc) are examined. The convective instability and EASM-related teleconnection pattern (i.e. EU and PJ patterns) changes are also explored. Finally, the decadal (2010-2020) prediction of the EASM will be discussed.