EVALUATING AND COMPARING CURRENT AND NEXT GENERATION CLIMATE MODEL-SIMULATED PRECIPITATION MEAN STATES AND EXTREMES

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One fundamental hypothesis that must be tested in the climate science is whether climate models are improving at capturing extremes. In particular, regional prediction and precipitation are two recognized gaps in current generation (AR4) climate models. Using several tradtional and impacts-motivated definitions for hydrological extremes, in particular shorter-term severe events, we begin to test the hypothesis that regional hydrometeorological extremes are better captured by next generation (AR5) global climate models. This is tested by comparing hindcasts from AR4 and AR5 multimodel ensembles to observed data using several physical process-guided statistical metrics. Simultaneously, we explore whether these newer models also lend different characterizations of such extremes than current models by comparing the ensemble projections of AR4 to those of AR5. Results will have important implications for the climate modeling and broadly-defined impacts communities, both of which have a vested interest in the potential improvement of climate model outputs and their utility for various applications.