P72   WRF simulations of climate in the Missouri River watershed, with validation: 1981-2010

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The Advanced Research and Weather Research and Forecasting Model (ARW) was used to simulate climate at a 36-km resolution for North America for 1981–2010, based on boundary and initial conditions from the Climate Forecast System Reanalysis (CFSR) and the Community Climate System Model version 3.0 (CCSM3). The CCSM3 simulations span the 20C3M and A2 emission scenarios. Physics options include WSM6 microphysics, CAM shortwave and longwave radiation, Monin–Obukhov surface layer scheme, Noah land surface model, YSU boundary layer, and Kain–Fritsch cumulus scheme. The WRF output was analyzed for the Missouri River watershed and six watershed regions within. Climate extreme indices from the Expert Team on Climate Change Detection and Indices (ETCCDI) of WRF simulations of 2-m air temperature and precipitation for each year spanning 1981–2010. Indices for the six watershed regions computed from WRF output were compared with indices computed from Daily Surface Weather and Climatological Summaries (DAYMET) and from CFSR. The WRF model output, DAYMET, and CFSR for the six watershed regions generally exhibited consistent responses in the climate extreme indices. The most apparent response in climate extreme indices across the entire watershed was warming in the indices computed using minimum 2-m air temperature. Changes in time series of precipitation indices varied across watershed regions but showed a general increase in precipitation intensity (mm per day) for 1981 to 2010 for the Missouri River watershed.