Change in the Precipitation Intensity of East Asia Summer Monsoon Projected by 20-km and 60-km Mesh Atmospheric Global Model

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We have conducted time-slice experiment using 20-km mesh atmospheric global model For present climate, observed historical sea surface temperature (SST) was prescribed from 1979 to 2003 (25 years). For future climate from 2075 to 2099 (25 years), change in the multi-model ensemble of SSTs projected by atmosphere–ocean general circulation models (AOGCMs) for Couple Model Intercomparison Project 3 (CMIP3) was superposed to the observed historical SST. The A1B emission scenario is assumed. To evaluate uncertainty of projection, ensemble simulations were conducted by the 60-km model with the combination of four different SSTs and three atmospheric initial conditions. Increase of precipitation intensity is robust over southern part of China, East Asia Sea and to the south-east of Japan island. Keywords: Global warming projection; Precipitation intensity; Asia monsoon20



Fig 1: Change in heavy precipitation day (> 30 mm/day) for June and July in 2075-2099 relative to 1979-2003. Unit is %. Red contour shows 95% significance level. (a) 20km model with CMIP3 ensemble SST. (b) 60km model of all ensemble (c-f). Total 12 member. (c) 60km model with CMIP3 ensemble SST. (d) 60km with CSIRO-mk3.0 SST. (e) 60km with MRI-CGCM2.3.3 SST. (f) 60km with MIROC_hires SST. Three simulations with different atmospheric initial conditions were averaged for (c-f)