

Comparison of the Northwestern Pacific summer climate simulated by five AGCMs

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IPCC AR4 AMIP experiments were used to estimate the skill of five atmospheric general circulation models (AGCMs) (HadGAM1, AM2.1, ECHAM5, CAM3, and MIROC3) in simulating the northwestern Pacific (NWP) summer climate. HadGAM1 showed the highest correlation between simulated and observed historical evolutions of NWP summer rainfall. To understand the possible causes of the differences in skill among the models, the simulated teleconnection of NWP summer climate with sea surface temperatures in the tropical Indian and Pacific oceans was compared among the models. HadGAM1 reproduces suppressed (intensified) rainfall during El Niño (La Niña) events, as observed, and captures the remote connection with the tropical Indian Ocean. In comparison, the four other models underestimate (AM2.1, ECHAM5, MIROC3.2) or fail to reproduce (CAM3) these teleconnections. This result provides a possible explanation of the differences in skill among the models. HadGAM1 may be a better choice for studying the Asian-NWP summer climate.