



Near-Term Climate Prediction with MRI-CGCM3

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Decadal climate prediction experiments with the latest climate model of the Meteorological Research Institute have been conducted. The model improved precipitation climatology particularly over the tropics in comparison with the previous model thanks to introduction of a modified cumulus convection scheme. The atmospheric model involves direct and indirect effects of aerosols, interactively coupling with an aerosol model. Both surface and oceanic subsurface warming trends are reproduced in an experiment prescribed global warming gas concentrations and volcanic aerosols comparably to the observations, although the climate sensitivity is slightly low. The climate model is initialized by using an incremental analysis update in which gridded ocean subsurface temperature and salinity observations are used. Near-term climate prediction experiments are conducted under the CMIP5 protocol. Predictability of surface air temperatures and ocean subsurface temperatures is confirmed 5-year ahead of the initials widely in the globe. The results encourage us to realize a practical use of decadal prediction after future development of the initialization scheme and the model. This study has been done in collaboration with the University of Tokyo, the National Institute for Environmental Studies, and Japan Agency for Marine-Earth Science and Technology.