P5 Verification of climatological reproducibility on incremental dynamical downscaling method.

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In the global warming study for regional climate, results of general circulation models (GCMs) are used as the lateral boundary values of regional climate model experiments. However, there is a large bias due to the uncertainty of the physical processes in GCMs. In order to reduce the biases, the pseudo-global-warming (PGW) method had been proposed assuming that the relative humidity and year-to-year variations do not climatologically change from the present climate for the lateral boundary conditions. The PGW method has been upgraded by increasing the approximation level into the incremental dynamical downscaling method. In the new method, a new variable named modified relative humidity has been applied to deal with climate changes in humidity. In addition, a new scheme to deal with the climate changes in year-to-year variations has been introduced.
In this study, the reproducibility of projections for past weak regional climate change around Japan were investigated by comparing between the PGW and its advanced methods. Using model is WRF3.3.1.
As a result, annual precipitation was improved by introducing the climate change in the modified relative humidity. Furthermore, it was found that the reproducibility was significantly improved by combining the scheme of climate changes in year-to-year variations with the modified relative humidity.