

Development of hi-resolution regional climate scenarios in Japan by statistical downscaling

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Climate information and services for Impacts, Adaptation and Vulnerability (IAV) Assessments are of great concern. To meet with the needs of stakeholders such as local governments, a Japan national project, Social Implementation Program on Climate Change Adaptation Technology (SI-CAT), launched in December 2015. It develops reliable technologies for near-term climate change predictions. Multi-model ensemble regional climate scenarios with 1 km horizontal grid-spacing over Japan are developed by using CMIP5 GCMs and a statistical downscaling method to support various municipal adaptation measures appropriate for possible regional climate changes. A statistical downscaling method, Bias Correction Spatial Disaggregation (BCSD), is employed to develop regional climate scenarios based on CMIP5 RCP8.5 five GCMs (MIROC5, MRI-CGCM3, GFDL-CM3, CSIRO-Mk3-6-0, HadGEM2-ES) for the periods of historical climate (1970-2005) and near future climate (2020-2055). Downscaled variables are monthly/daily precipitation and temperature. File format is NetCDF4 (conforming to CF1.6, HDF5 compression). Developed regional climate scenarios will be expanded to meet with needs of stakeholders and interface applications to access and download the data are under developing. Statistical downscaling method is not necessary to well represent locally forced nonlinear phenomena, extreme events such as heavy rain, heavy snow, etc. To complement the statistical method, dynamical downscaling approach is also combined and applied to some specific regions which have needs of stakeholders.

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