

**PARALLEL SESSION B : FRONTIER DOWNSCALING TOOL
B3: A FOCUS ON ESD SPECIFIC OPPORTUNITIES**

**High resolution probabilistic regional climate projection using
a regression method with multi-model ensemble**

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We have developed a statistical downscaling method for estimating probabilistic climate projection using multi general circulation models (GCMs). A regression model was established so that the combination of weight of GCMs reflects the characteristics of the variation of observations at each grid point. Cross validation was conducted to select GCMs and to evaluate the regression model. By using spatially high resolution observation system, we achieved statistically downscaled probabilistic climate projections. Biases in GCMs were typically reduced in this method for the monthly mean of the surface air temperature and precipitation in Japan. The corrected biases for the current climate were much smaller than those from dynamical downscaling results nested in single GCM and were comparable to biases corrected based on cumulative distribution function. Furthermore, this method generated probabilistic information for the future projection, such as exceedance probability of the temperature increase and several quantile values. Sensitivity of future changes on the emission scenario were investigated. We also discussed the difference of the probabilistic projections derived from multi-model ensemble and ensemble from single GCM. This probabilistic climate projection based on the statistical method can be expected to bring important information on the impact study and risk assessment.

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