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Downscaling in Climate Information and applications

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Climate effects caused by human activities will continue for centuries and natural climate influences have always been a risk. Mitigation is a complex, uncertain approach and will need at least several decades. It is necessary, therefore, to put adaptation together immediately. The impacts and potential applications of interest to the stakeholders are mostly at regional and local scales as the essential resources of water, food, energy, human health, and ecosystem function respond to regional and local climate. Climate information and services for Impacts, Adaptation and Vulnerability (IAV) Assessments are of great concern.

Users of climate scenarios produced by global climate models with coarse grid-spacing involve an inadequate mismatch of spatial scale. Downscaling technique is used to obtain the regional climate scenarios, especially in regions of complex topography, coastlines, and in regions with highly heterogeneous land surface covers where those results are highly sensitive to fine spatial scale climate processes. Dynamical and statistical downscaling techniques available for generating regional climate information have the respective strengths and weaknesses. To produce useful climate assessments for dicision-making, interaction between the downscaling community and the IAV community are necessary.

To facilitate its interaction, author will present,

- Overview of downscaling techniques in particular for regional climate modelling.
- current International activities (WCRP-CORDEX, etc.)
- Applications of downscaling in Japan from the ”REsearch program on Climate Change Adaptation (RECCA)” and the ”Program for Risk Information on Climate Change (SOUSEI)” sponsored by the Ministry of Education, Culture, Sports, Science and Technology(MEXT)

Keywords: Downscaling, Regional Climate Model, Climate Change, CORDEX, RECCA, SOUSEI