

## Development of a database system for SI-CAT climate experiments

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Analyses of large ensemble data are quite useful in order to produce probabilistic effect projection of climate change. Ensemble data of “+2K future climate simulations” are currently produced by Japanese national project “Social Implementation Program on Climate Change Adaptation Technology (SI-CAT)” as a part of a database for Policy Decision making for Future climate change (d4PDF; Mizuta et al. 2016) produced by Program for Risk Information on Climate Change. Those data consist of global warming simulations and regional downscaling simulations. Considering that those data volumes are too large (a few petabyte) to download to a local computer of users, a user-friendly system is required to search and download data which satisfy requests of the users.

We develop “a database system for SI-CAT climate experiments” (SI-CAT DBS) for providing functions to find necessary data for the users. The SI-CAT DBS mainly consists of a relational database, a data download function and user interface. The relational database using PostgreSQL is a key function among them. Temporally and spatially compressed data are registered on the relational database. As a first step, we developed the relational database for precipitation, temperature and track data of typhoon according to requests by SI-CAT members. The data download function provides a function to download temporally and spatially extracted data based on search results obtained by the relational database. We also develop the web-based user interface for using the relational database and the data download function. The SI-CAT DBS is currently in operational test on a server maintained by Data Integration and Analysis System Program (DIAS).

The SI-CAT DBS will be released on DIAS in fiscal year 2018. Techniques of the database system for near-future climate change projections might be quite useful for simulation and observational data in other research fields. We report current status of development and some case studies of the SI-CAT DBS.

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