

## Development of a database system for near-future climate change predictions

\*Yujin Nakagawa<sup>1</sup>, Shintaro Kawahara<sup>1</sup>, Fumiaki Araki<sup>1</sup>, Daisuke Matsuoka<sup>1</sup>, Yoichi Ishikawa<sup>1</sup>, Shingo Watanabe<sup>1</sup>

1. Japan Agency for Marine-Earth Science and Technology

A database for Policy Decision making for Future climate change (d4PDF) is a large volume of simulation data about 2 PB produced by Program for Risk Information on Climate Change. The d4PDF is published on Data Integration and Analysis System Program (DIAS). Analyses of ensemble data of the d4PDF are quite useful in order to produce probabilistic effect prediction of climate change. Considering that a data volume of the d4PDF is too large 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 near-future climate change predictions” for providing functions to find necessary data for the users under Social Implementation Program on Climate Change Adaptation Technology (SI-CAT). The database system for near-future climate change predictions 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 develop the relational database for precipitation, temperature and track data of typhoon according to requests by SI-CAT members. The data download function using Open-source Project for a Network Data Access Protocol (OPeNDAP) provides a function to download temporally and spatially extracted data based on search results obtained by the relational database. We also develop the user interface for using the relational database and the data download function. The database system for near-future climate change predictions will be released on DIAS in fiscal year 2017. Techniques of the database system for near-future climate change predictions might be quite useful for simulation and observational data in other research fields.

Keywords: Climate Change, Relational Database