

## Development of Future Ocean Regional Projection dataset by a high-resolution North Pacific downscaling model with simple biogeochemical processes using CMIP5 atmospheric forcings

\*Shiro Nishikawa<sup>1</sup>, Toru Sugiyama<sup>1</sup>, Masao Kurogi<sup>1</sup>, Nobuhiko Endo<sup>1</sup>, Hideyuki Nakano<sup>2</sup>, Hiroyuki Tsujino<sup>2</sup>, Yoichi Ishikawa<sup>1</sup>

1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC), 2. Meteorological Research Institute, Japan Meteorological Agency

We have developed a new version of Future Ocean Regional Projection dataset, named "FORP version 4", which have been produced by high-resolution ocean downscaling model simulations using surface atmospheric forcing data from CMIP5 models/scenarios. The FORP version 4 dataset consists of the North Pacific (NP) region dataset from an NP ocean model with a 10 km horizontal resolution (named "FORP-NP10") and the Japan-surrounding (JPN) region dataset from a JPN regional ocean model with a 2 km horizontal resolution (named "FORP-JPN02"). A new and important point of the new version of the former dataset (FORP-NP10 version 4) is the inclusion of simple biogeochemical processes in the NP model. Using the NP model, the FORP-NP10 version 4 dataset has been produced by long-term (from 1960 to 2100) integration simulations under surface forcings from four CMIP5 (MIROC5, MRI-CGCM3, GFDL-ESM2M, and IPSL-CM5A-MR) atmospheric data with historical, RCP2.6, and RCP8.5 scenarios. As a result, the dataset includes totally about 900 years with various ocean physical and biogeochemical variables. In this presentation, we would introduce the outline of the dataset (FORP-NP10 version 4) development and show some examples of the basic physical and biogeochemical properties of the dataset focusing on the northwestern Pacific Ocean region around Japan.

Keywords: Ocean model with biogeochemical processes, Dynamical downscaling, CMIP5, North Pacific