Brief updates on the status of ocean modeling activities in Japan

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Summary

- Two groups (MIROC, MRI-CGCM) participate in CMIP5 from Japan, and this research framework will continue in the near future

- Activity of improving the ocean component of climate models will employ on-line embedding (nesting) methods as well as increasing the resolution globally
  - The highest resolution global model to be run with the PFLOPs computer will employ 20 km atmosphere and 10 km ocean

- Current community-wide climate research projects involving ocean modeling community are:
  - Arctic Ocean
  - Mid-latitude air-sea interactions
  - Risk assessments under the changing climate

- Operational agencies/institutions employ 2 km horizontal resolutions for regional oceanic state estimation and forecast, beginning to bury a gap between climate and coastal communities

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Ocean models used by Japanese major agencies/institutions for specific research/operational purposes

	CMIP5 and decadal prediction	Seasonal-interannual prediction	Regional prediction (~ 2 km)	Global 10km resolution	Ice-shelf coupling	Ecological modeling
JAMSTEC	COCO* (MIROC)	NEMO COCO*	POM	OFES COCO*	COCO*	NPZD NEMURO
JMA/MRI	MRI.COM (MRI-CGCM)	MRI.COM	MRI.COM	MRI.COM	—	NPZD NEMURO[#]
FRA	—	—	ROMS	—	—	NEMURO
AORI	COCO* (MIROC)	COCO*	—	COCO*	COCO*	NPZD

* Projects promoted by the close collaboration between AORI and JAMSTEC
\# Incorporated into MRI.COM with the assistance of the Hokkaido University

JAMSTEC: Japan Agency for Marine-Earth Science and Technology
JMA/MRI: Japan Meteorological Agency / Meteorological Research Institute
FRA: Fisheries Research Agency
AORI: Atmosphere and Ocean Research Institute, University of Tokyo
COCO: an ocean general circulation model developed by AORI-JAMSTEC consortium
OFES: OGCM for the Earth Simulator
MRI.COM: Meteorological Research Institute Community Ocean Model
NEMURO: a lower trophic level model for the North Pacific marine ecosystem