

## **Improved the Indian Ocean Dipole Mode prediction by initializing subsurface ocean observation ~SINTEX-F2 seasonal prediction system~**

Dr. Takashi Doi  
Application Laboratory, JAMSTEC

### **Abstract:**

The numerical seasonal prediction system based on the SINTEX-F ocean-atmosphere coupled model has so far demonstrated good performance of prediction of the Indian Ocean Dipole Mode (IOD). However, there is much room for improvement in predicting the IOD because the system adopts the relatively simple initialization scheme: sea surface temperature (SST)-nudging initialization, which is not good at capturing the subsurface oceanic precondition related to the IOD. Therefore, we have introduced a new initialization scheme with a three-dimensional ocean data assimilation (3DVAR) method using 3D profile ocean observational data of temperature and salinity. The new system successfully improved the IOD prediction skill about 5-month lead. Our study clearly showed that the ocean observational efforts in the tropical Indian Ocean is critical for improvement of the IOD prediction with rich socio-economic applications for the Indian Ocean rim countries.