

Visualization Analysis of Large-Scale Three-Dimensional Scalar Data of Ocean Simulation

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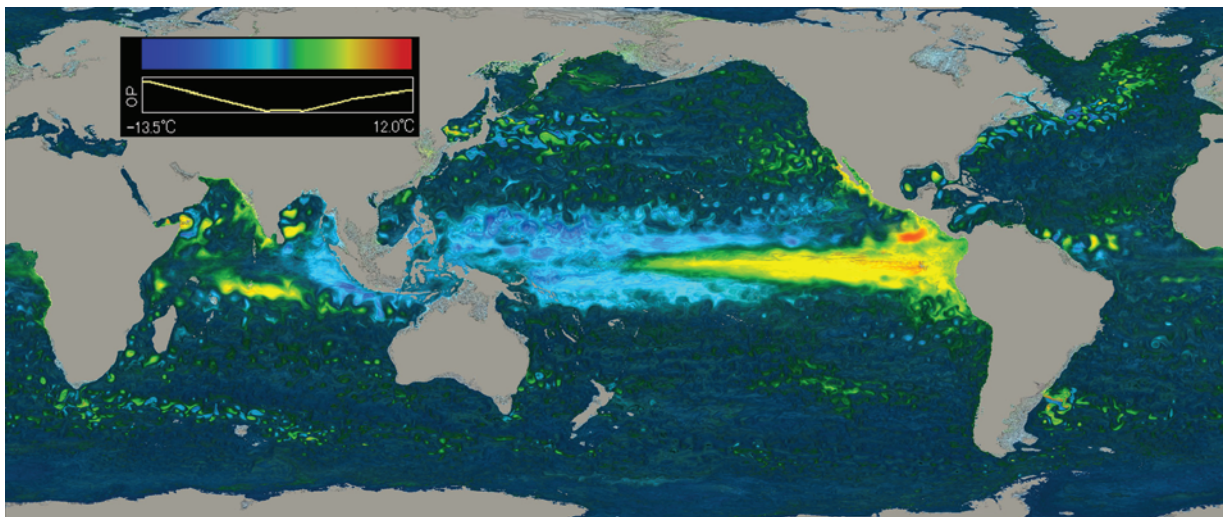


Fig. 1. A snap shot of sea temperature anomalies on 24 Oct 1997. Original size of picture is 3600×1500 pixels. El Niño event is captured in the equatorial Pacific Ocean. Indian Ocean Dipole (IOD) is also captured in the Indian Ocean.

We visualize the data set of the hind-cast experiment of OFES (Sasaki et al., 2004). The horizontal resolution and the number of vertical levels are 0.1 degree and 54, respectively. Total data size of simulated sea temperature is $3600 \times 1500 \times 54$ Grids \times 4 Bytes \times 6575 Snapshots = 7.7 Tera Bytes. In our visualization results, all of the simulated events are displayed by ray-casting volume rendering in the global view like Fig. 1, which represents the IOD and El Niño simultaneously without losing the resolution of original output data. These sets of the pictures through 54 years must be helpful for understanding the combined influences of the events.

Reference : Sasaki, H., Sasai, Y., Kawahara, S., Furuichi, M., Araki, F., Ishida, A., Yamanaka, Y., Masumoto, Y. and Sakuma, H., A series of eddy-resolving ocean simulations in the world ocean, OFES (OGCM for the Earth Simulator) project, *Oceans '04*, 3 (2004), 1535-1541.