# El Niño Modoki and the Anomalous Climatic Conditions in the Winter of 2009-10

J. VENKATA RATNAM[1,2] , SWADHIN K. BEHERA[1,2], Y. MASUMOTO[1,4], K. TAKAHASHI[2,3] and T. YAMAGATA[2,4]
[1]*Research Institute for Global Change, Yokohama, Japan*
[2]*Application Laboratory, Yokohama Japan*
[3]*Earth Simulator Center, Yokohama, Japan*
[4]*Department of Earth and Planetary Science, The University of Tokyo, Tokyo, Japan*

The winter (December-February) of 2009-10 witnessed extreme conditions affecting the lives of millions of people around the globe. Western Canada witnessed unusual warming that needed much effort to hold the winter Olympics; Northern Japan and eastern US received heavy snowfall. Are these anomalous climatic conditions due to the El Niño Modoki prevailing in the central tropical Pacific Ocean? We try to answer this by carrying out a series of sensitivity experiments using a high resolution Atmospheric General Circulation Model (AGCM). In the first experiment, we specified the observed Sea Surface Temperature (SST) over the oceans. In the other experiments, climatological SST was specified except either for the central tropical Pacific (165E-140W, 10S-10N), corresponding to the heating region of the El Niño Modoki or for the eastern Pacific (140W-80W, 5S-5N). Results show that the heating associated with the El Niño Modoki in the central Pacific was responsible for most of the anomalous conditions observed globally during the winter of 2009-10, while the eastern Pacific heating had most of its influence on north America. Those differences are due to different locations of the tropical Pacific heating and global circulation patterns.

Keywords: El Niño Modoki ; Pacific Ocean