Tropical Cyclone in future climate projection by a high-resolution global model

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Globally, estimates of the potential destructiveness of Tropical cyclone shows significant upward trend since the mid 1970's, with a trend towards longer lifetimes and greater Storm Intensity, and such trends are strongly correlated with tropical SST. By Oouchi et al. (2006), tropical cyclone frequency would be significantly reduced and intensity would be increased under the greenhouse-warmed environments.
In this study, to get the high resolution climate information for analysis the future tropical cyclone, we have adopted high resolution global model (GME) of German Weather Service (Deutscher Wetterdienst). It is based on uniform icosahedral-hexagonal grid (Majewski et al., 2002). The GME grid-point approach avoids the so-called pole problem that exists in conventional latitude-longitude grids. The data for GME model, we use ECMWF MARS (European Centre for Medium-Range Weather Forecasts Meteorological Archive and Retrieval System) operating analysis data for initial data, and average SST and Sea-ice of over 100km resolution four GCM data by IPCC A1B emission scenario(IPCC 2000) for forcing data. The model resolution is 40 km/40 layer with seven layers of soil model. Then, we choose two simulation times, present day climate (1981-2000) and near future climate (2001-2030). Based on the model results, we will analyze the frequency, intensity and distribution of the tropical cyclones over all the regions. This study would be a good information to adept to preparedness measure so as to reduce the damage by tropical cyclone in the near future. Results of these experiments will be presented at the conference.

Keywords: Climate change; AGCM; GME; Tropical cyclone; Typhoon

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