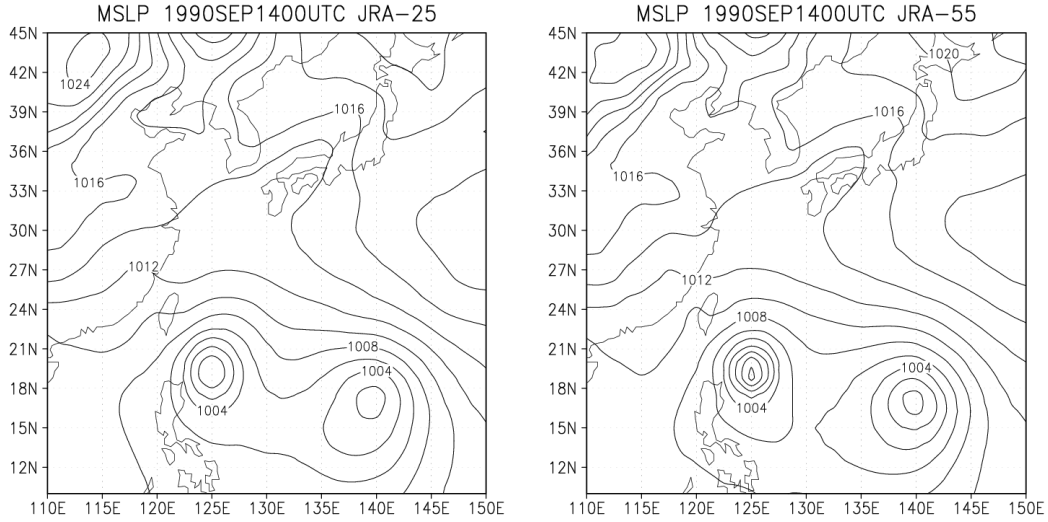
# Tropical Cyclones Represented in JRA-55

Hirotaka Kamahori

Meteorological Research Institute, Tsukuba, Japan

Tropical cyclones (TC) represented in ongoing reanalysis JRA-55 are investigated. In the Japanese 25-year reanalysis project (JRA-25), the wind retrieval surrounding TCs (TCR) based on the best track data (Fiorino, 2002) are utilized in data assimilation so that TCs are able to relevantly represent in the reanalysis products (Onogi et al., 2007). Hatsushika et al. (2006) investigated TC detection rate and found detection rate of around 90% in the JRA-25 much higher than around 50% in the ERA-40. We can understand the high detection rate in the JRA-25 is due to utilization of the TCR. In the JRA-55, the TCR are also utilized, and we can expect high detection rate of the TCs as well as relevant TC structures in the analyzed fields. Figure shows analyzed TCs on 00UTC14Sep1990 in JRA25 and JRA55, respectively. However similar synoptic fields in the both reanalyses, the TCs in JRA-55 have deeper structures than one in JRA-25. This is due to finer model grid resolution in JRA-55 (60km) than in JRA-25 (120km).




The TC detection rate in JRA-55 is also investigated. As TC detection methods, we adopt three tests similar to one of Hatsushika et al. (2006);

(1) Vorticity test
(2) Mass test
(3) Thermodynamic structure test

Resolution of original model grid in the JRA-55 is finer than in the JRA-25 by twice, and we expect that TCs in the JRA-55 have finer structure than in the JRA-25. So we should modify parameters in the detection tests. The resultant TC detection rate in JRA-55 counts 90% and is comparable with 90% of JRA-25. Our results suggest that the adaptation of TCR in reanalysis reproduces TC detection rate of 90% or higher and relevant TC structures.

Corresponding Author:
Name: Hirotaka Kamahori
Organization: Meteorological Research Institute/JMA
Address: 1-1 Nagamine, Tsukuba, Ibaraki 305-0052, Japan
Email Address: hkamahor@mri-jma.go.jp