Numerical Experiment of SST on the Onset of South China Sea Summer Monsoon in 1998

Lu Wei

Institute of Meteorology, Plast University, Nanjing 211101, P.R. of China

Since 1980s, Chinese scientists have pointed out that the South China Sea(SCS) monsoon is not only a major member of East Asian monsoon, but also has an important influence on the weather and climate in SCS, as well as the southeast China, and Asian summer monsoon breaks out in the SCS at first , then extends northwestward and northward respectively, finally the South Asian monsoon(India monsoon) are set up (Tao and Chen,1987). In this paper, the evolution of the regional circulation associated with the onset of South China Sea summer monsoon in 1998 was simulated with the meso-scale model system MM5(V3), two numerical experiments were conducted with the initial and daily sea surface temperature ,referred to ISST and DSST, respectively. The results show that the model system could capture the main features before and after the onset of the monsoon both for the two kinds of SST forcing, and the onset date is further evidenced on May 21, 1998.

With respect to the jump northward of high level jet associated with the onset of SCS summer monsoon, the jump process was reproduced successfully, not only in the jump time, but also in the extension of jump, as depicted in Fig.1. From Fig.1a, we can see the strength of simulated high level jet set up at the north is somewhat weaker than the observed one for ISST. The difference between DSST and ISST is significant at high level 4 days after the model integration was started, and the scope of the effect of daily SST, relative to initial SST, is not restricted over sea, but reaches 40^0N area(Fig.1b). Furthermore, the comparison between Fig.1a and b shows the newly established high level jet at north part is stronger for DSST, which is identical to observation.

The simulation result also suggests that the situation of precipitation center is closer to the observation ones when the daily SST is used in the simulation, and the differences on meso-scale characteristics are significant for different SST forcing.

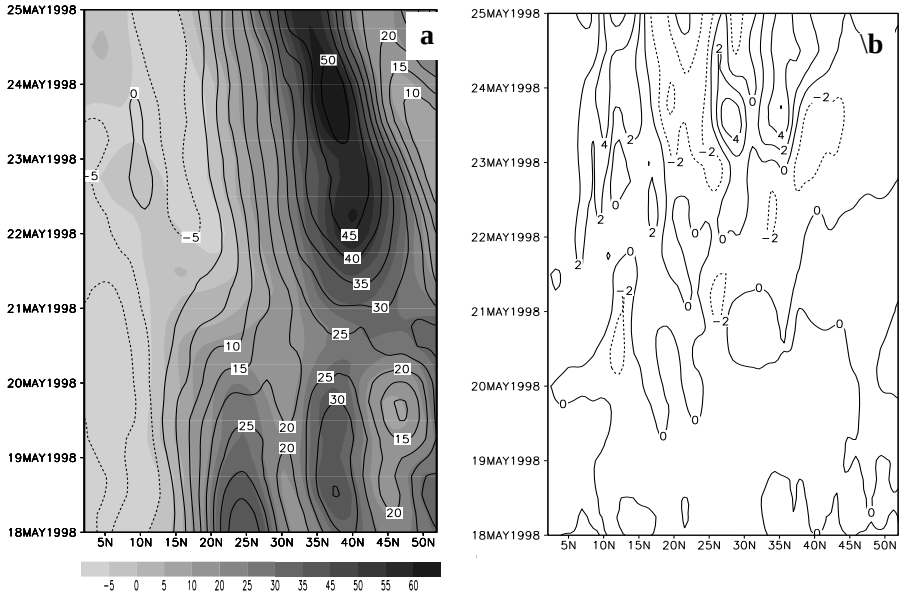

Fig.1 Observed (a, shaded) and ISST simulated (a, contour) time —latitude section of zonal wind at 200 hPa over SCS（110^0E—120^0E）, and the difference between DSST and ISST (b)

reference

[1]Tao,S.Y. and L.X.Chen,1987:A review of recent research on the East Asian summer monsoon in China, Monsoom Meteorology, Oxford University Press,60-92.