



Simulation of 1376 and 1379 winter precipitations using RegCM3 Regional Climate Model

Maryam karimian, Iman babaieian, Rahele Modirian

Climate Change Lab, Climatological Research Institute and Khorasan Razavi Meteorology Office/IRIMO,

Mashhad, I.R. of Iran,

Regional climate models such as RegCM3 are capable of simulating different climate processes. Modeling the climate can detect differences between real climate and model-simulated climate in the area under study. Variety of simulations have been done for sensitivity investigation of the model to the physical computational processes and schemes such as radiation, convection, land use, resolution, domain size and center of domain. In this work, sensitivity of the RegCM3 has been measured to the different convective schemes including Grell, modified Kuo and Emanuel. Grell scheme itself has divided into two different schemes of Arakawa-Schubert (AS) and Fritch-Chapel (FC). Winters (started from Decembers up to February) of 1376 and 1379 were the period of Study. Skill of the model in producing the monthly amount of precipitation was calculated by comparing model output with observed precipitation of 151 synoptic stations of Iran and CRU reanalysis data. According to the results of this research, the regional appropriate schemes whit their errors are: Kuo whit -%24 error for southeast, Kuo whit %16.5 error for northeast, Emanuel with %85 error for central part of Iran, Kuo with %20 error for southwest, Emanuel with -%10 error for West, Grell-FC and Kuo with -%80 error for northeast and Kuo with -%16 for southwest of Caspian Sea. Simulation's errors for central and northwestern parts of Iran have been rejected statistically because of high amount of errors. But according to mean error analysis of two years simulations, Grell schemes with approximately % 20 errors have good results for winter precipitation simulation of Iran.