Spatial and temporal variability of temperature and precipitation over Iraq and its relation with global sea surface temperature

Jasim Alkhalidi, Sabina Stefan, and Mihai Dima
University of Bucharest, faculty of physics, P.O.BOX, MG - 11, Bucharest-Magurele, Romania

In this study we have examined the spatial and temporal variability of mean temperature (0C) and precipitation (mm) in winter (DJF) and spring (MAM) in Iraq. The data used were recorded at 12 stations for temperature and 18stations for precipitation over the period 1981-2010. An empirical orthogonal function (EOFs) and principal component (PCs) analysis were employed to characterize the spatial variability of the climatological parameters. The first EOF of temperature has the most variance (80%) and it is monopolar. This means it is related with large scale patterns. The first EOF of precipitation has variance (70%) lower than that of EOF1 for temperature, because the precipitation is a local phenomenon. The analysis of PCS for temperature showed different trends for the different time intervals. In addition, the relation between the global sea surface temperature (SST) and the temperature and precipitation PCs was analyzed. The results derived through correlations maps indicate links between Iraq climate and El Nino southern oscillation (ENSO) and Atlantic multidecadal oscillation (AMO), large scale patterns.