



Atmospheric circulation patterns associated with heavy precipitation over Cyprus

F.Tymvios, K. Savvidou, **S.C. Michaelides**, K.A. Nicolaidis
Meteorological Service, Nicosia, Cyprus

The main synoptic conditions associated with heavy precipitation over Cyprus are investigated by using artificial neural network analysis. The data used are: (a) the daily precipitation amounts for the rainfall stations of Troodos, Polis, Lefkosia, Kornos, Achna and Acheleia; (b) the daily values of the geopotential height at the isobaric level of 500hPa and the sea level pressure from the NCEP/NCAR global analyses for 1200UTC with a grid length of 2.5x2.5 degrees for the area bounded by the meridians 20 degrees W and 40 degrees E and the parallel circles 20 degrees N and 60 degrees N for the period 1980 to 2005. The selected dates are those which correspond to the upper quintile (10%) of the frequency distribution of precipitation for each of the 6 stations. In total, 373 dates are used, some of them being common among the stations. The data set of 500hPa and the sea level pressure of the 373 cases are classified into 12 clusters, by using an artificial neural network clustering approach. The mean patterns (analogues) of the sea level pressure and the geopotential height over the 500hPa isobaric surface are constructed for each one of the 12 clusters. Most of the patterns are characterized by cyclonic activity to the west of Cyprus. The differences among the clusters refer mainly to the position and the intensity of the surface and the upper air synoptic systems.