



Seasonal Variations in the Number of the Summer Shamal Days in the Southern Arabian Gulf

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The purpose of this paper is to present the results of a study into seasonal variations in the number of Summer Shamal days in the southern Arabian Gulf. The Shamal wind is a north-westerly wind, which has acquired the local name of Shamal. It is the primary ambient wind in the Arabian Gulf and persists most of the year over the area, but with varying characteristics (Godvina et al, 2001). The study is focused on the parameters of the wind cycles. The wind data are collected over a thirty year period (1981 to 2010) from Bahrain airport data set (Al Aali, 2011) as it is less affected by surrounding topography and the meteorological charts were obtained from NCEP Reanalysis –II data set (NCEP, 2013). The wind data is analyzed to show variations in the number of summer Shamal days over the southern Arabian Gulf. The synoptic conditions which help to understand the wind cycles are analyzed using NCEP Charts. A Shamal Day is defined when the prevailing wind over the Arabian Gulf is from the North-West sector and the strength of the daily mean Shamal wind is 11 knots and more. The condition for the existence of Summer Shamal days is the deepening of the thermal Monsoon Low or the ridging from the Mediterranean High or both (Govinda et al, 2003).

A key finding is that the Summer Shamal days start in May and end in October of each year and the number of the Summer Shamal days is decreasing over the study period. During the months of May, June and July the number of Shamal days is the highest. Out of these three months, June has the highest number of Shamal day's. The analysis shows that the reduction in the number of Summer Shamal days over the thirty year period is potentially related to the variations in the parameters of the summer monsoon and the longitudinal location of the Azores High. Furthermore, in the summer there are two global systems: (i) El Nino, which effects the Summer Monsoon (Nazemosadat et al, 2003) and (ii) the Azores High, which have an indirect effect on the region. The high number of Summer Shamal days is associated with the strong summer monsoon or eastward-shift of the Azores High over land. Conversely, the low number of Summer Shamal days is associated with a westward-shift of the Azores High over the Atlantic or weak summer monsoon.

References

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