The passage of storms through the Eastern Mediterranean

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The eastern Mediterranean is a region of considerable interest with respect to many aspects cyclone behavior (e.g., intense 'medicanes' (Fita et al. 2009)). The region lies between the subtropics and midlatitudes, and cyclones therein obtain significant energy from both baroclinicity and surface fluxes. Additional interest arises because of the consequences of the region's complex topography.

We have been conducting investigations of storm tracks over the Eastern Mediterranean using a sophisticated cyclone tracking scheme (Simmonds and Keay 2009) applied to the 6-hourly mean sea level pressure data in the ERA-40 reanalysis (2.5° × 2.5° latitude–longitude grid) over the period 1962–2001. We analyse here some statistics for all tracks which spent at least one analysis time in the Eastern Mediterranean, here defined as the region lying within 20° and 38°E, 30° and 45°N.

Figure 1 shows the mean annual cycle of the number storm tracks which pass through the Eastern Mediterranean. It can be seen that these tracks are most numerous from December to April; their number decreases during the warm period and tends to increase again in October. The maximum number of cyclonic tracks over the area is observed in January (11.2% of the annual total) and in March (10.3%). The minimum number of tracks occurs in July (5.3%). Figure 6 presents the interannual variation of the number of tracks within the Eastern Mediterranean region as a function of month. The total number of tracks for the 40-yr period is 10,461, translating to an average number of about 260 tracks per year. The display suggest considerable variability. In the early part of the period the number of the tracks is quite high during the cold months. The year 1969 is characterized by a peak (286) in the total annual number of tracks. Comprehensive details of this investigation can be found in Flocas et al. (2010).

References

Fita, L., R. Romero, A. Luque and C. Ramis, 2009: Effects of assimilating precipitation zones derived from satellite and lightning data on numerical simulations of tropical-like Mediterranean storms. *Annales Geophysicae*, **27,** 3297-3319.

Flocas, H. A., I. Simmonds, J. Kouroutzoglou, K. Keay, M. Hatzaki, D. Asimakopoulos and V. Bricolas, 2010: On cyclonic tracks over the eastern Mediterranean *Journal of Climate*, **23,** 5243–5257.

Simmonds, I., and K. Keay, 2009: Extraordinary September Arctic sea ice reductions and their relationships with storm behavior over 1979-2008. *Geophysical Research Letters*, **39,** L19715, doi:10.1029/2009GL039810.

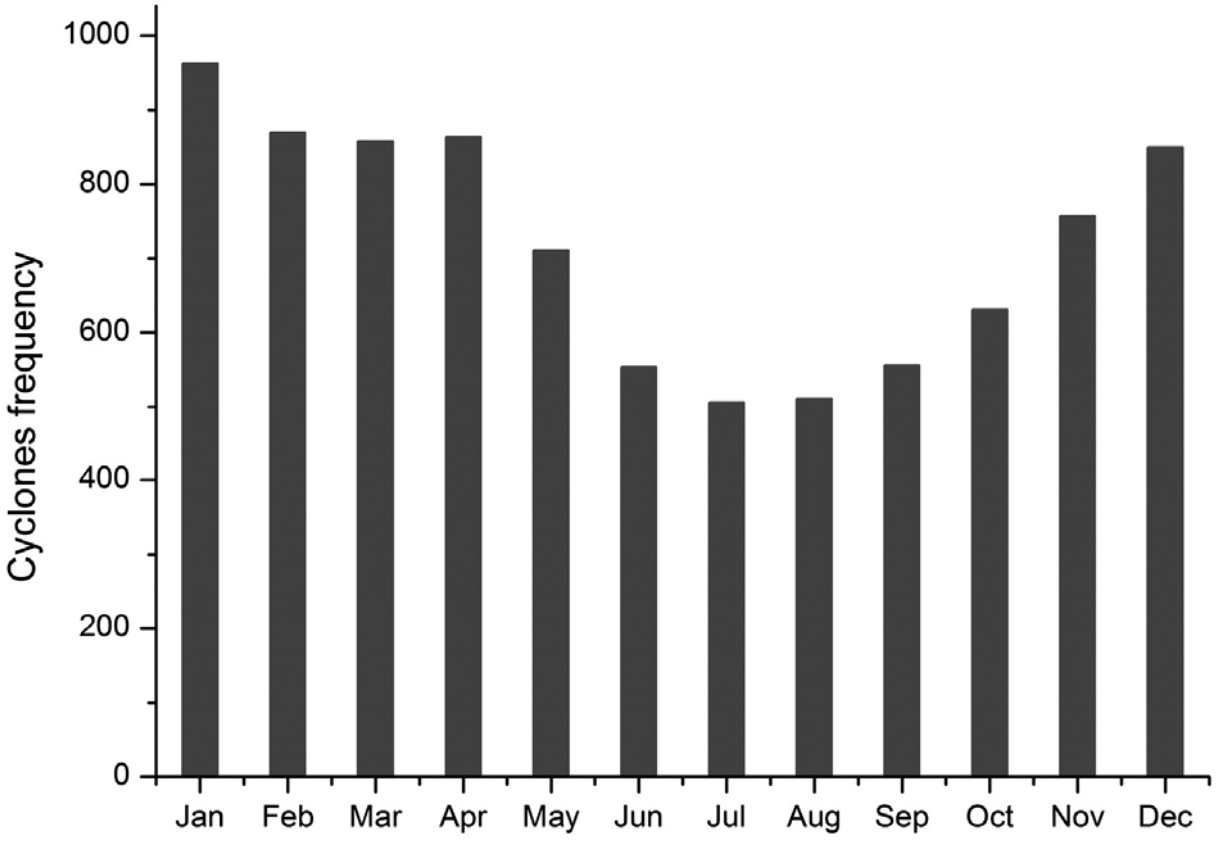

Fig. 1: Mean annual cycle of the number of storm tracks which pass through the Eastern Mediterranean over period 1962-2001.

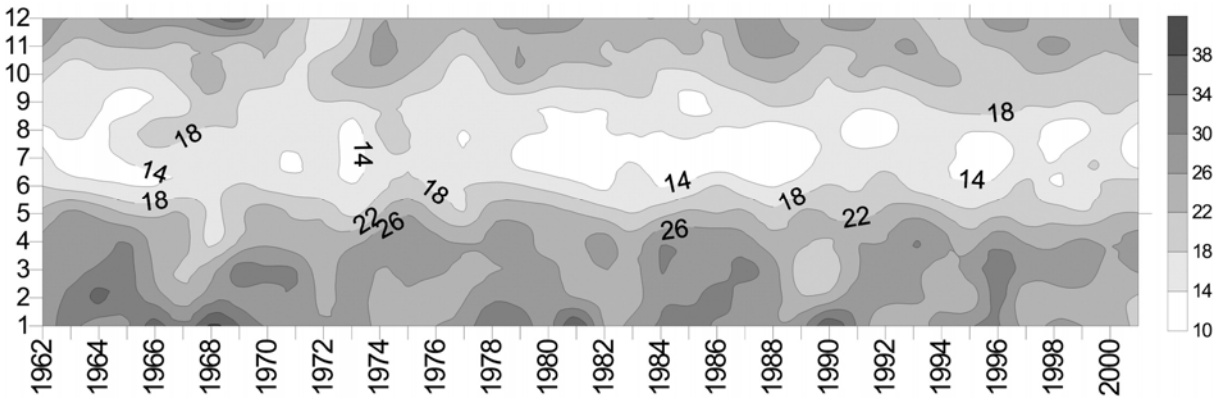

Fig. 1: Time series of the number of storm tracks which pass through the Eastern Mediterranean over period 1962-2001 (abscissa) as a function of month (ordinate).