Weather profile and respiratory infections with fever in Athens, Greece

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The impact of weather conditions on the number of admissions for adults' respiratory infections with fever (ARIF) in Athens, Greece, is investigated in this study. Daily counts of ARIF (31787) of 8 main hospitals and 1 health centre in Greater Athens were obtained from hospital registries during the two years period (1st August 2002 - 31th July 2004). The meteorological data analysed consist of daily values of 24 parameters recorded at the National Observatory of Athens during the study period: maximum temperature (Tmax); minimum temperature (Tmin); mean temperature (Tmean); diurnal temperature range (Trange = Tmax - Tmin); day-to-day change in maximum temperature (ÄTmax); day-to-day change in minimum temperature (ÄTmin); day-to-day change in mean temperature (ÄTmean); day-to-day change in diurnal temperature range (ÄTrange); mean relative humidity (RH); day-to-day change in mean relative humidity (ÄRH); mean water vapor pressure (e); day-to-day change in mean water vapor pressure (Äe); total evaporation (E); day-to-day change in total evaporation (ÄE); mean atmospheric pressure at sea level (P); day-to-day change in mean atmospheric pressure (ÄP); mean irradiance (I); day-to-day change in mean irradiance (ÄI); mean sunshine (S); day-to-day change in mean sunshine (ÄS); mean wind speed (v); day-to-day change in mean wind speed (Äv); prevailing direction of the wind (d) and day-to-day change in prevailing direction of the wind (Äd).

The application of Factor analysis to the 24 meteorological datasets resulted in 5 factors which explained 84% of the total variance of the weather in Athens. In the process, we applied Cluster analysis to the extracted 731 factor scores cases (days) in order to group them into classes of days with a characteristic type of weather and this procedure led to 7 clusters. The results showed that weather conditions with low temperature, low water vapor pressure, low wind speed, northeastern winds and cold anticyclonic presence were significantly correlated with an increase in the number of respiratory infections with fever among adults in Athens. This weather profile is established in January and in early spring (March to April), when cold and dry air masses are advected form northern Europe and Siberia to Greece more frequently. These results are in compliance with data for influenza activity in Greece.