



Trends and variability in indices of daily air temperature extremes in Greece, 1956-2002

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The globally averaged net effect of human activities since 1750 has been one of warming, with a radiative forcing of +1.6 [+0.6 to +2.4] W m⁻² and this is of very high confidence, after the fourth Assessment Report of IPCC. This warming may not be spatially and temporally uniform, but according to climate models projections will continue and will likely be accompanied by more extreme temperature events. These extremes have serious implications on human health and life and on economic, social and ecological structures.

This study examines the trends and the variability in the indices of daily air temperature extremes in Greece, for the period 1956-2002. The meteorological data were obtained from 25 meteorological stations of the Hellenic Meteorological Service, which are uniformly distributed over the country. The indices used can be divided in three categories: percentile, absolute and duration indices. The percentile indices concern: cold nights (the number of days with minimum temperature below the 10th percentile from the 1961-1990 reference period), warm nights (the number of days with minimum temperature above the 90th percentile from the 1961-1990 reference period), cold days (the number of days with maximum temperature below the 10th percentile from the 1961-1990 reference period) and warm days (the number of days with maximum temperature above the 90th percentile from the 1961-1990 reference period). The absolute indices concern: frost days (number of days with minimum temperature below 0 °C), summer days (number of days with maximum temperature above 25 °C) and the diurnal temperature range. The duration indices concern the warm spell duration indicator and cold spell duration indicator as defined by the joint

CCI/CLIVAR/JCOMM Expert Team (ET) on Climate Change Detection and Indices (ETCCDI).

The analysis showed that statistically significant positive or negative trends (95% c.l.) for the examined indices appear in the sub regions of Greece. Negative trends are found for cold nights while increases in the warm spell duration and in the number of warm days and nights are found in central continental regions of the country.