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Heat Wave Changes in the Eastern Mediterranean since 1960

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Heat waves have discernible impacts on mortality and morbidity, infrastructure, agricultural resources, the retail industry, ecosystem and tourism and consequently affect human societies. A new definition of socially relevant heat waves is presented and applied to new data sets of high-quality homogenized daily maximum and minimum summer air temperature series from 246 stations in the eastern Mediterranean region (including Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Israel, Romania, Serbia, Slovenia, Turkey). Changes in heat wave number, length and intensity between 1960 and 2006 are quantified. Daily temperature homogeneity analysis suggest that many instrumental measurements in the 1960s are warm-biased, correcting for these biases regionally averaged heat wave trends are up to 8% higher. We find significant changes across the western Balkans, southwestern and western Turkey, and along the southern Black Sea coastline. Since the 1960s, the mean heat wave intensity, heat wave length and heat wave number across the eastern Mediterranean region have increased by a factor 7.6 $\pm$1.3, 7.5 $\pm$1.3 and 6.2 $\pm$1.1, respectively. These findings suggest that the heat wave increase in this region is higher than previously reported.