

1.5. Heatwave Incidence

Project Name: CLEVER Cities (Grant Agreement no. 776604) and GROW GREEN (Grant Agreement no. 730283)

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Heatwave Incidence	Climate Resilience
Description and justification	A heatwave is a period of consecutive days with hot temperatures where both length and peak temperature are important.
Definition	<p>Several indicators are proposed. Among them 3 are pre-selected to represent heatwave events:</p> <ul style="list-style-type: none"> • Heatwave number (HWN) as defined by either the Excess Heat Factor (EHF), 90th percentile of TX or the 90th percentile of TN. The number of individual heatwaves that occur each summer (Nov–Mar in southern hemisphere and May–Sep in northern hemisphere). A heatwave is defined as 3 or more days where either the EHF is positive, TX >90th percentile of TX or where TN <90th percentile of TN, where percentiles are calculated from base period specified by user. • Heatwave frequency (HWF) as defined by either the Excess Heat Factor (EHF), 90th percentile of TX or the 90th percentile of TN • Heatwave amplitude (HWA) as defined by either the Excess Heat Factor (EHF), 90th percentile of TX or the 90th percentile of TN
Strengths and weaknesses	There exist a lot of definitions for heatwaves in the literature, which makes important an harmonization or standardization
Measurement procedure and tool	Sensors: measuring instruments (measurement stations or manual instruments, e.g., TESTO multi-function); thermography camera (e.g., FLIR).
Scale of measurement	It depends on the sensors network coverage; it can be a point or in case there are several localizations it ca be transformed to a grid (through interpolation)
Data source	
Required data	A time series of air T° data (measured in °C)
Data input type	Quantitative
Data collection frequency	The sensors can collect the data every 10 minutes or daily.

Level of expertise required	The sensors must be calibrated and located in the same place during all the measurement period. Not any sensor is valid
Synergies with other indicators	Synergies with the mean of daily minimum and maximum temperature.
Connection with SDGs	SDG 3 Good health and well-being, SDG 11 Sustainable cities and communities, SDG 13 Climate action
Opportunities for participatory data collection	No opportunities identified
Additional information	
References	Perkins, S.E. & Alexander, L.V. 2013. On the Measurement of heatwaves, <i>J. Climate</i> , 26, 4500–17. doi: 10.1175/JCLI-D-12-00383.1