



Climate Services to support urban resilient planning and design: the CLARITY methodology

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The intensity and impact of climate change induced extreme weather events, such as heat waves or floods, is to a large extent determined by the characteristics of built and natural environment. Urban resilience measures therefore need to be identified and designed locally to reduce impacts by altering the specific settlement characteristics and improving the microclimate conditions. To support urban planners in choosing the adequate adaptation options for specific urban infrastructure projects, climate projections should capture the variations at urban/district scale for key hazard indicators. Such refinement can be achieved by integrating the urban microclimate analysis in the conventional GCM-RCM (Global Climate Model - Regional Climate Model) downscaling approach. This is an emerging and interdisciplinary research area in the field of climate risk modelling, where climate science, earth observation, urban studies, environmental design and building technology can contribute to identify suitable approaches.

The H2020-CLARITY project (www.clarity-h2020.eu) aims to provide such support by developing an innovative hazard/impact modelling methodology that takes into account urban microclimate variability in an easy to use Climate Service. The microclimate effects are quantified by exploiting the potential of the wide amount of data generated by satellite earth observations and made available at pan-European level through the Copernicus datasets. Specific algorithms and GIS spatial analysis tools are used to process the data and to extract detailed information related to key parameters linked to urban morphology and surface type (e.g. albedo, emissivity, green fraction, runoff coefficient, etc.). Resulting “local” variations of the hazards are available for advanced automated screening and expert studies through localized data packages that combine complementary hazards, exposure and vulnerability data for specific region with a choice of relevant adaptation measures.