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Climate-resilient design and urban regeneration: UCCRN ARC3-2 methodology and experimental applications

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Effectively addressing climate resilience in urban areas requires the development of innovative design methods to handle the complexity of the information needed to guide sustainable strategies, as well as to manage the technological and environmental solutions in a multi-scale perspective. On the other side, City Officials in charge of the implementation of complex urban regeneration processes deal with a multiplicity of priorities, also as expression of local community needs, often not directly or explicitly related to climate resiliency principles, but that can be efficiently addressed through climate-resilient design principles.
The paper presents the methodology developed by the ARC3-2 Urban Planning and Design working group of the Urban Climate Change Research Network (UCCRN) and the results of the experimental activities conducted within the SIMMCITIES_NA project, aimed at developing a climate-resilient design toolkit for the Municipality of Naples, applied to the Ponticelli District Regeneration Plan.
The tools employed and the spatial resolution is tailored to the intervention scale: GIS tools are used to test district-wide concepts, providing outputs as urban heat hotspots and flood zones, while parametric tools (Rhinoceros/Grasshopper) allow to refine the definition of the main factors that influence the urban microclimate, through which alternative solutions can be evaluated and compared.