



Solar Energy at Urban Scale

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Increasing urbanization throughout the world, the depletion of fossil fuels and concerns about global warming have transformed the city into a physical problem of prime importance. This book proposes a multi-disciplinary and systematic approach concerning specialities as different as meteorology, geography, architecture and urban engineering systems, all surrounding the essential problem of solar radiation. It collects the points of view of 18 specialists from around the world on the interaction between solar energy and constructions, combining territorial, urban and architectural scales to better regulate energetic efficiency and light comfort for the sustainable city.

The main subjects covered are: measures and models of solar irradiance (satellite observations, territorial and urban ground measurements, sky models, satellite data and urban mock-up), radiative contribution to the urban climate (local heat balance, radiative-aerodynamics coupling, evapotranspiration, Urban Heat Island), light and heat modeling (climate-based daylight modeling, geometrical models of the city, solar radiation modeling for urban environments, thermal simulation methods and algorithms) and urban planning, with special considerations for solar potential, solar impact and daylight rights in the temperate, northern and tropical climates, and the requirement of urban solar regulation.

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