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Nota di contenuto	Cover; Solar Energy at Urban Scale; Title Page; Copyright Page; Table of Contents; Introduction; The Authors; Chapter 1. The Odyssey of Remote Sensing from Space: Half a Century of Satellites for Earth Observations; 1.1. To improve the weather forecasts; 1.2. Technological challenges to spy and to map from orbit; 1.3. Toward global environmental observers in space; 1.4. The digital revolution of the ICTs for GIS applications; 1.5. Suggested reading; Chapter 2. Territorial and Urban Measurements; 2.1. Solar radiation at the Earth's surface; 2.2. Instrumentation 2.2.1. Fundamentals of solar irradiance measurements2.2.2. Solar radiometers; 2.2.2.1. Pyrheliometers; 2.2.2.2. Pyranometers; 2.2.2.3. World radiometric reference; 2.2.2.4. Radiometers calibration and uncertainty; 2.2.2.5. Classification of pyranometers; 2.2.3. Sunshine duration measurements; 2.2.3.1. Burning card method; 2.2.3.2. Pyranometric method; 2.2.4. Data quality assessment; 2.2.5. Data availability; 2.3. Radiation measurements in urban environment; 2.3.1. Description scales; 2.3.2. Urban site description; 2.3.3. WMO recommendations

2.3.3.1. Scope of measurements and measurement site selection
 3.3.2. Measurements and corrections; 2.4. Conclusions; 2.5. Acknowledgments; 2.6. Bibliography; Chapter 3. Sky Luminance Models; 3.1. CIE standard overcast sky (1955); 3.2. CIE standard clear sky (1996); 3.3. CIE standard general sky; 3.4. All-weather model for sky luminance distribution - Perez; 3.5. ASRC-CIE model; 3.6. Igawa all-sky model; 3.7. Absolute luminance; 3.8. Visualization; 3.9. Conclusion; 3.10. Bibliography; Chapter 4. Satellite Images Applied to Surface Solar Radiation Estimation; 4.1. The solar resource
 4.2. Ground measurements of the solar resource
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 4.6.1. High-resolution solar atlas of Provence-Alpes-Cote d'Azur
 4.6.1.1. Model for the variation of the optical path length; 4.6.1.2. Model for sky obstruction effects by the orography; 4.6.1.3. Uncertainty analysis of the solar atlas; 4.6.1.4. Dissemination of the solar atlas; 4.6.2. Solar resource assessment at urban scale; 4.7. Bibliography; Chapter 5. Worldwide Aspects of Solar Radiation Impact; 5.1. Global energy budget at the Earth level; 5.2. The distribution of solar radiation on the Earth's surface; 5.2.1. Consequence of the unequal distribution of sunshine
 5.2.2. Effect of the Earth's rotation

Sommario/riassunto

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.
