1. Record Nr. UNINA9910787573903321

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Titolo	Ground-based microwave radiometry and remote sensing : methods and applications / / Pranab Kumar Karmakar
Pubbl/distr/stampa	Boca Raton : , : CRC Press, , [2014] ©2014
ISBN	0-429-09665-8 1-4665-1631-3
Descrizione fisica	1 online resource (220 p.)
Classificazione	SCI032000TEC024000TEC036000
Disciplina	551.5028/7 551.50287
Soggetti	Atmospherics Atmosphere - Research Radiation - Measurement Radio meteorology Microwave measurements
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Front Cover; Contents; Preface; About the Author; Chapter 1: Ground-Based Remote Sensing; Chapter 2: Radiometry; Chapter 3: Ground-Based Zenith-Looking Radio Visibility at Microwave Frequencies over a Tropical Location; Chapter 4: Radiometric Sensing of Temperature, Water Vapor, and Cloud Liquid Water; Chapter 5: Ground-Based Radiometric Sensing of Thermodynamic Variables in the Polar Regions; Chapter 6: Radiometric Estimation of Integrated Water Vapor Content; Chapter 7: Microwave Radiometric Estimation of Excess Electrical Path Chapter 8: Characterization of Rain and Attenuation in the Earth-Space PathBack Cover
Sommario/riassunto	Ground-based radiometers are currently operated in research labs around the globe and are also used as routine measurement tools for water vapor and temperature profiling. This reference provides a comprehensive picture of ground-based radiometry, starting with the basic principles. It provides information on ground-based instrumentation, retrieval techniques, and temperature structure. The

book also covers temperature profiling and water vapor radiometry as well as ozone radiometry and nitrous oxide measurements. In addition, it supplies retrieval algorithms using MATLAB, worked examples of derived products, and polar atmosphere cases. --
Preface Remote sensing by using microwave has become an important diagnostic tool for probing the atmosphere and surface of planetary objects. The term microwave remote sensing encompasses the physics of microwave propagation and its interaction with atmospheric ambient particles. The basic components of microwave remote sensing are the sensor-scene interaction, sensor design, and application in geosciences. This book is mainly for the physicists and engineers working in the area of microwave sensing of the atmosphere; it is not for ultimate users like geologists and hydrologists. An attempt has been made to establish a link between the microwave sensor response and the ambient atmospheric thermodynamic parameters, like water vapor content, temperature, nonprecipitable cloud liquid water content, and rain in the tropical, temperate, and polar regions. It should be mentioned here that of several types of sensors, such as radar, radiometer, LIDAR, et cetera, we have described the ground-based radiometric application in remote sensing of the atmosphere, which in a sense may be called microwave radiometry. Radiosonde observations (RAOBs) are considered to be the most fundamental and acceptable method for atmospheric temperature and water vapor measurements and profiling, in spite of their inaccuracies, cost, sparse temporal sampling, and logistical difficulties. A better technology has been sought for the past few decades, but until now, no accurate continuous all-weather technology for probing the atmosphere has been demonstrated. Laser radars (LIDARs) and Fourier transform infrared spectrometers can profile temperature and water vapor, but not in the presence of clouds--