RADIATIVE TRANSFER IN THE ATMOSPHERE AND OCEAN

SECOND EDITION

This new and completely updated edition gives a detailed description of radiative transfer processes at a level accessible to advanced students. The volume gives the reader a basic understanding of global warming and enhanced levels of harmful ultraviolet radiation caused by ozone depletion. It teaches the basic physics of absorption, scattering, and emission processes in turbid media, such as the atmosphere and ocean, using simple semiclassical models. The radiative transfer equation, including multiple scattering, is formulated and solved for several prototype problems, using both simple approximate and accurate numerical methods. In addition, the reader has access to a powerful, state-of-the-art computational code for simulating radiative transfer processes in coupled atmosphere–water systems, including snow and ice. This computational code can be regarded as a powerful educational aid, but also as a research tool that can be applied to solve a variety of research problems in environmental sciences.

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