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Nota di contenuto	TERRESTRIAL HYDROMETEOROLOGY; Contents; Foreword; Preface; Acknowledgments; 1 Terrestrial Hydrometeorology and the Global Water Cycle; Introduction; Water in the Earth system; Components of the global hydroclimate system; Atmosphere; Hydrosphere; Cryosphere; Lithosphere; Biosphere; Anthroposphere; Important points in this chapter; 2 Water Vapor in the Atmosphere; Introduction; Latent heat; Atmospheric water vapor content; Ideal Gas Law; Virtual temperature; Saturated vapor pressure; Measures of saturation; Measuring the vapor pressure of air; Important points in this chapter 3 Vertical Gradients in the AtmosphereIntroduction; Hydrostatic pressure law; Adiabatic lapse rates; Dry adiabatic lapse rate; Moist adiabatic lapse rate; Environmental lapse rate; Vertical pressure and temperature gradients; Potential temperature; Virtual potential temperature; Atmospheric stability; Static stability parameter; Important points in this chapter; 4 Surface Energy Fluxes; Introduction; Latent and sensible heat fluxes; Energy balance of an ideal surface; Net radiation, Rn; Latent heat flux, lE; Sensible heat flux, H; Soil heat flux, G; Physical energy storage, St Biochemical energy storage, PAdvected energy, Ad; Flux sign convention; Evaporative fraction and Bowen ratio; Energy budget of open water; Important points in this chapter; 5 Terrestrial Radiation;

Introduction; Blackbody radiation laws; Radiation exchange for 'gray' surfaces; Integrated radiation parameters for natural surfaces; Maximum solar radiation at the top of atmosphere; Maximum solar radiation at the ground; Atmospheric attenuation of solar radiation; Actual solar radiation at the ground; Longwave radiation; Net radiation at the surface; Height dependence of net radiation
Important points in this chapter6 Soil Temperature and Heat Flux; Introduction; Soil surface temperature; Subsurface soil temperatures; Thermal properties of soil; Density of soil, rs; Specific heat of soil, cs; Heat capacity per unit volume, Cs; Thermal conductivity, ks; Thermal diffusivity, as; Formal description of soil heat flow; Thermal waves in homogeneous soil; Important points in this chapter; 7 Measuring Surface Heat Fluxes; Introduction; Measuring solar radiation; Daily estimates of cloud cover; Thermoelectric pyranometers; Photoelectric pyranometers; Measuring net radiation
Measuring soil heat fluxMeasuring latent and sensible heat; Micrometeorological measurement of surface energy fluxes; Bowen ratio/energy budget method; Eddy correlation method; Evaporation measurement from integrated water loss; Evaporation pans; Watersheds and lakes; Lysimeters; Soil moisture depletion; Comparison of evaporation measuring methods; Important points in this chapter; 8 General Circulation Models; Introduction; What are General Circulation Models?; How are General Circulation Models used?; How do General Circulation Models work?; Sequence of operations; Solving the dynamics
Calculating the physics

Sommario/riassunto

Both hydrologists and meteorologists need to speak a common scientific language, and this has given rise to the new scientific discipline of hydrometeorology, which deals with the transfer of water and energy across the land/atmosphere interface. Terrestrial Hydrometeorology is the first graduate-level text with sufficient breadth and depth to be used in hydrology departments to teach relevant aspects of meteorology, and in meteorological departments to teach relevant aspects of hydrology, and to serve as an introductory text to teach the emerging discipline of hydrometeorology