METADATA

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Abstract

The book consists of six chapters. The first discusses the general concepts and their definitions (hydrology, water and its properties, hydrological cycle), and also provides a brief history of hydrology from antiquity to the present day. It delineates hydrology in the general scientific and technological framework, and its relations with hydraulic projects and hydrosystem management. It further discusses the spatial and temporal scales of hydrology and the methods followed, and outlines hydrological information. The second chapter refers to precipitation, its physical and meteorological context, its metric properties and measurement, the processing of rain gauge information, and the analysis of heavy rainfall. The third chapter studies evaporation and transpiration, their physical and meteorological context, their estimation methods with physically based as well as empirical methods, and quantifies the concept of water balance. The fourth chapter deals with retention and infiltration and how to estimate them. The fifth chapter examines surface runoff and in particular its mechanisms and origin, the hydrograph and its components, the catchment characteristics, the methods of measuring runoff and the processing of hydrometric data. Finally, the sixth chapter gives an introduction to groundwater hydrology, examining in particular porous media and aquifers, the basic principles of groundwater flow and its mathematical modeling, the contribution of groundwater in the water balance and the exploitation of groundwater.

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