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Abstract

The book consists of eleven chapters. Its aim is to provide students with the necessary knowledge of the principles of hydrology and the latest technological achievements in the fields of Geographic Information Systems (GIS) and remote sensing, so that they can respond to the basic requirements of contemporary environmental issues related to water management and protection. The first chapters analyze and interpret the parameters of the hydrological cycle, with particular emphasis on the following major topics: a) dynamic evapotranspiration, b) hydrographs and methods of runoff calculation. It then presents all the basic knowledge a scientist needs to know about GIS and remote sensing and their applications

in hydrology. Separate chapters present the basic concepts of GIS, coordinate systems, projection systems (those used in Greece are presented in detail), and the basic principles of remote sensing data pre-processing. A separate chapter provides an extensive overview of Digital Terrain Models and how they can be used in hydrology for the automatic calculation of hydrological basins and the automatic extraction of hydrographic networks. Next, the basic concepts of spatial interpolation and how they can be applied in hydrology are presented. Finally, the most modern process of using thermal remote sensing data to calculate evapotranspiration is presented, with many examples from Greece.

