HYDROLOGY

Hydrology and Hydroclimatology

Principles and Applications

A comprehensive compilation of scientific and engineering topics, **Hydrology and Hydroclimatology: Principles and Applications** combines coverage of many new challenges and emerging issues missing from many other textbooks in this field. The authors take a systems approach to understanding and applying the principles of hydrology and hydroclimatology, considering interactions among different components of water cycle.

The book provides a fresh look at the fundamentals and new challenges in hydrologic and hydroclimatic systems and climate change. The authors underscore the importance of the underlying concepts due to the emergence of non-traditional data sets and new investigation techniques applied to an expanding array of water-related problems.

Highlights include:

- System's view of hydroclimatology and hydrology
- Basic principles of hydrologic cycles and their interactions with hydroclimatic system
- Watersheds at the holistic scale in hydrologic studies
- Deterministic and stochastic investigations in hydrology
- Emerging issues in large and non-traditional data sets and regionalizing data
- Climate change assessment and evaluation of its impacts on hydrologic cycle
- Simulation and modeling tools and techniques in hydrology
- Quantifying risks and uncertainty including hazard, vulnerability, and resiliency
- Dealing with extreme hydrologic events: floods and droughts

Examining topics through the lens of current engineering issues, the book provides clear understanding of the hydrologic systems and their interactions, time series analysis, long lead forecasting and simulation, drought and flood management as well as risk and uncertainty in hydrologic design. The combined coverage of surface and groundwater hydrology, as well as deterministic and stochastic aspects of water science and engineering, provides practical tools and techniques for handling pressing water issues that have been amplified in urban areas.

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