

BOOK REVIEWS

NEPAL HIMALAYA—Geo Ecological Perspective (Ed.) by S.C. Joshi, H.R. Publishers, Nainital (1986).

Himalayas have fascinated mankind since Vedic period. The history of Himalayas is inextricably inter-woven with the history of Indian civilization. The very mention of Himalayas throws visions of grandeur and awe. The multitude of rivers and streams which comprise the mighty waters of Ganga originate in the Nepal Himalayas. It is Nepal Himalayas that one finds an entire spectrum of biophysical phenomenon.

The eco stress and mounting problems of the Himalaya have of late attracted world wide attention or ecologists and crusaders of environmental protection. A number of scientists and environmentalists carried out a lot of research on the environment and other problems of Himalayas. This book is a collection of scientific papers dealing with the socio-economic problems and environmental aspects of Nepal Himalayas. The papers have been arranged into six parts representing specific themes :

- Part 1 : The Himalaya : Resources Development
- Part 2 : Nepal Himalaya : The Biophysical Background
- Part 3 : Demographic & Geopolitical Aspects
- Part 4 : Socio-economic Profiles
- Part 5 : Ecological equations & strategies for development
- Part 6 : Applied Research & Explorations.

From Hydrologists' point of view, Part 6 which incorporates many papers of applied interest would be of useful in nature. The papers range from erosion processes, meteorological studies and geomorphic hazards of snow survey experiments and studies on glaciers. One of the papers by Dr. O.N. Dhar presents a brief reference to the variable contribution made in the sphere of glaciological observations and studies carried out by a group of Japanese scientists in the High Himalayas. Another paper by Dr. Dhar deals with precipitation climatology and snow survey experiments in Himalayas. These important works on meteorology and climatology of this part of the Himalayas can be of great practical interest for those working in the areas of meteorology and hydrology.

A paper by Prof. M. Khule presents the results of a most valuable scientific observation carried out in the Himalayan region and concentrating on extensive glacial studies. It makes a valuable contribution to the limited studies available on glaciers and also provides useful guidance to material for future glaciological investigations in Himalayas.

A collection of about 40 scientific papers from many leading academician, the book would be a valuable reading and reference material for anyone interested in any aspect of the geo-ecological perspectives of Himalayas.

Though the high cost may make the book not within the reach of individual scientists and researchers, it can certainly be a valuable addition to any library.

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DESIGN OF NETWORKS FOR MONITORING WATER QUALITY—by Thomas G. Sanders

Robert C. Ward, Jim. C. Loftis, T.D. Steele, D.D. Adrian and V. Yevjevich, Water Resources Publications, P.O.B. 2841, Little ton, Colorado 80161, USA, 1983, pages 328.

In this book the efforts are organised around the task of network design aspects of water quality monitoring and not on the procedures for sample collection, preservation, and analysis or the method of data storage and retrieval. Network design is discussed in the context of stream and groundwater monitoring, in particular, and while lake, reservoir or estuary monitoring are not directly addressed, many of the principles are applicable to such monitoring efforts.

The main purpose of this book is to present basic principles of water quality, monitoring network design, particularly those which have evolved from the need to consider sampling statistics and water quality hydrology as integral components of the design process. The various limitation in the design techniques and objectives of current monitoring efforts while stressing the need for more quantitative design process have also been stressed. Taking into account the complexity of water quality monitoring network design and the resulting assumption, it can be seen that different designers could develop an different procedures for the same area. Hence there is a definite need to begin to develop water quality monitoring data utilization, stream standards. Under the stochastic processes the heirarahical approach, procurement of information have been given.

Chapter three details the concept of probability and statistics for water quality monitoring streassing the probability and density functions, random processes, cumulative distribution function (CDF), various test for normality, confidence intervals, non-parametric tests analysis of variance, linear regression etc. The solved examples serve a good purpose for other areas also. Chapter four is directed towards location of water quality monitoring stations detailing basis for river quality sampling allocations, objectives, identification of sampling reaches, various criteria for sampling site location, microlocation, mixing length formula. An account of locating ground-water monitoring stations is also given. The matter is backed by typical actual examples which enhances the utility of text.

Chapter five is devoted to sampling frequency. Criteria for frequency like basin characteristics flows, information available, frequency selection etc. have been discussed. A step-by-step procedure for evaluating sampling frequencies including computer flow charts adds to the value of this chapter. Various statistical considerations like geometric means, seasonal variation, serial correlation, have been explained with a case study. An idea of spectral analysis, spatial correlation has also been given.

Chapter six is focussed towards variable selection bringing out factors of concern like physical parameters, analytical procedures, institutional aspects, costs, data and quality control etc. network design procedures, or principles, that can be generally regarded as valid by most designers. In spite of this need, most of the literature on water quality network design has ignored the fact that there are some basics that all designers may rely on.

The concepts presented in the book have been developed, experimented upon and used by the authors over a number of years. However the principles presented in the text can only be taken as guides than as widely agreed upon procedures. Hard and fast rules in such a complex difficult area are difficult to develop. Several techniques have been discussed in the book to accomplish each part of total monitoring network design, however the designer must choose the techniques deemed most appropriate for the situation. Since the design techniques chosen depend upon many factors, the designer must be much more rational and thorough in his approach to network design, and consequently more quantitative. At present, the ability to select appropriate design procedures is as much an art as it is a science.

The book has been organised into seven chapters with some typical problem solutions. The book opens with an introductory chapter giving the various definitions, assumptions and scope of design procedures. Chapter two deals with water quality monitoring with a systematic and stochastic perspective. The main emphasis in this chapter is laid on systems framework, regularly water quality monitoring, purposes, data acquisition, data utilization, monitoring system matrix strategies for effective various categories of variables like water quality in terms of inorganic quality, organic quality, nutrients, salinity, biological activity, radio active, isotopes, have been brought out. A mention of indices, time-trend analysis, etc. is given.

The major contribution made in chapter seven is a step by step, procedure of network design. A very useful example clearly bringing out the procedure is followed up. This would serve as a real tool for experts involved in designing work.

This book will definitely serve as a basic reference for persons responsible for the initial design, or design refinement of a water quality monitoring network. However, the text is not designed to cover the more statistically sophisticated procedures but rather to emphasize the more basic approaches. It has been claimed by the authors that the book should serve to introduce members of the general public, their elected representatives, regulatory officials and water quality professionals to the fundamentals of network design, including the advantages and limitations of the various design procedures. This seems to be a reasonable claim. The book shall definitely be very useful for post graduate students and research workers and field professionals. The book is a commendable effort to bring together selected network design procedure and shall serve the purpose of stimulating evaluation of other network design procedures and encourage further development of new design procedures. The book is written in simple and lucid style and narrates vast field experiences.

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