

# Table of Contents

## Table des Matières

Volume 1

Tome 1

Preface	v
Préface	vii
Authors' Addresses – Adresses des Auteurs	xii
<b>1 Structural Analysis of Hydrological Sequences</b>	
<b>1 Analyse Structurale des Chroniques Hydrologiques</b>	
The representation of a short period of experimental catchment data by a linear stochastic difference equation <i>R. T. Clarke</i>	3
Some applications of stochastic flow generation <i>M. J. Hamlin and N. T. Kottegoda</i>	16
Stochastic analysis of velocity fluctuations in a natural stream channel <i>M. J. Hall and P. M. Johnston</i>	26
Investigations on the structure of frequency distributions of floods <i>S. Dyck and Ch. Kluge</i>	39
Bayesian estimation of frequency of hydrological events <i>C. Cunnane and J. E. Nash</i>	47
Stochastic structure of a process of average monthly flows <i>Henryk Mitosek Jr.</i>	56
Methods for the mathematical description of the structure of river runoff variations <i>A. V. Rozhdestvensky</i>	62
Spectral analysis of the structure of hydrological series <i>A. I. Davydova</i>	67
Spatial and time analysis and estimation of river flow <i>G. P. Kalinin, N. V. Nikolskaya, V. M. Evstigneyev and V. A. Zhuk</i>	76
Elements of runoff periodicity in tasks of modelling <i>I. B. Khomeriki</i>	80
Cyclical structure of the hydrological series and the nature of individual components <i>S. G. Agarkov, I. P. Druzhinin and Z. P. Konovalenko</i>	85
Problems encountered in synthetic river flow generation procedures <i>R. J. G. Bloomer and J. R. Sexton</i>	91
On deterministic components in natural streamflow <i>N. S. Korganova and N. A. Kartvelishvili</i>	101
New forms of correlation relationships between positive quantities applied in hydrology <i>I. O. Sarmanov</i>	104
Simulation of daily rainfall series using Markov chain models <i>S. Jovanović, A. R. Dakkak, M. Cabrić and M. Brajković</i>	110
The generation of synthetic monthly runoff records for ungauged British catchments <i>Barry M. J. Barton</i>	121
Multidimensional statistic modelling of hydrological processes on the basis of structural analysis of the empirical hydrographs of runoff <i>G. A. Grinevich, A. G. Grinevich and A. F. Solovjova</i>	134
Stochastic difference equation modelling of hydrological processes <i>Ramachandra A. Rao and R. L. Kashyap</i>	140
Structural relation between parametric and stochastic hydrology models <i>Rafael G. Quimpo</i>	151

## Contents

Significance tests of periodicity in hydrological time series	<i>Vujica Yevjevich</i>	158
A simple stochastic modelling of Hurst's law	<i>P. E. O'Connell</i>	169
Stochastic point-rainfall simulation	<i>P. Todorovic and D. R. Dawdy</i>	188
In hydrology <i>h</i> is a household word	<i>J. R. Wallis and N. C. Matalas</i>	196
Frequency analysis of water balance components in relation to climatic factors	<i>Boris S. Browzin</i>	204
Mathematical models resulting from statistical analysis of mean monthly flow	<i>Boris S. Browzin</i>	212
<b>1A Statistical Techniques</b>		
<b>1A Techniques Statistiques</b>		
Flood frequency studies of rivers in the Federal Republic of Germany	<i>U. Maniak</i>	221
Stochastic analysis of short-time rainfalls	<i>J. Winter</i>	226
Loi de probabilité à deux variables des basses eaux	<i>I. Zsuffa</i>	233
A statistical filtration model for the in seepage of melt water into frozen ground	<i>A. B. Kasansky</i>	241
Determination of the degree of protection offered by flood control systems on the basis of distribution functions	<i>I. Bogárdi</i>	246
Statistical analysis applied to the study of the components of a flood wave	<i>V. Stănescu and C. Catană</i>	253
L'utilisation des modèles mathématiques pour le prévision en hydrologie et météorologie	<i>P. Guillot</i>	266
<b>2 Multi-dimensional Stochastic Processes in Hydrology</b>		
<b>2 Processus Stochastiques Multidimensionnels en Hydrologie</b>		
A multivariate mathematical model of monthly river flow	<i>Subin Pinkayan and Raziuddin Khaleel</i>	279
Analyse de la concomitance stochastique de certains processus hydrologiques	<i>J. Déri</i>	289
Finding regularities in long-term streamflow fluctuations by analysis of hydrological ensembles	<i>S. N. Kritsky and M. F. Menkel</i>	299
Optimal spatial interpolation and its errors in the case of various distances between observation points or watershed centres	<i>G. A. Alexeev</i>	305
Objective analysis of snow cover fields	<i>E. P. Chemerenko</i>	315
Use of cross-correlation techniques for determining the relationship between groundwater levels and sources in the Nile delta area	<i>M. G. Elgizawi</i>	319
Un modèle stochastique de simulation de la température d'un cours d'eau	<i>R. Gras et J. P. Henry</i>	326
Modèles probabilistes à variables hydrologiques multiples et hydrologie synthétique	<i>J. Bernier</i>	333
Frequency domain analysis of hydrological systems with monthly data	<i>Ignacio Rodríguez-Iturbe and Carl F. Nordin</i>	343
Principal-component analysis of streamflow chemical quality data	<i>Timothy Doak Steele and Nicholas C. Matalas</i>	355
Time and frequency-domain identification of a causal bivariate stochastic process	<i>Chester C. Kisiel and Lucien Duckstein</i>	364
Correlation constraints for generating processes	<i>N. C. Matalas and J. R. Wallis</i>	372
<b>3 Stochastic Analysis of Water Storage Problems</b>		
<b>3 Analyse Stochastique dans les Problèmes de Stockage d'Eau</b>		
Application of stochastic hydrological models in the design of lake level control	<i>I. Kontur</i>	379
Quelques relations arithmétiques de matrice dans le calcul des réservoirs	<i>I. Zsuffa</i>	385
Emptiness of a finite dam – time dependent theory	<i>S. K. Srinivasan</i>	395
Multiple Markov processes in hydrology and their importance for stochastic analysis of water accumulation problems	<i>K. Nacházel</i>	401

Mathematical models of runoff for the computation of storage reservoirs <i>G. G. Svanidze</i>	408
Reservoir operating policy in relation to inflow prediction <i>W. G. Strupczewski</i>	414
Model of a lake reservoir <i>Erich Weber</i>	422
A probabilistic model for an annual optimum control of a complex reservoir <i>I. Tzvetanov</i>	428
Some problems of stochastic storage with correlated inflow <i>Zdzisław Kaczmarek</i>	435