
Contents

List of Authors	<i>page xi</i>
Preface	xiii
 <i>I. INTRODUCTION</i>	
<i>1. Hydrological uncertainty in perspective</i> Z. W. Kundzewicz	3
 <i>II. FACETS OF UNCERTAINTY</i>	
<i>1. Bayesian relative information measure – a tool for analyzing the outputs of general circulation models</i> M. E. Moss	13
<i>2. A stochastic weather generator using atmospheric circulation patterns and its use to evaluate climate change effects</i> A. Bárdossy	25
<i>3. Hydrological uncertainty – floods of Lake Eyre</i> V. Kotwicki & Z. W. Kundzewicz	32
<i>4. Some aspects of hydrological design under non-stationarity</i> W. G. Strupczewski & H. T. Mitosek	39
<i>5. New plotting position rule for flood records considering historical data and palaeologic information</i> Guo Sheng Lian	45
 <i>III. NOVEL APPROACHES TO UNCERTAINTY: FRACTALS, FUZZY SETS AND PATTERN RECOGNITION, NON-PARAMETRIC METHODS</i>	
<i>1. Dispersion in stratified soils with fractal permeability distribution</i> M. W. Kemblowski & Jet-Chau Wen	55
<i>2. Multifractals and rain</i> S. Lovejoy & D. Schertzer	61
<i>3. Is rain fractal?</i> I. Zawadzki	104
<i>4. Multifractal structure of rainfall occurrence in West Africa</i> P. Hubert, F. Friggit & J. P. Carbonnel	109

viii	CONTENTS
<hr/>	
<i>5. Analysis of high-resolution rainfall data</i>	114
K. P. Georgakakos, M. B. Sharifi & P. L. Sturdevant	
<i>6. Application of fuzzy theory to snowmelt runoff</i>	121
K. Mizumura	
<i>7. On the value of fuzzy concepts in hydrology and water resources management</i>	126
J. Kindler & S. Tyszewski	
<i>8. Application of neural network in groundwater remediation under conditions of uncertainty</i>	133
R. S. Ranjithan, J. W. Eheart & J. H. Garrett, Jr.	
<i>9. Application of pattern recognition to rainfall–runoff analysis</i>	141
K. Mizumura	
<i>10. Nonparametric estimation of multivariate density and nonparametric regression</i>	145
W. Feluch	
<i>11. Nonparametric approach to design flood estimation with pre-gauging data and information</i>	151
Guo Sheng Lian	
 <i>IV. RANDOM FIELDS</i>	
<i>1. Analysis of regional drought characteristics with empirical orthogonal functions</i>	163
I. Krasovskaia & L. Gottschalk	
<i>2. Worth of radar data in real-time prediction of mean areal rainfall by nonadvective physically-based models</i>	168
K. P. Georgakakos & W. F. Krajewski	
<i>3. Uncertainty analysis in radar-rainfall estimation</i>	181
W. F. Krajewski & J. A. Smith	
<i>4. Design of groundwater monitoring networks for landfills</i>	190
P. D. Meyer, J. W. Eheart, R. S. Ranjithan & A. J. Valocchi	
<i>5. Spatial variability of evaporation from the land surface – random initial conditions</i>	197
R. J. Romanowicz, J. C. I. Dooge & J. P. O’Kane	
<i>6. Detecting outliers in flood data with geostatistical methods</i>	206
L. Gottschalk, I. Krasovskaia & Z. W. Kundzewicz	
 <i>V. TIME SERIES AND STOCHASTIC PROCESSES</i>	
<i>1. Prediction uncertainty in seasonal partial duration series</i>	217
P. F. Rasmussen & D. Rosbjerg	
<i>2. A daily streamflow model based on a jump-diffusion process</i>	225
F. Konecny & H. P. Nachtnebel	
<i>3. The influence of time discretization on inferred stochastic properties of point rainfall</i>	230
S. Weglarczyk	
<i>4. The distribution of the 1-day total precipitation amount</i>	238
W. Jakubowski	
<i>5. Analysis of outliers in Norwegian flood data</i>	245
L. Gottschalk & Z. W. Kundzewicz	

CONTENTS	ix
<i>6. Stochastic modelling of the operation of hydrants in an irrigation network</i> G. Tsakiris & O. Manoliadis	252
<i>7. Order and disorder in hydroclimatological processes</i> K. Kowalski	257
<i>8. Towards the physical structure of river flow stochastic process</i> J. J. Napiórkowski & W. G. Strupczewski	261
 <i>VI. RISK, RELIABILITY AND RELATED CRITERIA</i>	
<i>1. Stochastic approach to non-point pollution of surface waters</i> E. J. Plate	273
<i>2. Statistically safe sets methodology for optimal management of reservoirs in risk situations</i> A. Karbowski	284
<i>3. Risk assessment in control of reservoir systems</i> A. Kozłowski & A. Łodziński	293
<i>4. Reliability-related criteria in water supply system studies</i> Z. W. Kundzewicz & A. Laski	299
<i>5. Reliability analysis of reservoir operation</i> J. J. Bogardi & A. Verhoef	306
<i>6. Composite risk model of Ogee type spillway</i> M. Sowiński & M. I. Yusuf	316