

10929

The use of analog and digital computers in hydrology



L'utilisation des calculatrices analogiques et des ordinateurs en hydrologie

Contributions to the Symposium organized by IASH,
within the framework of the International Hydrological Decade,
in cooperation with Unesco, the American Geophysical Union,
the U.S. National Committee for the IHD,
and the University of Arizona
Tucson, Arizona, USA, December, 1968

Communications présentées au colloque organisé par l'AIHS,
dans le cadre de la Décennie hydrologique internationale,
avec la collaboration de l'Unesco, de l'American Geophysical Union,
du Comité national des États-Unis pour la DHI
et de l'Université de l'Arizona
Tucson, Arizona, États-Unis d'Amérique, décembre 1968

vol. II

PUBLICATION N° 81 AIHS

International Association of Scientific Hydrology
Association internationale d'hydrologie scientifique
United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation, la science et la culture

Contents

Table des matières

TOME II — VOLUME II

II

DIGITAL COMPUTING TECHNIQUES

(continued)

D. R. DAWDY and R. W. LICHTY (United States). — Methodology of hydrologic model building	347
R. W. LICHTY, D. R. DAWDY and J. M. BERGMANN (United States). — Rainfall-runoff model for small basin flood hydrograph simulation	356
S. LÉCZFALVY (Hungary). — Experiences gained with digital computers in analysing the discharge and the radius of influence of wells in porous aquifers	368
C. CATANĂ (Roumanie). — La programmation des méthodes numériques servant à résoudre un système de caractéristiques, appliquée à un modèle théorique de l'écoulement maximum pour un bassin hydrographique à étendue réduite	378
M. R. PACKER, J. P. RILEY and E. K. ISRAELSEN (United States). — Simulation of the hydrologic-economic flow system	386
R. A. AMISIAL and J. P. RILEY (United States). — Adaptation of electronic computer for improved method of modeling surface runoff from rainfall for small watersheds	392
N. S. NECHAEVA and V. M. MUKHIN (USSR). — The use of statistical methods for short-range forecasts	405
B. M. HARLEY and J. C. I. DOOGÉ (Ireland). — Problems in simulating and evaluating various methods of linear flood routing using a small digital computer	417
Dr. MANIAK (Germany). — The change of flood hydrographs by river regulation shown for the example of the Aller-Oker-River-System in Northern Germany	426
M. L. FRANKEL and J. A. BEAVER (United States). — Making analytical tools in water resources management usable	431
A. SARIAHMED and C. C. KISIEL (United States). — Synthesis of sequences of summer thunderstorms volumes for the Atterbury watershed in the Tucson area	439

E.G. POPOV (USSR). — Principles of modelling and prospects of using electronic computers in hydrological forecasting	448
M.A. DAUBERT (France). — Étude sur calculateur numérique de la propagation des crues	456
M.J. GOODSPEED (Australia). — A data collection and storage system using a digital event recorder	473
E. DEDMAN, J. CULVER, F. JANZA (United States). — Computer simulation of remote sensing by microwave radiometers	485
G.P. KALININ (USSR). — Main trends in utilization of electronic computers in hydrological investigations in USSR	498
H.G. GALLARDO and E.I. IRAGÜEN (Chile). — Computing stream-gauges by electronic computer	507
J. BERNIER (France). — Sur l'établissement de synthèses statistiques régionales des ressources en eau	521
P.G. FRANKE and W. BECHTELER (Germany). — Relation between Sunspots and Discharge	527
R.G. THOMAS (F.A.O.). — Use of digital computers in international water resources investigations	531
M. DOMOKOS and D. SZÁSZ (Hungary). — Generation of fitting probability distribution functions of discharges by electronic computer	535
R. RANGARAJAN (India). — On a problem of fixation of reservoir capacity solved with the help of electronic computer	546
H.W. ANDERSON and T.B. YERKE (United States). — Computer documentation and retrieval of hydrologic information for small research groups or individuals	555
J.M. McNELLIS, C.O. MORGAN and B.H. LOWELL (United States). — Digital computer applications that facilitate collection and interpretation of ground-water data	561
J.W. VAN DER MADE (Netherlands). — A dimensionless representation of flood wave subsidence by means of a subsidence function	569
M.J. BURLEY and J.A. COLE (U.K.). — Alternative digital computer applications to evaluate linked water resources	584
R.T. CLARKE (U.K.). — A computer program for estimating regressions between time series	591
S. CAVAZZA and S. VANNELLA (Italy). — Evaluation of drought periods by computer analysis. An application in Southern Italy	598
R.M. SHANE, G. MAVRIGIAN and H.J. DAY (United States). — Hybrid computer simulation of a low-flow augmentation sub-surface storage system	604
P.G. FRANKE and W. BECHTELER (Germany). — Periodogram analysis done by the use of analog and digital computers	610
L.S. KUTCHMENT and V.I. KOREN (USSR). — Modelling of hydrologic processes with the aid of electronic computers	616
T.A. PRICKETT and C.G. LONNQUIST (United States). — Comparison between analog and digital simulation techniques for aquifer evaluation	625

K.P. STARK (Australia). — Numerical solutions of the Navier Stokes equations for flow through idealised porous materials	635
C.G. KEYES Jr. and N.N. GUNAJI (United States). — Computer technology in evaporation studies	650
J.C. PHILLIPS, R.G. QUIMPO and J.P. MILLER (United States). — Simulation of oxygen utilization in storage-treatment plant system	661
K.P. SINGH (United States). — Hydrologic distributions resulting from mixed populations and their computer simulation	671
L.V. DUNIN-BARCOVSKY (USSR). — Importance of mathematical method and computing technique application to water resource planning and control	682
P.A. WITHERSPOON, I. JAVANDEL and S.P. NEUMAN (United States). — Use of the finite element method in solving transient flow problems in aquifer systems	687
CHINTU LAI (United States). — Numerical simulation of wave-crest movement in rivers and estuaries	699
W.S. BUTCHER (United States). — Mathematical models for optimizing the allocation of stored water	714
V. HÁLEK and M. NOVÁK (Czechoslovakia). — Application of statistic methods for solution of steady and unsteady ground water flow	724
J.R. WALLIS and B.B. MANDELBROT (United States). — Self-similar synthetic hydrology	738