

DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

Computer Programs Released as  
U.S. Geological Survey Publications  
through August 1989

by

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Open-File Report 89-681

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## INTRODUCTION

With increasing use of computers in the earth sciences, the U.S. Geological Survey has been developing computer programs on many subjects in the fields of geology, hydrology, mapping, and image processing (figs. 1 and 2). Approximately 500 USGS publications between 1965 and 1989 contain computer programs either in hard copy form, or more recently, on microcomputer diskettes. Many of the computer programs have been released as formal and informal USGS publications including Professional Papers, Bulletins, Water-Supply Papers, Circulars, Techniques of Water-Resources Investigations Reports, and Open-File Reports. This report is a listing of citations of USGS publications through August 1989 containing computer programs, and supersedes Open-File Report 86-172 (Dodd and Sakss, 1986).

The citations are arranged in numerical order within each USGS publication series. Comments following the citations inform the user of revisions or supersessions and the diskette size if one is available. Following the list of citations are indexes for authors, computer program acronyms, and subjects. In constructing the subject index, report titles that were not descriptive were consulted. Most computer programs are in hard copy form; some of the more recent microcomputer programs can be obtained on diskette.

This report was compiled from several sources, including the previous listing (Open-File Report 86-172) and the American Geological Institute's CD-ROM, PUBLICATIONS OF THE U.S. GEOLOGICAL SURVEY. Publications released in 1989 were collected from the monthly list, NEW PUBLICATIONS OF THE U.S. GEOLOGICAL SURVEY. Effort was made to include all available, but especially the most recent, USGS publications that contain computer programs. Other computer-related publications, such as those concerning data base operations, are not included in this list; data base materials are described in Circular 817, SCIENTIFIC AND TECHNICAL, SPATIAL, AND BIBLIOGRAPHIC DATA BASES OF THE U.S. GEOLOGICAL SURVEY, (U.S. Geological Survey, 1983), or can be accessed through the EARTH SCIENCES DATA DIRECTORY (for information contact Earth Science Data Directory Project Manager, U.S. Geological Survey, 801 National Center, Reston, Virginia 22092, telephone: (703) 648-7144, FTS 959-7144).

The USGS publications listed can be purchased prepaid from Books and Open-File Reports U.S. Geological Survey, Federal Center Box 25425, Denver, Colorado 80225 (Telephone: (303) 236-7476, FTS 776-7476). The price listed in each citation is for a single copy as of August 1989. In many cases, microfiche is also available. Programs that are only available through the National Technical Information Service (NTIS) can be ordered from NTIS, 5285 Port Royal Road, Springfield, Virginia 22161 (Telephone: (703) 487-4600).

Please direct all correspondence concerning this list including additions and corrections, to the U.S. Geological Survey, Geologic Inquiries Group, 907 National Center, Reston, Virginia 22092 (Telephone: (703) 648-4383, FTS 959-4383).

## REFERENCES

- Dodd, Kurt, and Sakss, Yula, 1986, COMPUTER PROGRAMS RELEASED AS U.S. GEOLOGICAL SURVEY OPEN-FILE REPORTS AS OF DECEMBER 1985: U.S. Geological Survey Open-File Report 86-172, 35 p.
- U.S. Geological Survey, 1983, SCIENTIFIC AND TECHNICAL, SPATIAL, AND BIBLIOGRAPHIC DATA BASES AND SYSTEMS OF THE U.S. GEOLOGICAL SURVEY: U.S. Geological Survey Circular 817, 435 p.

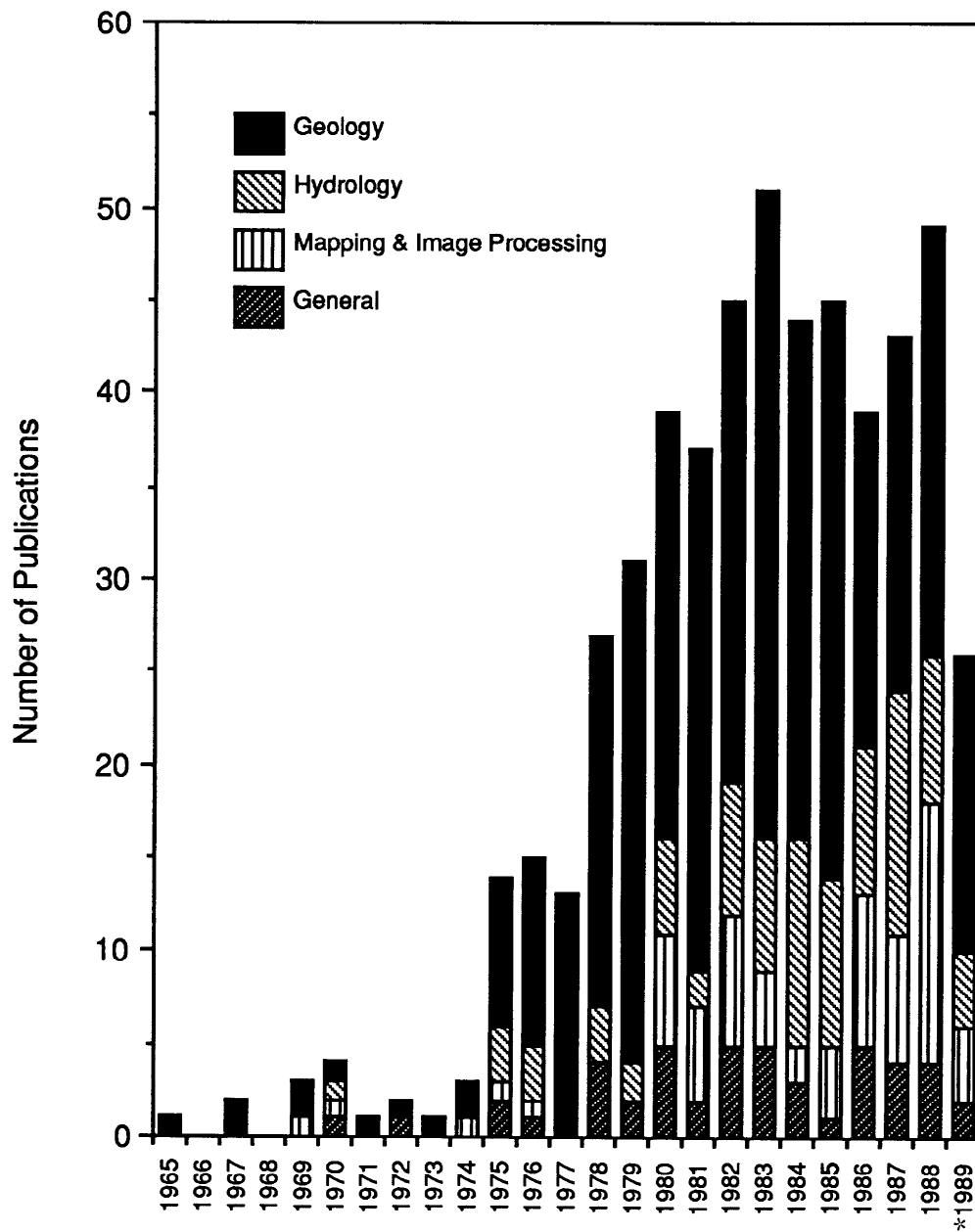


Figure 1. Histogram showing the number of USGS publications released each year containing computer programs (\*through August 1989).

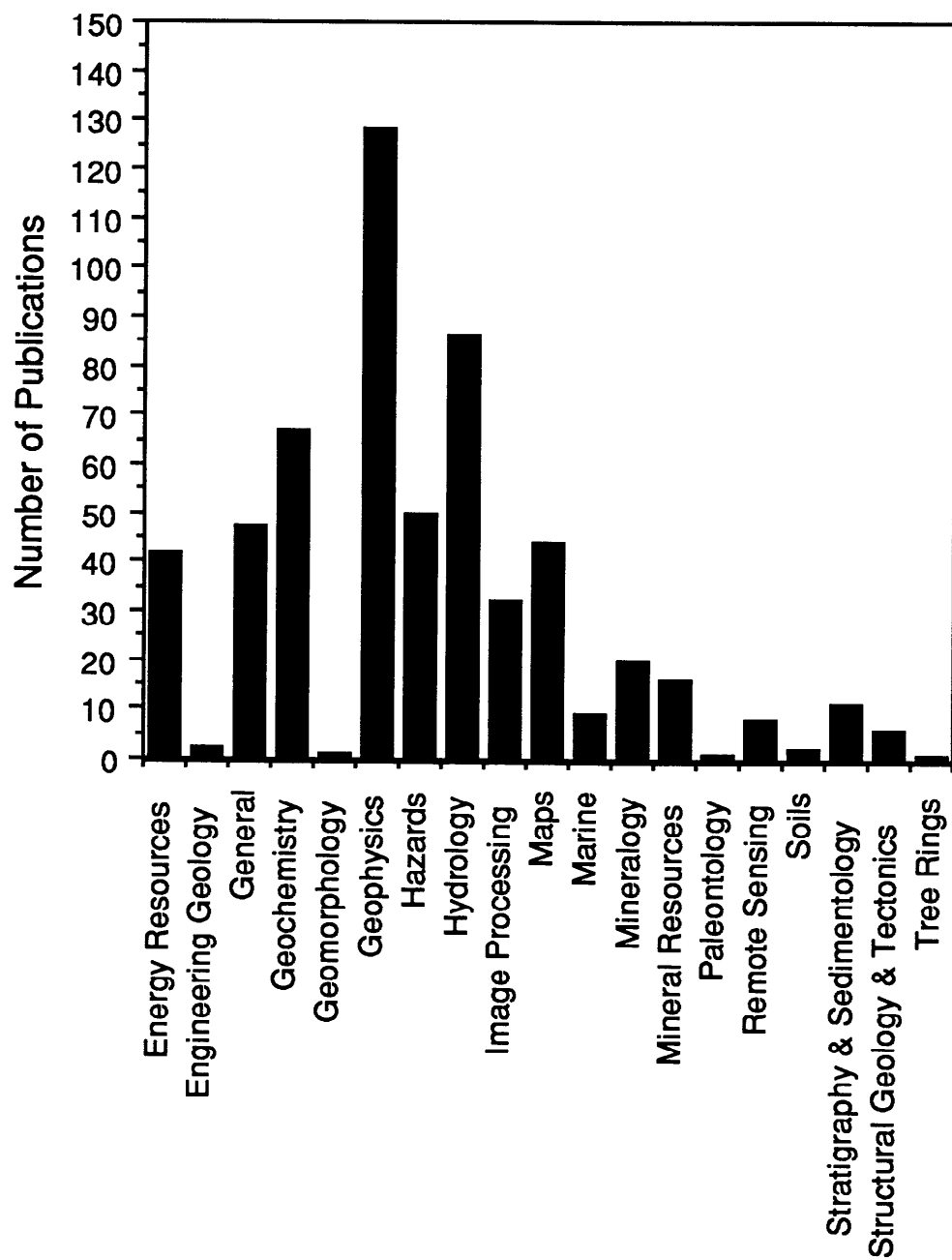


Figure 2. Histogram showing the number of USGS publications containing computer programs broken down by subject. Some publications are indexed under more than one subject.

## REFERENCE LIST

### Professional Papers

- P 0666                    **MAGNETIC FIELDS FOR A 4X6 PRISMATIC MODEL**, G. E. Andreassen and Isidore Zietz, 1969, 9p. \$6.50.
- P 0966                    **THE GEOLOGIC RETRIEVAL AND SYNOPSIS PROGRAM (GRASP)**, R.W. Bowen and J. M. Botbol, 1975, 87p. \$2.50.
- P 1172                    **GEOINDEX**, Patricia Fulton, Harold Johnson, W. L. McIntosh, M. F. Eister, Lawrence Balcerak, Donald Hanson, Richard Thoensen, and Pearl Porter, 1982, 298p. \$8.50.
- P 1297                    **DEPTH--A SYSTEM FOR THE DISPLAY OF ELEMENTARY PETROLEUM THEMES**, P. A. Fulton, R. W. Coffin, and M. S. Kutsko, 1983, 82p. \$3.50.

### Bulletins

- B 1616                    **JKDIGIT--A PROGRAM TO CONTROL A DIGITIZING BOARD FOR GEOLOGISTS, WRITTEN IN BASIC FOR AN IBM PERSONAL COMPUTER**, J. O. Kork, 1986, 69p. \$3.75.
- B 1621                    **THE NEW CHARACTERISTIC ANALYSIS (NCHARAN) PROGRAM**, R. B. McCammon, J. M. Botbol, Richard Sinding-Larsen, and R. W. Bowen, 1984, 27p. \$2.25.
- B 1642                    **COMPUTER PROGRAMS FOR COMMON MAP PROJECTIONS**, G. D. Newton, 1985, 33p. \$2.25.
- B 1697                    **THE MUPROSPECTOR MINERAL CONSULTANT SYSTEM**, R. B. McCammon, 1986, 35p. \$2.00. Supersedes OF 83-804 and OF 86-217.
- B 1772                    **SEISRISK III--A COMPUTER PROGRAM FOR SEISMIC HAZARD ESTIMATION**, Bernice Bender and D. M. Perkins, 1987, 48p. \$2.75. Revision of OF 82-293.
- B 1810                    **THE MUPETROL EXPERT SYSTEM FOR CLASSIFYING WORLD SEDIMENTARY BASINS**, B. M. Miller, 1987, 87p. \$4.50. Basin models disk in OF 87-0404.

### Water-Supply Papers

- WSP 2198                **A GALERKIN FINITE-ELEMENT FLOW MODEL TO PREDICT THE TRANSIENT RESPONSE OF A RADIALY SYMMETRIC AQUIFER**, T. E. Reilly, 1984, 33p. \$2.50.
- WSP 2209                **DIGITAL MODELS OF GROUND-WATER FLOW IN THE CAPE COD AQUIFER SYSTEM, MASSACHUSETTS**, J. H. Guswa and D. R. LeBlanc, 1985, 112p. \$4.25.
- WSP 2278                **APPLICATION OF A PARAMETER-ESTIMATION TECHNIQUE TO MODELING THE REGIONAL AQUIFER UNDERLYING THE EASTERN SNAKE RIVER PLAIN, IDAHO**, S. P. Garabedian, 1986, 60p. \$7.50.

WSP 2308                    **METHODS AND COMPUTER PROGRAM DOCUMENTATION FOR DETERMINING ANISOTROPIC TRANSMISSIVITY TENSOR COMPONENTS OF TWO-DIMENSIONAL GROUND-WATER FLOW**, M. L. Maslia and R. B. Randolph, 1987, 46p. \$2.75.

Circulars

C 963                        **APSAS--AN AUTOMATED PARTICLE SIZE ANALYSIS SYSTEM**, L. J. Poppe, A. H. Eliason, and J. J. Fredericks, 1985, 77p.

Techniques of Water-Resources Investigations

TWI 3-B3                    **TYPE CURVES FOR SELECTED PROBLEMS OF FLOW TO WELLS IN CONFINED AQUIFERS**, J. E. Reed, 1980, 106p. \$6.00.

TWI 6-A1                    **A MODULAR THREE-DIMENSIONAL FINITE-DIFFERENCE GROUND-WATER FLOW MODEL**, M. G. McDonald and A. W. Harbaugh, 1988, 576p. \$27.00. Supersedes OF 83-0875.

TWI 7-C1                    **FINITE-DIFFERENCE MODEL FOR AQUIFER SIMULATION IN TWO DIMENSIONS WITH RESULTS OF NUMERICAL EXPERIMENTS**, P. C. Trescott, G. F. Pinder, and S. P. Larson, 1970, 18p. \$4.75.

TWI 7-C2                    **COMPUTER MODEL OF TWO-DIMENSIONAL SOLUTE TRANSPORT AND DISPERSION IN GROUND WATER**, L. F. Konikow and J. D. Bredehoeft, 1978, 90p. \$3.25.

Water-Resources Investigations Reports

WRI 75-0061                **MIX2--A COMPUTER PROGRAM FOR MODELING CHEMICAL REACTIONS IN NATURAL WATERS**, L. N. Plummer, D. L. Parkhurst, and D. R. Kosiur, 1976, 73p. Available only from NTIS.

WRI 76-0013                **WATEQF--A FORTRAN IV VERSION OF WATEQ, A COMPUTER PROGRAM FOR CALCULATING CHEMICAL EQUILIBRIUM OF NATURAL WATERS**, L. N. Plummer, B. F. Jones, and A. H. Truesdell, 1976, 66p. Available only from NTIS.

WRI 78-0116                **ADDITIONAL AND REVISED THERMOCHEMICAL DATA AND COMPUTER CODE FOR WATEQ2--A COMPUTERIZED CHEMICAL MODEL FOR TRACE AND MAJOR ELEMENT SPECIATION AND MINERAL EQUILIBRIA OF NATURAL WATERS**, J. W. Ball, D. K. Nordstrom, and E. A. Jenne, 1980, 114p. Available only from NTIS.

WRI 79-0018                **DOCUMENTATION OF A FINITE-ELEMENT TWO-LAYER MODEL FOR SIMULATION OF GROUND-WATER FLOW**, M. J. Mallory, 1979, 352p. Available only from NTIS.

WRI 80-0096                **PHREEQE--A COMPUTER PROGRAM FOR GEOCHEMICAL CALCULATIONS**, D. L. Parkhurst, D. C. Thorstenson, and L. N. Plummer, 1980, 216p. \$17.00. Available only from NTIS.

WRI 82-0014      **BALANCE**--A COMPUTER PROGRAM FOR CALCULATING MASS TRANSFER FOR GEOCHEMICAL REACTIONS IN GROUND WATER, D. L. Parkhurst, L. N. Plummer, and D. C. Thorstenson, 1982, 33p. \$ 7.50. Available only from NTIS.

WRI 82-4023      A THREE-DIMENSIONAL GROUND-WATER-FLOW MODEL MODIFIED TO REDUCE COMPUTER-MEMORY REQUIREMENTS AND BETTER SIMULATE CONFINING-BED AND AQUIFER PINCHOUTS, P. P. Leahy, 1982, 62p. \$8.00.

WRI 82-4025      MODIFICATIONS AND CORRECTIONS TO THE FINITE-DIFFERENCE MODEL FOR SIMULATION OF THREE-DIMENSIONAL GROUND-WATER FLOW, L. J. Torak, 1982, 63p. \$8.50.

WRI 83-4009      APPLICATION OF THE CONJUGATE-GRADIENT METHOD TO GROUND-WATER MODELS, T. A. Manteuffel, D. B. Grove, and L. F. Konikow, 1983, 24p. \$3.75.

WRI 83-4034      FRONT-TRACKING MODEL FOR CONVECTIVE TRANSPORT IN FLOWING GROUND WATER, S. P. Garabedian and L. F. Konikow, 1983, 57p. \$7.50.

WRI 83-4051      FORTRAN COMPUTER PROGRAMS TO PLOT AND PROCESS AQUIFER PRESSURE AND TEMPERATURE DATA, J. B. Czarnecki, 1983, 53p. \$6.75.

WRI 83-4078      STORAGE ANALYSES FOR EPHEMERAL STREAMS IN SEMIARID REGIONS, K. C. Glover, 1984, 55p. \$8.00.

WRI 83-4087      A TWO-DIMENSIONAL GRAPHING PROGRAM FOR THE TEKTRONIX 4050-SERIES GRAPHIC COMPUTER, K. L. Kipp, 1983, 50p. \$6.50.

WRI 83-4099      DOCUMENTATION OF COMPUTER PROGRAM VS2D TO SOLVE THE EQUATIONS OF FLUID FLOW IN VARIABLY SATURATED POROUS MEDIA, E. G. Lappala, R. W. Healy, and E. P. Weeks, 1987, 184p. \$30.00.

WRI 83-4160      A DIGITAL MODEL FOR STREAMFLOW ROUTING BY CONVOLUTION METHODS, H. W. Doyle, Jr., H. O. Shearman, G. J. Stiltner, and W. O. Krug, 1983, 136p. \$17.75.

WRI 83-4236      **PHRQINPT**--AN INTERACTIVE COMPUTER PROGRAM FOR CONSTRUCTING INPUT DATA SETS TO THE GEOCHEMICAL SIMULATION PROGRAM **PHREEQE**, G. W. Fleming and L. N. Plummer, 1983, 111p. \$14.50.

WRI 83-4238      PRECIPITATION-RUNOFF MODELING SYSTEM--USER'S MANUAL, G. H. Leavesley, R. W. Lichty, B. M. Troutman, and L. G. Saindon, 1983, 207p. \$28.00.

WRI 83-4251      A MODIFICATION OF THE FINITE-DIFFERENCE MODEL FOR SIMULATION OF TWO-DIMENSIONAL GROUND-WATER FLOW TO INCLUDE SURFACE-GROUND WATER RELATIONSHIPS, M. M. Ozbilgin and D. C. Dickerman, 1984, 98p. \$13.50.

WRI 83-4257      COMPUTER ROUTINES FOR PROBABILITY DISTRIBUTIONS, RANDOM NUMBERS, AND RELATED FUNCTIONS, W. Kirby, 1983, 18p. \$2.50. Supersedes OF 80-0448.

WRI 83-4275 TRUE LOCATION AND ORIENTATION OF FRACTURES LOGGED WITH THE ACOUSTIC TELEVIEWER (INCLUDING PROGRAM TO CORRECT FRACTURE ORIENTATION), R. A. Kierstein, 1984, 73p. \$10.25.

WRI 84-4014 A DATA-MANAGEMENT SYSTEM FOR USE IN GROUND-WATER MODELING AND RESOURCE EVALUATION, R. L. Fields and E. F. Vetter, 1984, 193p. \$37.25.

WRI 84-4052 ENHANCED JOB CONTROL LANGUAGE PROCEDURES FOR THE **SIMSYS2D** TWO-DIMENSIONAL WATER-QUALITY SIMULATION SYSTEM, G. A. Karavitis, 1984, 21p. \$3.25.

WRI 84-4059 COMPUTER MODEL OF ONE-DIMENSIONAL EQUILIBRIUM CONTROLLED SORPTION PROCESSES, D. B. Grove and K. G. Stollenwerk, 1984, 58p. \$7.50.

WRI 84-4186 PARTIAL COMPILATION AND REVISION OF BASIC DATA IN THE **WATEQ** PROGRAMS, D. K. Nordstrom, S. D. Valentine, J. W. Ball, L. N. Plummer, and B. F. Jones, 1984, 40p. \$5.75.

WRI 84-4263 **AQUIFEM-SALT**--A FINITE-ELEMENT MODEL FOR AQUIFERS CONTAINING A SEAWATER INTERFACE, C. I. Voss, 1984, 37p. \$5.25.

WRI 84-4302 DOCUMENTATION OF A NUMERICAL CODE FOR THE SIMULATION OF VARIABLE DENSITY GROUND-WATER FLOW IN THREE DIMENSIONS, L. K. Kuiper, 1985, 90p. \$14.25.

WRI 84-4369 A FINITE-ELEMENT SIMULATION MODEL FOR SATURATED-UNSATURATED, TRANSPORT OR CHEMICALLY-REACTIVE SINGLE-SPECIES SOLUTE TRANSPORT, C. I. Voss, 1984, 409p. \$64.50.

WRI 85-4047 COMPUTER PROGRAM FOR THE COMPUTATION OF TOTAL SEDIMENT DISCHARGE BY THE MODIFIED EINSTEIN PROCEDURE, H. H. Stevens, Jr., 1985, 77p. \$12.25.

WRI 85-4168 DOCUMENTATION OF A REGIONAL AQUIFER SIMULATION MODEL, **RAQSIM**, AND A DESCRIPTION OF SUPPORT PROGRAMS APPLIED IN THE TWIN PLATTE - MIDDLE REPUBLICAN STUDY AREA, NEBRASKA, R. E. Cady and J. M. Peckenpaugh, 1985, 239p. \$36.75.

WRI 85-4248 DIGITAL MODEL FOR SIMULATING STEADY-STATE GROUND-WATER AND HEAT FLOW, J. E. Reed, 1985, 134p. \$20.75.

WRI 85-4279 A TWO-CONSTITUENT SOLUTE-TRANSPORT MODEL FOR GROUND WATER HAVING VARIABLE DENSITY, W. E. Sanford and L. F. Konikow, 1985, 88p. \$14.00.

WRI 85-4317 COMPUTER PROGRAM **NCALC** USER'S MANUAL--VERIFICATION OF MANNING'S ROUGHNESS COEFFICIENT IN CHANNELS, R. D. Jarrett, H. E. Petsch, Jr., 1985, 27p. \$4.75.

WRI 85-4335 A COMPUTER PROGRAM FOR ANALYZING CHANNEL GEOMETRY, R. S. Regan and R. W. Schaffranek, 1985, 49p. \$8.25.

WRI 86-4022 NUMERICAL SIMULATION OF ADVECTIVE-DISPERSIVE MULTISOLUTE TRANSPORT WITH SORPTION, ION EXCHANGE AND EQUILIBRIUM CHEMISTRY, F. M. Lewis, C. I. Voss, and Jacob Rubin, 1986, 165p. \$25.75.

WRI 86-4047 A DUAL POROSITY MODEL FOR SIMULATING SOLUTE TRANSPORT IN OIL SHALE, K. C. Glover, 1987, 88p. \$14.00.

WRI 86-4083      **PROCEDURES FOR DETERMINING DRAINAGE AREAS USING A DIGITIZER**, R. L. Gold and Dan Winkless, 1988, 33p. \$5.75.

WRI 86-4086      **THE SALT NORM--A QUANTITATIVE CHEMICAL-MINERALOGICAL CHARACTERIZATION OF NATURAL WATERS**, M. W. Bodine, Jr. and B. F. Jones, 1986, 134p. \$21.00.

WRI 86-4091      **A DATA-MANAGEMENT SYSTEM FOR DETAILED AREAL INTERPRETIVE DATA**, C. F. Ferrigno, 1986, 103p. \$16.25.

WRI 86-4095      **HST3D--A COMPUTER CODE FOR SIMULATION OF HEAT AND SOLUTE TRANSPORT IN THREE-DIMENSIONAL GROUND-WATER FLOW SYSTEMS**, K. L. Kipp, Jr., 1987, 517p. \$78.75.

WRI 86-4124      **USER'S MANUAL FOR ESTIMATION OF DISSOLVED-SOLIDS CONCENTRATIONS AND LOADS IN SURFACE WATER**, T. D. Liebermann, R. F. Middelburg, and S. A. Irvine, 1987, 51p. \$8.25.

WRI 86-4141      **COMPUTER PROGRAMS FOR COMPUTING PARTICLE-SIZE STATISTICS OF FLUVIAL SEDIMENTS**, H. H. Stevens, Jr. and D. W. Hubbell, 1986, 71p. \$6.50.

WRI 86-4144      **PROGRAMMERS MANUAL FOR A ONE-DIMENSIONAL LAGRANGIAN TRANSPORT MODEL**, D. H. Schoellhamer and H. E. Jobson, 1986, 101p. \$16.00.

WRI 86-4145      **USERS MANUAL FOR A ONE-DIMENSIONAL LAGRANGIAN TRANSPORT MODEL**, D. H. Schoellhamer and H. E. Jobson, 1986, 95p. \$15.00.

WRI 87-4061      **AQMAN--LINEAR AND QUADRATIC PROGRAMMING MATRIX GENERATOR USING TWO-DIMENSIONAL GROUND-WATER FLOW SIMULATION FOR AQUIFER MANAGEMENT MODELLING**, L. J. Lefkoff and S. M. Gorelick, 1987, 164p. \$24.75.

WRI 87-4086      **SIMULATION OF TRICKLE IRRIGATION, AN EXTENSION TO THE U.S. GEOLOGICAL SURVEY'S COMPUTER PROGRAM VS2D**, R. W. Healy, 1987, 61p. \$10.00.

WRI 87-4091      **COMPUTER PROGRAM FOR SOLVING GROUND-WATER FLOW EQUATIONS BY THE PRECONDITIONED CONJUGATE GRADIENT METHOD**, L. K. Kuiper, 1987, 33p. \$5.75.

WRI 87-4095-A      **A COMPUTER PROGRAM FOR GEOCHEMICAL ANALYSIS OF ACID-RAIN AND OTHER LOW-IONIC-STRENGTH, ACIDIC WATERS**, P. A. Johnsson and D. G. Lord, 1987, 42p. \$6.75. Text.

WRI 87-4095-B      **A COMPUTER PROGRAM FOR GEOCHEMICAL ANALYSIS OF ACID-RAIN AND OTHER LOW-IONIC-STRENGTH, ACIDIC WATERS--COMPUTER DISKETTE OF THE ATTACHMENT C SOURCE CODE**, P. A. Johnsson and D. G. Lord, 1987. \$6.00. One 5-1/4 in. diskette.

WRI 87-4245      **DOCUMENTATION OF A GRAPHICAL DISPLAY PROGRAM FOR THE SATURATED-UNSATURATED TRANSPORT (SUTRA) FINITE-ELEMENT SIMULATION MODEL**, W. R. Souza, 1987, 122p. \$18.75.

WRI 87-4265      **MODIFICATIONS OF A THREE-DIMENSIONAL GROUND-WATER FLOW MODEL TO ACCOUNT FOR VARIABLE WATER DENSITY AND EFFECTS OF MULTIAQUIFER WELLS**, A. L. Kontis and R. J. Mandle, 1988, 78p. \$12.75.

- WRI 88-4012      **COMPUTER-PROGRAM DOCUMENTATION OF AN INTERACTIVE-ACCOUNTING MODEL TO SIMULATE STREAMFLOW, WATER QUALITY, AND WATER-SUPPLY OPERATIONS IN A RIVER BASIN, A. W. Burns, 1988, 241p. \$36.75.**
- WRI 88-4153      **A COMPUTER PROGRAM INCORPORATING PITZER'S EQUATIONS FOR CALCULATION OF GEOCHEMICAL REACTIONS IN BRINES, L. N. Plummer, D. L. Parkhurst, G. W. Fleming, and S. A. Dunkle, 1988, 310p. \$59.50.**
- WRI 88-4226      **HYDRAUX--A MODEL FOR SIMULATING ONE-DIMENSIONAL, UNSTEADY, OPEN-CHANNEL FLOW, L. L. DeLong and D. H. Schoellhamer, 1989, 57p.**
- WRI 88-4227      **SOLMINEQ.88--A COMPUTER PROGRAM FOR GEOCHEMICAL MODELING OF WATER-ROCK INTERACTIONS, Y. K. Kharaka, W. D. Gunter, P. K. Aggarwal, E. H. Perkins, and J. D. DeBraul, 1988, 420p. \$63.00.**
- WRI 89-4028      **COMPUTER PROGRAMS TO CALCULATE BASAL AREA INCREMENT FROM TREE RINGS, R. L. Phipps and M. L. Field, 1989, 124p. \$18.75.**
- WRI 89-4030      **MODIFICATION OF A METHOD-OF-CHARACTERISTICS SOLUTE-TRANSPORT MODEL TO INCORPORATE DECAY AND EQUILIBRIUM-CONTROLLED SORPTION OR ION EXCHANGE, D. J. Goode and L. F. Konikow, 1989, 65p. \$10.50.**

#### Open-File Reports

- OF 65-0052      **COMPUTER SIMULATION PROGRAM FOR INVESTIGATION OF GEOCHEMICAL SAMPLING PROBLEMS, R. N. Eicher and A. T. Miesch, 1965, 48p. \$10.25.**
- OF 67-0015      **A COMPUTER PROGRAM FOR PROCESSING ELECTRON MICROPROBE DATA, M. H. Beeson, 1967, 10p. \$6.25.**
- OF 67-0187      **DEVELOPMENT OF COMPUTER PROGRAMS FOR ANALYSIS OF LUNAR GEOPHYSICAL SURVEY DATA, R. D. Regan and J. L. Herskovits, 1967, 24p. \$3.50. Microfiche only.**
- OF 69-0010      **COMPUTER CONTRIBUTION NUMBER 1, WEIGHTED TRIANGULATION ADJUSTMENT, W. L. Anderson, 1969, 52p. \$8.00.**
- OF 69-0085      **HYPOLAYR, A COMPUTER PROGRAM FOR DETERMINING HYPOCENTERS OF LOCAL EARTHQUAKES IN AN EARTH CONSISTING OF UNIFORM FLAT LAYERS OVER A HALFSpace, J. P. Eaton, 1969, 106p. \$21.50.**
- OF 70-0112      **COMPUTER CONTRIBUTION NUMBER 4, HOT PIPE, P. C. Doherty, 1970, 63p. \$9.75.**
- OF 70-0159      **COMPUTER CONTRIBUTION NUMBER 3, NONCONSTANT VARIANCE REGRESSION ANALYSIS PROGRAM, M. S. Hellmann, 1970, 106p. \$16.50.**
- OF 70-0209      **COMPUTER CONTRIBUTION NUMBER 2, PERSPECTIVE CENTER DETERMINATION, J. D. McLaurin, 1970, 41p. \$6.25.**

OF 71-0277      **LINEAR COMBINATION READING PROGRAM FOR CAPTURE GAMMA RAYS**, A. B. Tanner, 1971, 9p. \$1.50.

OF 72-0224      **HYPO71--A COMPUTER PROGRAM FOR DETERMINING HYPOCENTER MAGNITUDE AND FIRST MOTION PATTERN OF LOCAL EARTHQUAKES**, W. H. K. Lee and J. C. Lahr, 1972, 100p. \$15.25. Revised in OF 75-311.

OF 72-0259      **A COMPUTER PROGRAM FOR CREATING KEYWORD INDEXES TO TEXTUAL DATA FILES**, D. W. Moody, 1972, 27p. \$4.25.

OF 73-0235      **COMPUTER PROGRAMS FOR TIME AND SPACE ADAPTIVE DECONVOLUTION OF SINGLE CHANNEL MARINE SEISMIC REFLECTION DATA**, D. C. Riley, 1973, 101p. \$15.50.

OF 74-1017      **MAGDEP--A COMPUTER PROGRAM FOR FINDING DEPTH TO BASEMENT FROM TOTAL FIELD MAGNETIC PROFILES**, A. K. Cooper, 1974, 75p. \$12.75.

OF 74-1018      **GRID-COORDINATE GENERATION PROGRAM**, O. J. Cosner and Esther Horwich, 1974, 25p. \$4.75.

OF 74-1039      **GEOPAC**, R. H. Godson, 1974, 146p. \$19.75.

OF 75-0110      **COMPUTER PROGRAM DESIGNED TO COMPUTE OIL SHALE THICKNESS (FT.), AVERAGE VALUE (GAL. PER TON), AND RESOURCE (BARRELS PER ACRE) FROM FISCHER ASSAY DATA**, George VanTrump, Jr. and J. K. Pitman, 1975, 18p. \$3.50. Microfiche only.

OF 75-0127      **A PROGRAM FOR MASS SPECTROMETER CONTROL AND DATA PROCESSING ANALYSES IN ISOTOPE GEOLOGY - WRITTEN IN BASIC FOR AN 8K NOVA 1120 COMPUTER**, J. S. Stacey and J. Hope, 1975, 48p. \$6.50.

OF 75-0131      **COMPUTER PROGRAM TO SIMULATE THE SALT BALANCE BETWEEN THE NORTH AND SOUTH PARTS OF GREAT SALT LAKE, UTAH**, K. M. Waddell and E. L. Bolke, 1975, 22p. \$2.50.

OF 75-0159      **A FORTRAN IV PROGRAM FOR ANALYTIC CONTINUATION OF VLF ELECTROMAGNETIC DATA**, R. D. Watts, 1975, 28p. \$4.25.

OF 75-0311      **HYPO71 (REVISED)--A COMPUTER PROGRAM FOR DETERMINING HYPOCENTER, MAGNITUDE, AND FIRST MOTION PATTERN OF LOCAL EARTHQUAKES**, W. H. K. Lee and J. C. Lahr, 1975, 59p. \$17.25. Revision of OF 72-224.

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