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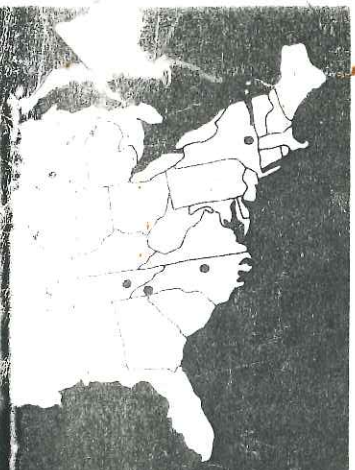

Eastern Deciduous Forest Biome

Analysis of Ecosystems

IBP

DOCUMENTATION of PROSPER
A Model of Atmosphere-Soil-Plant Water Flow

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DOCUMENTATION OF PROSPER: A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW

R. A. Goldstein, J. B. Mankin, and R. J. Luxmoore

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ABSTRACT

A phenomenological model, PROSPER, has been developed that simulates atmosphere-plant-soil moisture relations on a day-to-day basis. The model is explained in detail, and a computer program of the model is listed. Computer output resulting from an application of PROSPER to a forested watershed is also presented.

INTRODUCTION

Water is one of the major factors governing the structure and function of ecosystems on micro and regional scales, and it is a major factor governing structure of ecosystems (e.g., forest, grassland, desert) on a global scale. This leads to great emphasis on the study of water dynamics at a number of scales. Watersheds are a particularly important scale since they are a well-defined geographical unit for ecosystem studies. PROSPER was developed to provide a model that can be coupled to a model of stand vegetation development and provide a detailed description of water fluxes in a hydrologic transport model.

In a previous paper Goldstein and Mankin (1972b) discussed the concept of space-time compatibility in ecological modeling. Their general thesis was that temporal and spatial resolutions of ecological models are not independent. For a given process, models based on relatively small spatial units require correspondingly small units of time. If the spatial units are made larger, then the temporal units should be larger. To illustrate the point, it required approximately 110 hr of computer time to simulate the molecular dynamics of 216 molecules of water for a simulation time of approximately $2*10^{-12}$ sec (Rahman and Stillinger 1971). It is impractical at our present level of technology to try to extend a study of this detail to study water dynamics on a watershed scale, and it also does not focus on the relevant ecological effects of water on the watershed level. Excellent codes exist for computation of soil water dynamics based on the numerical solutions of Darcy's Equation (Freeze 1971, Reeves and Duguid 1973). These codes do not model vegetational effects and evapotranspiration.

PROSPER was originally reported on at the 1972 Summer Simulation Conference in San Diego (Goldstein and Mankin 1972a). Since that time, several changes have been made in the model and its computer implementation as a result of applications of the model. Many individuals have expressed interest in acquiring more information about the development

and application of PROSPER. Therefore, this report has been produced with the sole objective of documentation and no attempt will be made to interpret the results of the application which is included.

PROSPER applies a water balance to a stand of vegetation with the soil divided into several layers. A hypothetical evapotranspiration surface is defined which homogenizes the plant and litter characteristics. We hypothesize that a model that simulates water dynamics on a day-to-day basis and uses either mean or total daily environmental input conditions does not require a detailed description of canopy geometry. Canopy geometry is, however, taken into consideration in the albedo term for solar radiation. Evapotranspiration is, therefore, conceptualized as taking place from a surface (Fig. 1) which is a combination of both ground surface and vegetation canopy surface. A combined energy balance-aerodynamic method is used to derive an equation for evapotranspiration as a function of a resistance to vapor transfer which is characteristic of the evapotranspiration surfaces. This resistance is a function of the water potential of the surface which is analogous to the relationship between stomatal resistance and leaf water potential. A mass balance is applied to the water flowing through soil and plant. The flow of water within and between soil and plant is a function of soil conductivity, soil water potential, root characteristics for each soil level and surface water potential. Soil conductivity and soil water potential are functions of volumetric soil water content. By setting liquid water flow to the evapotranspiration surface equal to vapor flow away from the surface, surface water potential, surface resistance to vapor transfer, evaporation from the litter surface, and transpiration through the plant can be calculated. PROSPER also calculates daily volumetric water content of the different soil layers and predicts lateral flow from each of the layers as well as drainage below the soil profile.

In following sections, we discuss derivation, implementation, simulation procedure and application of PROSPER. It is essential to not confuse the computer program by which PROSPER is implemented with the actual model as shown in Fig. 1. The computer program is one of a number of possible representations of the model. In writing the program, the authors must make certain decisions about how to calculate matric water potentials, resistances to flow and conductivities. Although the authors have a rationale for guiding them in making these choices, the choices are not fixed by the framework of the model. Another user of the model may substitute what he considers to be more appropriate calculations based upon his own needs for those calculations made by the authors. The authors' choices were governed by what they considered appropriate for Walker Branch Watershed, which was their initial subject for application. For applying the model to other Eastern Deciduous Forest Biome study sites, it is probable that some of the implementation procedures will have to be modified.

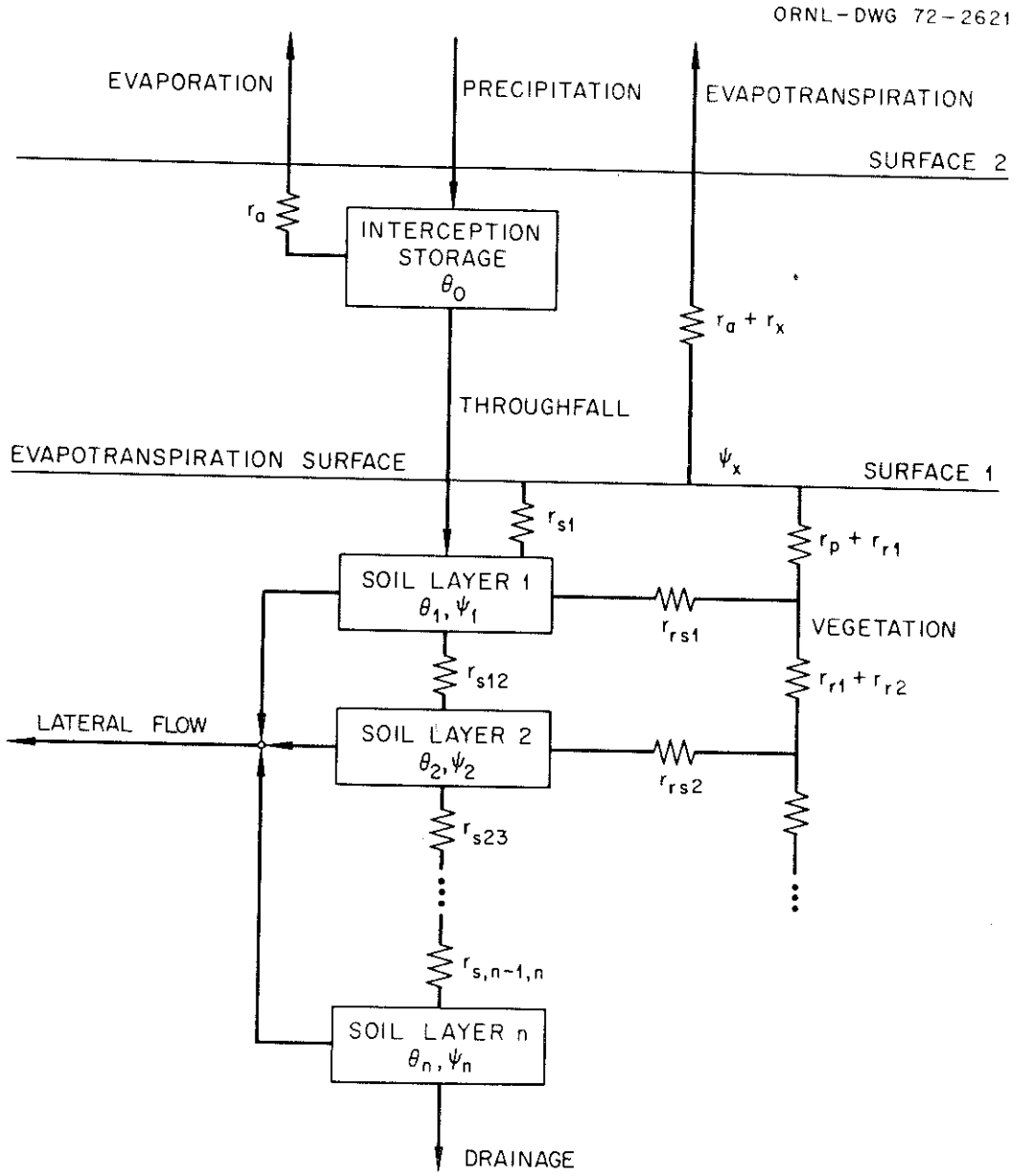

Fig. 1. Schematic of PROSPER.

DERIVATION OF PROSPER

PROSPER is designed for accuracy on the order of a week, but a basic time increment of a day is used to insure desired predictive capability. Errors incurred during one time increment are smoothed by the integration process. During periods of high water fluxes, excessive error is incurred using an integration time increment of a day. Therefore, the integration time increment is decreased during these periods.

By using a combined energy balance-aerodynamic method (Cowan and Milthorpe 1968, Tanner 1968), we derive an equation for vapor flow, F_V, from the evapotranspiration surface. By applying the law of conservation of mass to the water and Darcy's law, we derive an equation for liquid water flow, F_W, to the evapotranspiration surface. Assuming the system to be in steady state, we equate F_V and F_W and solve for evapotranspiration.

If we apply an energy balance at the evapotranspiration surface, then,

$$R_N = L_V F_V + H + G \ , \tag{1}$$

where R_N is the net radiation (solar plus long wave) absorbed by the surface per day, L_V is the latent heat of vaporization for water, $L_V F_V$ is the daily latent heat energy loss from the surface, H is the daily sensible heat energy leaving the surface and G is the daily amount of heat energy transferred from the surface to the soil.

From aerodynamic considerations,

$$F_V = \frac{\rho_1{}^* - \rho_2}{r_a + r_x} = \frac{\rho_1{}^* - \rho_2{}^*}{r_a + r_x} - \frac{\rho_2 - \rho_2{}^*}{r_a + r_x} \ , \tag{2}$$

where ρ_1 is water vapor density of the evapotranspiration surface, ρ_2 is water vapor density at a reference level above the canopy, r_a is resistance to transfer of water vapor between levels 1 and 2 (Fig. 1), r_x is resistance of the evapotranspiration surface to release of vapor and the asterisk signifies saturation vapor density. It is assumed that the air within the evapotranspiration surface is saturated, the evapotranspiration surface has a characteristic water potential, ψ_x, and that

$$r_x = g_1(\psi_x) \ . \tag{3}$$

The quantity r_a is given by $r_a = 3.3\ell^{.3}/v^{.5}$, where ℓ is the characteristic length of the leaf (cm) and v is wind speed (cm/sec).

From aerodynamic considerations, the rate of transfer of heat energy by convection from the evapotranspiration surface is,

$$H = [\sigma c_p \rho \ (T_1 - T_2)]/r_a \ , \tag{4}$$

where σ is the ratio of convection area to evapotranspiration area, c_p is the specific heat of air at constant pressure, ρ is the density of air, T_1 is the temperature of the evapotranspiration surface, T_2 is the temperature of level 2, and r_a is resistance to the transfer of sensible heat between levels 1 and 2.

Combining Eqs. (1), (2), and (4) gives

$$F_v = \left[\frac{(R_N - G)\Delta}{\sigma c_p \rho} + \frac{\rho_2^* + \rho_2}{r_a}\right] \Bigg/ \left[\frac{r_a + r_x}{r_a} + \frac{L_v \Delta}{\sigma c_p \rho}\right] \tag{5}$$

where

$$\Delta = \frac{\rho_1^* - \rho_2^*}{T_1 - T_2} \cong \frac{d\rho^*}{dT} \tag{6}$$

and from the ideal gas law

$$\frac{d\rho^*}{dT} = \frac{1}{R_v T} \frac{de^*}{dT}$$

where R_v is the gas constant for water vapor, and e* is saturation vapor pressure. The net radiation is

$$R_N = R_S(1 - \alpha) + R_{NL} \ , \tag{7}$$

where R_S is the solar radiation incident on the surface, α is the albedo for solar radiation and R_{NL} is the net long wave radiation absorbed by the surface.

According to Eq. (5), F_V is a function of r_X which is in turn a function of ψ_X, the water potential of the evapotranspiration surface which depends on the moisture status of the soil. The water balance approach and an electrical analog (Fig. 1) are used to model soil water dynamics and calculate water flow to the evapotranspiration surface. The electrical analog to water movement in vegetation has been used previously (Slatyer 1967). There has been some dispute over the capacity of the electrical analog to adequately describe what is a nonlinear, heterogeneous process (Cowan and Milthorpe 1968). For the purpose of describing water dynamics over a large vegetated area, such as a forest stand, we feel that the electric analog adequately portrays the major mechanisms governing the movement of water through the soil-plant continuum. The electrical analog forms a framework for a logical statement of the model, but it is not essential to the model. Another framework, such as a compartment model, could be used without affecting the basic model. The electrical analog allows consideration of the heterogeneity of soil and vegetation types over a watershed by using parallel models for homogeneous subareas of the watershed.

The soil is conceptualized to consist of n homogeneous layers. Flow of water between any two points in the analog circuit is assumed to be directly proportional to the difference in water potential between the points and inversely proportional to the resistance to water flow between the points. The potentials and resistances determining the flow of water through soil and vegetation are:

ψ_X = water potential of evapotranspiration surface,
ψ_i = water potential of soil layer i,
r_{si} = resistance of soil in layer i,
r_{sij} = resistance between soil layers i and j,
r_{ri} = root resistance of layer i,
r_{rsi} = resistance between soil and roots of layer i,
r_ℓ = litter resistance,
r_p = aboveground plant resistance, and
$\psi_i = \psi_{mi} + \psi_{gi}$,

where ψ_m is the matric potential and ψ_g is the gravitational potential. The term ψ_{mi} is a function of the volumetric water content of layer i, θ_i, given by

$$\psi_{mi} = g_{2i}(\theta_i) \ . \tag{9}$$

(The nature of this function is discussed in the next section.) The gravitational potential is given by

$$\psi_{gi} = \sum_{j=1}^{i-1} d_j + d_i/2 \tag{10}$$

where d_i is the thickness of layer i. The soil resistance is given by

$$r_{si} = (d_i/2)/K_{si} \tag{11}$$

where K_{si} is the soil conductivity of layer i and is a function of the volumetric water content of layer i given by

$$K_{si} = g_{3i}(\theta_i) \ . \tag{12}$$

(The nature of this function is discussed in the section on application of the model.) The soil resistance between soil layers is given by

$$r_{sij} = r_{si} + r_{sj} \ . \tag{13}$$

The resistance of the roots to the flow of water is given by

$$r_{ri} = (d_i/2)/(\delta_i K_{ri}) \ , \tag{14}$$

where δ_i is the cross-sectional area of roots in layer i per unit area of soil and K_{ri} is root conductivity of layer i. The resistance between the roots and soil in layer i is given by

$$r_{rsi} = (d_i \delta_i)/(f_i F K_{si}) \ , \tag{15}$$

where F is the leaf area index of the canopy and f_i is the fraction in layer i of root surface area through which water is absorbed. For lack of detailed information, it is assumed that the velocity of water intake through the roots is equal to the velocity of water flow to the atmosphere. Therefore, it is assumed that the active area of the roots through which water is absorbed is approximately equal to the active transpiration area of the canopy. This function will be modified as more information becomes available.

By applying standard techniques for solving circuit problems (Seshu and Balabanian 1963), we can solve for F_w, the amount of water flowing to the evapotranspiration surface, which is a function of ψ_x,

$$F_W = f_1(\psi_X) \ . \tag{16}$$

In addition to deriving the above relationship for F_W, relationships for the net change in volumetric water content of each of the soil layers, $\Delta\theta_i$, can be derived. By equating F_V and F_W [Eqs. (5) and (16)] and using Eq. (3), ψ_X can be calculated. Then r_X, F_V, and $\Delta\theta_i$ for all i can be calculated.

IMPLEMENTATION OF PROSPER

We emphasize that the implementation of PROSPER which encompasses the choosing of explicit functions or means of calculation for resistances, conductivities, and potentials is independent of the derived framework of the model. Users of the model should feel free to substitute other functions and means of calculation which they feel are better suited for the ecosystems to which they intend to apply PROSPER. An application of PROSPER to a new system, hence not only requires selecting new values for the model's parameters but also a critical reexamination of the methods of calculating resistances, conductivities, and potentials.

In the current documentation of the model, soil hydraulic conductivity is calculated by the method outlined by Green and Corey (1971). This method is based on the soil pore interaction model of Marshall (1958) and Millington and Quirk (1959). In this procedure, the matric water potential $[\psi_{mi} = g_{2i}(\theta_i)]$ and the saturated hydraulic conductivity for each soil layer, i, are read into subroutine SOIL and used to calculate a table of water content, matric potential, and hydraulic conductivity values representative of the soil layer. These table values are transferred to subroutine TABLOK where, for any given value of soil water content, the equivalent values of matric potential and hydraulic conductivity are determined from the table values by linear interpolation. Further details of this method can be obtained in another documentation (Luxmoore 1973).

In a previous implementation of the model (Goldstein and Mankin 1972a) the soil water conductivity and matric water potential were calculated by empirical relationships. This procedure is recommended where simple formulae can be used to accurately express soil water conductivity and matric water potential as functions of soil water content.

Surface resistance to vapor flow was calculated by

$$\begin{aligned} r_X &= R_X + (r_C - R_X)e^{h(\psi_C - \psi_X)} \ , & |\psi_X| &< |\psi_C| \\ r_X &= r_C & |\psi_X| &\geq |\psi_C| \end{aligned} \tag{18}$$

We based our hypothesis of this functional relationship on studies of the literature of plant water relationships. The parameter ψ_c is the critical surface water potential at which the surface attains its maximum resistance, r_c, ($r_c >> R_x$). By application of the stomatal resistance-leaf water potential analogy, r_c is analogous to cuticle resistance. Both R_x and h are empirically determined constants; R_x is analogous to stomatal resistance when the vegetation is fully hydrated.

SIMULATION PROCEDURE

The computational steps by which PROSPER simulates water dynamics for a single day are:

1. Precipitation for the day enters the system. If there is no precipitation, the simulation proceeds to step 2. The precipitation initially enters the interception storage compartment (Fig. 1). The interception compartment has a maximum storage capacity which is a function of leaf area index. When the interception compartment is full, any additional precipitation becomes throughfall.

2. If the intercept storage compartment does not contain any water, i.e., if $\theta_0 = 0$, when the simulation proceeds to step 3. If $\theta_0 > 0$, then $F_v(r_x = 0)$ is calculated from Eq. (5). Since r_a is is the only resistance to evaporation of intercepted water, r_x is set to zero in Eq. (5). If $\theta_0 \geq F_v(r_x = 0)$, then an amount of water equal to $F_v(r_x = 0)$ is evaporated from the interception storage compartment, F_w is set to zero and the simulation proceeds to step 3. If $F_v(r_x = 0) > \theta_0$ then all of θ_0 is evaporated and an amount of energy equal to $L_v\theta_0$ (where L_v is the latent heat of vaporization for water) is subtracted from the total net radiation for the day, R_N. The adjusted value of R_N will be used instead of the total net radiation in Eq. (4) in step 3.

3. At this point, the simulation enters a loop to calculate soil water transferred to the atmosphere by evapotranspiration, and soil water redistribution and drainage. In the original implementation of PROSPER (Goldstein and Mankin 1972a), the looping structure was not incorporated into the computer program. The saturated soil water conductivities used in the original implementation were based on data for agricultural soils (Miller and Klute 1967). For these values (on the order of 1 cm/day) a single calculation of soil water movement in a day using total daily throughfall and solar radiation was adequate. However, saturated soil water conductivities have been found to be two to three orders of magnitude greater for forest soils than for agricultural soils (Peters et al. 1969, Freeland 1956, Longwell et al. 1963). For these high values of soil water conductivity, single daily calculations produce numerical instabilities. This necessitates the inclusion of the loop structure which makes N iterations in calculating the daily water movement. The number of

OW.

passes through the loop, N, is dependent upon throughfall, layer thickness, maximum saturated soil water conductivity, and N for the previous day.

4. Upon entering the loop, soil water potentials, conductivities and resistances are calculated for the soil layers. One Nth of the daily throughfall and net radiation are used to calculated $F_V[r_X = g_1(\psi_X)]$ by the procedure outlined in the previous section, unless $F_W = F_V[r_X = g_1(\psi_X)]$ has been set to zero in step 2, in which case the depletion of soil water by evapotranspiration is zero. Also calculated are ψ_X and $\Delta\theta_i$ for all i. The volumetric soil moisture content of each level, θ_i, is readjusted by $\Delta\theta_i$. If the moisture in any level exceeds saturation, the excess is removed by lateral flow. The amount of water in the bottom layer exceeding field capacity drains at a rate equal to the hydraulic conductivity.

5. If the program has not passed through the loop N times at this point, the simulation returns to step 3 and goes through the loop again. If the simulation has gone through the loop N times, then the daily total of evapotranspiration, lateral flow from each soil layer, and drainage are calculated by summing the amounts calculated in each of the N passes through the loop.

6. The simulation proceeds to the next day and returns to step 1.

Input Description

Input data are read in the three subroutines PARAM, SØIL, and ENDATA. The input to SØIL is described in another publication (Luxmoore 1973). The program is now set up to read data from PARAM, SØIL, and ENDATA in that order. However, the order of these may be changed according to the application of the user. The application described in this publication was designed to compute the water cycle for several years of environmental data.

The computer program of PROSPER documented in this publication divides the soil into five layers: two in the root zone and three below the root zone.

The input cards to PARAM are:

1. Title Card

   Format: 20A4

   This card should be used to identify the application.

2. List: LLDAY

   Format: I2

LLDAY = 0, daily values will not be printed.

≠ 0, daily values will be printed.

3 & 4. List: DL(5), THETA(5), FC(5)

Format: 8G10.3

DL = The five soil layer thicknesses in cm.

THETA = The initial moisture contents in cm for the five soil layers.

FC = The field capacities of the five soil layers in fraction of total volume of each layer.

5. List: PAIR, CPO, XL, V

Format: 8G10.3

PAIR = Air pressure in bars.

CPO = Specific heat in cal/g°K.

XL = Average length of leaf in cm.

V = Wind velocity in cm/sec.

6. List: AT(2), ARAT(2), GM, GV

Format: 8G10.3

AT = Root cross-sectional area/unit area of soil for the two soil layers containing roots.

ARAT = Fraction of roots in each of the two soil layers.

GM = Mean energy flow from ground to surface in langleys/day.

GV = Mean peak variation in energy flow from ground to surface in langleys/day.

7. List: ALBVEG, CANON, CANOFF, SIMIN, SIMAX, ALMIN, ALMAX

Format: 8G10.3

ALBVEG = Albedo of the vegetation.

CANON = The day (number of days from 1 January) at which the canopy vegetation has emerged 50%.

CANOFF = The day (number of days from 1 January) at which 50% of the canopy vegetation has died.

SIMIN = Maximum interception storage during the winter in cm.

SIMAX = Maximum interception storage during the summer in cm.

ALMIN = Leaf area index during winter.

ALMAX = Leaf area index during summer.

The input cards to ENDATA are:

1. Title card:

   Format: 20A4

   In the present application this card is used to describe the environmental data.

2. List: LASTDY (12), MOBEG

   Format: 13I5

   LASTDY = The number of days (starting with January) in each of the twelve months.

   MOBEG = The month in which the simulation is to begin.

3-38. List: IMO, IDY, RP

   Format: 9X, I2, I1, 11D6.3

   IMO = The numeric value of the month.

   IDY = The card number for the month (1, 2, or 3). Each month has three cards.

   RP = The daily precipitation in inches.

39-74. List: IMO, IDY, RP

   Format: 9X, I2, I1, 11D6.3

   IMO = Same as above.

   IDY = Same as above.

   RP = The total daily solar radiation in langleys/day

75-110. List: IMO, IDY, RP

Format: 9X, I2, I1, 11D6.3

IMO = Same as above.

IDY = Same as above.

RP = The average vapor pressure ±4 hr from solar noon in millibars.

11-146. List: IMO, IDY, RP

Format: 9X, I2, I1, 11D6.3

IMO = Same as above.

IDY = Same as above.

RP = The average air temperature ±4 hr from solar noon in degrees Fahrenheit.

SAMPLE APPLICATION

As a means of illustrating the printed output of the computer program, we present a sample application of PROSPER to Walker Branch Watershed, a 97.5-ha oak-hickory watershed on the U.S.-Atomic Energy Commission Oak Ridge Reservation in East Tennessee. [A general description of Walker Branch Watershed can be found in Grigal and Goldstein (1971)]. Parameter values (which are read in PARAM) are listed in the output. PROSPER was used to simulate water relations during 1970. Meteorological data (which are read in ENDATA) used for environmental inputs were taken in the town of Oak Ridge several miles from the watershed. These data include daily solar radiation, mean air temperature during the interval ±4 hr from solar noon, and mean atmospheric vapor pressure ±4 hr from solar noon. Daily precipitation data were taken from Walker Branch Watershed. Note that vapor density which is a required input to the model can be derived from either vapor pressure, relative humidity, dew point or wet bulb temperature data. The annual distribution of heat exchange with the ground was estimated with a sine function based on data fron Van Wijk and De Vries (1966). The simulation is started on January 1, and the initial soil water potentials were determined from computations with the 1969 Walker Branch Watershed meteorological data.

FUTURE REFINEMENTS

Several modifications of the model and computer program are being considered. The program could be made more versatile by modifying it to allow the division of the soil into more than the two layers in the root zone required by the present version. This modification will be necessary when applied to areas where the root systems are deeper than they are on Walker Branch Watershed. From a computational point of view, it would be preferable to divide the soil into compartments of equal thickness in order to avoid biasing soil resistance values. For the example in this input, that would mean dividing the second soil layer into two identical layers. PROSPER may also be extended to account for lateral transport of water by compartmentalizing the soil horizontally as well as vertically, effects of slope and aspect, and more detailed phenology.

SYNTHESIS WITH OTHER MODELS

PROSPER was developed not only to be applied by itself but also to be an integral part of the Watershed Transport Model (Huff 1972) being developed, under the direction of Dale Huff, by the Eastern Deciduous Forest Biome of the International Biological Program. The Watershed Transport Model includes explicit representation of both stream and groundwater systems. It also simulates snowmelt and infiltration. The integration of PROSPER and WTM has been completed; however, there are studies which only require the application of PROSPER. It is more efficient in these cases to apply PROSPER by itself, than to work with the more complex structure of the larger model. PROSPER was also developed to be applied in conjunction with TEEM, a terrestrial ecosystem energy model (O'Neill, Goldstein, Shugart, and Mankin 1972) being developed by the Eastern Deciduous Forest Biome.

ACKNOWLEDGMENTS

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LITERATURE CITED

Cowan, I. R. 1965. Transport of water in the soil-plant-atmosphere system. J. Appl. Ecol. 2:221-239.

Cowan, I. R., and F. L. Milthorpe. 1968. Plant factors influencing the water status of plant tissues, pp. 137-193. In T. T. Kozlowski (Ed.) Water deficits and plant growth. Vol. 2. Academic Press, N. Y.

Freeland, F. D., Jr. 1956. The effects of a complete cutting of forest vegetation and subsequent annual cutting of regrowth upon some pedologic and hydrologic characteristics of a watershed in the Southern Appalachians. Ph.D. Thesis. Michigan State University. 182 p.

Freeze, R. A. 1972. A Physics-Based Approach to Hydrologic Response Modeling. Completion Report, OWRR Contract No. 14-31-001-3694.

Goldstein, R. A., and J. B. Mankin. 1972a. PROSPER: A model of atmosphere-soil-plant water flow, pp. 1176-1181. In Proceedings of the 1972 Summer Computer Simulation Conference, ACM, IEEE, SHARE, SCI. San Diego, California.

Goldstein, R. A. and J. B. Mankin. 1972b. Space-time considerations in modeling the development of vegetation, pp. 87-97. In C. E. Murphy, J. D. Hesketh, and B. R. Strain (Eds.). Modeling the growth of trees. EDFB-IBP 72-11 (Oak Ridge National Laboratory, Oak Ridge, Tennessee). 199 p.

Green, R. E., and I. C. Corey. 1971. Calculation of hydraulic conductivity: A further evaluation of some predictive methods. Soil Sci. Soc. Amer. Proc. 35:3-8.

Grigal, D. F., and R. A. Goldstein. 1971. An integrated ordination-classification analysis of an intensively sampled oak-hickory forest. J. Ecol. 59:481-492.

Huff, D. D. 1972. Hydrologic transport of materials in ecosystems: Annual report for 1971-72. Eastern Deciduous Forest Biome Memo Report, 72-121. 12 p.

Longwell, T. J., W. L. Parks, and M. E. Springer. 1963. The moisture characteristics of Tennessee soil. Tennessee Agricultural Experimental Station Bulletin 367, Knoxville, Tennessee. 46 p.

Luxmoore, R. J. 1973. Application of the Green and Corey method for computing hydraulic conductivity in hydrologic modeling. EDFB-IBP 73-4 (Oak Ridge National Laboratory, Oak Ridge, Tennessee). 22 p.

Marshall, T. J. 1958. A relation between permeability and size distribution of pores. J. Soil Sci. 9:1-8.

Miller, E. E., and A. Klute. 1967. The dynamics of soil water. Part 1 - mechanical forces. Agronomy 11, 209-244, Americal Society of Agronomy, Madison, Wisconsin.

Millington, R. J., and J. P. Quirk. 1959. Permeability of porous media. Nature 183:387-388.

O'Neill, R. V., R. A. Goldstein, H. H. Shugart, and J. B. Mankin. 1972. Terrestrial ecosystem energy model. Eastern Deciduous Forest Biome Memo Report. 72-19. 38 p.

Peters, L. N., D. F. Grigal, J. W. Curlin, and W. J. Selvidge. 1970. Walker Branch Watershed Project: chemical, physical and morphological properties of the soils of Walker Branch Watershed. ORNL-TM-2968 (Oak Ridge National Laboratory, Oak Ridge, Tennessee). 96 p.

Rahman, A., and F. H. Stillinger. 1971. Molecular Dynamics Study of Liquid Water. J. of Chem. Phys. 55(7):3336-3359.

Reeves, M., and J. O. Duguid. 1973. Water Movement Through Saturated-Unsaturated Porous Media: A Finite Element Galerkin Model. ORNL-4927. Oak Ridge National Laboratory, Oak Ridge, Tennessee (in press).

Rutter, A. J. 1968. Water consumtion by forests, pp. 23-84. In T. T. Kozlowski (Ed.). Water deficits and plant growth. Vol. 2. Academic Press, N. Y.

Seshu, S., and N. Belabanian. 1963. Linear network analysis. John Wiley and Sons, London. 571 p.

Slatyer, R. O. 1967. Plant-water relationships. Academic Press, London. 366 p.

Tanner, C. B. 1968. Evaporation of water from plants and soil, pp. 73-106. In T. T. Kozlowski (Ed.). Water deficits and plant growth. Vol. 1. Academic Press, N. Y.

Van Wijk, W. R., and D. A. DeVries. 1966. The atmosphere and the soil, pp. 17-61. In W. R. Van Wijk (Ed.). Physics of plant environment. North-Holland Publishing Co., Amsterdam.

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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
   ISN 0002          IMPLICIT REAL*8 (A-H,O-Z)                                    MAIN   0
   ISN 0003          DIMENSION SIMON(13),QIMON(13),FTMON(13),PREMON(13),DRNMON(13),  MAIN   5
                    , SWTMON(13),RNFMON(13),BALMON(13), FLTMON(13),SEVMON(13),    MAIN  10
                    , RF1MON(13),RF2MON(13),SFOMON(13)                            MAIN  15
   ISN 0004          COMMON/ENVIR/PRECIP(366),TEMP(366),SOLAR(366),VAPOR(366),WIND(366)MAIN  20
   ISN 0005          COMMON/FLUXES/SWRF1,SWRF2, FILT,FLNET, DRUN,DDRAIN,SI,QI      MAIN  25
   ISN 0006          COMMON/THINGS/ALBVEG,CANON,CANOFF,SIMIN,SIMAX,ALMIN,ALMAX     MAIN  30
   ISN 0007          COMMON/HUMID/REL,PAIR,CPO,RA,RX,SIGMA,XL,V,GM,GV,HT           MAIN  35
   ISN 0008          COMMON /GEOMET/ DL(5),AT(2),ARAT(2),FC(5),THETA(5)            MAIN  40
   ISN 0009          COMMON /PORES/ VP(5),F,S(5),SATCOI,SEV                        MAIN  45
   ISN 0010          COMMON /PLACE/ CASEID(20),LASTDY(12),MOBEG,LLDAY              MAIN  50
   ISN 0011          COMMON /SOLPOT/ PSI(5)                                        MAIN  55
   ISN 0012          COMMON/BLOCKI/ITIME                                           MAIN  60
                C  INPUT DATA FOR PROSPER (UNITS IN WHICH THE DATA ARE READ)      MAIN  65
                C     SUBROUTINE ENDATA---READS THE ENVIRONMENTAL DATA            MAIN  70
                C                                                                 MAIN  75
                C        LASTDY(12)  AN ARRAY CONTAINING NUMBER OF DAYS IN EACH MONTH  MAIN  80
                C        MOBEG  MONTH FOR WHICH THE SIMULATION STARTS             MAIN  85
                C     *  PRECIP(366)  TOTAL DAILY PRECIPITATION (INCHES PER DAY)  MAIN  90
                C     *  SOLAR(366)  TOTAL DAILY SOLAR RADIATION (LY/DAY)         MAIN  95
                C     *  VAPOR(366)  MEAN DAILY VAPOR PRESSURE (MILLIBARS)        MAIN 100
                C     *  TEMP(366)  MEAN DAILY DAYTIME AIR TEMPERATURE (DEGREES   MAIN 105
                C        FARENHEIT)                                               MAIN 110
                C     *  WIND(366)  MEAN DAILY WIND VELOCITY (CM PER SECOND)      MAIN 115
                C     SUBROUTINE PARAM---READS IN SYSTEM PARAMETERS               MAIN 120
                C  THE FOLLOWING PARAMETERS ARE READ IN PARAM.                    MAIN 125
                C     *  DL(5)  THICKNESS OF EACH SOIL LAYER (CM)                 MAIN 130
                C        THETA(5)  WATER CONTENT IN EACH SOIL LAYER (CM)          MAIN 135
                C        FC(5)  FIELD CAPACITY OF EACH SOIL LAYER (FRACTION OF LAYER  MAIN 140
                C        THICKNESS)                                               MAIN 145
                C        PAIR  AIR PRESSURE (BARS)                                MAIN 150
                C        CPO  SPECIFIC HEAT ((CAL/GM)/DEGREES F)                  MAIN 155
                C     *  XL  CHARACTERISTIC LENGTH OF LEAF (CM)                   MAIN 160
                C        V  WIND VELOCITY (CM/SEC)                                MAIN 165
                C     *  AT(2)  ROOT CROSS SECTIONAL AREA/UNIT AREA SOIL          MAIN 170
                C     *  ARAT(2)  FRACTION OF ROOTS IN LAYER                      MAIN 175
                C        GM  MEAN ENERGY FLOW FROM GROUND TO SURFACE (LY/DAY)     MAIN 180
                C        GV  MEAN PEAK VARIATION IN ENERGY FLOW FROM GROUND TO    MAIN 185
                C        SURFACE (LY/DAY)                                         MAIN 190
                C     *  ALBVEG  ALBEDO OF VEGETATION                             MAIN 195
                C     *  SIMIN  MAX. INTERCEPTION STORAGE DURING WINTER (CM)      MAIN 200
                C     *  SIMAX  MAX. INTERCEPTION STORAGE DURING SUMMER (CM)      MAIN 205
                C        ALMIN  LEAF AREA INDEX DURING WINTER                     MAIN 210
                C     *  ALMAX  LEAF AREA INDEX DURING SUMMER                     MAIN 215
                C  THE FOLLOWING PARAMETERS ARE SET IN PROSPR--                   MAIN 220
                C        SIGMA  RATIO OF CONVECTIVE TO EVAPOTRANSPIRATION AREA    MAIN 225
                C     *  CANON  DAY LEAVES START TO EMERGE                        MAIN 230
                C     *  CANOFF  DAY MAJOR LEAF FALL STARTS                       MAIN 235
                C  THE FOLOWING PARAMETERS ARE CALCULATED IN EVAL--               MAIN 240
                C        R1  RESISTANCE BETWEEN SOIL LAYERS TO WATER FLOW         MAIN 245
                C        R2  RESISTANCE BETWEEN SOIL AND ROOT IN LAYER 2 + ROOT   MAIN 250
                C            RESISTANCE BETWEEN LAYERS 2 AND 1                    MAIN 255
                C        R3  RESISTANCE TO WATER FLOW IN LAYER 1+LITTER RESISTANCE MAIN 260
                C        R4  ROOT RESISTANCE FROM LAYER 1 TO SURFACE+STEM RESISTANCE MAIN 265
                C        R5  RESISTANCE BETWEEN SOIL AND ROOT IN LAYER 1          MAIN 270
                C        RX  SURFACE RESISTANCE                                   MAIN 275
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                C  THE FOLOWING PARAMETER IS COMPUTED IN EVAP--                    MAIN 280
                C        RA  BOUNDARY LAYER RESISTANCE (CM/DAY)                    MAIN 285
                C                                                                  MAIN 290
                C    * INDICATES PARAMETERS WHICH SHOULD BE ESTIMATED AT EACH SITE MAIN 295
                C                                                                  MAIN 300
ISN 0013              NERR=1                                                       MAIN 305
                C  READ IN SYSTEM PARAMETERS                                       MAIN 310
ISN 0014              CALL PARAM                                                   MAIN 315
                C                                                                  MAIN 320
ISN 0015              GWATER=10.                                                   MAIN 325
                C                                                                  MAIN 330
                C   CALCULATE SOIL PARAMETERS                                       MAIN 335
                C      NOTE---MORE INPUT DATA READ AT THIS POINT                   MAIN 340
ISN 0016              CALL SOIL                                                    MAIN 345
                C  THE PROGRAM RECYCLES TO STATEMENT 10 WITH THE OPTION OF PERFORMING MAIN 350
                C     CALCULATIONS WITH NEW ENVIRONMENTAL DATA SETS.  THIS GIVES THE MAIN 355
                C       OPTION OF CALCULATIONS FOR MULTIPLE YEARS FOR A SINGLE RUN. MAIN 360
                C   READ ENVIRONMENTAL DATA                                        MAIN 365
ISN 0017           10 CALL ENDATA(NERR)                                            MAIN 370
ISN 0018              IF (NERR.EQ.0) GO TO 120                                     MAIN 375
ISN 0020              DO 20 K=1,366                                                MAIN 380
ISN 0021                 TEMP(K)=TEMP(K)+.5                                        MAIN 385
ISN 0022           20    CONTINUE                                                  MAIN 390
ISN 0023              SWRF1=0.D0                                                   MAIN 400
ISN 0024              SWRF2=0.D0                                                   MAIN 405
ISN 0025              DRUN=0.D0                                                    MAIN 410
ISN 0026              DDRAIN=0.D0                                                  MAIN 415
ISN 0027              ET=1.D-2                                                     MAIN 420
ISN 0028              SI=0.D0                                                      MAIN 425
ISN 0029              I=0                                                          MAIN 430
ISN 0030              T=0.                                                         MAIN 435
ISN 0031              F=FC(5)*DL(5)                                                MAIN 440
                C                                                                  MAIN 445
                C  FAKED SOIL WATER DATA                                           MAIN 450
                C                                                                  MAIN 455
ISN 0032              VP(3)=VP(2)                                                  MAIN 460
ISN 0033              VP(4)=VP(2)                                                  MAIN 465
ISN 0034              VP(5)=VP(2)                                                  MAIN 470
ISN 0035              DO 30 K=1,5                                                  MAIN 475
ISN 0036           30    S(K)=VP(K)*DL(K)                                          MAIN 480
ISN 0037              WRITE(51,10000)                                              MAIN 485
ISN 0038              IF (LLDAY.NE.0) WRITE(51,10100)                              MAIN 490
ISN 0040              WRITE(51,10200)                                              MAIN 495
ISN 0041              DO 100 MO=1,13                                               MAIN 500
ISN 0042                 SIMCN(MO)=0.D0                                            MAIN 505
ISN 0043                 QIMCN(MO)=0.D0                                            MAIN 510
ISN 0044                 ETMCN(MO)=0.D0                                            MAIN 515
ISN 0045                 PREMCN(MO)=0.D0                                           MAIN 520
ISN 0046                 FLTMCN(MO)=0.D0                                           MAIN 525
ISN 0047                 DRNMCN(MO)=0.D0                                           MAIN 530
ISN 0048                 SWTMCN(MO)=0.D0                                           MAIN 535
ISN 0049                 RNFMCN(MO)=0.D0                                           MAIN 540
ISN 0050                 SEVMCN(MO)=0.D0                                           MAIN 545
ISN 0051                 BALMCN(MO)=0.D0                                           MAIN 550
ISN 0052                 SFDMCN(MO)=0.D0                                           MAIN 555
ISN 0053                 RF2MCN(MO)=0.D0                                           MAIN 560
ISN 0054                 RF1MCN(MO)=0.D0                                           MAIN 565
ISN 0055                 WRITE(51,10300)                                           MAIN 570
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ISN 0056              WRITE(51,10400) CASEID,MOBEG                                MAIN 575
ISN 0057              IF (LLDAY.EQ.0) GO TO 40                                    MAIN 580
ISN 0059              WRITE(51,10500)                                             MAIN 585
ISN 0060        40    CONTINUE                                                    MAIN 590
ISN 0061              MOBEG=MOBEG+1                                               MAIN 595
ISN 0062              SIINL=SI                                                    MAIN 600
ISN 0063              SWINL=THETA(1)+THETA(2)+THETA(3)+THETA(4)+THETA(5)          MAIN 605
ISN 0064              DO 90 JMO=1,4                                               MAIN 610
ISN 0065                 QIWK=QIMON(MO)                                           MAIN 615
ISN 0066                 ETWK=ETMON(MO)                                           MAIN 620
ISN 0067                 FLTWK=FLTMON(MO)                                         MAIN 625
ISN 0068                 PREWK=PREMON(MO)                                         MAIN 630
ISN 0069                 DRNWK=DRNMON(MO)                                         MAIN 635
ISN 0070                 RNFWK=RNFMON(MO)                                         MAIN 640
ISN 0071                 SEVWK=SEVMON(MO)                                         MAIN 645
ISN 0072                 SSTORE=THETA(1)+THETA(2)+THETA(3)+THETA(4)+THETA(5)      MAIN 650
ISN 0073                 SINT=SI                                                  MAIN 655
ISN 0074                 NDAY=7                                                   MAIN 660
ISN 0075                 IF ((JMO.EQ.4).AND.(MO.EQ.13)) NDAY=8                    MAIN 665
ISN 0077                 IF ((NDAY.EQ.8).AND.(LASTDY(2).EQ.29)) NDAY=9            MAIN 670
ISN 0079                 DO 80 JD=1,NDAY                                          MAIN 675
ISN 0080                    I=I+1                                                 MAIN 680
ISN 0081                    ITIME=I                                               MAIN 685
ISN 0082                    T=T+1.D0                                              MAIN 690
ISN 0083                    TPRES=TEMP(I)                                         MAIN 695
          C  PROSPR IS THE SUBROUTINE IN WHICH THE WATER FLOWS ARE CALCULATED.    MAIN 700
ISN 0084        50          CALL PROSPR(T,TPRES,PWP,ET)                           MAIN 705
ISN 0085                    PSL=PWP*9.81D-4                                       MAIN 710
ISN 0086                    IF (LLDAY.EQ.0) GO TO 70                              MAIN 715
ISN 0088        60          WRITE(51,10600) I,FILT,QI,ET,PSL,SEV,DDRAIN,THETA     MAIN 720
ISN 0089        70          CONTINUE                                              MAIN 725
ISN 0090                    QIMON(MO)=QIMON(MO)+QI                                MAIN 730
ISN 0091                    ETMON(MO)=ETMON(MO)+ET                                MAIN 735
ISN 0092                    PREMON(MO)=PREMON(MO)+PRECIP(I)                       MAIN 740
ISN 0093                    FLTMON(MO)=FLTMON(MO)+FILT                            MAIN 745
ISN 0094                    DRNMON(MO)=DRNMON(MO)+DDRAIN                          MAIN 750
ISN 0095                    RNFMON(MO)=RNFMON(MO)+DRUN                            MAIN 755
ISN 0096                    SFDMON(MO)=SFDMON(MO)+FLNET                           MAIN 760
ISN 0097                    RF2MON(MO)=RF2MON(MO)+SWRF2                           MAIN 765
ISN 0098                    RF1MON(MO)=RF1MON(MO)+SWRF1                           MAIN 770
ISN 0099                    SEVMON(MO)=SEVMON(MO)+SEV                             MAIN 775
ISN 0100                    QI=0.D0                                               MAIN 780
ISN 0101                    DDRAIN=0.D0                                           MAIN 785
ISN 0102                    FLNET=0.D0                                            MAIN 790
ISN 0103                    DRUN=0.D0                                             MAIN 795
ISN 0104        80          CONTINUE                                              MAIN 800
ISN 0105                 WRITE(51,10700) JMO                                      MAIN 805
ISN 0106                 QIWK=QIMON(MO)-QIWK                                      MAIN 810
ISN 0107                 ETWK=ETMON(MO)-ETWK                                      MAIN 815
ISN 0108                 FLTWK=FLTMON(MO)-FLTWK                                   MAIN 820
ISN 0109                 PREWK=PREMON(MO)-PREWK                                   MAIN 825
ISN 0110                 DRNWK=DRNMON(MO)-DRNWK                                   MAIN 830
ISN 0111                 RNFWK=RNFMON(MO)-RNFWK                                   MAIN 835
ISN 0112                 SEVWK=SEVMON(MO)-SEVWK                                   MAIN 840
ISN 0113                 SSTORE=THETA(1)+THETA(2)+THETA(3)+THETA(4)+THETA(5)-SSTORE  MAIN 845
ISN 0114                 SINT=SI-SINT                                             AIN 850
ISN 0115                 ETOTWK=QIWK+ETWK+SEVWK                                   AIN 855
ISN 0116                 OUT=RNFWK+DRNWK                                          MAIN 860
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ISN 0117                BAL=PREWK-ETOTWK-OUT-SSTORE-SINT                          MAIN 865
ISN 0118                SWTMON(MO)=THETA(1)+THETA(2)-SWINL +THETA(3)+THETA(4)+    MAIN 870
                 ,       THETA(5)                                                 MAIN 875
ISN 0119                SIMON(MO)=SI-SIINL                                        MAIN 880
ISN 0120                BALMON(MO)=PREMON(MO)-ETMON(MO)-QIMON(MO)-SIMON(MO) -     MAIN 885
                 ,       RNFMON(MO)-DRNMON(MO)-SWTMON(MO)- SEVMON(MO)             MAIN 890
ISN 0121                ETOT=ETMON(MO)+SEVMON(MO)+QIMON(MO)                       MAIN 895
ISN 0122                PRINT 10800, PREWK,FLTWK,QIWK,ETWK,SEVWK,ETOTWK           MAIN 900
ISN 0123                OUTFLO= RNFMON(MO)+DRNMON(MO)                             MAIN 905
ISN 0124                PRINT 10900, DRNWK,OUT,SSTORE,BAL                         MAIN 910
ISN 0125         90     CONTINUE                                                  MAIN 915
ISN 0126             PRINT 11000 ,MO                                              MAIN 920
ISN 0127             PRINT 10800, PREMON(MO),FLTMON(MO),QIMON(MO),ETMON(MO),      MAIN 925
                 ,    SEVMON(MO), ETOT                                            MAIN 930
ISN 0128             PRINT 10900, DRNMON(MO),OUTFLO,SWTMON(MO),BALMON(MO)         MAIN 935
ISN 0129        100  CONTINUE                                                     MAIN 940
ISN 0130         PRINT 11100                                                      MAIN 945
ISN 0131         BALANC=0.D0                                                      MAIN 950
ISN 0132         PTOTAL=0.D0                                                      MAIN 955
ISN 0133         ETOTAL=0.D0                                                      MAIN 960
ISN 0134         TINCEP=0.D0                                                      MAIN 965
ISN 0135         SI=0.D0                                                          MAIN 970
ISN 0136         FILTOT=0.D0                                                      MAIN 975
ISN 0137         DRAIN=0.D0                                                       MAIN 980
ISN 0138         TRNOF=0.D0                                                       MAIN 985
ISN 0139         SOILWT=0.D0                                                      MAIN 990
ISN 0140         SEVAP=0.D0                                                       MAIN 995
ISN 0141         YRRF1=0.D0                                                       MAIN1000
ISN 0142         YRRF2=0.D0                                                       MAIN1005
ISN 0143         YRNSF=0.D0                                                       MAIN1010
ISN 0144         DO 110 J=1,13                                                    MAIN1015
ISN 0145            PTOTAL=PTOTAL+PREMON(J)                                       MAIN1020
ISN 0146            ETOTAL=ETOTAL+ETMON(J)                                        MAIN1025
ISN 0147            TINCEP=TINCEP+QIMON(J)                                        MAIN1030
ISN 0148            SI=SI+SIMON(J)                                                MAIN1035
ISN 0149            FILTOT=FILTOT+FLTMON(J)                                       MAIN1040
ISN 0150            DRAIN=DRAIN+DRNMON(J)                                         MAIN1045
ISN 0151            TRNOF=TRNOF+RNFMON(J)                                         MAIN1050
ISN 0152            SEVAP=SEVAP+SEVMON(J)                                         MAIN1055
ISN 0153            YRRF1=YRRF1+RF1MON(J)                                         MAIN1060
ISN 0154            YRRF2=YRRF2+RF2MON(J)                                         MAIN1065
ISN 0155            YRNSF=YRNSF+SFOMON(J)                                         MAIN1070
ISN 0156            SOILWT=SOILWT+SWTMON(J)                                       MAIN1075
ISN 0157            BALANC=BALANC+BALMON(J)                                       MAIN1080
ISN 0158        110 CONTINUE                                                      MAIN1085
ISN 0159         ETOT=ETOTAL+SEVAP +TINCEP                                        MAIN1090
ISN 0160         PRINT 10800, PTOTAL,FILTOT,TINCEP,ETOTAL,SEVAP,ETOT              MAIN1095
ISN 0161         OUTFLO= TRNOF+DRAIN                                              MAIN1100
ISN 0162         PRINT 10900, DRAIN,OUTFLO,SOILWT,BALANC                          MAIN1105
ISN 0163         GO TO 10                                                         MAIN1110
ISN 0164        120 CONTINUE                                                      MAIN1115
ISN 0165         STOP                                                             MAIN1120
ISN 0166      10000 FORMAT(T1,'1OUTPUT DESCRIPTION')                              MAIN1125
ISN 0167      10100 FORMAT(T1,'0VALUES FOR EACH JULIAN DATE(DAY) ARE PRINTED FOR INFI'MAIN1130
                 ,,'LTRATION, INTERCEPTION STORAGE, TRANSPIRATION(ET),PLANT WATER'/ MAIN1135
                 ,T1,'  POTENTIAL(PSI), SOIL EVAPORATION, DRAINAGE, AND THE WATER ',MAIN1140
                 ,'CONTENTS OF THE FIVE LAYERS.  THE PLANT WATER POTENTIAL '/T1,   MAIN1145
                 ,'  UNITS ARE BARS.  ALL OTHER UNITS ARE CENTIMETERS.')          MAIN1150
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ISN 0168     10200 FORMAT(T1,'0WEEKLY, MONTHLY AND ANNUAL SUMMARIES ARE PRINTED',     MAIN1155
                  ,' FOR PRECIPITATION, INFILTRATION, INTERCEPTION EVAPORATION'/T1,  MAIN1160
                  ,', TRANSPIRATION, SOIL EVAPORATION, TOTAL EVAPORATION,DRAINAGE,', MAIN1165
                  ,' CUTFLCW, SOIL STORAGE AND MASS PALANCE.  ALL VALJES ARE'/T1,    MAIN1170
                  ,'  IN CENTIMETERS.')                                              MAIN1175
ISN 0169     10300 FORMAT('1PROSPER.   A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.')MAIN1180
ISN 0170     10400 FORMAT(T1,'0',20A4,10X,'MONTH ',I3)                               MAIN1185
ISN 0171     10500 FORMAT(T1,'0DAY  INFILT INTCPT  ET(CM)  PSI(CM)    SOIL EVAP  DR',MAIN1190
                  ,  'AINAGE    SOIL 1     SOIL 2     SOIL 3     SOIL 4     SOIL 5') MAIN1195
ISN 0172     10600 FORMAT(T1,' ',I3,1X,2F6.2, 9(1PG11.4))                            MAIN1200
ISN 0173     10700 FORMAT(T1,'0WEEKLY SUMMARY FOR WEEK ',I1)                         MAIN1205
ISN 0174     10800 FORMAT(T1,'0 PRECIPITATION  INFILTRATION   INTERCEPT-ET  TRANSPIRAMAIN1210
                  ,TICN   SOIL EVAP      TOTAL ET'/(T1,' ',8(1PG15.5)) )             MAIN1215
ISN 0175     10900 FORMAT(T1,'0   DRAINAGE        CUTFLOW     SOIL STORAGE         BAMAIN1220
                  ,LANCE'/(T1,' ',8(1PG15.5)) )                                      MAIN1225
ISN 0176     11000 FORMAT('0MONTHLY WATER BUDGET (CM) FOR MONTH ',I2)                MAIN1230
ISN 0177     11100 FORMAT('1ANNUAL WATER BUDGET (CM)')                               MAIN1235
ISN 0178           END                                                               MAIN1240
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            SUBROUTINE PROSPR(T,TE,PWP,ET)                                  PROS   0
                C   PROSPR IS A SUBROUTINE IN WHICH THE WATER FLUXES ARE CALCULATED  PROS   5
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                       PROS  10
ISN 0004            DIMENSION PSM(5),CHETA(5),ZS(5),RS(5),RSBL(4),SWFBL(4)          PROS  15
ISN 0005            COMMON/ENVIR/PRECIP(366),TEMP(366),SOLAR(366),VAPOR(366),WIND(366)PROS  20
ISN 0006            COMMON/FLUXES/SWRF1,SWRF2, FILT,FLNET, DRUN,DDRAIN,SI,QI        PROS  25
ISN 0007            COMMON/RESIST/R1,R2,R3,R4,R5,RR1,RRA,RRB,RRC,RRR,RD,RLIT        PROS  30
ISN 0008            COMMON/HUMID/REL,PAIR,CPO,RA,RX,SIGMA,XL,V,GM,GV,HT             PROS  35
ISN 0009            COMMON /GEOMET/ DL(5),AT(2),ARAT(2),FC(5),THETA(5)              PROS  40
ISN 0010            COMMON/THINGS/ALBVEG,CANON,CANOFF,SIMIN,SIMAX,ALMIN,ALMAX       PROS  45
ISN 0011            COMMON /PORES/ VP(5),F,S(5),SATCO1,SEV                          PROS  50
ISN 0012            COMMON /BLOCKE/ RN,G,TTT,EE                                     PROS  55
ISN 0013            COMMON /SOLPOT/ PSI(5)                                          PROS  60
ISN 0014            COMMON/BLOCKI/ITIME                                             PROS  65
ISN 0015            DATA FF,FFF/0.D0,0.D0/                                          PROS  70
ISN 0016            DATA NDRN /96/                                                  PROS  75
                C   INITIALIZATION                                                  PROS  80
ISN 0017            STORE=SIMIN                                                     PROS  85
ISN 0018            IF ((T.GT.CANON).AND.(T.LT.CANOFF)) STORE=SIMAX                 PROS  90
ISN 0020            P=PRECIP(ITIME)                                                 PROS  95
ISN 0021            WMAXS=STORE-SI                                                  PROS 100
ISN 0022            IF (P.GT.WMAXS) GO TO 10                                        PROS 105
                C   INTERCEPTION(WHEN PRECIPITATION IS LESS THAN INTERCEPTION STORAGE) PROS 110
ISN 0024            SI=SI+P                                                         PROS 115
ISN 0025            P=0.D0                                                          PROS 120
ISN 0026            FILT=P                                                          PROS 125
ISN 0027            GO TO 20                                                        PROS 130
ISN 0028         10 SI=STORE                                                        PROS 135
                C   INTERCEPTION(WHEN PRECIPITATION IS GREATER THAN INTERCEPTION STORAGE)PROS 140
ISN 0029            P=P-WMAXS                                                       PROS 145
ISN 0030            FILT=P                                                          PROS 150
ISN 0031         20 CONTINUE                                                        PROS 155
                C   INITIALIZATION OF SEASONALLY DEPENDENT VARIABLES                 PROS 160
ISN 0032            ALEAF=ALMIN                                                     PROS 170
ISN 0033            SIGMA=1.                                                        PROS 175
ISN 0034            RO=6.                                                           PROS 180
ISN 0035            IF ((T.LT.CANON).OR.(T.GT.CANOFF)) GO TO 30                     PROS 185
ISN 0037            ALEAF=ALMAX                                                     PROS 190
ISN 0038            SIGMA=2.                                                        PROS 195
ISN 0039            RO=2.5                                                          PROS 200
                C   ABSORBED RADIATION CALCULATION                                  PROS 205
ISN 0040         30 RN=SOLAR(ITIME)*(1.-ALBVEG)                                     PROS 210
ISN 0041            G=GROUND(GM,GV,T)                                               PROS 215
ISN 0042         40 CONTINUE                                                        PROS 220
ISN 0043            NPRE=0                                                          PROS 225
ISN 0044            NRAD=0                                                          PROS 230
                C   CALCULATE POTENTIAL EVAPORATION FROM INTERCEPTION.              PROS 235
ISN 0045            CALL EVAP(RN,G,TTT,ET)                                          PROS 240
ISN 0046            IF (ET.GT.SI) GO TO 50                                          PROS 245
                C   EVAPORATION FROM INTERCEPTION                                   PROS 250
ISN 0048            SI=SI-ET                                                        PROS 255
ISN 0049            QI=ET                                                           PROS 260
ISN 0050            ET=0.D0                                                         PROS 265
ISN 0051            SEV=0.D0                                                        PROS 270
ISN 0052            RX=RRR                                                          PROS 275
ISN 0053            SWRF1=0.D0                                                      PROS 280
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ISN 0054          SWRF2=0.D0                                          PROS 285
ISN 0055          NPRE=1                                              PROS 290
ISN 0056          GO TO 60                                            PROS 295
ISN 0057       50 RN=RN-HT *SI                                        PROS 300
ISN 0058          QI=SI                                               PROS 305
ISN 0059          SI=0.D0                                             PROS 310
ISN 0060          RNAV=RN-G                                           PROS 315
ISN 0061          IF (RNAV.LT.0.D0) NRAD=1                            PROS 320
ISN 0063       60 CONTINUE                                            PROS 325
ISN 0064          NP=P                                                PROS 330
ISN 0065          NFAC=30./DL(1)                                      PROS 335
ISN 0066          ITER=12*(1+NP)*NFAC +NDRN                           PROS 340
ISN 0067          XDIS=ITER                                           PROS 345
ISN 0068          PRE=P/XDIS                                          PROS 350
ISN 0069          PRETOT=0.                                           PROS 355
ISN 0070          ETOTAL=0.                                           PROS 360
ISN 0071          STOTAL=0.                                           PROS 365
ISN 0072          RUNTOT=0.                                           PROS 370
ISN 0073          DRNTOT=0.                                           PROS 375
ISN 0074          SWBTOT=0.                                           PROS 380
ISN 0075          RF1TOT=0.                                           PROS 385
ISN 0076          RF2TOT=0.                                           PROS 390
ISN 0077          DO 260 IDIS=1,ITER                                  PROS 395
ISN 0078             DRUN=0.                                          PROS 400
ISN 0079             IF (IDIS.EQ.ITER) PRE=P-PRETOT                   PROS 405
ISN 0081             DO 70 K=1,5                                      PROS 410
ISN 0082       70       CHETA(K)=THETA(K)/DL(K)                       PROS 415
            C  CALC. ATE MATRIC POTENTIAL OF THE SOIL LAYERS.         PROS 420
            C                                                         PROS 425
            C     CALL TABLOK(CHETA,PSM,ZS)                           PROS 430
            C                                                         PROS 435
            C  DATA ARE NOT AVAILABLE AT PRESENT FOR LAYERS 3 TO 5.  IN THE  PROS 440
            C       PRESENT VERSION THESE LAYERS ARE CONSIDERED TO HAVE THE  PROS 445
            C       SAME CHARACTERISTICS AS THOSE IN LAYER 2.         PROS 450
            C                                                         PROS 455
ISN 0083             CALL TABLOK(CHETA(4),PSM(4),ZS(4))               PROS 460
ISN 0084             CALL TABLOK(CHETA(3),PSM(3),ZS(3))               PROS 465
ISN 0085             CALL TABLOK(CHETA(2),PSM(2),ZS(2))               PROS 470
ISN 0086             CALL TABLOK(CHETA(1),PSM(1),ZS(1))               PROS 475
            C                                                         PROS 480
            C  CALCULATE TOTAL SOIL WATER POTENTIAL                   PROS 485
ISN 0087             XXX=0.                                           PROS 490
ISN 0088             DO 80 K=1,5                                      PROS 495
ISN 0089                PSI(K)=-PSM(K)-DL(K)/2.-XXX                   PROS 500
ISN 0090       80       XXX=XXX+DL(K)                                 PROS 505
            C  CALCULATE ELECTRICAL ANALOG RESISTANCE TERMS.          PROS 510
ISN 0091             ZS1=ZS(1)                                        PROS 515
ISN 0092             ZS2=ZS(2)                                        PROS 520
ISN 0093             DO 90 K=1,5                                      PROS 525
ISN 0094       90       RS(K)=DL(K)/(2.*ZS(K))                        PROS 530
ISN 0095             ZR1=1.D6*ZS(1)                                   PROS 535
ISN 0096             ZR2=1.D6*ZS(2)                                   PROS 540
ISN 0097             RR1 = DL(1)/(AT(1)*ZR1)/2.                       PROS 545
ISN 0098             RR2 = DL(2)/(AT(2)*ZR2)/2.                       PROS 550
ISN 0099             RSR1=DL(1)*AT(1)/(ZS(1)*ALEAF*ARAT(1))           PROS 555
ISN 0100             RSR2=DL(2)*AT(2)/(ZS(2)*ALEAF*ARAT(2))           PROS 560
ISN 0101             DO 110 K=1,4                                     PROS 565
ISN 0102                IF (PSI(K).GT.PSI(K+1)) GO TO 100             PROS 570
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ISN 0104                RSBL(K)=RS(K+1)                                          PROS 575
ISN 0105                GO TO 110                                                PROS 580
ISN 0106        100     RSBL(K)=RS(K)                                            PROS 585
ISN 0107        110     CONTINUE                                                 PROS 590
ISN 0108              R1=RSBL(1)                                                 PROS 595
ISN 0109              R2=RSR2+(RR2+RR1/2.)                                       PROS 600
ISN 0110              R3=RS(1)                                                   PROS 605
                C  R4 IS THE ABOVE GROUND PLANT RESISTANCE FROM ESTIMATE BY COWAN,1965,  PROS 610
                C       TRANSPORT OF WATER IN THE SOIL-PLANT-ATMOSPHERE SYSTEM,  PROS 615
                C       J. APPL. ECOL.  2,221-239                                PROS 616
ISN 0111              R4=5000. +RR1/2.                                           PROS 620
ISN 0112              R5=RSR1                                                    PROS 625
ISN 0113              RX=0.D0                                                    PROS 630
ISN 0114              IF (NPRE.EQ.1) GO TO 160                                   PROS 635
ISN 0116              IF (NRAD.EQ.1) GO TO 140                                   PROS 640
                C  SOLVE FOR SURFACE WATER POTENTIAL=PWP                         PROS 645
ISN 0118              CALL SOLVO1(Y)                                             PROS 650
ISN 0119              PWP=Y                                                      PROS 655
ISN 0120              IF (PWP.GT.PSI(1)) GO TO 120                               PROS 660
                C  CALCULATE EVAPOTRANSPIRATION=ET                               PROS 665
ISN 0122              CALL SUBEV(Y,B)                                            PROS 670
ISN 0123              ET=B                                                       PROS 675
ISN 0124              GO TO 130                                                  PROS 680
ISN 0125        120   PWP=PSI(1)-100.                                            PROS 685
ISN 0126              CALL EVAP(RN,G,TTT,ET)                                     PROS 690
ISN 0127        130   IF (ET.GT.0.D0) GO TO 150                                  PROS 695
ISN 0129        140   ET=0.D0                                                    PROS 700
ISN 0130              SEV=0.D0                                                   PROS 705
ISN 0131              SWRF1=0.D0                                                 PROS 710
ISN 0132              SWRF2=0.D0                                                 PROS 715
ISN 0133              GO TO 160                                                  PROS 720
ISN 0134        150   CONTINUE                                                   PROS 725
                C  CALCULATE SOIL EVAPORATION=SEV                                PROS 730
ISN 0135              ET=ET/XDIS                                                 PROS 735
ISN 0136              SEV=(PSI(1)-PWP)/((R3+RLIT)*XDIS)                          PROS 740
                C  CALCULATE PLANT TRANSPIRATION                                 PROS 745
ISN 0137              ET=ET-SEV                                                  PROS 750
                C  CALCULATE WATER FLUXES                                        PROS 755
ISN 0138              SWRF1=ET*R2/(R2+R5)                                        PROS 760
ISN 0139              SWRF2=ET-SWRF1                                             PROS 765
ISN 0140        160   CONTINUE                                                   PROS 770
                C  CALCULATE SOIL WATER CONTENT                                  PROS 775
ISN 0141              DO 170 K=1,4                                               PROS 780
ISN 0142        170       SWFBL(K)=(PSI(K)-PSI(K+1))/RSBL(K)                     PROS 785
ISN 0143              THETA(1)=THETA(1)-SWFBL(1)/XDIS-SWRF1+PRE-SEV              PROS 790
ISN 0144              THETA(2)=THETA(2)+(SWFBL(1)-SWFBL(2))/XDIS-SWRF2           PROS 795
ISN 0145              THETA(3)=THETA(3)+(SWFBL(2)-SWFBL(3))/XDIS                 PROS 800
ISN 0146              THETA(4)=THETA(4)+(SWFBL(3)-SWFBL(4))/XDIS                 PROS 805
ISN 0147              THETA(5)=THETA(5)+SWFBL(4)/XDIS                            PROS 810
ISN 0148              FLNET=(SWFBL(1)+SWFBL(2)+SWFBL(3)+SWFBL(4))/XDIS           PROS 815
ISN 0149              IF (THETA(1).LE.S(1)) GO TO 190                            PROS 820
                C  WHEN THE SOIL LAYERS ARE SATURATED, THEY CANNOT ACCEPT ANY MORE  PROS 825
                C     WATER.  IN THIS CASE , THE WATER IS REMOVED FROM THE SYSTEM  PROS 830
                C     AND GROUPED UNDER A GENERAL TERM OF RUNOFF.                PROS 835
                C  CALCULATE RUNOFF FROM FIRST LAYER.                            PROS 840
ISN 0151              FF=THETA(1)-S(1)                                           PROS 845
ISN 0152              DRUN=FF/XDIS                                               PROS 850
ISN 0153        180   THETA(1)=THETA(1)-DRUN                                    PROS 855
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ISN 0154        190     IF (THETA(2).LE.S(2)) GO TO 200                 PROS 860
              C  CALCULATE RUNOFF FROM SECOND LAYER.                    PROS 865
ISN 0156                FF=THETA(2)-S(2)                                PROS 870
ISN 0157                DRUN=DRUN+FF/XDIS                               PROS 875
ISN 0158                THETA(2)=THETA(2)-FF/XDIS                       PROS 880
ISN 0159        200     IF (THETA(3).LE.S(3)) GO TO 210                 PROS 885
              C  CALCULATE RUNOFF FROM THIRD LAYER.                     PROS 890
ISN 0161                FF=THETA(3)-S(3)                                PROS 895
ISN 0162                DRUN=DRUN+FF/XDIS                               PROS 900
ISN 0163                THETA(3)=THETA(3)-FF/XDIS                       PROS 905
ISN 0164        210     IF (THETA(4).LE.S(4)) GO TO 220                 PROS 910
              C  CALCULATE RUNOFF FROM FOURTH LAYER.                    PROS 915
ISN 0166                FF=THETA(4)-S(4)                                PROS 920
ISN 0167                DRUN=DRUN+FF/XDIS                               PROS 925
ISN 0168                THETA(4)=THETA(4)-FF/XDIS                       PROS 930
ISN 0169        220     IF (THETA(5).LE.S(5)) GO TO 230                 PROS 935
              C  CALCULATE RUNOFF FROM FIFTH LAYER.                     PROS 940
ISN 0171                FF=THETA(5)-S(5)                                PROS 945
ISN 0172                DRUN=DRUN+FF/XDIS                               PROS 950
ISN 0173                THETA(5)=THETA(5)-FF/XDIS                       PROS 955
ISN 0174        230     CONTINUE                                        PROS 960
ISN 0175                IF (THETA(5).LE.F) GO TO 250                    PROS 965
              C  CALCULATE DRAINAGE                                     PROS 970
ISN 0177                FFF=ZS(5)                                       PROS 975
ISN 0178                AMOUNT=THETA(5)-F                               PROS 980
ISN 0179                IF (AMOUNT.LT.FFF) GO TO 240                    PROS 985
ISN 0181                DDRAIN=FFF /XDIS                                PROS 990
ISN 0182                THETA(5)=THETA(5)-FFF/XDIS                      PROS 995
ISN 0183                GO TO 250                                       PROS1000
ISN 0184        240     THETA(5)=THETA(5)-AMOUNT/XDIS                   PROS1005
ISN 0185                DDRAIN=AMOUNT /XDIS                             PROS1010
ISN 0186        250     CONTINUE                                        PROS1015
ISN 0187                PRETOT=PRETOT+PRE                               PROS1020
ISN 0188                ETOTAL=ETOTAL+ET                                PROS1025
ISN 0189                STOTAL=STOTAL+SEV                               PROS1030
ISN 0190                RUNTOT=RUNTOT+DRUN                              PROS1035
ISN 0191                DRNTOT=DRNTOT+DDRAIN                            PROS1040
ISN 0192                SWBTOT=SWBTOT+FLNET                             PROS1045
ISN 0193                RF1TOT=RF1TOT+SWRF1                             PROS1050
ISN 0194                RF2TOT=RF2TOT+SWRF2                             PROS1055
ISN 0195        260     CONTINUE                                        PROS1060
ISN 0196            ET=ETOTAL                                           PROS1065
ISN 0197            SEV=STOTAL                                          PROS1070
ISN 0198            DRUN=RUNTOT                                         PROS1075
ISN 0199            DDRAIN=DRNTOT                                       PROS1080
ISN 0200            FLNET=SWBTOT                                        PROS1085
ISN 0201            SWRF1=RF1TOT                                        PROS1090
ISN 0202            SWRF2=RF2TOT                                        PROS1095
ISN 0203            NDRN=ITER/2.                                        PROS1100
ISN 0204            RETURN                                              PROS1105
ISN 0205            END                                                 PROS1110
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        COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                           SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            SUBROUTINE EVAL(Y,P)                                                    EVAL   0
              C  SUBROUTINE EVAL DEFINES THE RESISTANCE PARAMETERS FOR THE ELECTRICAL EVAL   5
              C        ANALOG AND IT ESTIMATES EVAPOTRANSPIRATION                           EVAL  10
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                               EVAL  15
ISN 0004            COMMON/RESIST/R1,R2,R3,R4,R5,RR1,RRA,RRB,RRC,RRR,RO,RLIT                EVAL  20
ISN 0005            COMMON/HUMID/REL,PAIR,CPO,RA,RX,SIGMA,XL,V,GM,GV,HT                     EVAL  25
ISN 0006            COMMON /BLOCKE/ RN,G,TTT,EE                                             EVAL  30
ISN 0007            COMMON /SOLPOT/ PSI(5)                                                  EVAL  35
              C  COMPUTE SURFACE RESISTANCE                                                 EVAL  40
ISN 0008            PPP=9.81D-4*Y+1.5D1                                                     EVAL  45
ISN 0009            IF (PPP.LT.0.D0) GO TO 10                                               EVAL  50
ISN 0011            IF (PPP.GT.1.5D1) GO TO 20                                              EVAL  55
ISN 0013            RRR=RO +( 380. DO-RO)*DEXP(-.6D0*PPP )                                  EVAL  60
ISN 0014            GO TO 30                                                                EVAL  65
ISN 0015         10 RRR = 3.8D2                                                             EVAL  70
ISN 0016            GO TO 30                                                                EVAL  75
ISN 0017         20 RRR=2.0D0+TM                                                            EVAL  80
              C  DETERMINE ELECTRICAL ANALOG PARAMETERS                                     EVAL  85
ISN 0018         30 RR=R4 +RR1                                                              EVAL  90
ISN 0019            RLIT=200000.                                                            EVAL  95
ISN 0020            D=R1+R2+R5                                                              EVAL 100
ISN 0021            RT1=R1*R5/D                                                             EVAL 105
ISN 0022            RT2=R1*R2/D                                                             EVAL 110
ISN 0023            RT3=R2*R5/D+RR                                                          EVAL 115
ISN 0024            D=RT1+RT3+R3+RLIT                                                       EVAL 120
ISN 0025            RRA=RT2+RT1*RT3/D                                                       EVAL 125
ISN 0026            RRB=(R3+RLIT)*RT3/D                                                     EVAL 130
ISN 0027            RRC=(R3+RLIT)*RT1/D                                                     EVAL 135
ISN 0028            D=RRA+RRC                                                               EVAL 140
ISN 0029            RX=RRR                                                                  EVAL 145
              C  DETERMINE EVAPOTRANSPIRATION                                               EVAL 150
ISN 0030            CALL EVAP(RN,G,TTT,EE)                                                  EVAL 155
ISN 0031            P=-(Y-(RRA*PSI(1)/D+RRC*PSI(2)/D))/(RRB+RRA*RRC/D)-EE                   EVAL 160
ISN 0032            RETURN                                                                  EVAL 165
ISN 0033            END                                                                     EVAL 170
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            SUBROUTINE EVAP(RN,G,TE,ET)                                    EVAP   0
                C  SUBROUTINE EVAP DETERMINES THE EVAPOTRANSPIRATION DEMAND FROM   EVAP   5
                C        ENVIRONMENTAL PARAMETERS                                  EVAP  10
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                      EVAP  15
ISN 0004            REAL*8 MIX,MIXSAT                                              EVAP  20
ISN 0005            COMMON/ENVIR/PRECIP(366),TEMP(366),SOLAR(366),VAPOR(366),WIND(366)EVAP  25
ISN 0006            COMMON/HUMID/REL,PAIR,CPO,RA,RX,SIGMA,XL,V,GM,GV,HT            EVAP  30
ISN 0007            COMMON/BLOCKI/ITIME                                            EVAP  35
                C      V=WIND(ITIME)                                               EVAP  40
                C  COMPUTE BOUNDARY LAYER RESISTANCE (REFERENCE)                   EVAP  45
ISN 0008            RA=3.3D0*XL**.3D0/V**.5D0                                      EVAP  50
ISN 0009            TT=TE+273.16D0                                                 EVAP  55
                C  THE SATURATION VAPOR PRESSURE(ATM) AND ITS DERIVATIVE WITH RESPECT EVAP  60
                C        TO TEMPERATURE (ATM/DEGREES KELVIN) ARE COMPUTED IN SATVP EVAP  65
                C        USING THE GOFF-GRATCH FORMULA                             EVAP  70
                C  ESTAR=SATURATION VAPOR PRESSURE                                 EVAP  75
                C  DEDT=DERIVATIVE OF SATURATION VAPOR PRESSURE WITH RESPECT TO    EVAP  80
                C        TEMPERATURE.                                              EVAP  85
ISN 0010            CALL SATVP(TT,ESTAR,DEDT)                                      EVAP  90
ISN 0011            ESTAR=1.0132*ESTAR                                             EVAP  95
ISN 0012            DEDT=1.013200*DEDT                                             EVAP 100
ISN 0013            DELTA=.1D0*DEDT/(.461D0*TT)                                    EVAP 105
ISN 0014            E=VAPOR(ITIME)                                                 EVAP 110
ISN 0015            IF (E.LE.ESTAR) GO TO 10                                       EVAP 115
ISN 0017            E=ESTAR                                                        EVAP 120
ISN 0018            VAPOR(ITIME)=E                                                 EVAP 125
ISN 0019         10 CONTINUE                                                       EVAP 130
ISN 0020            REL=E*(PAIR-ESTAR)/(ESTAR*(PAIR-E))                            EVAP 135
ISN 0021            RHOSAT=.1D0*ESTAR/(.461D0*TT)                                  EVAP 140
ISN 0022            RHO=.1D0*E/(.461D0*TT)                                         EVAP 145
ISN 0023            MIXSAT=.622D0*ESTAR/(PAIR-ESTAR)                               EVAP 150
ISN 0024            MIX=REL*MIXSAT                                                 EVAP 155
ISN 0025            RHOAIR=.1D0*PAIR*(1.D0+MIX)/(2.87D-1*(1.D0+1.61D0*MIX)*TT)     EVAP 160
ISN 0026            CP=CPO*(1.D0+.8D0*MIX)                                         EVAP 165
ISN 0027            HT=5.9730D-0.56D0*TEMP(ITIME)                                  EVAP 170
                C  ET=EVAPOTRANSPIRATION DEMAND                                    EVAP 175
ISN 0028            ET=((RN-G)*DELTA/(SIGMA*CP*RHOAIR)+8.64D4*(RHOSAT-RHO)/RA)/ ((RA+ EVAP 180
                  + RX)/RA+HT *DELTA/(SIGMA*CP*RHOAIR))                            EVAP 185
ISN 0029            IF (ET.LT.0.D0) ET=0.                                          EVAP 190
ISN 0031            RETURN                                                         EVAP 195
ISN 0032            END                                                            EVAP 200
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            DOUBLE PRECISION FUNCTION GROUND(GM,GV,T)                    GROU   0
ISN 0003            IMPLICIT REAL*8 (A-H,C-Z)                                    GROU   5
ISN 0004            DATA PI/3.141592653600/                                      GROU  10
                 C                                                               GROU  15
                 C  P. 132, PHYSICS OF PLANT ENVIRONMENT                         GROU  20
                 C       BY W. R. VAN WIJK                                       GROU  25
                 C                                                               GROU  30
ISN 0005            GROUND=GM+GV*DSIN(2.D0*PI*(T-8.1D1)/3.65D2)                  GROU  35
ISN 0006            RETURN                                                       GROU  40
ISN 0007            END                                                          GROU  45
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LEVEL  21.6  (DEC 72)                    OS/360  FORTRAN H                                    DATE  73.361/17.24.38

          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
  ISN 0002            SUBROUTINE SATVP(T,PV,DPVDT)                                          SATV   0
                C  SUBROUTINE SATUP COMPUTES THE SATURATION VAPOR PRESSURE AND ITS         SATV   5
                C       DERIVATIVES WITH RESPECT TO TEMP. USING THE GOFF-GRATCH FORMULA.SATV  10
                C  PV   =SATURATION VAPOR PRESSURE                                         SATV  15
                C  DPVDT=DERIVATIVE OF SATURATION VAPOR PRESSURE WITH RESPECT TO TEMP.     SATV  20
  ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                             SATV  25
  ISN 0004            DATA DLE/.43429D0/                                                    SATV  30
  ISN 0005            IF (T.LT.2.731602) T=2.731602                                         SATV  35
  ISN 0007            TS=3.731602/T                                                         SATV  40
  ISN 0008            DTSDT=-3.731602/T**2                                                  SATV  45
  ISN 0009            A=-7.90298D0*(TS-1.D0)                                                SATV  50
  ISN 0010            DADT=-7.90298D0*DTSDT                                                 SATV  55
  ISN 0011            B=5.02808D0*DLOG10(TS)                                                SATV  60
  ISN 0012            DBDT=5.02808D0*DLE*DTSDT/TS                                           SATV  65
  ISN 0013            CC=1.1344D1*(1.D0-TS)                                                 SATV  70
  ISN 0014            C10=1.D1**(-7.D0)                                                     SATV  75
  ISN 0015            CC10=1.D1**CC                                                         SATV  80
  ISN 0016            C=1.3816D0*C10*(CC10-1.D0)                                            SATV  85
  ISN 0017            DCCDT=-1.1344D1*TS                                                    SATV  90
  ISN 0018            DL10=DLOG(1.D1)                                                       SATV  95
  ISN 0019            DCDT=-1.3816D0*C10*CC10*DL10*DCCDT                                    SATV 100
  ISN 0020            DD=-3.49149*(TS-1.D0)                                                 SATV 105
  ISN 0021            D3=1.D1**(-3.D0)                                                      SATV 110
  ISN 0022            DD3=1.D1**DD                                                          SATV 115
  ISN 0023            D=8.1328D0*D3*(DD3-1.D0)                                              SATV 120
  ISN 0024            DDDDT=-3.49149D0*DTSDT                                                SATV 125
  ISN 0025            DDDT=8.1328D0*D3*DD3*DL10*DDDDT                                       SATV 130
  ISN 0026            P=A+B+C+D                                                             SATV 135
  ISN 0027            DPDT=DADT+DBDT+DCDT+DDDT                                              SATV 140
  ISN 0028            PV=1.D1**P                                                            SATV 145
  ISN 0029            DPVDT=PV*DL10*DPDT                                                    SATV 150
  ISN 0030            RETURN                                                                SATV 155
  ISN 0031            END                                                                   SATV 160
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            SUBROUTINE SUBEV(A,B)                                    SUBE   0
              C  SUBROUTINE SUBEV CALCULATES EVAPOTRANSPIRATION              SUBE   5
ISN 0003            IMPLICIT REAL*8(A-H,O-Z)                                 SUBE  10
ISN 0004            COMMON/RESIST/R1,R2,R3,R4,R5,RR1,RRA,RRB,RRC,RPR,RO,RLIT SUBE  15
ISN 0005            COMMON /SOLPOT/ PSI(5)                                   SUBE  20
ISN 0006            RR=R4+RR1                                                SUBE  25
ISN 0007            D=R1+R2+R5                                               SUBE  30
ISN 0008            RT1=R1*R5/D                                              SUBE  35
ISN 0009            RT2=R1*R2/D                                              SUBE  40
ISN 0010            RT3=R2*R5/D+RR                                           SUBE  45
ISN 0011            D=RT1+RT3+R3+RLIT                                        SUBE  50
ISN 0012            RRA=RT2+RT1*RT3/D                                        SUBE  55
ISN 0013            RRB=(R3+RLIT)*RT3/D                                      SUBE  60
ISN 0014            RRC=(R3+RLIT)*RT1/D                                      SUBE  65
ISN 0015            D=RRA+RRC                                                SUBE  70
ISN 0016            B=-(A-(PRA*PSI(1)/D+RRC*PSI(2)/D))/(RRB+RRA*RRC/D)       SUBE  75
ISN 0017            RETURN                                                   SUBE  80
ISN 0018            END                                                      SUBE  85
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            SUBROUTINE SOLVO1(Y)                                          SOLV   0
                C  SUBROUTINE SOLVO1 SOLVES FOR THE ROOTS OF A NONLINEAR EQUATION USING SOLV   5
                C        LINEAR FRACTIONAL ITERATION                              SOLV  10
                C              WESTLEY,G.W.,AND J.A.WATTS,1970THE COMPUTING TECHNOLOGY SOLV  15
                C              CENTER NUMERICAL ANALYSIS LIBRARY,CTC-39            SOLV  20
ISN 0003            IMPLICIT REAL*8(A-H,O-Z)                                      SOLV  25
ISN 0004            DATA Z /0.D0/                                                 SOLV  30
ISN 0005            DIMENSION X(30),FX(30)                                        SOLV  35
ISN 0006            ABCISA(X3,X2,X1,Y3,Y2,Y1)=X3+((Y1*Y3-Y2*Y3)*(X3-X1)*(X2-X3))/ (Y1*SOLV  40
                  , Y2*(X1-X2)+Y1*Y3*(X3-X1)+Y2*Y3*(X2-X3))                       SOLV  45
ISN 0007            I=1                                                           SOLV  50
ISN 0008            X(1)=Z                                                        SOLV  55
ISN 0009            CALL EVAL(X(1),FX(1))                                         SOLV  60
ISN 0010            IF (FX(1).LT.0.D0) GO TO 20                                   SOLV  65
ISN 0012            X(2)=X(1)                                                     SOLV  70
ISN 0013            FX(2)=FX(1)                                                   SOLV  75
ISN 0014         10 CONTINUE                                                      SOLV  80
ISN 0015            X(1)=X(2)+200.D0                                              SOLV  85
ISN 0016            CALL EVAL(X(1),FX(1))                                         SOLV  90
ISN 0017            IF (FX(1).LT.0.D0.AND.FX(2).GE.0.D0) GO TO 30                 SOLV  95
ISN 0019            X(2)=X(1)                                                     SOLV 100
ISN 0020            FX(2)=FX(1)                                                   SOLV 105
ISN 0021            I=I+1                                                         SOLV 110
ISN 0022            GO TO 10                                                      SOLV 115
ISN 0023         20 CONTINUE                                                      SOLV 120
ISN 0024            X(2)=X(1)- 200.D0                                             SOLV 125
ISN 0025            CALL EVAL(X(2),FX(2))                                         SOLV 130
ISN 0026            IF (FX(1).LT.0.D0.AND.FX(2).GT.0.D0) GO TO 30                 SOLV 135
ISN 0028            X(1)=X(2)                                                     SOLV 140
ISN 0029            FX(1)=FX(2)                                                   SOLV 145
ISN 0030            I=I+1                                                         SOLV 150
ISN 0031            GO TO 20                                                      SOLV 155
ISN 0032         30 CONTINUE                                                      SOLV 160
ISN 0033            X(3)=(X(1)+X(2))/2.D0                                         SOLV 165
ISN 0034            CALL EVAL(X(3),FX(3))                                         SOLV 170
ISN 0035            NIT=30                                                        SOLV 175
ISN 0036            DO 40 I=4,NIT                                                 SOLV 180
ISN 0037               III=I                                                      SOLV 185
ISN 0038               X(I)=ABCISA(X(I-1),X(I-2),X(I-3),FX(I-1),FX(I-2),FX(I-3))  SOLV 190
ISN 0039               CALL EVAL(X(I),FX(I))                                      SOLV 195
ISN 0040               IF (DABS(FX(I)).LE.1.D-5) GO TO 50                         SOLV 200
ISN 0042         40    CONTINUE                                                   SOLV 205
ISN 0043            PRINT 10000                                                   SOLV 210
ISN 0044         50 CONTINUE                                                      SOLV 215
ISN 0045            Y=X(III)                                                      SOLV 220
ISN 0046            Z=Y                                                           SOLV 225
ISN 0047            RETURN                                                        SOLV 230
ISN 0048      10000 FORMAT('0ERROR')                                              SOLV 235
ISN 0049            END                                                           SOLV 240
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            SUBROUTINE ENDATA(NERR)                                          ENDA   0
              C  SUBROUTINE ENDATA IS THE INPUT FOR ENVIRONMENTAL DATA.              ENDA   5
              C     ENDATA HAS BEEN WRITTEN TO BE COMPATIBLE WITH THE WATERSHED      ENDA  10
              C       TRANSPORT MODEL UNDER DEVELOPMENT BY D.D. HUFF OF THE LAKE     ENDA  15
              C       WINGRA SITE, EASTERN DECIDUOUS FOREST BIOME, IBP               ENDA  20
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                        ENDA  25
ISN 0004            DIMENSION RP(11),TB(22)                                          ENDA  30
ISN 0005            COMMON/ENVIR/PRECIP(366),TEMP(366),SOLAR(366),VAPOR(366),WIND(366)ENDA  35
ISN 0006            COMMON /PLACE/ CASEID(20),LASTDY(12),MOBEG,LLDAY                 ENDA  40
              C  LASTDY IS AN ARRAY CONTAINING THE NUMBER OF DAYS IN EACH MONTH      ENDA  45
              C  MOBEG IS THE MONTH(NUMERICAL) IN WHICH THE SIMULATION STARTS        ENDA  50
              C     NOTE--MOBEG IS ALWAYS SET TO 1 IN THIS PROGRAM                   ENDA  55
              C  THE DATA ARE READ IN THE ORDER--                                    ENDA  60
              C     1. DAILY TOTAL PRECIPITATION(INCHES)                             ENDA  65
              C     2. DAILY TOTAL SOLAR RADIATION(LANGLEYS)                         ENDA  70
              C     3. DAYTIME MEAN VAPOR PRESSURE(MILLIBARS)                        ENDA  75
              C     4. DAYTIME MEAN TEMPERATURE(DEGREES FARENHEIT)                   ENDA  80
              C  THE DATA ARE ON CARDS CONTAINING THE FOLLOWING INFORMATION--        ENDA  85
              C     1. IMO=THE NUMERICAL VALUE OF THE MONTH                          ENDA  90
              C     2. IDY=THE CARD NUMBER FOR THE MONTH (1,2,OR 3).  EACH MONTH HAS ENDA  95
              C       THREE DATA CARDS                                               ENDA 100
              C     3. RP =AN ARRAY TO STORE UP TO 11 PIECES OF DATA TEMPORARILY     ENDA 105
              C  CASEID IS AN ALPHANUMERIC PROBLEM DEFINITION.                       ENDA 110
              C     CASEID WILL BE THE HEADING UPON OUTPUT.                          ENDA 115
ISN 0007            READ(50,10000) CASEID                                            ENDA 120
ISN 0008            WRITE(51,10100) CASEID                                           ENDA 125
ISN 0009            READ(50,10200,END=210) LASTDY,MOBEG                              ENDA 130
ISN 0010            WRITE(51,10300) MOBEG,LASTDY                                     ENDA 135
ISN 0011            KDAY = 0                                                         ENDA 140
ISN 0012            NOMO=0                                                           ENDA 145
ISN 0013         10 READ(50,10400) IMO,IDY,RP                                        ENDA 150
ISN 0014            NOMO=NOMO+1                                                      ENDA 155
ISN 0015            IF (IDY.GT.2) GO TO 30                                           ENDA 160
ISN 0017            DO 20 I=1,11                                                     ENDA 165
ISN 0018               KDAY=KDAY+1                                                   ENDA 170
ISN 0019         20    PRECIP(KDAY)= RP(I)*2.54D0                                    ENDA 175
ISN 0020            GO TO 10                                                         ENDA 180
ISN 0021         30 LAST = LASTDY(IMO)-22                                            ENDA 185
ISN 0022            DO 40 I=1, LAST                                                  ENDA 190
ISN 0023               KDAY=KDAY+1                                                   ENDA 195
ISN 0024         40    PRECIP(KDAY)= RP(I)*2.54D0                                    ENDA 200
ISN 0025            IF (NOMO.GE.36) GO TO 50                                         ENDA 205
ISN 0027            GO TO 10                                                         ENDA 210
ISN 0028         50 KDAY=0                                                           ENDA 215
ISN 0029            NOMO=0                                                           ENDA 220
ISN 0030            WRITE(51,10500) PRECIP                                           ENDA 225
ISN 0031         60 READ(50,10400) IMO,IDY,RP                                        ENDA 230
ISN 0032            NOMO=NOMO+1                                                      ENDA 235
ISN 0033            IF (IDY.GT.2) GO TO 80                                           ENDA 240
ISN 0035            DO 70 I=1,11                                                     ENDA 245
ISN 0036               KDAY=KDAY+1                                                   ENDA 250
ISN 0037         70    SOLAR(KDAY)=RP(I)                                             ENDA 255
ISN 0038            GO TO 60                                                         ENDA 260
ISN 0039         80 LAST = LASTDY(IMO) - 22                                          ENDA 265
ISN 0040            DO 90 I=1, LAST                                                  ENDA 270
ISN 0041               KDAY=KDAY+1                                                   ENDA 275
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ISN 0037        70     SOLAR(KDAY)=RP(I)                                    ENDA 255
ISN 0038           GO TO 60                                                ENDA 260
ISN 0039        80 LAST = LASTDY(IMO) - 22                                 ENDA 265
ISN 0040           DO 90 I=1, LAST                                         ENDA 270
ISN 0041              KDAY=KDAY+1                                          ENDA 275
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ISN 0042        90     SOLAR(KDAY)= RP(I)                                  ENDA 280
ISN 0043           IF (NOMO.GE.36) GO TO 100                               ENDA 285
ISN 0045           GO TO 60                                                ENDA 290
ISN 0046       100 KDAY = 0                                                ENDA 295
ISN 0047           NOMO=0                                                  ENDA 300
ISN 0048           WRITE(51,10600) SOLAR                                   ENDA 305
ISN 0049       110 READ(50,10400) IMO,IDY,RP                               ENDA 310
ISN 0050           NOMO=NOMO+1                                             ENDA 315
ISN 0051           IF (IDY.GT.2) GO TO 130                                 ENDA 320
ISN 0053           DO 120 I=1,11                                           ENDA 325
ISN 0054              KDAY=KDAY+1                                          ENDA 330
            C      RP(I)=((RP(I)-3.2D1)*5.D0/9.D0)+27.3D1                  ENDA 335
            C      BIT=5.793D2*1.8D1*(1.D0/2.73D2-1D0/RP(I))/1.987D0       ENDA 340
            C   22 VAPOR(KDAY)=6.11D-3*DEXP(BIT)                           ENDA 345
ISN 0055       120    VAPOR(KDAY)=RP(I)*0.001                              ENDA 350
ISN 0056           GO TO 110                                               ENDA 355
ISN 0057       130 LAST = LASTDY(IMO)-22                                   ENDA 360
ISN 0058           DO 140 I=1,LAST                                         ENDA 365
ISN 0059              KDAY=KDAY+1                                          ENDA 370
            C      RP(I)=((RP(I)-3.2D1)*5.D0/9.D0)+27.3D1                  ENDA 375
            C      BIT=5.793D2*1.8D1*(1.D0/2.73D2-1D0/RP(I))/1.987D0       ENDA 380
            C   23 VAPOR(KDAY)=6.11D-3*DEXP(BIT)                           ENDA 385
ISN 0060       140    VAPOR(KDAY)=RP(I)*0.001                              ENDA 390
ISN 0061           IF (NOMO.GE.36) GO TO 150                               ENDA 395
ISN 0063           GO TO 110                                               ENDA 400
ISN 0064       150 KDAY = 0                                                ENDA 405
ISN 0065           NOMO=0                                                  ENDA 410
ISN 0066           WRITE(51,10700) VAPOR                                   ENDA 415
ISN 0067       160 READ(50,10400) IMO,IDY,RP                               ENDA 420
ISN 0068           NOMO=NOMO+1                                             ENDA 425
ISN 0069           IF (IDY.GT.2) GO TO 180                                 ENDA 430
ISN 0071           DO 170 I=1,11                                           ENDA 435
ISN 0072              KDAY=KDAY+1                                          ENDA 440
ISN 0073       170    TEMP(KDAY)=(RP(I)-32.D0)*5.D0/9.D0                   ENDA 445
ISN 0074           GO TO 160                                               ENDA 450
ISN 0075       180 LAST = LASTDY(IMO)-22                                   ENDA 455
ISN 0076           DO 190 I=1,LAST                                         ENDA 460
ISN 0077              KDAY=KDAY+1                                          ENDA 465
ISN 0078       190    TEMP(KDAY)=(RP(I)-32.D0)*5.D0/9.D0                   ENDA 470
ISN 0079           IF (NOMO.GE.36) GO TO 200                               ENDA 475
ISN 0081           GO TO 160                                               ENDA 480
ISN 0082       200 KDAY = 0                                                ENDA 485
ISN 0083           NOMO=0                                                  ENDA 490
ISN 0084           WRITE(51,10800) TEMP                                    ENDA 495
ISN 0085           RETURN                                                  ENDA 500
ISN 0086       210 NERR=0                                                  ENDA 505
ISN 0087           RETURN                                                  ENDA 510
ISN 0088     10000 FORMAT(20A4)                                            ENDA 515
ISN 0089     10100 FORMAT(T1,'1',20A4)                                     ENDA 520
ISN 0090     10200 FORMAT(15I5)                                            ENDA 525
ISN 0091     10300 FORMAT(T1,'0 DAYS PER MONTH. SIMULATION BEGINNING WITH MONTH ',I3/ENDA 530
                 , (1X,12I3))                                              ENDA 535
ISN 0092     10400 FORMAT (9X,I2,I1,11D6.3)                                ENDA 540
ISN 0093     10500 FORMAT(T1,'0  PRECIP  (CM)'/(T1,' ',10(E10.5,2X)))      ENDA 545
ISN 0094     10600 FORMAT(T1,'0  SCLAR  (LANGLEYS PER DAY)'/(T1,' ',10(E10.5,2X)))  ENDA 550
ISN 0095     10700 FORMAT(T1,'0  VAPOR  (BARS)'/(T1,' ',10(E10.5,2X)))    ENDA 555
ISN 0096     10800 FORMAT(T1,'0  TEMP  (CENTIGRADE)'/(T1,' ',10(E10.4,2X)))  ENDA 560
ISN 0097           END                                                     ENDA 565
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
 ISN 0002            SUBROUTINE PARAM                                          PARA   0
               C  SUBROUTINE PARAM IS THE INPUT FOR MODEL PARAMETERS           PARA   5
               C      MODEL PARAMETERS ARE EXPLAINED IN THE CALLING PROGRAM.   PARA  10
 ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                 PARA  15
 ISN 0004            COMMON/THINGS/ALBVEG,CANON,CANOFF,SIMIN,SIMAX,ALMIN,ALMAX PARA  20
 ISN 0005            COMMON/HUMIO/REL,PAIR,CPO,RA,RX,SIGMA,XL,V,GM,GV,HT       PARA  25
 ISN 0006            COMMON/RESIST/R1,R2,R3,R4,R5,RR1,RRA,RRB,RRC,RRH,RO,RLIT  PARA  30
 ISN 0007            COMMON /GEOMETY/ DL(5),AT(2),ARAT(2),FC(5),THETA(5)       PARA  35
 ISN 0008            COMMON /PLACE/ CASEID(20),LASTDY(12),MOBEG,LLDAY          PARA  40
 ISN 0009            COMMON /BLKFLC/ RATIO,EX                                  PARA  45
               C  CASEID IS AN ALPHANUMERIC PROBLEM DESCRIPTION.               PARA  50
               C     IT WILL BE THE HEADING AND WILL BE OUTPUT ONE TIME ONLY DURING PARA  55
               C        PROGRAM.  IT SHOULD BE USED TO DESCRIBE THE TOTAL PROBLEM. PARA  60
               C        THE CASE ID IN SUBROUTINE ENDATA SHOULD BE USED TO DESCRIBE PARA  65
               C        EACH SPECIFIC CASE.                                    PARA  70
 ISN 0010            READ(50,10000) CASEID                                     PARA  75
 ISN 0011            WRITE(51,10100) CASEID                                    PARA  80
               C  IF LLDAY IS 0, DAILY VALUES WILL NOT BE PRINTED.             PARA  85
 ISN 0012            READ(50,10200) LLDAY                                      PARA  90
 ISN 0013            IF (LLDAY.EQ.0) WRITE(51,10300)                           PARA  95
 ISN 0015            READ(50,10400) DL,THETA,FC                                PARA 100
 ISN 0016            WRITE(51,10500) DL,THETA,FC                               PARA 105
 ISN 0017            READ(50,10400) PAIR,CPO,XL,V                              PARA 110
 ISN 0018            WRITE(51,10600) PAIR,CPO,XL,V                             PARA 115
 ISN 0019            READ(50,10400) AT,ARAT,GM,GV                              PARA 120
 ISN 0020            WRITE(51,10700) AT,ARAT,GM,GV                             PARA 125
 ISN 0021            READ(50,10400) ALBVEG,CANON,CANOFF,SIMIN,SIMAX,ALMIN,ALMAX PARA 130
 ISN 0022            WRITE(51,10800) ALBVEG,CANON,CANOFF,SIMIN,SIMAX,ALMIN,ALMAX PARA 135
 ISN 0023            RETURN                                                    PARA 150
 ISN 0024      10000 FORMAT(20A4)                                              PARA 155
 ISN 0025      10100 FORMAT(T1,'0',20A4)                                       PARA 160
 ISN 0026      10200 FORMAT(5I2)                                               PARA 165
 ISN 0027      10300 FORMAT(T1,'0DAILY VALUES WILL NOT BE PRINTED.')           PARA 170
 ISN 0028      10400 FORMAT(8G10.3)                                            PARA 175
 ISN 0029      10500 FORMAT(T1,'0 DL,THETA,FC'/(T1,' ',6G10.3))                PARA 180
 ISN 0030      10600 FORMAT(T1,'0  PAIR,CPO,XL,AND V'/(T1,' ',5G20.8))         PARA 185
 ISN 0031      10700 FORMAT(T1,'0  AT,ARAT,GM,GV'/(T1,' ',6G10.3))             PARA 190
 ISN 0032      10800 FORMAT(T1,'0  ALBVEG,CANON,CANOFF,SIMIN,SIMAX,ALMIN,ALMAX'/( T1, PARA 195
                    , ' ',8G10.3))                                             PARA 200
 ISN 0033            END                                                       PARA 210
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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
 ISN 0002            SUBROUTINE SOIL                                           SOIL   0
               C          HYDRAULIC CONDUCTIVITY CALCULATION USING FORTRAN IV BY SOIL   5
               C     GREEN AND COREY AT THE SAVANNAH RIVER LABORATORY. CALCULATIONS SOIL  10
               C     ARE BASED ON PAPERS BY MARSHALL AND MILLINGTON-QUIRK. THIS SOIL  15
               C     IS A VARIATION OF A PROGRAM DEVELOPED BY DR. RAY KUNZE TO SOIL  20
               C     CALCULATE HYDRAULIC CONDUCTIVITY OF POROUS SOLIDS FROM SOIL  25
               C     WATER RETENTION DATA. THE PROGRAM, AS WRITTEN, REQUIRES NO SOIL  30
               C     CORRECTION FOR IMMOBILE WATER.                            SOIL  35
               C  SEE--                                                        SOIL  40
               C      SOIL SCIENCE SOCIETY OF AMERICA PROCEEDINGS 35--3-8 (1971) AND SOIL  45
               C      EDFB-IBP-73-4 (1973)                                     SOIL  50
               C  FOR FURTHER REFERENCE                                        SOIL  55
               C                                                               SOIL  60
               C INPUT VARIABLES                                               SOIL  65
               C                                                               SOIL  70
               C     ST = SAMPLE IDENTIFICATION                                SOIL  75
               C     THETA = WATER CONTENT FOR EACH INPUT POINT (CM**3/CM**3)  SOIL  80
               C     N = NUMBER OF INPUT DATA POINTS (N IS LIMITED TO 20 WITH  SOIL  85
               C         PRESENT FORMAT)                                       SOIL  90
               C     NC = NUMBER OF INCREMENTED PORE CLASSES CHOSEN FOR CALCULATING SOIL  95
               C         DATA (NC IS LIMITED TO 50)                            SOIL 100
               C     TMAX = MAXIMUM WATER CONTENT (CM**3/CM**3)                SOIL 105
               C     SCON = EXPERIMENTALLY OBTAINED SATURATED CONDUCTIVITY (CM/DAY) SOIL 110
               C     DP  = DESORPTION PRESSURE (CM OF WATER)                   SOIL 115
               C     RESWAT = ESTIMATE OF RESIDUAL (IMMOBILE) WATER            SOIL 120
               C     EXPON = EXPONENT CHOSEN FOR POROSITY TERM                 SOIL 125
               C                                                               SOIL 130
               C INTERMEDIATE CALCULATED VARIABLES                             SOIL 135
               C                                                               SOIL 140
               C     STOINC = STANDARD WATER CONTENT INCREMENT FOR CALCULATED  SOIL 145
               C              VALUES (CM**3/CM**3)                             SOIL 150
               C     TINC = INCREMENTED THETA (CM**3/CM**3)                    SOIL 155
               C     DPI  = INCREMENTED DP FOR RESPECTIVE TINC (CM OF H2O)     SOIL 160
               C     CLS  = SQUARED RECIPROCAL OF NUMBER OF WATER CONTENT CLASSES SOIL 165
               C            (KL)                                               SOIL 170
               C     PCH  = INTERMEDIATE SUM OF PRODUCTS OF COEFFICIENTS AND   SOIL 175
               C            HEADS IN CONDUCTIVITY EQUATION                     SOIL 180
               C     SPCH = FINAL SUM OF PRODUCTS                              SOIL 185
               C     ACF  = CONVERSION FACTOR THAT TAKES INTO ACCOUNT TEMPERATURE SOIL 190
               C            AND GRAVITY INFLUENCES                             SOIL 195
               C          = 4*1440*60*(SURFACE TENSION)**2 / (B*VISCOSITY*     SOIL 200
               C            DENSITY*GRAVITY)                                   SOIL 205
               C       UNITS FOR VARIABLES IN ACF                              SOIL 210
               C         1440 = MIN/DAY                                        SOIL 215
               C           60 = SEC/MIN                                        SOIL 220
               C         SURTEN = DYNES/CM                                     SOIL 225
               C         VISWAT = DYNE SEC/CM**2                               SOIL 230
               C           DENWAT = G/CM**3                                    SOIL 235
               C         GRAVTY = CM/SEC**2                                    SOIL 240
               C                                                               SOIL 245
               C OUTPUT VARIABLES                                              SOIL 250
               C                                                               SOIL 255
               C     CCAL     = CALCULATED CONDUCTIVITY (CM/DAY), CALLED 'CALCULATED K' SOIL 260
               C     CMAT     = CONDUCTIVITY (CM/DAY) MATCHED WITH SATURATION VALUE, SOIL 265
               C                CALLED 'SAT MATCH'                             SOIL 270
               C     FACTOR      = EXPERIMENTALLY MEASURED SATURATED CONDUCTIVITY SOIL 275
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                C            DIVIDED BY CALCULATED SATURATED CONDUCTIVITY                SOIL 280
                C     THETA       = WATER CONTENT AT UPPER END OF                        SOIL 285
                C              INCREMENT (CM**3/CM**3)                                   SOIL 290
                C     PRESSURE    = DESCRPTION PRESSURE (CM OF WATER)                    SOIL 295
ISN 0003              IMPLICIT REAL*8 (A-H,O-Z)                                         SOIL 300
ISN 0004              DIMENSION THETA(51),DPI(51),SPCH(51),DPI(51),CMAT(51) ,TINC(51),  SOIL 305
                     , CCAL(51)                                                         SOIL 310
ISN 0005              COMMON/HOOKUP/WATCON(2,51),SLPOT(2,51),SLCON(2,51),RESWAT,NC,NS   SOIL 315
ISN 0006              COMMON/PORES/VP(5),F,S1,S2,DUM(3),SATCO1,SEV                      SOIL 320
ISN 0007              LS=1                                                              SOIL 325
                C     NUMBER OF SOIL HORIZONS  NS=2                                     SOIL 330
ISN 0008              NS=2                                                              SOIL 335
                C     READ INPUT PARAMETERS AND VARIABLES                               SOIL 340
ISN 0009           10 READ(50,10000) ST,ST1,ST2,ST3,ST4,ST5,ST6,ST7,ST8,ST9             SOIL 345
ISN 0010              READ 10100, N,NC,TMAX,SCON,RESWAT                                 SOIL 350
ISN 0011              VP(LS)=TMAX                                                       SOIL 355
ISN 0012              IF (LS.LT.2) SATCO1=SCON                                          SOIL 360
ISN 0014              READ 10200, SURTEN,DENWAT,VISWAT,TEMP,GRAVTY                      SOIL 365
ISN 0015              READ 10300, EXPON                                                 SOIL 370
                C     NOTE ORDER OF INPUT DATA=                                         SOIL 375
                C          THETA(I) = LOWEST WATER CONTENT                              SOIL 380
                C          DPI(I)     = HIGHEST PRESSURE (ABSOLUTE VALUE)               SOIL 385
ISN 0016              READ 10400,(THETA(J),J=1,N)                                       SOIL 390
ISN 0017              READ 10500, (DPI(J),J=1,N)                                        SOIL 395
                C     CALCULATE CONVERSION FACTOR                                       SOIL 400
ISN 0018              ACF = 30.*SURTEN**2/(VISWAT*DENWAT*GRAVTY)                        SOIL 405
ISN 0019              ACF=ACF*1440.                                                     SOIL 410
                C     CALCULATE INCREMENT SIZE                                          SOIL 415
ISN 0020              RNC = NC                                                          SOIL 420
ISN 0021              STDINC = (TMAX-THETA(1))/RNC                                      SOIL 425
                C     INITIALIZE TINC AND DPI ARRAYS                                    SOIL 430
ISN 0022              TINC(1) = THETA(1)                                                SOIL 435
ISN 0023              DPI(1)=DPI(1)                                                     SOIL 440
ISN 0024              NCP1 = NC+1                                                       SOIL 445
                C     INDEX I REFERS TO INCREMENTED VARIABLES                           SOIL 450
                C     INDEX J REFERS TO INPUT DATA                                      SOIL 455
                C     CALCULATE THETA INCREMENT LIMITS                                  SOIL 460
ISN 0025              DO 40 I = 2,NCP1                                                  SOIL 465
ISN 0026                 TINC(I) = TINC(I-1) + STDINC                                   SOIL 470
                C     CALCULATE PRESSURE INCREMENT LIMITS                               SOIL 475
ISN 0027                 DO 20 J=1,N                                                    SOIL 480
ISN 0028                    IF (THETA(J).GE.TINC(I)) GO TO 30                           SOIL 485
ISN 0030           20       CONTINUE                                                    SOIL 490
ISN 0031           30    DPI(I) = ((TINC(I)-THETA(J-1))/(THETA(J)-THETA(J-1)))*(DPI(J)- SOIL 495
                     ,    DPI(J-1))+DPI(J-1)                                            SOIL 500
ISN 0032           40    CONTINUE                                                      SOIL 505
                C  ADJUST DPI TO GIVE VALUES AT MIDPOINT OF INCREMENT                   SOIL 510
ISN 0033              DPI(NCP1) = 0.0                                                   SOIL 515
ISN 0034              DO 50 I = 1,NC                                                    SOIL 520
ISN 0035                 DPI(I) = (DPI(I) + DPI(I+1))*0.5                               SOIL 525
ISN 0036           50    CONTINUE                                                      SOIL 530
                C     CALCULATE ADJUSTED NUMBER OF CLASSES (ANC) CORRESPONDING TO TOTAL SOIL 535
                C     WATER CONTENT                                                     SOIL 540
ISN 0037              ANC = (TMAX - 0.01)/STDINC                                        SOIL 545
                C     CALCULATE SQUARED RECIPROCAL OF 'ANC'                             SOIL 550
ISN 0038              CLS = (1.0/ANC)**2                                                SOIL 555
                C     CALCULATE PRODUCT OF COEFFICIENT AND 'HEAD' TERMS FOR             SOIL 560
                C     EACH PORE CLASS                                                   SOIL 565
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ISN 0039              KL = NC                                                           SOIL 570
ISN 0040              DO 70 J =1,NC                                                     SOIL 575
ISN 0041                 NL = NCP1 - J                                                  SOIL 580
ISN 0042                 PCH = 0.0                                                      SOIL 585
ISN 0043                 DO 60 I = J,NC                                                 SOIL 590
ISN 0044                    PCH = PCH + (2*I +1 -2*J) *(1./DPI(NL))**2                  SOIL 595
ISN 0045           60       NL = NL-1                                                   SOIL 600
ISN 0046                 SPCH(KL) = PCH                                                 SOIL 605
                C     CORRECT POROSITY TERM WITH COTINC FUNCTION (CORRECTION            SOIL 610
                C     NEEDED ONLY WHEN LIMITED THETA RANGE IS USED)                     SOIL 615
ISN 0047                 COTINC = TINC(NCP1) - RESWAT                                   SOIL 620
                C     CALCULATE K FOR A GIVEN WATER CONTENT AND PRESSURE                SOIL 625
ISN 0048                 CCAL(KL) = SPCH(KL)*ACF*COTINC**EXPON*CLS                      SOIL 630
ISN 0049                 KL = KL-1                                                      SOIL 635
ISN 0050           70    CONTINUE                                                      SOIL 640
                C     CALCULATE MATCHING FACTOR                                         SOIL 645
ISN 0051              FACTOR = SCON/CCAL(NC)                                            SOIL 650
                C     ADJUST TINC AND DPI VALUES AT UPPER LIMIT OF INCREMENTS           SOIL 655
                C     FOR PLOTTING AND CALCULATE MATCHED CONDUCTIVITY AT                SOIL 660
                C     EACH WATER CONTENT                                                SOIL 665
ISN 0052              DO 80 I =1,NC                                                     SOIL 670
ISN 0053                 TINC(I) = TINC(I+1)                                            SOIL 675
ISN 0054                 DPI(I) = (DPI(I) + DPI(I+1))*0.5                               SOIL 680
ISN 0055           80    CMAT (I) = FACTOR*CCAL(I)                                      SOIL 685
ISN 0056              DPI(NC) = 0.0                                                     SOIL 690
                C     PRINT OUTPUT                                                      SOIL 695
ISN 0057           90 PRINT 10600, ST,ST1,ST2,ST3,ST4,ST5,ST6,ST7,ST8,ST9               SOIL 700
ISN 0058              PRINT 10700,N,TMAX,SCON,FACTOR                                    SOIL 705
ISN 0059              PRINT 10800, SURTEN,DENWAT,VISWAT,RESWAT,TEMP                     SOIL 710
ISN 0060              PRINT 10900, EXPON,GRAVTY,ACF                                     SOIL 715
ISN 0061              PRINT 11000                                                       SOIL 720
ISN 0062              PRINT 11100,(I,DPI(I),TINC(I),CCAL(I),CMAT(I),I=1,NC)             SOIL 725
ISN 0063              PRINT 11200,(J,THETA(J),DPI(J),J=1,N)                             SOIL 730
                C     SET UP STORED DATA ARRAYS                                         SOIL 735
ISN 0064              DO 100 I=1,NC                                                     SOIL 740
ISN 0065                 WATCON(LS,I)=TINC(I)                                           SOIL 745
ISN 0066                 SLPOT(LS,I)=DPI(I)                                             SOIL 750
ISN 0067                 SLCON(LS,I)=CMAT(I)                                            SOIL 755
ISN 0068          100    CONTINUE                                                      SOIL 760
ISN 0069              LS=LS+1                                                           SOIL 765
ISN 0070              IF (LS.GT.NS) GO TO 110                                           SOIL 770
ISN 0072              GO TO 10                                                          SOIL 775
ISN 0073          110 CONTINUE                                                          SOIL 780
ISN 0074              RETURN                                                            SOIL 785
ISN 0075        10000 FORMAT(10A4)                                                      SOIL 790
ISN 0076        10100 FORMAT(I1,I2,T11,I2,T21,F5.4,T31,F9.5,T41,F5.3)                   SOIL 795
ISN 0077        10200 FORMAT(I1,F6.2,T11,F5.3,T21,F7.6,T31,F4.1,T41,F5.1)               SOIL 800
ISN 0078        10300 FORMAT(F4.2)                                                      SOIL 805
ISN 0079        10400 FORMAT(20F4.3)                                                    SOIL 810
ISN 0080        10500 FORMAT(10F6.1)                                                    SOIL 815
ISN 0081        10600 FORMAT(1H1,20X,10A4/)                                             SOIL 820
ISN 0082        10700 FORMAT(I1,'ON = ',I3,T15,'TMAX = ',F5.4,T30,'SCON = ',1PE10.3,T50,SOIL 825
                     , 'FACTOR = ',1PE10.3)                                             SOIL 830
ISN 0083        10800 FORMAT(1X,'SURTEN =',F5.2,'  DENWAT =',F5.3,'  VISWAT =',F7.6,    SOIL 835
                     ,'   RESWAT =',F5.3,2X,' TEMP = ',F4.1,' C'/)                      SOIL 840
ISN 0084        10900 FORMAT('  EXPONENT =',F5.2,' GRAVITY = ',F5.1,'  ACF = ',1PE10.3)SOIL 845
ISN 0085        11000 FORMAT('0CLASS',3X,'PRESSURE',6X,'THETA',7X,'CALCULATED K',6X,    SOIL 850
                     , 'SAT MATCH'/2X,'(I)',3X,'(CM WATER)',4X,'(BY VOL)',7X,'(CM/DAY)',SOIL 855
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                , 8X,'(CM/DAY)')                                                SOIL 860
ISN 0086     11100 FORMAT(' ',I3,4X,0PF7.1,8X,0PF5.3,7X,1PE10.3,7X,1PE10.3)     SOIL 865
ISN 0087     11200 FORMAT('0',T2,'INPUT DATA FOR THE ABOVE OUTPUT'//1X,T4,'J',T10,  SOIL 870
                , 'THETA',T20,'PRESSURE'//(1X,T2,I3,T10,F4.3,T20,F7.1))         SOIL 875
ISN 0088           END                                                          SOIL 880
```



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          COMPILER OPTIONS - NAME=  MAIN,OPT=02,LINECNT=60,SIZE=0000K,
                             SOURCE,EBCDIC,NOLIST,NODECK,LOAD,MAP,NOEDIT,NOID,NOXREF
ISN 0002            SUBROUTINE TABLCK(THETA,PSM,ZS)                             TABL   0
              C  METHOD OF TABLE LOOKUP FOR MATRIC WATER POTENTIAL(PSM)AND       TABL   5
              C     CONDUCTIVITY(ZS) FROM SOIL WATER CONTENT(THETA)              TABL  10
              C  THE FOLLOWING TABLES ARE CALCULATED IN SUBROUTINE SOIL--        TABL  15
              C     WATCON IS THE TABLE OF VOLUMETRIC WATER CONTENTS.            TABL  20
              C     SLPOT IS THE TABLE OF MATRIC WATER POTENTIALS                TABL  25
              C     SLCON IS THE TABLE OF HYDRAULIC CONDUCTIVITIES               TABL  30
ISN 0003            IMPLICIT REAL*8 (A-H,O-Z)                                   TABL  35
ISN 0004            DIMENSION THETA(2),PSM(2),ZS(2)                             TABL  40
ISN 0005            COMMON/HOOKUP/WATCON(2,51),SLPOT(2,51),SLCON(2,51),RESWAT,NC,NS TABL  45
ISN 0006            DO 50 J=1,NS                                                TABL  50
ISN 0007               DO 10 I=1,NC                                             TABL  55
ISN 0008                  IF (THETA(J).LE.WATCON(J,I)) GO TO 20                 TABL  60
ISN 0010                  IF (THETA(J).GE.WATCON(J,NC)) GO TO 40                TABL  65
ISN 0012         10       CONTINUE                                              TABL  70
ISN 0013               GO TO 50                                                 TABL  75
ISN 0014         20    IF (I.LT.2) GO TO 30                                     TABL  80
              C     VALUES WITHIN TABLE RANGE                                   TABL  85
ISN 0016               PROPTN=(WATCON(J,I)-THETA(J))/(WATCON(J,I)-WATCON(J,I-1))  TABL  90
ISN 0017               PSM(J)=SLPOT(J,I)-(SLPOT(J,I)-SLPOT(J,I-1))*PROPTN        TABL  95
ISN 0018               ZS(J)=SLCON(J,I)-(SLCON(J,I)-SLCON(J,I-1))*PROPTN         TABL 100
ISN 0019               GO TO 50                                                 TABL 105
              C     VALUES AT DRY END OUTSIDE TABLE RANGE                       TABL 110
ISN 0020         30    PROPTN=(WATCON(J,I)-THETA(J))/(WATCON(J,I)-RESWAT)        TABL 115
ISN 0021               PSM(J)=SLPOT(J,I)-(SLPOT(J,I)-15000.)*PROPTN              TABL 120
ISN 0022               ZS(J)=SLCON(J,I)-(SLCON(J,I)*PROPTN)                      TABL 125
ISN 0023               GO TO 50                                                 TABL 130
              C     VALUES AT SATURATION                                        TABL 135
ISN 0024         40    PSM(J)=SLPOT(J,NC)                                       TABL 145
ISN 0025               ZS(J)=SLCON(J,NC)                                        TABL 150
ISN 0026         50    CONTINUE                                                 TABL 155
ISN 0027            RETURN                                                      TABL 160
ISN 0028            END                                                         TABL 165
```

WALKER BRANCH WATERSHED (TOWNSITE MET. DATA) FOR 1968,1969,1970, AND 1971

DL,THETA,FC

20.0	40.0	40.0	40.0	40.0	4.00
9.33	9.33	9.33	9.33	0.190	0.230
0.230	0.230	0.230			

PAIR,CP0,XL,AND V

1.0132000	0.24000000	10.000000	100.00000

AT,ARAT,GM,GV

0.200	0.100D-01	0.600	0.400	0.0	20.0

ALBVEG,CANON,CANOFF,SIMIN,SIMAX,ALMIN,ALMAX

0.150	105.	284.	0.400D-01	0.140	0.100C-11	4.00

FULLERTON 'AVE' A2 WALKER BRANCH

N = 9 TMAX = .270C SCON = 1.500D 03 FACTOR = 4.253D 00
SORTEN =73.49 DENWAT =0.999 VISWAT =.011380 RESWAT =0.0 TEMP = 15.0 C

EXPONENT = 2.00 GRAVITY = 980.0 ACF = 2.094D 07

CLASS (I)	PRESSURE (CM WATER)	THETA (BY VOL)	CALCULATED K (CM/DAY)	SAT MATCH (CM/DAY)
1	13388.9	0.128	8.741D-07	3.718D-06
2	11777.8	0.131	3.735D-06	1.588D-05
3	10166.7	0.134	9.170D-06	3.900D-05
4	6555.6	0.137	1.808D-05	7.689D-05
5	6944.4	0.140	3.193D-05	1.358D-04
6	5509.0	0.142	5.338D-05	2.271D-04
7	4470.8	0.145	8.691D-05	3.697D-04
8	3700.0	0.148	1.385D-04	5.891D-04
9	2975.0	0.151	2.166D-04	9.212D-04
10	2250.0	0.154	3.363D-04	1.430D-03
11	1568.9	0.157	5.312D-04	2.259D-03
12	1091.1	0.160	8.882D-04	3.778D-03
13	888.0	0.163	1.561D-03	6.638D-03
14	800.2	0.166	2.683D-03	1.141D-02
15	716.1	0.169	4.361D-03	1.855D-02
16	643.5	0.171	6.732D-03	2.863D-02
17	582.5	0.174	9.960D-03	4.236D-02
18	525.5	0.177	1.423D-02	6.054D-02
19	468.6	0.180	1.979D-02	8.419D-02
20	411.6	0.183	2.698D-02	1.147D-01
21	358.9	0.186	3.627D-02	1.543D-01
22	317.4	0.189	4.833D-02	2.056D-01
23	285.4	0.192	6.392D-02	2.719D-01
24	256.0	0.195	8.388D-02	3.567D-01
25	226.6	0.198	1.093D-01	4.647D-01
26	197.3	0.200	1.416D-01	6.022D-01
27	167.9	0.203	1.831D-01	7.788D-01
28	138.5	0.206	2.374D-01	1.010D 00
29	112.9	0.209	3.107D-01	1.322D 00
30	96.7	0.212	4.125D-01	1.754D 00
31	87.8	0.215	5.522D-01	2.348D 00
32	80.5	0.218	7.379D-01	3.138D 00
33	73.3	0.221	9.782D-01	4.161D 00
34	66.0	0.224	1.285D 00	5.464D 00
35	58.8	0.227	1.673D 00	7.115D 00
36	51.5	0.229	2.164D 00	9.205D 00
37	44.3	0.232	2.790D 00	1.187D 01
38	37.0	0.235	3.600D 00	1.531D 01
39	30.2	0.238	4.675D 00	1.988D 01
40	24.9	0.241	6.150D 00	2.616D 01
41	21.6	0.244	8.204D 00	3.490D 01
42	19.1	0.247	1.102D 01	4.688D 01
43	16.6	0.250	1.482D 01	6.302D 01
44	14.0	0.253	1.992D 01	8.472D 01
45	11.5	0.256	2.685D 01	1.142D 02
46	9.0	0.258	3.654D 01	1.554D 02
47	6.5	0.261	5.083D 01	2.162D 02
48	4.2	0.264	7.431D 01	3.161D 02
49	2.1	0.267	1.223D 02	5.201D 02
50	0.0	0.270	3.527D 02	1.500D 03

INPUT DATA FOR THE ABOVE OUTPUT

J	THETA	PRESSURE
1	.125	15000.0
2	.143	5000.0
3	.159	1000.0
4	.170	667.0
5	.187	333.0
6	.210	100.0
7	.240	25.0
8	.263	5.0
9	.270	0.0

FULLERTON 'AVE' B22T WALKER BRANCH

N = 9 TMAX = .3040 SOON = 7.400D 02 FACTOR = 2.840D 00
SURTEN =73.49 DENWAT =0.999 VISWAT =.011380 RESWAT =0.0 TEMP = 15.0 C

EXPONENT = 2.00 GRAVITY = 980.0 ACF = 2.094D 07

CLASS (I)	PRESSURE (CM WATER)	THETA (BY VOL)	CALCULATED K (CM/DAY)	SAT MATCH (CM/DAY)
1	13285.7	0.186	6.031D-07	1.713D-06
2	11571.4	0.189	2.590D-06	7.357D-06
3	9857.1	0.191	6.409D-06	1.820D-05
4	8142.9	0.194	1.277D-05	3.626D-05
5	6469.2	0.196	2.289D-05	6.501D-05
6	5080.2	0.198	3.905D-05	1.109D-04
7	4138.5	0.201	6.493D-05	1.844D-04
8	3400.0	0.203	1.052D-04	2.989D-04
9	2661.5	0.206	1.672D-04	4.748D-04
10	1923.1	0.208	2.652D-04	7.532D-04
11	1301.7	0.210	4.361D-04	1.239D-03
12	953.4	0.213	7.665D-04	2.177D-03
13	800.2	0.215	1.371D-03	3.893D-03
14	688.9	0.218	2.357D-03	6.695D-03
15	584.1	0.220	3.862D-03	1.097D-02
16	483.3	0.222	6.089D-03	1.730D-02
17	393.4	0.225	9.384D-03	2.665D-02
18	334.3	0.227	1.429D-02	4.058D-02
19	305.9	0.230	2.137D-02	6.070D-02
20	287.9	0.232	3.104D-02	8.815D-02
21	269.9	0.234	4.362D-02	1.239D-01
22	251.8	0.237	5.953D-02	1.691D-01
23	233.8	0.239	7.926D-02	2.251D-01
24	215.7	0.242	1.034D-01	2.938D-01
25	197.7	0.244	1.328D-01	3.772D-01
26	179.7	0.246	1.684D-01	4.783D-01
27	161.6	0.249	2.115D-01	6.007D-01
28	143.6	0.251	2.639D-01	7.496D-01
29	125.6	0.254	3.282D-01	9.322D-01
30	108.9	0.256	4.080D-01	1.159D 00
31	96.0	0.258	5.085D-01	1.444D 00
32	86.4	0.261	6.354D-01	1.805D 00
33	77.9	0.263	7.948D-01	2.257D 00
34	69.3	0.266	9.944D-01	2.824D 00
35	60.7	0.268	1.245D 00	3.536D 00
36	52.1	0.270	1.562D 00	4.436D 00
37	43.6	0.273	1.969D 00	5.593D 00
38	35.0	0.275	2.507D 00	7.121D 00
39	27.7	0.278	3.251D 00	9.235D 00
40	23.3	0.280	4.321D 00	1.227D 01
41	20.6	0.282	5.842D 00	1.659D 01
42	18.2	0.285	7.937D 00	2.254D 01
43	15.8	0.287	1.077D 01	3.059D 01
44	13.4	0.290	1.459D 01	4.143D 01
45	11.0	0.292	1.978D 01	5.618D 01
46	8.6	0.294	2.704D 01	7.680D 01
47	6.3	0.297	3.776D 01	1.072D 02
48	4.1	0.299	5.531D 01	1.571D 02
49	2.0	0.302	9.091D 01	2.582D 02
50	0.0	0.304	2.605D 02	7.400D 02

INPUT DATA FOR THE ABOVE OUTPUT

J	THETA	PRESSURE
1	.184	15000.0
2	.198	5000.0
3	.211	1000.0
4	.218	667.0
5	.226	333.0
6	.257	100.0
7	.278	25.0
8	.298	5.0
9	.304	0.0

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA

DAYS PER MONTH. SIMULATION BEGINNING WITH MONTH 1
31 28 31 30 31 30 31 31 30 31 30 31

PRECIP (CM)

.0	.0	.22098D 00	.0	.40640D-01	.14986D 00	.40640D-01	.0	.21082D 00	.0
.0	.0	.0	.0	.0	.0	.19050D 00	.12598D 01	.40894D 01	.93980D 00
.0	.0	.51054D 00	.0	.0	.0	.71120D-01	.75946D 00	.51054D 00	.87122D 00
.10211D 01	.37109D 01	.22809D 01	.0	.0	.0	.18110D 01	.0	.12294D 01	.0
.0	.0	.0	.0	.0	.39116D 00	.17297D 01	.40640D-01	.0	.0
.0	.0	.16002D 01	.18034D 00	.0	.0	.0	.0	.28956D 00	.0
.0	.0	.0	.0	.10211D 01	.0	.57912D 00	.18034D 00	.0	.0
.0	.0	.0	.0	.0	.0	.12700D 01	.0	.0	.0
.0	.69088D 00	.87122D 00	.18034D 00	.0	.0	.0	.66040D 00	.0	.0
.0	.0	.51054D 00	.51054D 00	.75946D 00	.0	.0	.0	.24892D 00	.75946D 00
.0	.0	.0	.51054D 00	.51054D 00	.0	.51054D 00	.22911D 01	.24892D 00	.0
.0	.24892D 00	.0	.0	.0	.0	.0	.51054D 00	.0	.0
.0	.0	.0	.0	.0	.0	.0	.0	.75946D 00	.10211D 01
.0	.0	.0	.0	.0	.0	.0	.12700D 01	.35611D 01	.0
.0	.0	.0	.0	.51054D 00	.0	.0	.0	.0	.0
.0	.0	.15189D 01	.0	.0	.0	.0	.0	.0	.24892D 00
.10211D 01	.0	.0	.24892D 00	.75946D 00	.0	.0	.0	.0	.0
.0	.0	.51054D 00	.76200D 01	.51054D 00	.0	.24892D 00	.24892D 00	.0	.0
.0	.51054D 00	.0	.0	.0	.0	.0	.30505D 01	.75946D 00	.0
.0	.24892D 00	.75946D 00	.0	.0	.0	.0	.0	.0	.0
.0	.0	.15189D 01	.51054D 00	.0	.0	.0	.0	.0	.0
.0	.0	.17805D 01	.40589D 01	.13970D 00	.0	.0	.0	.0	.0
.0	.0	.0	.0	.0	.0	.27889D 01	.26797D 01	.65024D 00	.0
.13792D 01	.13970D 00	.0	.16408D 01	.0	.0	.0	.0	.0	.0
.0	.0	.0	.0	.0	.65024D 00	.12294D 01	.39878D 00	.0	.0
.0	.0	.0	.0	.0	.0	.0	.0	.0	.24892D 00
.0	.61697D 01	.0	.0	.75946D 00	.51054D 00	.24892D 00	.0	.0	.0
.0	.0	.0	.24892D 00	.40640D-01	.0	.0	.0	.0	.12700D 01
.0	.0	.0	.0	.0	.0	.10922D 00	.0	.0	.0
.0	.0	.89916D 00	.84074D 00	.0	.0	.0	.80010D 00	.22098D 00	.0
.0	.0	.0	.65024D 00	.21806D 01	.10922D 00	.0	.18034D 00	.0	.0
.0	.0	.0	.0	.69088D 00	.57912D 00	.51054D 00	.24892D 00	.0	.0
.0	.0	.25400D 01	.0	.0	.0	.0	.0	.0	.0
.71120D-01	.0	.0	.0	.0	.0	.0	.0	.0	.51054D 00
.17805D 01	.0	.0	.15900D 01	.0	.0	.0	.0	.0	.0
.0	.0	.0	.0	.10211D 01	.71120D-01	.0	.0	.12497D 01	.43942D 00
.0	.69088D 00	.28357D 01	.10991D 02	.0	.78633D 66				

SOLAR (LANGLEYS PER DAY)

.29149D 03	.25909D 03	.61490D 02	.31019D 03	.26539D 03	.49790D 02	.30029D 03	.53890D 02	.24669D 03	.28519D 03
.30559D 03	.27239D 03	.29409D 03	.30339D 03	.24849D 03	.21729D 03	.76990D 02	.42890D 02	.53590D 02	.73490D 02
.76990D 02	.14759D 03	.67990D 02	.26359D 03	.30059D 03	.24269D 03	.62290D 02	.60290D 02	.61890D 02	.13039D 03
.17599D 03	.61690D 02	.12349D 03	.31579D 03	.37819D 03	.31049D 03	.36490D 02	.25769D 03	.46190D 02	.16279D 03
.41609D 03	.23559D 03	.34819D 03	.41999D 03	.29609D 03	.60490D 02	.13849D 03	.98290D 02	.34209D 03	.43509D 03
.43529D 03	.43039D 03	.38090D 02	.98990D 02	.18509D 03	.25729D 03	.45449D 03	.47239D 03	.11449D 03	.10519D 03
.30679D 03	.25069D 03	.23019D 03	.36949D 03	.52190D 02	.41449D 03	.26319D 03	.11389D 03	.34659D 03	.44439D 03
.42569D 03	.52889D 03	.52209D 03	.41559D 03	.55299D 03	.49589D 03	.10489D 03	.49739D 03	.41749D 03	.58409D 03
.57349D 03	.32879D 03	.31339D 03	.63490D 02	.24249D 03	.49459D 03	.59219D 03	.11699D 03	.60069D 03	.61619D 03
.26889D 03	.26399D 03	.51439D 03	.45429D 03	.16499D 03	.61159D 03	.62569D 03	.61669D 03	.54799D 03	.95090D 02
.62399D 03	.59909D 03	.25989D 03	.12499D 03	.20199D 03	.47829D 03	.51879D 03	.39189D 03	.11899D 03	.61099D 03
.61399D 03	.62069D 03	.27949D 03	.63299D 03	.67739D 03	.67009D 03	.66489D 03	.20879D 03	.52409D 03	.65978D 03
.64289D 03	.63119D 03	.63219D 03	.47499D 03	.63149D 03	.65579D 03	.64029D 03	.18489D 03	.50709D 03	.57889D 03
.56999D 03	.67309D 03	.69389D 03	.49579D 03	.58329D 03	.27169D 03	.38499D 03	.16199D 03	.35399D 03	.52799D 03
.69329D 03	.63059D 03	.42689D 03	.34449D 03	.26929D 03	.68859D 03	.63369D 03	.61049D 03	.60649D 03	.61749D 03
.63419D 03	.51949D 03	.31789D 03	.74739D 03	.49829D 03	.68369D 03	.66269D 03	.61229D 03	.52869D 03	.52449D 03
.29639D 03	.63539D 03	.61669D 03	.54909D 03	.54279D 03	.47669D 03	.38929D 03	.64699D 03	.49209D 03	.71089D 03
.51859D 03	.49689D 03	.47139D 03	.30079D 03	.40229D 03	.65999D 03	.53979D 03	.62959D 03	.53679D 03	.58189D 03

.58859D 03	.471590 03	.498590 03	.618990 03	.651190 03	.601690 03	.533390 03	.290590 03	.454890 03	.490190 03
.462190 03	.427990 03	.670090 03	.612090 03	.659990 03	.598990 03	.609190 03	.606690 03	.656390 03	.642290 03
.448290 03	.524590 03	.536290 03	.144090 03	.450290 03	.515790 03	.483490 03	.455690 03	.590290 03	.559290 03
.812390 03	.626690 03	.502590 03	.465690 03	.515490 03	.528190 03	.437390 03	.498590 03	.488390 03	.465590 03
.546690 03	.533690 03	.614490 03	.581190 03	.525990 03	.423790 03	.483790 03	.344590 03	.330890 03	.372290 03
.175190 03	.513490 03	.462390 03	.375190 03	.619090 03	.607190 03	.583290 03	.559090 03	.542090 03	.441190 03
.462590 03	.557390 03	.392190 03	.310490 03	.452890 03	.437990 03	.446490 03	.253290 03	.425990 03	.289490 03
.425090 03	.560290 03	.573290 03	.496690 03	.507490 03	.518190 03	.475490 03	.490890 03	.479390 03	.301290 03
.341090 03	.471900 02	.267690 03	.416690 03	.208390 03	.165290 03	.159890 03	.440090 03	.487790 03	.449490 03
.497390 03	.496490 03	.401390 03	.147790 03	.137390 03	.389190 03	.401490 03	.428890 03	.354390 03	.639900 02
.448990 03	.435690 03	.348790 03	.308390 03	.396190 03	.388590 03	.120790 03	.139890 03	.341590 03	.429690 03
.410690 03	.388790 03	.532900 02	.388590 03	.406890 03	.374390 03	.381490 03	.513900 02	.185390 03	.151890 03
.387590 03	.364090 03	.363490 03	.311490 03	.761900 02	.703900 02	.202390 03	.185490 03	.190490 03	.342290 03
.321990 03	.337790 03	.324590 03	.311490 03	.247090 03	.315490 03	.405900 02	.180690 03	.270090 03	.308390 03
.211290 03	.160190 03	.717900 02	.314190 03	.293590 03	.289890 03	.253690 03	.275490 03	.201990 03	.301390 03
.167090 03	.122690 03	.233390 03	.287090 03	.291090 03	.293190 03	.301490 03	.289790 03	.174090 03	.941900 02
.102990 03	.568900 02	.153890 03	.366900 02	.551900 02	.886900 02	.255290 03	.202890 03	.128190 03	.274790 03
.258190 03	.864900 02	.251990 03	.230190 03	.387990 02	.590900 02	.358900 02	.154590 03	.437900 02	.766900 02
.189690 03	.874900 02	.681900 02	.253900 02	.361900 02	.192670-77				

VAPOR (BARS)

.563000-02	.106100-01	.945000-02	.879000-02	.863000-02	.886000-02	.101300-01	.961000-02	.348000-02	.272000-02
.522000-02	.716000-02	.834000-02	.114800-01	.854000-02	.104700-01	.124300-01	.407000-02	.370000-02	.425000-02
.781000-02	.966000-02	.834000-02	.483000-02	.367000-02	.551000-02	.352000-02	.319000-02	.322000-02	.423000-02
.672000-02	.638000-02	.531000-02	.433000-02	.430000-02	.472000-02	.613000-02	.715000-02	.607000-02	.472000-02
.404000-02	.393000-02	.503000-02	.563000-02	.526000-02	.443000-02	.428000-02	.376000-02	.603000-02	.460000-02
.585000-02	.566000-02	.305000-02	.332000-02	.276000-02	.327000-02	.377000-02	.351000-02	.362000-02	.413000-02
.804000-02	.815000-02	.864000-02	.466000-02	.386000-02	.449000-02	.100900-01	.627000-02	.377000-02	.376000-02
.487000-02	.844000-02	.523000-02	.333000-02	.484000-02	.955000-02	.133900-01	.169100-01	.171400-01	.888000-02
.821000-02	.867000-02	.122400-01	.171900-01	.983000-02	.910000-02	.113000-01	.113600-01	.163600-01	.174000-01
.156100-01	.180900-01	.117900-01	.791000-02	.950000-02	.559000-02	.625000-02	.707000-02	.739000-02	.872000-02
.119300-01	.166100-01	.844000-02	.813000-02	.985000-02	.118300-01	.120700-01	.137800-01	.142800-01	.132800-01
.129300-01	.198900-01	.894000-02	.848000-02	.835000-02	.101100-01	.900000-02	.141800-01	.137300-01	.181700-01
.177400-01	.204600-01	.205700-01	.205800-01	.184000-01	.198200-01	.206900-01	.200600-01	.208500-01	.142800-01
.148700-01	.190600-01	.202300-01	.207800-01	.214900-01	.213400-01	.199200-01	.873000-02	.109200-01	.129500-01
.177400-01	.201500-01	.233100-01	.226400-01	.201490-01	.211300-01	.194500-01	.207600-01	.217200-01	.215900-01
.149400-01	.152400-01	.211600-01	.168200-01	.203300-01	.232300-01	.231600-01	.210000-01	.235800-01	.255400-01
.245000-01	.247800-01	.260900-01	.224900-01	.231600-01	.244500-01	.226500-01	.233200-01	.235100-01	.243500-01
.259300-01	.255100-01	.258400-01	.279600-01	.261600-01	.292200-01	.212200-01	.217200-01	.183100-01	.196100-01
.193700-01	.211900-01	.225100-01	.208000-01	.224100-01	.226900-01	.221800-01	.262300-01	.276300-01	.242500-01
.269500-01	.258300-01	.227800-01	.195400-01	.197000-01	.188300-01	.216700-01	.235100-01	.207100-01	.199700-01
.194000-01	.187100-01	.199800-01	.220000-01	.235200-01	.178100-01	.153500-01	.181800-01	.187500-01	.203600-01
.208600-01	.241400-01	.270000-01	.250500-01	.258200-01	.229700-01	.214200-01	.213400-01	.163000-01	.192000-01
.191800-01	.193100-01	.193200-01	.204400-01	.238100-01	.223000-01	.226100-01	.234000-01	.223500-01	.207700-01
.219300-01	.228000-01	.223700-01	.238900-01	.217000-01	.116100-01	.890000-02	.107500-01	.102100-01	.114200-01
.132500-01	.146600-01	.172800-01	.216900-01	.218300-01	.182400-01	.171800-01	.173300-01	.165700-01	.177400-01
.186900-01	.146000-01	.119400-01	.145700-01	.122500-01	.905000-02	.121700-01	.125300-01	.178800-01	.175700-01
.171900-01	.153900-01	.126800-01	.171800-01	.112100-01	.108800-01	.150800-01	.181000-01	.179700-01	.184900-01
.102600-01	.977000-02	.121200-01	.649000-02	.644500-02	.100200-01	.185100-01	.106500-01	.807000-02	.440000-02
.513000-02	.901000-02	.116400-01	.108600-01	.540000-02	.592000-02	.571000-02	.899000-02	.145300-01	.130000-01
.883000-02	.748000-02	.573000-02	.708000-02	.803000-02	.635000-02	.820000-02	.756000-02	.853000-02	.826000-02
.645000-02	.338000-02	.287000-02	.386000-02	.219000-02	.312000-02	.522000-02	.213000-02	.259000-02	.373000-02
.308000-02	.390000-02	.607000-02	.303000-02	.228000-02	.284000-02	.248000-02	.313000-02	.359000-02	.435000-02
.504000-02	.850000-02	.483000-02	.384000-02	.425000-02	.544000-02	.655000-02	.885000-02	.828000-02	.471000-02
.521000-02	.609000-02	.465000-02	.381000-02	.433000-02	.315000-02	.352000-02	.221000-02	.322000-02	.392000-02
.886000-02	.593000-02	.616000-02	.793000-02	.806000-02	.421000-02	.435000-02	.521000-02	.394000-02	.372000-02
.379000-02	.407000-02	.450000-02	.319000-02	.460000-02	.452000-02	.490000-02	.378000-02	.501000-02	.421000-02
.373000-02	.414000-02	.681000-02	.106300-01	.494000-02	.263550-81				

TEMP (CENTIGRADE)

-.6361D 01	-.2961D 01	0.11720 01	-.69780 01	-.61720 01	-.2594D 01	-.1294D 01	-.1728D 01	0.5800D 01	-.3394D 01
-.49440 00	-.4333D 00	0.22830 01	0.12330 01	0.24670 01	0.5494D 01	0.7344D 01	0.92610 01	0.8828D 01	0.8272D 01
0.6233D 01	0.9878D 01	0.94440 01	0.1185D 02	0.0	-.61670 00	-.6111D-01	0.4194D 01	0.5000D 01	0.1364D 02
0.91940 01	0.8950D 01	0.12280 02	0.40110 01	0.50610 01	0.8706D 01	0.4506D 01	0.1000D 02	0.4444D 01	0.3517D 01
0.2839D 01	0.4750D 01	0.27170 01	0.6111D-01	0.5889D 00	0.3211D 01	0.1544D 01	0.9889D 00	0.3333D 01	0.4878D 01
0.4383D 01	0.7900D 01	0.1466D 01	0.3706D 01	0.5678D 01	0.5000D 01	0.4689D 01	0.3578D 01	0.4133D 01	0.3194D 01

0.4878D 01	0.3394D 01	0.3828D 01	0.3828D 01	0.3150D 01	0.5617D 01	0.6294D 01	0.2656D 01	-.2839D 01	-.2500D 00
0.49440 00	0.3706D 01	0.6254D 01	0.5494D 01	0.8394D 01	0.1043D 02	0.6850D 01	0.1216D 02	0.1623D 02	0.1278D 02
0.1086D 02	0.1290D 02	0.1808D 02	0.5306D 01	0.4383D 01	0.6417D 01	0.1117D 02	0.1094D 02	0.7656D 01	0.5061D 01
0.8728D 01	0.1846D 02	0.1919D 02	0.2204D 02	0.1778D 02	0.1444D 02	0.1778D 02	0.2222D 02	0.2315D 02	0.1568D 02
0.1883D 02	0.1938D 02	0.1691D 02	0.1482D 02	0.1500D 02	0.1982D 02	0.2346D 02	0.2136D 02	0.1333D 02	0.1136D 02
0.1852D 02	0.1710D 02	0.9939D 01	0.1234D 02	0.1568D 02	0.2031D 02	0.2506D 02	0.1802D 02	0.1222D 02	0.1469D 02
0.1926D 02	0.2161D 02	0.2228D 02	0.2352D 02	0.2543D 02	0.2568D 02	0.2691D 02	0.2136D 02	0.1625D 02	0.1919D 02
0.1426D 02	0.1661D 02	0.1919D 02	0.2191D 02	0.2568D 02	0.2241D 02	0.2457D 02	0.1889D 02	0.2129D 02	0.2371D 02
0.2518D 02	0.2642D 02	0.2296D 02	0.2364D 02	0.2086D 02	0.2383D 02	0.2333D 02	0.2419D 02	0.2623D 02	0.2722D 02
0.2808D 02	0.2802D 02	0.2043D 02	0.1919D 02	0.2123D 02	0.2407D 02	0.2580D 02	0.3043D 02	0.3000D 02	0.2839D 02
0.1969D 02	0.2586D 02	0.2778D 02	0.2710D 02	0.2833D 02	0.2593D 02	0.1957D 02	0.2197D 02	0.2518D 02	0.2741D 02
0.2586D 02	0.2728D 02	0.2568D 02	0.2062D 02	0.2438D 02	0.2951D 02	0.2994D 02	0.3068D 02	0.2994D 02	0.3000D 02
0.2926D 02	0.2883D 02	0.2796D 02	0.2802D 02	0.3000D 02	0.3142D 02	0.3142D 02	0.2586D 02	0.2691D 02	0.2821D 02
0.2901D 02	0.2957D 02	0.2963D 02	0.2901D 02	0.2833D 02	0.2871D 02	0.2951D 02	0.2858D 02	0.3012D 02	0.3024D 02
0.2833D 02	0.2833D 02	0.2855D 02	0.2475D 02	0.2895D 02	0.2889D 02	0.2858D 02	0.2864D 02	0.2617D 02	0.2537D 02
0.2574D 02	0.2611D 02	0.2784D 02	0.2716D 02	0.2512D 02	0.2519D 02	0.2463D 02	0.2475D 02	0.2599D 02	0.2919D 02
0.2988D 02	0.2568D 02	0.2514D 02	0.2642D 02	0.2605D 02	0.2605D 02	0.2728D 02	0.2315D 02	0.2605D 02	0.2833D 02
0.2661D 02	0.2846D 02	0.2629D 02	0.2401D 02	0.2377D 02	0.2438D 02	0.2580D 02	0.2842D 02	0.2648D 02	0.2426D 02
0.2413D 02	0.2580D 02	0.2562D 02	0.2524D 02	0.2629D 02	0.2463D 02	0.2593D 02	0.2512D 02	0.2661D 02	0.2611D 02
0.2661D 02	0.2161D 02	0.1852D 02	0.1951D 02	0.2031D 02	0.2068D 02	0.2154D 02	0.2346D 02	0.2562D 02	0.2593D 02
0.2568D 02	0.1877D 02	0.2031D 02	0.2241D 02	0.1932D 02	0.1704D 02	0.2037D 02	0.1982D 02	0.2018D 02	0.2185D 02
0.2167D 02	0.1919D 02	0.1815D 02	0.1766D 02	0.1871D 02	0.2153D 02	0.2284D 02	0.2266D 02	0.1821D 02	0.1580D 02
0.2049D 02	0.1951D 02	0.2117D 02	0.2167D 02	0.2302D 02	0.2346D 02	0.1278D 02	0.1451D 02	0.1895D 02	0.1315D 02
0.1210D 02	0.1531D 02	0.1766D 02	0.1988D 02	0.1629D 02	0.9133D 01	0.1086D 02	0.7961D 01	0.1259D 02	0.1259D 02
0.9194D 01	0.1056D 02	0.1049D 02	0.1562D 02	0.1494D 02	0.1556D 02	0.1259D 02	0.5163D 01	0.5739D 01	0.1024D 02
0.1154D 02	0.1234D 02	0.1173D 02	0.1056D 02	0.1284D 02	0.1482D 02	0.4750D 01	-.6778D 00	-.2472D 01	0.6172D 01
0.1006D 02	0.1426D 02	0.2778D 01	0.2839D 01	0.6667D 01	0.1049D 02	0.1253D 02	0.1494D 02	0.1123D 02	0.9506D 01
0.5494D 01	0.5989D 01	0.4817D 01	0.3578D 01	0.7161D 01	0.5183D 01	0.7406D 01	0.2528D 01	0.8611D 00	0.4878D 01
0.9261D 01	0.5183D 01	0.4817D 01	0.6172D 01	0.6972D 01	0.4261D 01	0.2717D 01	0.8083D 01	0.3211D 01	0.3150D 01
0.2344D 01	0.2222D 01	0.3578D 01	0.2161D 01	0.1356D 01	0.2283D 01	0.2594D 01	0.1667D 01	0.9278D 00	0.1667D 01
-.1294D 01	0.3056D 00	0.5061D 01	0.1253D 02	0.2594D 01	0.0				

OUTPUT DESCRIPTION

VALUES FOR EACH JULIAN DATE(DAY) ARE PRINTED FOR INFILTRATION, INTERCEPTION STORAGE, TRANSPIRATION(ET),PLANT WATER POTENTIAL(PSI), SOIL EVAPORATION, DRAINAGE, AND THE WATER CONTENTS OF THE FIVE LAYERS. THE PLANT WATER POTENTIAL UNITS ARE BARS. ALL OTHER UNITS ARE CENTIMETERS.

WEEKLY, MONTHLY AND ANNUAL SUMMARIES ARE PRINTED FOR PRECIPITATION, INFILTRATION, INTERCEPTION EVAPORATION TRANSPIRATION, SOIL EVAPORATION, TOTAL EVAPORATION,DRAINAGE, OUTFLOW, SOIL STORAGE AND MASS BALANCE. ALL VALUES ARE IN CENTIMETERS.

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 1

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
1	0.0	0.0	8.7476D-10	-5.847	2.81540-02	0.1239	3.776	9.280	9.337	9.365	9.410
2	0.0	0.0	4.7271D-10	-4.834	2.29160-02	0.1463	3.750	9.188	9.281	9.350	9.429
3	0.18	0.01	0.0	-4.834	0.0	0.1462	3.776	9.240	9.269	9.331	9.416
4	0.0	0.03	4.58920-10	-5.166	2.45750-02	0.1401	3.740	9.160	9.245	9.319	9.404
5	0.00	0.02	0.0	-5.166	0.0	0.1334	3.726	9.124	9.206	9.294	9.386
6	0.13	0.04	6.1484D-11	-1.119	3.9660D-03	0.1236	3.749	9.159	9.194	9.271	9.363
7	0.00	0.03	0.0	-1.119	0.0	0.1154	3.724	9.118	9.179	9.255	9.344

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.45212	0.30926	0.13180	1.86788D-09	7.96517D-02	0.21145

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.92894	0.92894	-0.69933	2.88640D-13

8	0.0	0.01	8.1004D-11	-1.569	6.1166D-03	0.1087	3.710	9.083	9.155	9.233	9.325
9	0.17	0.04	4.6533D-10	-6.985	3.3799D-02	0.1013	3.738	9.131	9.153	9.214	9.305
10	0.0	0.0	5.0050D-10	-7.690	3.7301D-02	9.4603D-02	3.699	9.076	9.142	9.203	9.290
11	0.0	0.0	3.4506D-10	-6.366	3.0429D-02	8.6511D-02	3.677	9.046	9.111	9.182	9.277
12	0.0	0.0	2.4257D-10	-5.037	2.3580D-02	7.2580D-02	3.663	9.027	9.083	9.161	9.263
13	0.0	0.0	2.3517D-10	-5.294	2.4825D-02	5.8213D-02	3.650	9.008	9.066	9.141	9.250
14	0.0	0.0	2.2124D-10	-5.402	2.5313D-02	4.5263D-02	3.637	8.991	9.053	9.124	9.238

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.21082	0.17082	5.10603D-02	2.09C87D-09	0.18136	0.23242

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.56730	0.56730	-0.57784	1.58100D-13

15	0.0	0.0	1.8081D-10	-4.766	2.2016D-02	3.4618D-02	3.627	8.980	9.041	9.110	9.229
16	0.0	0.0	1.5694D-10	-4.358	1.9857D-02	2.6015C-02	3.619	8.972	9.031	9.097	9.221
17	0.15	0.01	0.0	-4.358	0.0	1.9196D-02	3.684	9.033	9.046	9.092	9.216
18	1.25	0.04	6.9490D-10	-4.533	2.1815D-02	2.0236D-02	3.927	9.559	9.360	9.202	9.234
19	4.05	0.03	0.0	-4.533	0.0	0.2539	4.216	10.32	10.24	10.16	10.14
20	0.91	0.04	4.5531D-09	-4.618	2.2677D-02	1.176	4.073	10.04	10.11	10.21	10.36
21	0.0	0.0	1.0061D-09	-1.896	8.4777D-03	1.068	3.947	9.750	9.889	10.01	10.12

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
6.4795	6.3631	0.11645	6.59165D-09	9.48826D-02	0.21133

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.5980	2.5980	3.6702	2.32037D-13

22	0.0	0.0	1.0459D-09	-3.130	1.4610D-02	0.7243	3.885	9.585	9.721	9.837	9.945
23	0.47	0.01	0.0	-3.130	0.0	0.5254	3.930	9.655	9.703	9.772	9.860
24	0.0	0.03	1.6094D-09	-6.100	2.9669D-02	0.4624	3.843	9.474	9.599	9.705	9.807
25	0.0	0.0	1.3029D-09	-7.276	3.5547D-02	0.3844	3.804	9.366	9.502	9.615	9.721
26	0.0	0.0	7.2955D-10	-5.453	2.6169D-02	0.3101	3.778	9.289	9.424	9.537	9.643
27	0.03	0.03	0.0	-5.453	0.0	0.2557	3.771	9.254	9.368	9.474	9.578
28	0.73	0.04	1.0387D-09	-5.766	2.8023D-02	0.2184	3.897	9.528	9.477	9.482	9.547

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.3411	1.2326	0.10853	5.72630C-09	0.13402	0.24255

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.8809	2.8809	-1.7823	1.625370-13

MONTHLY WATER BUDGET (CM) FOR MONTH 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
8.4836	8.0758	0.40784	1.627690-08	0.48991	0.89776

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
6.9751	6.9751	0.61072	8.301550-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 2

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
29	0.47	0.03	0.0	-5.766	0.0	0.2321	3.895	9.550	9.546	9.562	9.616
30	0.84	0.04	1.74010-09	-5.338	2.60160-02	0.2894	3.955	9.692	9.668	9.668	9.713
31	0.98	0.02	0.0	-5.338	0.0	0.4027	3.997	9.805	9.797	9.810	9.864
32	3.70	0.04	1.20380-09	-1.012	4.61450-03	0.8789	4.236	10.41	10.40	10.44	10.60
33	2.24	0.02	0.0	-1.012	0.0	1.678	4.196	10.35	10.46	10.67	10.57
34	0.0	0.02	6.69860-09	-6.847	3.39660-02	1.659	4.020	9.952	10.12	10.29	10.57
35	0.0	0.0	4.04170-09	-7.286	3.59550-02	1.155	3.946	9.752	9.900	10.03	10.14

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
8.3947	8.2295	0.16522	1.368430-08	0.10059	0.26581

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
6.2950	6.2950	1.8338	2.375880-13

36	0.0	0.0	2.34710-09	-6.666	3.26640-02	0.7451	3.884	9.585	9.724	9.843	9.951
37	1.77	0.00	0.0	-6.666	0.0	0.6010	4.085	10.02	10.00	10.00	10.05
38	0.0	0.04	2.13380-09	-4.325	2.08030-02	0.8065	3.917	9.671	9.803	9.916	10.02
39	1.19	0.01	0.0	-4.325	0.0	0.6644	4.039	9.916	9.923	9.955	10.02
40	0.0	0.03	2.19260-09	-5.153	2.49860-02	0.7119	3.899	9.624	9.755	9.867	9.973
41	0.0	0.0	1.98250-09	-7.590	3.72720-02	0.5471	3.846	9.483	9.621	9.738	9.845
42	0.0	0.0	1.24700-09	-6.731	3.27830-02	0.4133	3.809	9.381	9.519	9.635	9.742

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
3.0404	2.9604	8.00000D-02	9.903110-09	0.14851	0.22851

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
4.4892	4.4892	-1.6773	1.769700-13

43	0.0	0.0	9.44680-10	-6.710	3.25890-02	0.3259	3.780	9.300	9.438	9.552	9.659
44	0.0	0.0	7.49870-10	-6.767	3.27980-02	0.2657	3.757	9.230	9.370	9.483	9.589
45	0.0	0.0	5.52510-10	-6.163	2.96520-02	0.2212	3.740	9.173	9.311	9.425	9.530
46	0.35	0.02	0.0	-6.163	0.0	0.1889	3.814	9.327	9.326	9.391	9.484
47	1.71	0.04	1.90070-09	-5.282	2.58800-02	0.1857	4.027	9.843	9.738	9.636	9.596
48	0.00	0.03	0.0	-5.282	0.0	0.3385	3.862	9.518	9.617	9.699	9.787
49	0.0	0.01	1.11970-09	-5.740	2.77410-02	0.3807	3.813	9.391	9.518	9.625	9.728

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
2.1615	2.0625	9.90029D-02	5.267400-09	0.14866	0.24766

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.9266	1.9266	-1.27003D-02	1.629810-13

50	0.0	0.0	1.06630-09	-7.415	3.61500-02	0.3179	3.780	9.302	9.437	9.548	9.654
51	0.0	0.0	7.44150-10	-6.701	3.24610-02	0.2630	3.757	9.231	9.369	9.481	9.587
52	0.0	0.0	6.11710-10	-6.802	3.29100-02	0.2199	3.739	9.171	9.310	9.423	9.529
53	1.56	0.03	0.0	-6.802	0.0	0.1943	4.002	9.773	9.656	9.558	9.548
54	0.16	0.04	1.87000-09	-5.928	2.88620-02	0.2970	3.871	9.525	9.592	9.652	9.728
55	0.0	0.0	1.39460-09	-7.133	3.48420-02	0.3430	3.809	9.380	9.500	9.600	9.699
56	0.0	0.0	1.00160-09	-7.231	3.52400-02	0.2991	3.776	9.290	9.422	9.531	9.635

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.7805	1.7152	6.53000D-02	6.688330-09	0.20051	0.26581

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.9343	1.9343	-0.41953	1.740830-13

MONTHLY WATER BUDGET (CM) FOR MONTH 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
15.377	14.968	0.40952	3.554320-08	0.59826	1.0078

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
14.645	14.645	-0.27571	7.38604C-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 3

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
57	0.0	0.0	8.43220-10	-7.847	3.82880-02	0.2515	3.752	9.217	9.356	9.468	9.573
58	0.0	0.0	6.9045D-10	-8.007	3.90260-02	0.2120	3.731	9.158	9.297	9.411	9.517
59	0.25	0.02	0.0	-8.007	0.0	0.1810	3.788	9.263	9.291	9.371	9.469
60	0.0	0.02	5.0892D-10	-5.301	2.5287D-02	0.1614	3.747	9.178	9.273	9.354	9.444
61	0.0	0.0	3.9568D-10	-5.235	2.4866D-02	0.1503	3.724	9.128	9.228	9.323	9.418
62	0.0	0.0	2.9075D-10	-4.555	2.1331D-02	0.1370	3.709	9.091	9.186	9.289	9.388
63	0.3	0.0	2.4132D-10	-4.283	1.9878D-02	0.1228	3.694	9.066	9.151	9.253	9.356

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.28956	0.24956	4.00000D-02	2.97035D-09	0.16868	0.20868

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.2160	1.2160	-1.1351	1.407760-13

64	0.0	0.0	3.7693D-10	-7.066	3.39760-02	0.1103	3.672	9.044	9.120	9.217	9.322
65	0.98	0.02	0.0	-7.066	0.0	9.87020-02	3.896	9.490	9.325	9.245	9.301
66	0.0	0.02	1.1674D-09	-7.278	3.55120-02	0.1077	3.777	9.282	9.334	9.346	9.376
67	0.54	0.02	0.0	-7.278	0.0	0.1355	3.865	9.451	9.397	9.382	9.424
68	0.16	0.04	2.9061D-10	-1.889	8.10920-03	0.1617	3.819	9.373	9.402	9.431	9.467
69	0.0	0.0	9.5572D-10	-7.384	3.59530-02	0.1853	3.766	9.252	9.348	9.421	9.504
70	0.0	0.0	7.3291D-10	-7.798	3.79980-02	0.1825	3.739	9.173	9.291	9.386	9.481

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.7805	1.6844	9.61541D-02	3.52355E-09	0.15159	0.24774

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.98175	0.98175	0.55105	1.50324D-13

71	0.0	0.0	5.4262D-10	-7.212	3.4924D-02	0.1658	3.717	9.123	9.239	9.345	9.446
72	0.0	0.0	4.4685D-10	-7.001	3.3767D-02	0.1480	3.700	9.084	9.193	9.304	9.407
73	0.0	0.0	4.2382D-10	-7.497	3.6211D-02	0.1300	3.681	9.058	9.151	9.263	9.369
74	0.0	0.0	4.0463D-10	-7.877	3.8062D-02	0.1146	3.663	9.036	9.117	9.222	9.331
75	0.0	0.0	3.6558D-10	-7.797	3.7580D-02	0.1007	3.648	9.017	9.087	9.185	9.295
76	0.0	0.0	2.9289D-10	-6.825	3.2564D-02	8.08650-02	3.637	8.999	9.066	9.152	9.264
77	1.23	0.01	0.0	-6.825	0.0	5.8167C-02	2.923	9.546	9.347	9.214	9.259

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.2700	1.2300	6.56181D-03	2.47638D-09	0.21311	0.22007

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.79810	0.79810	0.21879	1.614140-13

78	0.0	0.03	1.1746D-09	-6.621	3.2186D-02	9.4952D-02	3.785	9.306	9.352	9.353	9.367
79	0.0	0.0	6.5714D-10	-6.212	2.9958D-02	0.1339	3.752	9.200	9.287	9.346	9.415
80	0.0	0.0	5.8441D-10	-7.267	3.5239D-02	0.1417	3.724	9.135	9.234	9.320	9.408
81	0.0	0.0	4.7818D-10	-7.220	3.4902D-02	0.1340	3.703	9.090	9.188	9.288	9.384
82	0.65	0.02	0.0	-7.220	0.0	0.1222	3.851	9.393	9.290	9.286	9.361
83	0.85	0.04	1.1234D-09	-4.802	2.3198D-02	0.1264	3.922	9.590	9.506	9.435	9.430
84	0.14	0.01	0.0	-4.802	0.0	0.1901	3.840	9.436	9.478	9.512	9.568

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.7424	1.6425	9.80801D-02	4.01773D-09	0.15548	0.25356

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.94318	0.94318	0.54381	1.620760-13

MONTHLY WATER BUDGET (CM) FOR MONTH 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
5.0825	4.8064	0.24120	1.29880D-08	0.68885	0.93005

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
3.9390	3.9390	0.17851	6.05663D-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 4

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
85	0.0	0.03	5.87310-10	-2.925	1.84060-02	0.2342	3.787	9.311	9.410	9.492	9.581
86	0.0	0.0	7.5464D-10	-6.741	3.26690-02	0.2242	3.757	9.226	9.348	9.447	9.546
87	0.0	0.0	6.42170-10	-7.290	3.53860-02	0.1997	3.735	9.163	9.292	9.399	9.501
88	0.62	0.01	0.0	-7.290	0.0	0.1745	3.864	9.438	9.375	9.390	9.467
89	0.0	0.03	1.0778D-09	-7.200	3.5101D-02	0.1726	3.776	9.281	9.361	9.419	9.491
90	0.0	0.0	7.4899D-10	-7.394	3.5964D-02	0.1791	3.747	9.192	9.303	9.390	9.481
91	0.0	0.0	3.5993D-10	-4.629	2.1794D-02	0.1670	3.730	9.140	9.251	9.352	9.450

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.66040	0.62040	7.49304D-02	4.17085D-09	0.17932	0.25425

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.3513	1.3513	-0.91017	1.49367D-13

92	0.0	0.0	3.05950-10	-4.572	2.1437D-02	0.1508	3.713	9.104	9.207	9.313	9.414
93	0.47	0.04	6.45290-10	-6.658	3.2336D-02	0.1341	3.813	9.308	9.255	9.295	9.383
94	0.47	0.03	0.0	-6.658	0.0	0.1276	3.853	9.425	9.372	9.353	9.397
95	0.73	0.04	5.6496D-10	-2.533	1.1628D-02	0.1502	3.914	9.576	9.515	9.473	9.487
96	0.0	0.0	1.5580D-09	-7.639	3.7435D-02	0.2131	3.804	9.363	9.451	9.512	9.585
97	0.0	0.0	9.5445D-10	-7.420	3.6176D-02	0.2345	3.767	9.261	9.377	9.472	9.567
98	0.0	0.0	7.20310-10	-7.384	3.5900D-02	0.2130	3.744	9.188	9.318	9.423	9.524

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.7805	1.6704	0.11018	4.74894D-09	0.17491	0.28509

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.2233	1.2233	0.27217	1.45439D-13

99	0.21	0.03	0.0	-7.384	0.0	0.1867	3.785	9.264	9.304	9.384	9.481
100	0.73	0.04	1.97220-10	-1.312	5.36200-03	0.1689	3.896	9.522	9.450	9.427	9.476
101	0.0	0.0	1.33680-09	-7.399	3.6171D-02	0.1916	3.792	9.329	9.412	9.470	9.539
102	0.0	0.0	8.50290-10	-7.288	3.5475D-02	0.2077	3.759	9.232	9.345	9.436	9.528
103	0.0	0.0	3.88480-10	-4.442	2.0887D-02	0.1922	3.743	9.170	9.291	9.392	9.492
104	0.47	0.01	0.0	-4.442	0.0	0.1704	3.836	9.377	9.339	9.376	9.459
105	0.50	0.04	1.5038D-02	-0.3569	4.3429D-04	0.1657	3.871	9.475	9.441	9.437	9.484

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
2.0295	1.9080	0.12145	1.50384D-02	9.83284D-02	0.23482

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.2831	1.2831	0.51153	1.45661D-13

106	0.0	0.0	4.2835D-02	-0.5262	1.0816D-03	0.1923	3.786	9.304	9.393	9.457	9.531
107	0.37	0.05	0.0	-0.5262	0.0	0.2023	3.843	9.411	9.410	9.450	9.526
108	2.24	0.14	0.0	-0.5262	0.0	0.2453	4.089	10.01	9.918	9.831	9.793
109	0.11	0.04	0.0	-0.5262	0.0	0.5922	3.918	9.659	9.763	9.858	9.956
110	0.0	0.10	4.8437D-02	-0.5195	1.2177D-03	0.5432	3.850	9.490	9.628	9.743	9.850
111	0.0	0.0	5.5051D-02	-0.5734	1.3805D-03	0.4176	3.809	9.375	9.520	9.638	9.746
112	0.11	0.06	0.0	-0.5734	0.0	0.3286	3.813	9.367	9.462	9.562	9.664

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
3.2995	2.8320	0.38451	0.14632	3.67988D-03	0.53451

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.5215	2.5215	0.16049	1.65146D-13

MONTHLY WATER BUDGET (CM) FOR MONTH 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
7.7699	7.0307	0.69107	0.16136	0.45624	1.3087

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
6.3791	6.3791	3.402790-02	5.98910D-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 5

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
113	0.0	0.08	1.91590-02	-0.4146	4.8409D-04	0.2739	3.777	9.282	9.402	9.506	9.607
114	0.0	0.0	5.6645D-02	-0.6152	1.4178D-03	0.2344	3.752	9.192	9.337	9.448	9.552
115	0.0	0.0	6.0655D-02	-0.6526	1.5177D-03	0.2007	3.727	9.128	9.274	9.392	9.498
116	0.0	0.0	5.9967D-02	-0.6664	1.4983D-03	0.1706	3.706	9.078	9.216	9.340	9.448
117	0.0	0.0	5.9469D-02	-0.6826	1.4852D-03	0.1467	3.684	9.049	9.158	9.288	9.400
118	0.37	0.02	0.0	-0.6826	0.0	0.1252	3.786	9.232	9.193	9.257	9.357
119	0.0	0.12	3.8856D-02	-0.5425	9.7892D-04	0.1132	3.732	9.137	9.200	9.261	9.341

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.51054	0.37054	0.22298	0.29475	7.382030-03	0.52512

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.2648	1.2648	-1.1964	1.53044C-13

120	0.0	0.0	5.8887D-02	-0.6651	1.4746D-03	0.1092	3.701	9.071	9.159	9.241	9.330
121	0.0	0.0	5.7321D-02	-0.6809	1.4347D-03	0.1030	3.675	9.033	9.116	9.208	9.308
122	0.0	0.0	5.6227D-02	-0.6931	1.4034D-03	9.2430D-02	3.654	9.006	9.079	9.172	9.279
123	0.0	0.0	5.6283D-02	-0.7125	1.4013D-03	6.8811D-02	3.635	8.980	9.054	9.140	9.255
124	0.0	0.0	4.1940D-02	-0.6549	1.0417D-03	4.6803C-02	3.621	8.967	9.035	9.114	9.237
125	0.0	0.0	5.6158D-02	-0.7414	1.3949D-03	3.0475D-02	3.603	8.949	9.018	9.092	9.223
126	0.0	0.0	5.8336D-02	-0.7671	1.4431D-03	1.7581D-02	3.586	8.933	9.001	9.077	9.211

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.0	0.0	0.0	0.38515	9.59384D-03	0.39475

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.46831	0.46831	-0.86306	1.51101D-13

127	0.0	0.0	5.6901D-02	-0.7734	1.4014D-03	4.9488D-03	3.571	8.920	8.987	9.068	9.199
128	0.0	0.0	1.5373D-02	-0.5660	3.5508D-04	0.0	3.574	8.924	8.984	9.061	9.185
129	0.62	0.05	0.0	-0.5660	0.0	0.0	3.793	9.207	9.086	9.082	9.180
130	0.98	0.14	4.2412D-02	-0.4806	1.1587D-03	7.8676D-03	3.908	9.526	9.373	9.232	9.234
131	0.0	0.0	5.0447D-02	-0.5656	1.2761D-03	8.8715D-02	3.782	9.291	9.345	9.350	9.364
132	0.0	0.0	5.9812D-02	-0.6350	1.4987D-03	0.1320	3.746	9.172	9.274	9.338	9.409
133	0.0	0.0	6.1676D-02	-0.6652	1.5441D-03	0.1382	3.716	9.101	9.213	9.307	9.399

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.7805	1.5947	0.18588	0.28662	7.23406D-03	0.47973

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.37178	0.37178	0.92904	-9.10635C-06

134	0.0	0.0	4.3610D-02	-0.5950	1.0915D-03	0.1287	3.696	9.064	9.163	9.270	9.371
135	0.0	0.0	5.1562D-02	-0.6526	1.2898D-03	0.1160	3.675	9.034	9.121	9.229	9.336
136	0.0	0.0	2.3106D-02	-0.5203	5.7575D-04	0.1026	3.667	9.022	9.090	9.189	9.300
137	0.0	0.0	3.3429D-02	-0.5826	8.3505D-04	8.4574D-02	3.654	9.002	9.069	9.156	9.268
138	1.13	0.01	0.0	-0.5826	0.0	6.1081C-02	3.910	9.516	9.324	9.208	9.261
139	3.55	0.12	0.0	-0.5826	0.0	0.1988	4.178	10.23	10.14	10.04	9.986
140	0.0	0.02	4.5401D-02	-0.4610	1.1476D-03	0.9254	3.938	9.726	9.864	9.980	10.09

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
4.8311	4.6777	0.15334	0.19711	4.93968D-03	0.35539

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.6172	1.6172	2.8585	2.05835E-13

MONTHLY WATER BUDGET (CM) FOR MONTH 5

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
7.1222	6.6429	0.56220	1.1636	2.91496D-02	1.7550

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
3.7221	3.7221	1.7281	-9.10635E-06

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 6

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
141	0.0	0.0	6.1542D-02	-0.5730	1.5444D-03	0.6831	3.872	9.548	9.693	9.813	9.923
142	0.0	0.0	5.5796D-02	-0.5680	1.3995D-03	0.4860	3.826	9.424	9.570	9.689	9.758
143	0.0	0.0	3.7154D-02	-0.4932	9.3233D-04	0.3694	3.795	9.334	9.476	9.593	9.701
144	0.0	0.0	2.9624D-02	-0.4697	7.4339D-04	0.2939	3.771	9.262	9.401	9.516	9.623
145	0.37	0.02	0.0	-0.4697	0.0	0.2431	3.839	9.402	9.415	9.478	9.568
146	0.0	0.12	5.3679D-02	-0.5865	1.3502D-03	0.2205	3.773	9.267	9.376	9.461	9.551
147	0.0	0.0	5.5954D-02	-0.6155	1.4006D-03	0.2059	3.747	9.175	9.311	9.415	9.515

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.51054	0.37054	0.14000	0.29375	7.37057D-03	0.44112

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.5018	2.5018	-2.4324	1.61204E-13

148	0.0	0.0	5.3817D-02	-0.6222	1.3470D-03	0.1816	3.723	9.117	9.251	9.366	9.470
149	0.0	0.0	5.3436D-02	-0.6378	1.3359D-03	0.1578	3.702	9.073	9.197	9.318	9.425
150	0.0	0.0	5.4416D-02	-0.6604	1.3599D-03	0.1368	3.681	9.044	9.146	9.270	9.380
151	0.0	0.0	5.5919D-02	-0.6836	1.3929D-03	0.1177	3.663	9.019	9.105	9.222	9.337
152	0.0	0.0	4.5456D-02	-0.6442	1.1266D-03	0.1018	3.650	9.000	9.075	9.178	9.295
153	1.38	0.03	0.0	-0.6442	0.0	8.1887E-02	3.946	9.605	9.410	9.254	9.279
154	0.0	0.11	5.9158D-02	-0.6022	1.4955D-03	0.1130	3.794	9.325	9.385	9.398	9.420

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.5189	1.3789	0.14000	0.32220	8.05777D-03	0.47026

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.89062	0.89062	0.15804	1.64975D-13

155	0.0	0.0	4.3502D-02	-0.5472	1.0918D-03	0.1571	3.758	9.210	9.311	9.382	9.459
156	0.0	0.0	6.0385D-02	-0.6505	1.5118D-03	0.1600	3.728	9.130	9.251	9.347	9.442
157	0.0	0.0	5.8458D-02	-0.6602	1.4621D-03	0.1476	3.704	9.076	9.195	9.307	9.408
158	0.0	0.0	5.3861D-02	-0.6569	1.3473D-03	0.1306	3.683	9.045	9.145	9.262	9.370
159	0.0	0.0	4.6228D-02	-0.6333	1.1528D-03	0.1145	3.666	9.023	9.106	9.217	9.330
160	0.11	0.05	0.0	-0.6333	0.0	9.9647D-02	3.707	9.071	9.101	9.182	9.291
161	0.97	0.10	0.0	-0.6333	0.0	8.2974D-02	3.899	9.499	9.333	9.233	9.279

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.2700	1.0830	0.14713	0.26243	6.56577D-03	0.41613

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.89240	0.89240	-7.83682D-02	1.42455D-13

162	0.0	0.04	5.3469D-02	-0.5835	1.3515D-03	0.1013	3.776	9.275	9.330	9.340	9.365
163	0.0	0.0	5.4191D-02	-0.6097	1.3580D-03	0.1300	3.743	9.164	9.264	9.329	9.401
164	0.11	0.05	0.0	-0.6097	0.0	0.1347	3.758	9.184	9.235	9.306	9.393
165	0.71	0.14	3.8705D-02	-0.4761	1.0443D-03	0.1293	3.873	9.454	9.364	9.336	9.389
166	0.0	0.0	4.1462D-02	-0.5245	1.0490D-03	0.1426	3.776	9.276	9.347	9.388	9.444
167	0.0	0.0	3.3463D-02	-0.5032	8.3963D-04	0.1595	3.750	9.182	9.287	9.367	9.451
168	0.0	0.0	5.6955D-02	-0.6385	1.4261D-03	0.1546	3.721	9.113	9.231	9.331	9.428

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.0084	0.81912	0.22910	0.27825	7.06848D-03	0.51441

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.95189	0.95189	-0.41809	1.45703D-13

MONTHLY WATER BUDGET (CM) FOR MONTH 6

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
4.3078	3.6516	0.65623	1.1566	2.90626D-02	1.8419

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
5.2367	5.2367	-2.7708	6.07864D-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 7

DAY	INFILT	INTCPT	ETI(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
169	0.0	0.0	4.28390-02	-0.5858	1.0720D-03	0.1408	3.702	9.073	9.180	9.292	9.394
170	0.0	0.0	6.27600-02	-0.7056	1.5697D-03	0.1244	3.677	9.037	9.133	9.248	9.356
171	0.0	0.0	4.5240D-02	-0.6324	1.1263D-03	0.1096	3.662	9.017	9.095	9.204	9.317
172	0.0	0.0	4.3262D-02	-0.6352	1.0742D-03	9.4062C-02	3.648	8.997	9.069	9.164	9.279
173	0.37	0.04	0.0	-0.6352	0.0	6.6902C-02	3.767	9.171	9.115	9.153	9.255
174	7.58	0.10	0.0	-0.6352	0.0	0.5154	4.412	10.71	10.71	10.75	10.94
175	0.41	0.14	0.0	-0.6352	0.0	1.928	4.096	10.13	10.30	10.57	10.91

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
8.6411	8.3575	0.28256	0.19410	4.84215D-03	0.48150

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.9791	2.9791	5.1795	2.21892C-13

176	0.0	0.00	5.8202D-02	-0.4969	1.4608D-03	1.475	3.992	9.872	10.04	10.19	10.38
177	0.11	0.05	0.0	-0.4969	0.0	1.002	3.945	9.734	9.856	9.968	10.07
178	0.20	0.14	4.6733D-02	-0.4849	1.1903D-03	0.6808	3.911	9.630	9.734	9.836	9.938
179	0.0	0.0	4.6984D-02	-0.5155	1.1815D-03	0.5185	3.844	9.472	9.610	9.725	9.831
180	0.0	0.0	5.1094D-02	-0.5563	1.2814D-03	0.4011	3.805	9.362	9.506	9.624	9.732
181	0.0	0.0	5.16980-02	-0.5756	1.2954D-03	0.3166	3.774	9.275	9.422	9.540	9.648
182	0.37	0.04	0.0	-0.5756	0.0	0.2587	3.843	9.414	9.431	9.496	9.587

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.0084	0.67994	0.23149	0.25471	6.40948D-03	0.49261

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
4.6523	4.6523	-4.2335	1.87406C-13

183	0.0	0.10	3.73750-02	-0.5031	9.4282D-04	0.2325	3.779	9.265	9.391	9.477	9.568
184	0.0	0.0	5.4477D-02	-0.6048	1.3641D-03	0.2153	3.752	9.191	9.326	9.430	9.530
185	0.0	0.0	5.7414D-02	-0.6371	1.4369D-03	0.1900	3.727	9.126	9.265	9.379	9.483
186	0.0	0.0	5.29080-02	-0.6311	1.3225D-03	0.1640	3.707	9.079	9.209	9.330	9.437
187	0.0	0.0	4.66810-02	-0.6170	1.1675D-03	0.1422	3.688	9.053	9.158	9.282	9.391
188	2.91	0.03	0.0	-0.6170	0.0	0.1384	4.110	10.04	9.897	9.721	9.576
189	0.73	0.14	3.0782D-02	-0.3716	8.2474D-04	0.5017	3.994	9.816	9.852	9.903	9.979

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
3.8100	3.6449	0.26307	0.27564	7.05857D-03	0.54976

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.5840	1.5840	1.7742	1.74458D-13

190	0.0	0.0	4.2817D-02	-0.4775	1.0804D-03	0.6231	3.879	9.567	9.701	9.813	9.918
191	0.0	0.0	4.0263D-02	-0.4887	1.0118D-03	0.4876	3.832	9.440	9.579	9.695	9.803
192	0.11	0.04	0.0	-0.4887	0.0	0.3767	3.829	9.414	9.512	9.612	9.714
193	0.72	0.14	5.0487D-02	-0.5065	1.3282D-03	0.3174	3.924	9.608	9.595	9.620	9.687
194	0.0	0.0	5.3977D-02	-0.5626	1.3606D-03	0.3284	3.819	9.402	9.517	9.609	9.702
195	0.0	0.0	5.8344D-02	-0.6050	1.4626D-03	0.3045	3.780	9.291	9.430	9.540	9.644
196	0.0	0.0	5.2791D-02	-0.5933	1.3214D-03	0.2570	3.757	9.208	9.357	9.473	9.579

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.0084	0.83031	0.17807	0.29868	7.56503D-03	0.48432

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.6950	2.6950	-2.1709	1.580960-13

MONTHLY WATER BUDGET (CM) FOR MONTH 7

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
14.468	13.513	0.95519	1.0271	2.587520-02	2.0082

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
11.910	11.910	0.54921	7.341300-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 8

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
197	0.0	0.0	5.3729D-02	-0.6137	1.3445D-03	0.2147	3.734	9.145	9.293	9.412	9.519
198	0.0	0.0	5.3505D-02	-0.6272	1.3381D-03	0.1814	3.714	9.096	9.235	9.358	9.466
199	0.0	0.0	5.8043D-02	-0.6686	1.4503D-03	0.1549	3.692	9.060	9.178	9.307	9.417
200	0.0	0.0	5.6767D-02	-0.6789	1.4150D-03	0.1324	3.673	9.034	9.131	9.256	9.370
201	0.0	0.0	3.9096D-02	-0.6022	9.7004D-04	0.1135	3.661	9.017	9.096	9.210	9.325
202	0.0	0.0	4.6065D-02	-0.6496	1.1435D-03	9.73520-02	3.647	8.996	9.070	9.168	9.284
203	1.38	0.05	0.0	-0.6496	0.0	7.3208D-02	3.945	9.602	9.404	9.246	9.273

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.5189	1.3789	4.832100-02	0.30721	7.661500-03	0.36319

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.96758	0.96758	9.646900-02	1.562920-13

204	0.46	0.05	0.0	-0.6496	0.0	0.1136	3.888	9.529	9.497	9.457	9.448
205	0.0	0.09	3.34850-02	-0.4739	8.4840D-04	0.1925	3.798	9.339	9.423	9.482	9.551
206	0.0	0.0	4.53800-02	-0.5523	1.1384D-03	0.2143	3.763	9.232	9.352	9.445	9.539
207	0.0	0.0	4.24460-02	-0.5536	1.0630D-03	0.1974	3.741	9.161	9.292	9.398	9.499
208	0.0	0.0	3.99230-02	-0.5554	9.99650-04	0.1728	3.721	9.113	9.238	9.351	9.455
209	0.0	0.0	5.22040-02	-0.6338	1.3056D-03	0.1512	3.700	9.069	9.186	9.306	9.412
210	0.0	0.0	4.93890-02	-0.6368	1.2349D-03	0.1211	3.680	9.042	9.139	9.259	9.369

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.51054	0.46222	0.14000	0.26283	6.589990-03	0.40942

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.1729	1.1729	-0.98013	1.585810-13

211	0.0	0.0	5.4242D-02	-0.6763	1.3521D-03	0.1139	3.662	9.018	9.100	9.214	9.327
212	0.0	0.0	5.5564D-02	-0.6982	1.3793D-03	9.85090-02	3.645	8.993	9.070	9.171	9.287
213	1.64	0.05	0.0	-0.6982	0.0	7.6836D-02	3.978	9.686	9.488	9.295	9.283
214	4.01	0.14	3.2151D-02	-0.2876	9.4220D-04	0.3650	4.224	10.34	10.26	10.24	10.25
215	0.0	0.05	0.0	-0.2876	0.0	1.191	3.979	9.836	9.982	10.11	10.24
216	0.0	0.09	4.0951D-02	-0.4553	1.0299D-03	0.8749	3.906	9.639	9.781	9.901	10.01
217	0.0	0.0	3.8487D-02	-0.4692	9.6754D-04	0.5835	3.853	9.499	9.639	9.757	9.865

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
5.9792	5.6541	0.32505	0.22140	5.671030-03	0.55212

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
3.3041	3.3041	2.1230	2.38254D-13

218	0.0	0.0	4.4093D-02	-0.5171	1.1066D-03	0.4307	3.814	9.388	9.531	9.648	9.756
219	0.0	0.0	4.3184D-02	-0.5290	1.0828D-03	0.3361	3.783	9.300	9.444	9.561	9.668
220	0.0	0.0	4.1132D-02	-0.5328	1.0363D-03	0.2713	3.762	9.226	9.372	9.488	9.595
221	0.0	0.0	4.8555D-02	-0.5838	1.2151D-03	0.2242	3.741	9.160	9.309	9.427	9.533
222	0.0	0.0	4.7377D-02	-0.5922	1.1855D-03	0.1892	3.720	9.112	9.250	9.371	9.478
223	0.0	0.0	5.4760D-02	-0.6461	1.3687D-03	0.1608	3.700	9.070	9.196	9.321	9.429
224	0.0	0.0	5.1748D-02	-0.6476	1.2923D-03	0.1383	3.681	9.044	9.145	9.271	9.383

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.0	0.0	0.0	0.33085	8.281360-03	0.33913

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.7506	1.7506	-2.0898	1.48548D-13

MONTHLY WATER BUDGET (CM) FOR MONTH 8

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
8.0086	7.4952	0.51337	1.1223	2.820390-02	1.6639

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
7.1952	7.1952	-0.85046	6.966660-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 9

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
225	0.0	0.0	4.67410-02	-0.6363	1.16380-03	0.1184	2.666	9.023	9.107	9.224	9.338
226	0.0	0.0	3.74500-02	-0.6007	9.29040-04	0.1023	3.655	9.006	9.078	9.181	9.257
227	2.65	0.04	0.0	-0.6007	0.0	9.22480-02	4.080	9.954	9.782	9.564	9.393
228	2.64	0.12	0.0	-0.6007	0.0	0.5055	4.156	10.20	10.17	10.17	10.21
229	0.53	0.12	0.0	-0.6007	0.0	1.109	4.027	9.929	10.02	10.12	10.23
230	0.0	0.02	3.14650-02	-0.4021	7.94980-04	0.9157	3.919	9.674	9.813	9.930	10.04
231	1.24	0.02	0.0	-0.4021	0.0	0.6857	4.045	9.933	9.940	9.972	10.04

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
7.4981	7.0526	0.32075	0.11566	2.887770-03	0.43929

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
3.5287	3.5287	3.4054	2.07709D-13

232	0.12	0.14	3.71400-02	-0.4300	9.47790-04	0.7432	3.923	9.672	9.788	9.893	9.996
233	0.0	0.0	4.12410-02	-0.4806	1.03760-03	0.5815	3.857	9.509	9.648	9.763	9.871
234	1.50	0.03	0.0	-0.4806	0.0	0.4824	4.047	9.921	9.890	9.883	9.925
235	0.0	0.11	4.89750-02	-0.5026	1.23600-03	0.6293	3.889	9.594	9.726	9.836	9.941
236	0.0	0.0	5.45420-02	-0.5563	1.36890-03	0.5128	3.836	9.453	9.595	9.713	9.821
237	0.0	0.0	5.23880-02	-0.5653	1.31340-03	0.3904	3.800	9.348	9.494	9.612	9.721
238	0.0	0.0	5.02080-02	-0.5703	1.25790-03	0.3079	3.771	9.264	9.412	9.530	9.638

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.7805	1.6253	0.28000	0.28449	7.161670-03	0.57165

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
3.6475	3.6475	-2.3139	1.77983D-13

239	0.0	0.0	4.86850-02	-0.5765	1.21820-03	0.2506	3.752	9.190	9.343	9.461	9.568
240	0.0	0.0	3.95010-02	-0.5452	9.88560-04	0.2084	3.733	9.140	9.283	9.401	9.509
241	0.0	0.0	4.14820-02	-0.5675	1.03790-03	0.1758	3.715	9.098	9.229	9.349	9.457
242	0.0	0.0	5.01560-02	-0.6280	1.25420-03	0.1511	3.695	9.063	9.176	9.301	9.410
243	0.0	0.0	3.51190-02	-0.5662	8.77900-04	0.1298	3.681	9.043	9.135	9.254	9.365
244	0.0	0.0	2.76910-02	-0.5389	6.91660-04	0.1124	3.671	9.028	9.104	9.211	9.324
245	0.0	0.0	4.07190-02	-0.6157	1.01620-03	9.7433D-02	3.656	9.007	9.077	9.173	9.285

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.0	0.0	0.0	0.28335	7.08504D-03	0.29044

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.1255	1.1255	-1.4159	1.51434D-13

246	0.51	0.04	0.0	-0.6157	0.0	7.3576D-02	3.800	9.252	9.155	9.167	9.261
247	1.19	0.14	3.1393D-02	-0.4074	8.9018D-04	7.3511D-02	3.947	9.629	9.489	9.346	9.307
248	0.26	0.02	0.0	-0.4074	0.0	0.1433	3.862	9.481	9.490	9.489	9.512
249	0.0	0.12	3.11370-02	-0.4655	7.87570-04	0.2149	3.792	9.323	9.417	9.488	9.568
250	0.0	0.0	2.60050-02	-0.4569	6.53820-04	0.2200	3.764	9.235	9.352	9.447	9.543
251	0.0	0.0	3.84270-02	-0.5328	9.62610-04	0.1993	3.743	9.164	9.294	9.400	9.501
252	0.0	0.0	5.07720-02	-0.6096	1.27080-03	0.1140	3.719	9.109	9.239	9.353	9.457

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
2.2784	1.9580	0.32037	0.17773	4.564990-03	0.50267

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.0986	1.0986	0.67714	1.72529D-13

MONTHLY WATER BUDGET (CM) FOR MONTH 9

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
11.557	10.636	0.92112	0.86123	2.16995D-02	1.8041

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
9.4002	9.4002	0.35276	7.01278D-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 10

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
253	0.0	0.0	5.19740-02	-0.6336	1.2996D-03	0.1520	3.699	9.068	9.185	9.307	9.413
254	0.0	0.0	4.5026D-02	-0.6148	1.1258D-03	0.1316	3.681	9.043	9.139	9.259	9.370
255	0.0	0.0	4.6044D-02	-0.6335	1.1482D-03	0.1141	3.665	9.022	9.103	9.215	9.328
256	0.0	0.0	4.7053D-02	-0.6518	1.1694D-03	9.8835D-02	3.650	9.000	9.074	9.173	9.288
257	0.0	0.0	4.3195D-02	-0.6471	1.0732D-03	7.3483C-02	3.636	8.981	9.053	9.140	9.257
258	0.0	0.0	4.4631D-02	-0.6683	1.1100D-03	4.7650C-02	3.621	8.966	9.035	9.114	9.237
259	0.0	0.0	4.3623D-02	-0.6755	1.0811D-03	3.0816C-02	3.608	8.954	9.020	9.093	9.223

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.0	0.0	0.0	0.32154	8.00745D-03	0.32955

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.64867	0.64867	-0.57823	1.61510D-13

260	0.11	0.03	0.0	-0.6755	0.0	1.8568D-02	3.661	9.001	9.029	9.084	9.213
261	0.0	0.11	2.4082D-02	-0.5524	6.0601D-04	1.2302D-02	3.638	8.981	9.034	9.087	9.211
262	6.03	0.00	0.0	-0.5524	0.0	0.2062	4.311	10.51	10.41	10.30	10.25
263	0.0	0.10	0.0	-0.5524	0.0	1.317	3.997	9.885	10.04	10.18	10.36
264	0.0	0.04	3.5805D-02	-0.4217	9.0102D-04	0.9805	3.923	9.684	9.827	9.948	10.06
265	0.62	0.02	0.0	-0.4217	0.0	0.6680	3.973	9.766	9.812	9.878	9.964
266	0.49	0.06	0.0	-0.4217	0.0	0.6069	3.957	9.731	9.786	9.857	9.944

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
7.6886	7.2490	0.36052	5.96871D-02	1.50703D-03	0.42191

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
3.8098	3.8098	3.3778	2.12871C-13

267	0.19	0.06	0.0	-0.4217	0.0	0.5647	3.904	9.610	9.701	9.793	9.891
268	0.0	0.08	3.5335D-02	-0.4613	8.9058D-04	0.4755	3.838	9.457	9.589	9.700	9.805
269	0.0	0.0	4.4809D-02	-0.5276	1.1243D-03	0.3794	3.801	9.350	9.491	9.607	9.714
270	0.0	0.0	4.1349D-02	-0.5259	1.0367D-03	0.3038	3.773	9.269	9.412	9.528	9.635
271	0.0	0.0	4.5749D-02	-0.5613	1.1450D-03	0.2491	3.753	9.195	9.344	9.461	9.567
272	0.0	0.0	4.5689D-02	-0.5758	1.1436D-03	0.2080	3.732	9.140	9.283	9.402	9.509
273	0.0	0.0	3.7044D-02	-0.5451	9.2704D-04	0.1759	3.716	9.100	9.229	9.349	9.457

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.24892	0.18801	0.14000	0.24998	6.26732D-03	0.39624

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.3563	2.3563	-2.4245	1.49727C-13

274	0.11	0.01	0.0	-0.5451	0.0	0.1513	3.741	9.144	9.205	9.307	9.411
275	0.03	0.05	0.0	-0.5451	0.0	0.1325	3.729	9.125	9.191	9.281	9.378
276	0.0	0.09	3.0518D-02	-0.5216	7.6554D-04	0.1197	3.706	9.078	9.162	9.254	9.351
277	0.0	0.0	3.7198D-02	-0.5733	9.3201D-04	0.1096	3.685	9.048	9.128	9.221	9.323
278	0.0	0.0	3.9726D-02	-0.6009	9.9408D-04	9.8658D-02	3.668	9.023	9.095	9.187	9.292
279	0.0	0.0	3.2953D-02	-0.5792	8.2353D-04	8.0642D-02	3.655	9.004	9.070	9.155	9.265
280	1.13	0.04	0.0	-0.5792	0.0	5.5642D-02	3.910	9.517	9.325	9.208	9.260

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.5596	1.2653	0.19708	0.14040	3.51515D-03	0.34099

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.75218	0.75218	0.36923	1.43691D-13

MONTHLY WATER BUDGET (CM) FOR MONTH 10

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
9.4971	8.7023	0.69760	0.77180	1.92969D-02	1.4887

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
7.5669	7.5669	0.34428	6.62671D-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 11

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
281	0.0	0.10	5.6729D-02	-0.5990	1.4339D-03	9.1939D-02	3.778	9.279	9.330	9.333	9.351
282	0.0	0.0	4.0508D-02	-0.5402	1.0162D-03	0.1253	3.747	9.173	9.265	9.325	9.394
283	0.0	0.0	3.2609D-02	-0.5183	8.1797D-04	0.1320	3.723	9.116	9.212	9.299	9.388
284	0.0	0.0	2.8952D-02	-0.5147	7.2548D-04	0.1247	3.706	9.077	9.169	9.268	9.364
285	0.0	0.0	3.7758D-10	-6.769	3.2505D-02	0.1144	3.681	9.054	9.135	9.232	9.335
286	0.0	0.0	3.1975D-10	-6.342	3.0245D-02	0.1028	3.665	9.034	9.105	9.197	9.303
287	0.07	0.01	0.0	-6.342	0.0	8.8475D-02	3.695	9.056	9.091	9.169	9.274

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.10922	6.92200D-02	0.11014	0.15880	6.67437D-02	0.33568

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.77965	0.77965	-0.93597	1.60108D-13

288	0.0	0.03	1.2518D-10	-2.659	1.1519D-02	6.7161D-02	3.677	9.036	9.081	9.154	9.257
289	0.0	0.0	2.6481D-10	-5.668	2.6765D-02	5.3879D-02	3.656	9.015	9.068	9.139	9.247
290	0.0	0.0	2.7413D-10	-6.434	3.0583D-02	4.3693D-02	3.638	8.995	9.055	9.125	9.238
291	0.0	0.0	2.4572D-10	-6.300	2.9826D-02	3.4708D-02	3.624	8.980	9.042	9.111	9.229
292	0.0	0.0	2.2500D-10	-6.133	2.8912D-02	2.6604D-02	3.612	8.969	9.031	9.098	9.222
293	0.86	0.01	0.0	-6.133	0.0	2.0746D-02	3.854	9.372	9.187	9.134	9.222
294	0.83	0.04	1.2418D-09	-5.765	2.8067D-02	5.1768D-02	3.909	9.549	9.440	9.329	9.295

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.7399	1.6914	7.54825D-02	2.37666D-09	0.15567	0.23116

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.29856	0.29856	1.2372	1.46058D-13

295	0.0	0.0	1.1443D-09	-6.203	3.0065D-02	0.1258	3.793	9.327	9.388	9.411	9.447
296	0.0	0.0	6.7432D-10	-5.942	2.8605D-02	0.1669	3.759	9.223	9.320	9.394	9.475
297	0.0	0.0	5.1761D-10	-6.018	2.8903D-02	0.1667	3.736	9.156	9.267	9.361	9.455
298	0.76	0.00	0.0	-6.018	0.0	0.1549	3.886	9.467	9.395	9.375	9.436
299	0.22	0.04	5.8966D-10	-3.211	1.4889D-02	0.1662	3.833	9.407	9.427	9.449	9.500
300	0.0	0.0	4.2427D-10	-3.153	1.4441D-02	0.1955	3.778	9.285	9.374	9.444	9.529
301	0.0	0.0	6.2447D-10	-6.075	2.9250D-02	0.1951	3.751	9.202	9.316	9.409	9.503

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.0211	0.97635	4.47287D-02	3.97468D-09	0.14615	0.19088

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.1713	1.1713	-0.34108	1.50879D-13

302	0.0	0.0	6.2991D-10	-7.688	3.7390D-02	0.1775	3.726	9.143	9.263	9.367	9.467
303	0.0	0.0	5.4094D-10	-7.895	3.8351D-02	0.1578	3.705	9.099	9.214	9.325	9.427
304	0.61	0.03	0.0	-7.895	0.0	0.1397	3.846	9.386	9.300	9.314	9.395
305	2.07	0.04	2.9757D-09	-6.660	3.2955D-02	0.1583	4.061	9.928	9.818	9.695	9.617
306	0.07	0.03	0.0	-6.660	0.0	0.4208	3.889	9.584	9.679	9.763	9.853
307	0.0	0.01	1.1867D-09	-5.207	2.5068D-02	0.4428	3.831	9.441	9.569	9.677	9.781
308	0.14	0.04	1.3474D-09	-7.354	3.5989D-02	0.3618	3.826	9.407	9.504	9.602	9.703

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
3.0404	2.8902	0.15014	6.68063D-09	0.16975	0.31990

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.8587	1.8587	0.86180	1.88738E-13

MONTHLY WATER BUDGET (CM) FOR MONTH 11

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
5.9106	5.6273	0.38049	0.15880	0.53832	1.0776

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
4.1082	4.1082	0.82196	6.35506E-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 12

DAY	INFILT	INTCPT	ETI(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
309	0.0	0.0	1.0847D-09	-7.290	3.5561D-02	0.3025	3.783	9.307	9.434	9.540	9.642
310	0.0	0.0	8.3745D-10	-7.442	3.6246D-02	0.2569	3.757	9.231	9.366	9.477	9.581
311	0.0	0.0	6.8795D-10	-7.656	3.7255D-02	0.2170	3.736	9.169	9.307	9.420	9.525
312	0.0	0.0	5.5003D-10	-7.353	3.5638D-02	0.1855	3.716	9.124	9.253	9.368	9.474
313	0.0	0.0	3.6428D-10	-5.705	2.7171D-02	0.1594	3.704	9.089	9.206	9.322	9.428
314	0.0	0.0	4.4184D-10	-7.654	3.7031D-02	0.1387	3.684	9.063	9.162	9.279	9.386
315	0.65	0.04	0.0	-7.654	0.0	0.1209	3.845	9.373	9.264	9.269	9.352

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
0.69088	0.65088	3.786270-02	3.966300-09	0.20890	0.24676

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.3810	1.3810	-0.93898	1.54315D-13

316	0.54	0.04	1.4129D-09	-7.598	3.7304D-02	0.1187	3.867	9.461	9.404	9.367	9.390
317	0.47	0.03	0.0	-7.598	0.0	0.1527	3.879	9.502	9.475	9.460	9.491
318	0.22	0.04	1.3723D-09	-6.763	3.3014D-02	0.2043	3.838	9.425	9.461	9.501	9.565
319	0.0	0.0	1.0720D-09	-7.170	3.4946D-02	0.2289	3.780	9.295	9.399	9.482	9.571
320	0.0	0.0	7.4363D-10	-6.949	3.3714D-02	0.2179	3.753	9.213	9.337	9.437	9.536
321	0.0	0.0	4.7680D-10	-5.669	2.7116D-02	0.1939	3.735	9.156	9.282	9.389	9.491
322	0.0	0.0	2.3634D-10	-3.416	1.5581D-02	0.1687	3.723	9.121	9.234	9.344	9.448

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.3386	1.2329	0.10784	5.31399D-09	0.18168	0.28952

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
1.2851	1.2851	-0.23394	1.45293D-13

323	2.50	0.02	0.0	-3.416	0.0	0.1641	4.085	9.981	9.848	9.697	9.594
324	0.0	0.02	2.9421D-09	-7.175	3.5264D-02	0.4292	3.876	9.562	9.674	9.767	9.861
325	0.0	0.0	1.5242D-09	-6.910	3.3750D-02	0.4438	3.826	9.428	9.561	9.672	9.777
326	0.0	0.0	9.5061D-10	-5.589	2.8950D-02	0.3558	3.794	9.336	9.472	9.585	9.691
327	0.0	0.0	5.7671D-10	-4.732	2.2465D-02	0.2883	3.771	9.266	9.400	9.513	9.618
328	0.0	0.0	4.9846D-10	-5.012	2.3829D-02	0.2393	3.753	9.205	9.340	9.451	9.556
329	0.0	0.0	3.2968D-10	-4.054	1.8851D-02	0.2030	3.738	9.158	9.287	9.398	9.503

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
2.5400	2.5000	4.00000D-02	6.82176D-09	0.16317	0.20317

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.1235	2.1235	0.21328	1.78968E-13

330	0.0	0.0	4.8736D-10	-6.697	3.2287D-02	0.1737	3.715	9.118	9.238	9.351	9.455
331	0.03	0.02	0.0	-6.697	0.0	0.1514	3.723	9.112	9.200	9.309	9.413
332	0.0	0.02	1.6612D-10	-2.853	1.2655D-02	0.1326	3.709	9.083	9.170	9.274	9.376
333	0.0	0.0	3.5427D-10	-6.272	2.9987D-02	0.1178	3.685	9.058	9.139	9.238	9.342
334	0.0	0.0	3.7016D-10	-7.191	3.4582D-02	0.1055	3.665	9.036	9.109	9.203	9.309
335	0.0	0.0	3.2367D-10	-6.916	3.3103D-02	9.2171D-02	3.651	9.017	9.082	9.171	9.278
336	0.0	0.0	3.2545D-10	-7.561	3.6313D-02	6.8454D-02	3.635	8.997	9.063	9.144	9.255

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
7.11200D-02	3.11200E-02	4.00000D-02	2.02703D-09	0.17893	0.21893

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.84162	0.84162	-0.98943	1.57471D-13

MONTHLY WATER BUDGET (CM) FOR MONTH 12

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
4.6406	4.4149	0.22571	1.81291D-08	0.73267	0.95838

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
5.6313	5.6313	-1.9491	6.22821D-13

PROSPER. A MODEL OF ATMOSPHERE-SOIL-PLANT WATER FLOW.

1969 TOWNSITE METEORLOGICAL DATA. WALKER BRANCH PRECIPITATION DATA MONTH 13

DAY	INFILT	INTCPT	ET(CM)	PSI(CM)	SOIL EVAP	DRAINAGE	SOIL 1	SOIL 2	SOIL 3	SOIL 4	SOIL 5
337	0.0	0.0	2.92200-10	-7.431	3.55760-02	4.87510-02	3.620	8.980	9.047	9.122	9.240
338	0.0	0.0	2.93070-10	-7.941	3.80980-02	3.45390-02	3.605	8.968	9.032	9.104	9.228
339	0.0	0.0	2.40230-10	-6.949	3.29E40-02	2.37100-02	3.595	8.958	9.020	9.088	9.218
340	0.47	0.02	0.0	-6.949	0.0	1.54450-02	3.770	9.167	9.086	9.098	9.214
341	1.76	0.04	4.90930-10	-1.918	8.72160-03	3.26290-02	4.006	9.768	9.597	9.392	9.288
342	0.0	0.0	5.56520-10	-2.219	9.83000-03	0.1672	3.831	9.434	9.499	9.532	9.578
343	0.0	0.0	5.05140-10	-3.427	1.58670-02	0.2440	3.788	9.314	9.417	9.502	9.593

WEEKLY SUMMARY FOR WEEK 1

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
2.2911	2.2280	6.31161D-02	2.37809D-09	0.14108	0.20419

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.56628	0.56628	1.5206	1.59650D-13

344	1.55	0.01	0.0	-3.427	0.0	0.2462	4.019	9.827	9.739	9.669	9.665
345	0.0	0.03	3.31180-10	-1.226	4.84830-03	0.3912	3.862	9.520	9.624	9.712	9.803
346	0.0	0.0	1.04310-09	-5.313	2.55640-02	0.3923	3.815	9.396	9.524	9.632	9.736
347	0.0	0.0	9.66390-10	-6.632	3.22020-02	0.3240	3.783	9.308	9.442	9.554	9.660
348	0.0	0.0	6.10220-10	-5.424	2.59620-02	0.2670	3.762	9.239	9.375	9.487	9.592
349	0.0	0.0	5.54540-10	-6.010	2.88840-02	0.2232	3.743	9.180	9.317	9.429	9.534
350	0.0	0.0	5.56220-10	-7.163	3.46880-02	0.1904	3.721	9.134	9.263	9.377	9.482

WEEKLY SUMMARY FOR WEEK 2

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.5900	1.5580	4.00000-02	4.06163D-09	0.15215	0.19215

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
2.0343	2.0343	-0.63643	1.68754C-13

351	0.0	0.0	4.68880-10	-7.040	3.39870-02	0.1634	3.704	9.095	9.214	9.330	9.436
352	0.0	0.0	3.18630-10	-5.509	2.61230-02	0.1423	3.693	9.069	9.170	9.287	9.393
353	0.0	0.0	3.51940-10	-6.545	3.13290-02	0.1235	3.676	9.049	9.135	9.245	9.353
354	0.0	0.0	3.59150-10	-7.246	3.48290-02	0.1086	3.659	9.030	9.104	9.205	9.315
355	0.98	0.01	0.0	-7.246	0.0	9.55100-02	3.893	9.479	9.308	9.229	9.290
356	0.06	0.04	6.64050-10	-4.193	1.97860-02	0.1026	3.790	9.307	9.337	9.338	9.362
357	0.0	0.0	3.80590-10	-3.694	1.71240-02	0.1298	3.756	9.204	9.284	9.338	9.405

WEEKLY SUMMARY FOR WEEK 3

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
1.0922	1.0380	5.41793D-02	2.54323D-09	0.16318	0.21736

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
0.86573	0.86573	9.11582D-03	1.48478D-13

358	0.0	0.0	5.17210-10	-6.367	3.06620-02	0.1380	3.728	9.139	9.234	9.315	9.402
359	1.21	0.01	0.0	-6.367	0.0	0.1340	3.949	9.633	9.500	9.400	9.412
360	0.43	0.04	1.33470-09	-4.819	2.32310-02	0.1852	3.891	9.545	9.544	9.547	9.583
361	0.0	0.0	1.29980-09	-6.627	3.22590-02	0.2612	3.805	9.367	9.467	9.546	9.632
362	0.65	0.02	0.0	-6.627	0.0	0.2641	3.908	9.569	9.544	9.560	9.624
363	2.82	0.04	8.70080-10	-1.252	5.68970-03	0.4096	4.150	10.17	10.12	10.08	10.09
364	10.95	0.00	0.0	-1.252	0.0	1.716	4.483	12.45	10.80	14.38	11.21
365	0.0	0.04	6.53750-09	-3.083	1.48780-02	2.030	4.084	10.12	10.38	13.14	11.21

WEEKLY SUMMARY FOR WEEK 4

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
16.210	16.054	0.15611	1.05592C-08	0.10672	0.26283

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
5.1385	7.9915	7.9560	3.75477E-13

MONTHLY WATER BUDGET (CM) FOR MONTH 13

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
21.184	20.870	0.31341	1.95422E-08	0.56312	0.87653

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
8.6048	11.458	8.8493	8.45851E-13

ANNUAL WATER BUDGET (CM)

PRECIPITATION	INFILTRATION	INTERCEPT-ET	TRANSPIRATION	SOIL EVAP	TOTAL ET
123.41	116.43	6.9749	6.4229	4.2207	17.618

DRAINAGE	OUTFLOW	SOIL STORAGE	BALANCE
95.314	98.167	7.6228	-9.10634E-06