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RUNOFF HYDROGRAPH COMPUTATION *FOR* ATTANAGALU OYA CATCHMENT

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ABSTRACT

This research aims at developing runoff hydrographs, for Attanagalu Oya catchment.The repetitive calculations involved were efficiently done on a personal computer.

The calculation of the rainfall excess which is an essential part in computing runoff hydrographs,was done using the curvenumber developed by the US Soil Conservation Service.

The Williams' and SCS synthetic unit hydrographs were used to develop runoff hydrographs.The Computed runoff hydrographs were compared with the observed hydrographs and were found to be satisfactory with respect to peakflows.

These methods are easy to use and they seem to be promising in hydrological studies on ungauged catchments.The curvenumber method and the Williams' approach are worthy of further investigation.

This dissertation has not been previously presented in whole or part,to any university or institution for a higher degree.

UOM Verified Signature

D A J Ranwala

It is proper for you,Kalamas,to doubt,and to be uncertain.Uncertainty has arisen in you about what is doubtful.Do not go upon report;do not go upon tradition;do not go upon hearsay;do not go upon scriptures;do not go upon cognition;do not go upon dogmatic notions;do not go upon person's seeming ability.Kalamas when you yourselves know:"These things are bad;these things are blamable;these things are censured by wise;these things lead to harm",abandon them.

Gauthama Buddha

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LIST OF SYMBOLS

A	-	Catchment area
AMC	-	Antecedent moisture condition
B	-	Watershed parameter
CN	-	SCS runoff curvenumber
D	-	Rainfall duration
e	-	Base of the natural logarithm
I	-	Inflow rate
i(t)	-	Arbitary excitation of rainfall
IR1,IR2	-	Rainfall excess for substorms
k	-	Recession constant
k1	-	Second recession constant
L	-	Mainstream length
n	-	Shape constant
$\Gamma(n)$	-	Gamma function
O	-	Outflow rate

P	-	Depth of rainfall
Pe	-	Rainfall excess
Q	-	Depth of runoff
q	-	Discharge
Q_p	-	Peakflow of SCS unit hydrograph
q_p	-	Peakflow of Williams' unit hydrograph
Q(t)	-	Response function
q(t)	-	Ordinates of Williams' instantaneous unit hydrograph
R	-	Potential maximum retention
R1	-	Ratio of recession constant to time to peak
RF	-	Total depth of rainfall five days before a flood event
RO1,RO2	-	Depth of runoff
S	-	Storage
s	-	Catchment slope
T	-	Unit rain duration of SCS unit hydrograph
t	-	Time
t_0	-	Time to inflexion point of Williams' unit hydrograph
t_1	-	Time upto the second segment of Williams' unit hydrograph
T_c	-	Time of concentration

t_p	-	Time to peak of Williams' unit hydrograph
T_p	-	Time to peak of SCS unit hydrograph
U(D,t)	-	Unit hydrograph of duration D
V	-	Volume of runoff
v	-	Average velocity
V(t)	-	Intergrating factor
W	-	Watershed length to width ratio
Z		Time dummy variable of intergration