

VIII.3.3-API-HAR2 HARRISBURG (MARFC) API-RUNOFF OPERATION

Identifier: API-HAR2

Operation Number: 41

Developed by: Middle Atlantic River Forecast Center

Parameter Array: The FORTRAN identifier used for the parameter array is PO. The contents of the array are:

<u>Position</u>	<u>Type</u>	<u>Contents</u>
1	I*4	Operation version number
2-3	R*4	Runoff zone identifier
4-8	R*4	Runoff zone name
9	I*4	Runoff zone number
10	R*4	Latitude of runoff zone centroid (units of decimal degrees)
11	R*4	Longitude of runoff zone centroid (units of decimal degrees)
12	R*4	Wet curve AEI value (units of IN)
13	R*4	Wet curve AI intercept (units of IN)
14	R*4	Wet curve curvature
15	R*4	Dry curve AEI value (units of IN)
16	R*4	Dry curve AI intercept (units of IN)
17	R*4	Dry curve curvature
18	R*4	Precipitation quadrant coefficient PA
19	R*4	Precipitation quadrant coefficient PB
20	R*4	Precipitation quadrant coefficient PC
21	R*4	Precipitation quadrant coefficient PD
22	R*4	Precipitation quadrant coefficient PE
23	R*4	Potential ET adjustment factor
24	R*4	New storm rain/melt threshold value (units of IN)

<u>Position</u>	<u>Type</u>	<u>Contents</u>
25	R*4	24 hour API recession factor
26	I*4	Computational time step interval (hours)
27	I*4	Number of hours in the new storm window
28	I*4	Number of periods in the new storm window
29	I*4	Number of positions needed in the CO array
30	I*4	API/AEI/AI time series output indicator
31	I*4	Initial carryover input indicator
32-33	R*4	Internal identifier of the rain/melt time series
34	R*4	Data type code of the rain/melt time series
35-36	R*4	Internal identifier of the potential ET time series
37	R*4	Data type code of the potential ET time series
38-39	R*4	Internal identifier of the runoff time series
40	R*4	Data type code of the runoff time series
41-42	R*4	Internal identifier of the storm AI time series
43	R*4	Data type code of the storm AI time series
44-45	R*4	Internal identifier of the storm API time series
46	R*4	Data type code of the storm API time series
47-48	R*4	Internal identifier of the storm AEI time series
49	R*4	Data type code of the storm AEI time series
50-55	I*4	Not used (zeros)

Carryover Array: The FORTRAN identifier used for the carryover array is CO. The contents of the array are:

<u>Position</u>	<u>Type</u>	<u>Contents</u>
1	R*4	12Z API value (units of IN)
2	R*4	12Z AEI value (units of IN)
3	R*4	12Z AI value (units of IN)
4	R*4	Storm API value at 12Z (units of IN)

<u>Position</u>	<u>Type</u>	<u>Contents</u>
5	R*4	Storm AEI value at 12Z (units of IN)
6	R*4	Storm AI value at 12Z (units of IN)
7	R*4	Storm total rain/melt (units of IN)
8	R*4	Storm total runoff (units of IN)
9	R*4	24 hour rain/melt (units of IN)
10	R*4	24 hour runoff (units of IN)
11-PO(29)	R*4	Rain/melt for each period in the new storm window (units of IN)

Subroutines Names and Functions: Subroutines associated with this Operation are:

<u>Subroutine</u>	<u>Function</u>
PIN41	Input cards and store values in PO and CO arrays
PRP41	Print information stored in the PO array
PRC41	Print information stored in the CO array
EX41	Execute the Operation
AI41	Contain the season quadrant equations for the event-based MARFC API rainfall-runoff model
RO41	Contain the precipitation quadrant equations for the event-based MARFC API rainfall-runoff model
COX41	Perform carryover transfer
PUC41	Punch cards with information from the PO and CO arrays which may be used by the PIN routine
TAB41	Make entry into Operations Table

Subroutines PIN41, PRP41, PRC41, COX41 and PUC41 have the standard argument lists for these routines as described in section VIII.4.3.

SUBROUTINE EX41(PO,CO,PX,RO,PE,AIS,APIS,AEIS)

Function: This is the execution subroutine for Operation API-HAR2.

Argument List:

<u>Variable</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
PO	Input	R*4	55	Contains parameters and other information
CO	Both	R*4	Variable	Contains carryover data
PX	Input	R*4	Variable	Rain/melt time series data (units of MM)
RO	Output	R*4	Variable	Runoff time series data (units of MM)
PE	Input	R*4	Variable	Potential ET time series data (units of MM)
AIS	Output	R*4	Variable	Storm AI time series data (units of MM)
APIS	Output	R*4	Variable	Storm API time series data (units of MM)
AEIS	Output	R*4	Variable	Storm AEI time series data (units of MM)

SUBROUTINE TAB41(TO,LEFT,IUSET,NXT,LPO,PO,LCO,TS,MTS,LWORK,IDT)

Function: This is the Operations Table entry subroutine for Operation API-HAR2.

Argument List: The arguments for this subroutine are similar to the arguments for the Operations Table entry subroutines for the other Operations. A description of the arguments is contained in section VIII.4.2-TAB.

Operation Table Array: The contents of the TO array are:

<u>Position</u>	<u>Contents</u>
1	Operation number
2	Location of the next Operation to be executed
3	Location of the parameter array for the Operation in the P array
4	Location of the carryover array for the Operation in the C array
5	Location of rain + melt data in the D array
6	Location of potential evaporation data in the D array
7	Location of runoff data in the D array
8	Location of AI values in the D array: 0 = AI not output
9	Location of API values in the D array: 0 = API not output
10	Location of AEI values in the D array: 0 = AEI not output