***Input files***

1. basin.header

Flow direction file header

2. basin.dir

Flow direction file without head er (1-8 format, 9 for basin outlet)

3. basin.stn.list

Streamflow gauge information

Each line: <1> <gauge\_code> <gauge\_lat> <gauge\_lon> <1000> <1000> <1000>

where:

<1>: this column is not used, but need to be given (use value 1)

<gauge\_code>: gauge code. This column is not important, just need to give unique values for each gauge

<gauge\_lat>: gauge latitude

<gauge\_lon>: gauge longitude (this value minus 360 is the real longitude;

e.g., 236 for longitude = -124)

<1000>: these three columns are not used, but need to be given (use value 1000)

4. basin.stn.obs

Streamflow gauge observation (natualized flow) data

Each column: a gauge

Each line: a time step

unit: cfs

5. basin.runoff

Initial runoff guess field

Each row is initial runoff field for one time step

*For each row:*

There are nrow\*ncol number of values (nrow\*ncol is the dimension of the flow direction file); these are the initial runoff field for a certain time step. The row of values are in column order, i.e., when Matlab reads in each line, it fills in first column of a nrow\*ncol-size matrix, then fills in the second column, and so forth. For example, if a certain basin is of size of 2\*3, and the initial guess field for a certain time step is:

11 22 33

44 55 66

then this line in the input file should be:

11 44 22 55 33 66

[unit: mm]

***Input arguments***

Input arguments: <basin> <nst> <sst> <skpst>

Where:

<basin>: basin name

<nst>: total number of time steps in input files (station observation and initial runoff field), e.g., 4800

<sst>: length of smooth window [in number of time steps], e.g., 60

<skpst>: number of time steps to skip, e.g., 40

***Output file***

1. data\_all\_day\_<sst>\_skip<skpst>

Each line of this output is results for one active grid cell

*For each line:*

First column: longitude of the grid cell

Second column: latitude of the grid cell

From the third column: time series of inverted runoff for each time step. This time series skips the first <skpst> # of time steps, as well as skips another <ksteps> # of time steps; and includes maximum number of complete smooth windows. For example, if <skpst>=40 (skip the first 40 time steps), <sst>=60 (smooth window length), <nst>=4800 (total # input time steps), and <ksteps>=5 (max # time steps water flows from most upstream to most downstream gauge), then this output time series would be from the 46st time step through the 4785th time step (because in this case, there are 79 complete smooth windows).

***Other notes***

ksteps:

max number of time steps the water needs to flow from the most upstream headwater to the most downstream gauge station

nsteps:

<nst> - <sst>

(total # time steps in input files - # time steps to skip)

e.g., nsteps = 4800-40 = 4760