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1)

Number1 a.OpenFOAM

Pretty much any physical phenomenon associated to fluid dynamics can be represented with this software. The amount of packages incorporated and also its condition of an open source code make it useful to explore the possibilities of modeling several types of problems including the addition of a reactive model.

b SWAT

SWAT is a tool to evaluate soil and water at a basin scale. It is focused in precipitation-runoff modeling and transport of water and solutes through surface flow. It predicts the impacts of soil management practices in water resources and sediments

C. iRIC

iRIC (International River Interface Cooperative) is a software developed with the purpose of offering a complete simulation environment of the riverbed and its results can be exported and used to analyze, mitigate and prevent disasters, through the visualization of the results of the river simulation.

D. . SAGA GIS

SAGA GIS is a GIS platform oriented to spatial analysis. SAGA GIS is a simple but powerful tool, with a big library focused on spatial analysis and characterization of basins. The interpolation options in SAGA GIS are better implemented than in other free and commercial software.

E. Python

This is the favorite code for scientific, water resources and environment analysis. It has several packages for different tools such as GIS, mathematical analysis and artificial intelligence.

1. 2) Using the total direct runoff hydrograph given in Fig. Q1, derive a unit hydrograph for the l7I5 ac drainage area. (Provide soft copy of table and all necessary graphs)

SOLUTION

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| time | runoff | baseflow | direct runoff | depth of direct runoff | 2hr unit hydrograph ordinate | | |  |
| 1 | 110 | 110 | 0 | 1.415 | 0 |  |  |  |
| 2 | 120 | 110 | 10 | 1.415 | 7.067138 |  |  |  |
| 3 | 230 | 110 | 120 | 1.415 | 84.80565 |  |  |  |
| 4 | 570 | 110 | 460 | 1.415 | 325.0883 |  |  |  |
| 5 | 640 | 110 | 530 | 1.415 | 374.5583 |  |  |  |
| 6 | 430 | 110 | 320 | 1.415 | 226.1484 |  |  |  |
| 7 | 290 | 110 | 180 | 1.415 | 127.2085 |  |  |  |
| 8 | 200 | 110 | 90 | 1.415 | 63.60424 |  |  |  |
| 9 | 160 | 110 | 50 | 1.415 | 35.33569 |  |  |  |
| 10 | 120 | 110 | 10 | 1.415 | 7.067138 |  |  |  |
| 11 | 90 | 90 | 0 | 1.415 | 0 |  |  |  |
| 12 | 80 | 80 | 0 | 1.415 | 0 |  |  |  |

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