

DAFLOW

Model Uses DADFLOW is used for modeling and assessing stream flow based on Lagrangian methods while predicting discharge and transport velocity.

Major Categories Hydrology and Water Use

Subject Knowledge Level
Intermediate

Minor Categories Flow

Technical Difficulty Level
Intermediate

Model Type Physical Model

Geographic in Nature?
No

Abstract

DAFLOW is a digital model for routing stream flow using the diffusion analogy form of the flow equations in conjunction with a Lagrangian solution scheme. The flow model is designed to provide reasonable predictions of discharge and transport velocity using a minimum of field data and calibration. The use of hydraulic geometry coefficients for area and top-width contributes to the model's predictive capability.

The flow model is designed to support the BLTM transport model documented by Jobson and Schoellhamer (1987), which simulated the fate and movement of dissolved water-quality constituents through a network of upland streams and rivers. It also should be useful for routine flow routing applications.

Future Developments

Unknown

Model Limitations

Unknown

Model Features

- Diffusion analogy flow equations
- Lagrangian solution scheme
- Supports the BLTM transport model (Jobson and Schoellhamer)
- Supports WDAFLOW model inputs
- Supports WDM files

Required Data Types

(1) Network description including branch lengths, wave celerity, and wave attenuation.

(2) Inflow hydro graphs at the upstream boundaries and at tributaries input from either a flat file (DAFLOW or WDAFLO) or from a WDM file (WDAFLO).

Model Outputs

DAFLOW and WDAFLO both generate a flat file containing the discharge, cross-sectional area, top width, and tributary inflow at each grid point and time step. This format is compatible with BLTM input requirements. WDAFLO will also write the discharge to a WDM file.

Hardware Requirements

None noted.

| | Supported Platforms | | | |
|---------|-------------------------------------|-----------|-------------------------------------|--|
| DOS | <input checked="" type="checkbox"/> | UNIX | <input checked="" type="checkbox"/> | |
| Windows | <input type="checkbox"/> | Macintosh | <input type="checkbox"/> | |

Software Requirements

None noted.

Cost, Licensing and Availability

DAFLOW is provided free of charge from the link below.

Source

US Geological Survey

Source (URL)

<http://water.usgs.gov/software/daflow.html>