Editable Distributed Hydrological Model

Kan Lei

2021-04-12

Contents

The Document and the EDHM Package **5**

The Document 5

EDHM 5

1 Basic Concept **7**

1.1 Hydrological Cycle 7

1.2 Important Concept of EDHM 7

1.3 Data and Parameter 7

2 Model Use and Develop **9**

2.1 Model Structure or Concept 9

2.2 Use Model with a MODEL or Run_MODEL 9

2.3 Copuling a new Model with MODULE 9

2.4 Design a new MODULE 10

3 Modules **11**

3.1 ET 11

3.2 Baseflow 11

4 Model **13**

4.1 Classical VIC 13

4.2 GR4J 13

5 Final Words **15**

The Document and the EDHM Package

The Document

This document is the use guide for EDHM and some other information about the hydrological models (**HM**) building.

EDHM

EDHM is a R package for hydrological models in order to simplify the models building, specially the distributed hydrological model. In the package contain many complete **MODEL** that can used directly, and many **MODULE** that can a new MODEL to building. All of the MODELs and MODULEs are build with matrix-arithmetic, that can good deal with the distributed situation. In the package there are many tools to calibrate the parameters or build a new MODEL or a new MODULE. The Package is only in GitHub published, for the first time use, please install the package EDHM and HMtools use the following code:

```
install.packages("devtools")
library(devtools)
install_github("LuckyKanLei/HMtools")
install_github("LuckyKanLei/EDHM")
```

Chapter 1

Basic Concept

1.1 Hydrological Cycle

Process

1.2 Important Concept of EDHM

Process

Method

Module

Model

Run_Model

Evaluate

Calibrate

1.3 Data and Parameter

1.3.1 Variable naming

1.3.2 Data Structure

1.3.3 Data or Parameter

Chapter 2

Model Use and Develop

Choose a Model

virtue: convenience

shortage: poor adaptability

2.1 Model Structure or Concept

Design a Model

2.2 Use Model with a MODEL or Run_MODEL

2.2.1 Check the InData list

2.2.2 Data Preparation

2.2.3 Evaluate

2.2.4 Calibrate

2.3 Copuling a new Model with MODULE

2.3.1 Choose MODULE

2.3.2 Set the Data-FLow

2.3.3 Build the MODEL and Run_MODEL

2.4 Design a new MODULE

2.4.1 Method and Formula

2.4.2 Coding the Inhalt

2.4.3 Set In/OutData and Parameter

Here is a review of existing methods.

Chapter 3

Modules

3.1 ET

3.2 Baseflow

Chapter 4

Model

4.1 Classical VIC

4.2 GR4J

Chapter 5

Final Words

We have finished a nice book.