Package 'ambhasGW'

October 12, 2022

Title Ground Water Modelling

Version 0.0.2

Description Implements distributed transient groundwater modelling. The model is based on the groundwater flow equation solved numerically using the finite difference explicit scheme.

Depends R (>= 3.2.3)

Imports yaml, raster, stats, rgdal

License GPL (>= 3)

Repository CRAN

Encoding UTF-8

RoxygenNote 6.0.1.9000

NeedsCompilation no

Author Sat Tomer [aut, cre],
Sekhar Muddu [aut],
Vishal K. Mehta [aut],
Subash Yegina [aut],
Thiyaku S. [aut]

Maintainer Sat Tomer <sat.kumar@aapahinnovations.com>

Date/Publication 2017-08-02 13:53:06 UTC

R topics documented:

ambhasGW *Ground Water Modelling*

Description

ambhasGW Computes the groundwater head for each time step in raster format

Usage

```
ambhasGW(input.file)
```

Arguments

input.file	yml file having input parameters information

Examples

```
# Create necessary input file to make dummy run
# Dummy directory to run
dummy.dir <- tempdir()

# Make dummy run
create_inputs(dummy.dir)
input.file <- file.path(dummy.dir , 'input/parameters.yml')
ambhasGW(input.file)
```

create_inputs *Create dummy input data*

Description

Creates dummy data and corresponding yml file to run the model.

Usage

```
create_inputs(dummy.dir)
```

Arguments

dummy.dir	Dummy directory to input and output data

Examples

```
# Creates input data and yml file
create_inputs(tempdir())
```

`parameter_definition` *Parameters definition*

Description

Prints the parameters definition of given parameter

Usage

```
parameter_definition(par)
```

Arguments

`par`	Parameter name

Examples

```
parameter_definition('hini')
```

`update_horizontally` *Horizontal distribution of the flow in grid.*

Description

Simulates the horizontal distribution of the flow in grids based on the diffusivity.

Usage

```
update_horizontally(h, beta)
```

Arguments

`h`	Initial head
`beta`	a parameter based on the diffusivity, time step and grid size.

Value

Returns the updated head.

Examples

```
# create synthetic head:
h <- cbind(c(1,2,3),c(4,5,6),c(7,8,9))
h
beta <- 0.5
h1 <- update_horizontally(h, beta)
h1

# increase the value of beta:
beta <- 1.0
h1 <- update_horizontally(h, beta)

# decrease the value of beta:
beta <- 0
h1 <- update_horizontally(h, beta)
h1
```

`update_vertically` *Update the vertical flux components*

Description

Update the grids with net recharge and discharge, also computes the baseflow from each grid.

Usage

```
update_vertically(h, sy, net.recharge, p.baseflow, hmin.baseflow)
```

Arguments

`h`	Initial head raster
`sy`	Specific yield [0-1].
`net.recharge`	Net recharge (recharge - draft)
`p.baseflow`	parameter for the baseflow [0-1].
`hmin.baseflow`	head corresponding to zero baseflow.

Value

Returns a list containing the updated head and computed baseflow.

Examples

```
# create synthetic head and parameters
h <- 10
sy <- 0.01
net.recharge <- 1
p.baseflow <- 0.7
hmin.baseflow <- 5

# update the head and compute baseflow
out <- update_vertically(h, sy, net.recharge, p.baseflow, hmin.baseflow)
out
```

Index