

Package ‘ROpenFLUID’

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Type Package

Title R Interface to OpenFLUID Platform Framework for Modelling and
Simulation of Landscapes

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Description Provides a collection of functions to load, parameterize, run and analyze Open-
FLUID simulations within the GNU R environment.

URL <http://www.openfluid-project.org>

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Depends R (>= 2.6.2)

Suggests RUnit

LazyLoad yes

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`OpenFLUID.addExtraObserversPaths`

Adds paths to search for observers

Description

Adds paths to search for observers

Usage

`OpenFLUID.addExtraObserversPaths(paths)`

Arguments

paths the colon separated paths to add

See Also

`OpenFLUID.getObserversPaths`
`OpenFLUID.getExtraObserversPaths`
`OpenFLUID.resetExtraObserversPaths`

Examples

```
## Not run:  
OpenFLUID.addExtraObserversPaths("/first/path")  
OpenFLUID.addExtraObserversPaths("/second/path:/third/path")  
  
## End(Not run)
```

`OpenFLUID.addExtraSimulatorsPaths`
Adds paths to search for simulators

Description

Adds paths to search for simulators

Usage

```
OpenFLUID.addExtraSimulatorsPaths(paths)
```

Arguments

`paths` the colon separated paths to add

See Also

`OpenFLUID.getSimulatorsPaths`
`OpenFLUID.getExtraSimulatorsPaths`
`OpenFLUID.resetExtraSimulatorsPaths`

Examples

```
## Not run:  
OpenFLUID.addExtraSimulatorsPaths("/first/path")  
OpenFLUID.addExtraSimulatorsPaths("/second/path:/third/path")  
  
## End(Not run)
```

`OpenFLUID.addVariablesExportAsCSV`

Adds export of simulation variables as CSV files for a given units class

Description

Adds export of simulation variables as CSV files for a given units class

Usage

```
OpenFLUID.addVariablesExportAsCSV(ofblob, unitclass, unitid = -1,
                                 varname = "", precision = -1)
```

Arguments

<code>ofblob</code>	the simulation definition blob
<code>unitclass</code>	the units class to add for simulation variables export
<code>unitid</code>	the unit ID (optional)
<code>varname</code>	the name of the variable(s) (optional)
<code>precision</code>	the number of digits of the variables (optional)

See Also

`OpenFLUID.loadResult`

Examples

```
## Not run:
OpenFLUID.addVariablesExportAsCSV(ofsim, "TU")
OpenFLUID.addVariablesExportAsCSV(ofsim, "TU", 1, "var1", precision=14)
OpenFLUID.addVariablesExportAsCSV(ofsim, "TU", 2, "var1;var2")
OpenFLUID.addVariablesExportAsCSV(ofsim, "TU", 1, "*")

## End(Not run)
```

`OpenFLUID.createAttribute`

Creates an attribute for all spatial units of a class, initialized with a default value

Description

Creates an attribute for all spatial units of a class, initialized with a default value

Usage

```
OpenFLUID.createAttribute(ofblob, unitclass, attrname, attrval)
```

Arguments

ofblob	the simulation definition blob
unitclass	the unit class
attrname	the attribute name
attrval	the default attribute value for all units

See Also

```
OpenFLUID.getAttribute  
OpenFLUID.setAttribute  
OpenFLUID.removeAttribute
```

Examples

```
## Not run:  
OpenFLUID.createAttribute(ofsim, "SU", "area", 1.0)  
OpenFLUID.createAttribute(ofsim, "SU", "code", "NONE")  
  
## End(Not run)
```

OpenFLUID.getAttribute

Returns an attribute value for a given spatial unit

Description

Returns an attribute value for a given spatial unit

Usage

```
OpenFLUID.getAttribute(ofblob, unitclass, unitid, attrname)
```

Arguments

ofblob	the simulation definition blob
unitclass	the unit class
unitid	the unit ID
attrname	the name of the attribute

Value

the attribute value

See Also

OpenFLUID.createAttribute
OpenFLUID.setAttribute
OpenFLUID.removeAttribute

Examples

```
## Not run:  
val = OpenFLUID.getAttribute(ofsim, "SU", 18, "length")  
  
## End(Not run)
```

OpenFLUID.getDefaultDeltaT

Returns the simulation time step

Description

Returns the simulation time step

Usage

OpenFLUID.getDefaultDeltaT(ofblob)

Arguments

ofblob the simulation definition blob

Value

the time step value in seconds

See Also

OpenFLUID.setDefaultDeltaT

Examples

```
## Not run:  
deltat = OpenFLUID.getDefaultDeltaT(ofsim)  
  
## End(Not run)
```

```
OpenFLUID.getExtraObserversPaths  
    Returns the added paths to search for observers
```

Description

Returns the added paths to search for observers

Usage

```
OpenFLUID.getExtraObserversPaths()
```

Value

a vector of paths

See Also

```
OpenFLUID.addExtraObserversPaths  
OpenFLUID.getObserversPaths  
OpenFLUID.resetExtraObserversPaths
```

Examples

```
## Not run:  
paths = OpenFLUID.getExtraObserversPaths()  
  
## End(Not run)
```

```
OpenFLUID.getExtraSimulatorsPaths  
    Returns the added paths to search for simulators
```

Description

Returns the added paths to search for simulators

Usage

```
OpenFLUID.getExtraSimulatorsPaths()
```

Value

a vector of paths

See Also

`OpenFLUID.addExtraSimulatorsPaths`
`OpenFLUID.getSimulatorsPaths`
`OpenFLUID.resetExtraSimulatorsPaths`

Examples

```
## Not run:  

paths = OpenFLUID.getExtraSimulatorsPaths()  
  
## End(Not run)
```

`OpenFLUID.getGeneratorParam`
Returns a generator parameter value

Description

Returns a generator parameter value

Usage

`OpenFLUID.getGeneratorParam(ofblob, unitclass, varname, paramname)`

Arguments

<code>ofblob</code>	the simulation definition blob
<code>unitclass</code>	the unit class to which the generator is applied
<code>varname</code>	the variable name to which the generator is applied
<code>paramname</code>	the name of the parameter

Value

the parameter value

See Also

`OpenFLUID.setGeneratorParam`

Examples

```
## Not run:  

val = OpenFLUID.getGeneratorParam(ofsim, "SU", "var.flux", "fixedvalue")  
  
## End(Not run)
```

```
OpenFLUID.getModelGlobalParam  
    Returns a model global parameter value
```

Description

Returns a model global parameter value

Usage

```
OpenFLUID.getModelGlobalParam(ofblob, paramname)
```

Arguments

ofblob	the simulation definition blob
paramname	the name of the parameter

Value

the parameter value

See Also

```
OpenFLUID.setModelGlobalParam  
OpenFLUID.removeModelGlobalParam
```

Examples

```
## Not run:  
val = OpenFLUID.getModelGlobalParam(ofsim, "gvalue")  
  
## End(Not run)
```

```
OpenFLUID.getObserverParam  
    Returns an observer parameter value
```

Description

Returns an observer parameter value

Usage

```
OpenFLUID.getObserverParam(ofblob, obsid, paramname)
```

Arguments

<code>ofblob</code>	the simulation definition blob
<code>obsid</code>	the observer ID
<code>paramname</code>	the name of the parameter

Value

the parameter value

See Also

`OpenFLUID.setObserverParam`
`OpenFLUID.removeObserverParam`

Examples

```
## Not run:
val = OpenFLUID.getObserverParam(ofsim, "my.observer", "value")

## End(Not run)
```

`OpenFLUID.getObserversPaths`

Returns the paths to search for observers

Description

Returns the paths to search for observers

Usage

`OpenFLUID.getObserversPaths()`

Value

a vector of paths

See Also

`OpenFLUID.addExtraObserversPaths`
`OpenFLUID.getExtraObserversPaths`
`OpenFLUID.resetExtraObserversPaths`

Examples

```
## Not run:  
paths = OpenFLUID.getObserversPaths()  
  
## End(Not run)
```

OpenFLUID.getPeriodBeginDate
Returns the simulation period begin date

Description

Returns the simulation period begin date

Usage

```
OpenFLUID.getPeriodBeginDate(ofblob)
```

Arguments

ofblob the simulation definition blob

Value

the begin date as an ISO datetime string (%Y-%m-%d %H:%M:%S)

See Also

OpenFLUID.setPeriodBeginDate
OpenFLUID.getPeriodEndDate
OpenFLUID.setPeriodEndDate

Examples

```
## Not run:  
bdate = OpenFLUID.getPeriodBeginDate(ofsim)  
  
## End(Not run)
```

```
OpenFLUID.getPeriodEndDate  
    Returns the simulation period end date
```

Description

Returns the simulation period end date

Usage

```
OpenFLUID.getPeriodEndDate(ofblob)
```

Arguments

ofblob the simulation definition blob

Value

the end date as an ISO datetime string (%Y-%m-%d %H:%M:%S)

See Also

```
OpenFLUID.setPeriodEndDate  
OpenFLUID.getPeriodBeginDate  
OpenFLUID.setPeriodBeginDate
```

Examples

```
## Not run:  
edate = OpenFLUID.getPeriodEndDate(ofsim)  
  
## End(Not run)
```

```
OpenFLUID.getSimulatorParam  
    Returns a simulator parameter value
```

Description

Returns a simulator parameter value

Usage

```
OpenFLUID.getSimulatorParam(ofblob, simid, paramname)
```

Arguments

<code>ofblob</code>	the simulation definition blob
<code>simid</code>	the simulator ID
<code>paramname</code>	the name of the parameter

Value

the parameter value

See Also

`OpenFLUID.setSimulatorParam`
`OpenFLUID.removeSimulatorParam`

Examples

```
## Not run:  
val = OpenFLUID.getSimulatorParam(ofsim,"my.simulator","coeff")  
## End(Not run)
```

`OpenFLUID.getSimulatorsPaths`

Returns the paths to search for simulators

Description

Returns the paths to search for simulators

Usage

`OpenFLUID.getSimulatorsPaths()`

Value

a vector of paths

See Also

`OpenFLUID.addExtraSimulatorsPaths`
`OpenFLUID.getExtraSimulatorsPaths`
`OpenFLUID.resetExtraSimulatorsPaths`

Examples

```
## Not run:  
paths = OpenFLUID.getSimulatorsPaths()  
  
## End(Not run)
```

`OpenFLUID.getUnitsClasses`

Returns the existing units classes

Description

Returns the existing units classes

Usage

```
OpenFLUID.getUnitsClasses(ofblob)
```

Arguments

`ofblob` the simulation definition blob

Value

a vector of units classes

See Also

`OpenFLUID.getUnitsIDs`

Examples

```
## Not run:  
cls = OpenFLUID.getUnitsClasses(ofsim)  
  
## End(Not run)
```

```
OpenFLUID.getUnitsIDs
```

Returns the existing units IDs for a given units class

Description

Returns the existing units IDs for a given units class

Usage

```
OpenFLUID.getUnitsIDs(ofblob, unitclass)
```

Arguments

ofblob	the simulation definition blob
unitclass	the units class

Value

a vector of units IDs

See Also

```
OpenFLUID.getUnitsClasses
```

Examples

```
## Not run:  
ids = OpenFLUID.getUnitsIDs(ofsim, "SU")  
  
## End(Not run)
```

```
OpenFLUID.getVersion
```

Returns the OpenFLUID version

Description

Returns the OpenFLUID version

Usage

```
OpenFLUID.getVersion()
```

Value

the OpenFLUID version number

Examples

```
## Not run:  
v = OpenFLUID.getVersion()  
  
## End(Not run)
```

`OpenFLUID.loadResult`

Loads results as a dataframe, giving dataset informations

Description

Loads results as a dataframe, giving dataset informations

Usage

```
OpenFLUID.loadResult(ofblob, unitclass, unitid, varname)
```

Arguments

<code>ofblob</code>	the simulation definition blob
<code>unitclass</code>	the unit class
<code>unitid</code>	the unit ID
<code>varname</code>	the variable name

Value

a dataframe containing the simulation results

See Also

`OpenFLUID.loadResultFile`

Examples

```
## Not run:  
resSU18 = OpenFLUID.loadResult(ofsim,"SU",18,"runoff")  
resRS1 = OpenFLUID.loadResult(ofsim,"RS",1,"waterlevel")  
  
## End(Not run)
```

```
OpenFLUID.loadResultFile
```

Loads results as a dataframe, giving output file name

Description

Loads results as a dataframe, giving output file name

Usage

```
OpenFLUID.loadResultFile(filepath)
```

Arguments

filepath the full path of file to load

Value

a dataframe containing the simulation results

See Also

```
OpenFLUID.loadResult
```

Examples

```
## Not run:  
resSU18 = OpenFLUID.loadResultFile("/path/to/output/SU18_full.out")  
resRS1 = OpenFLUID.loadResultFile("/path/to/output/RS1_waterlevel.out")  
  
## End(Not run)
```

```
OpenFLUID.openDataset
```

Opens a dataset and returns a simulation definition blob

Description

Opens a dataset and returns a simulation definition blob

Usage

```
OpenFLUID.openDataset(path)
```

Arguments

path the full path of the dataset to open

Value

a simulation definition blob

See Also

OpenFLUID.openProject

OpenFLUID.runSimulation

Examples

```
## Not run:  
ofsim = OpenFLUID.openDataset("/path/to/dataset")  
  
## End(Not run)
```

OpenFLUID.openProject

Opens a project and returns a simulation definition blob

Description

Opens a project and returns a simulation definition blob

Usage

OpenFLUID.openProject (path)

Arguments

path the full project to open

Value

a simulation definition blob

See Also

OpenFLUID.openDataset

OpenFLUID.runProject

Examples

```
## Not run:  
ofsim = OpenFLUID.openProject("/path/to/project")  
  
## End(Not run)
```

```
OpenFLUID.printSimulationInfo
```

Prints informations to screen about simulation definition blob

Description

Prints informations to screen about simulation definition blob

Usage

```
OpenFLUID.printSimulationInfo(ofblob)
```

Arguments

ofblob the simulation definition blob

Examples

```
## Not run:  
OpenFLUID.printSimulationInfo(ofsim)  
  
## End(Not run)
```

```
OpenFLUID.removeAttribute
```

Removes an attribute value for a given spatial unit

Description

Removes an attribute value for a given spatial unit

Usage

```
OpenFLUID.removeAttribute(ofblob, unitclass, attrname)
```

Arguments

ofblob the simulation definition blob
unitclass the unit class
attrname the name of the attribute

See Also

`OpenFLUID.createAttribute`
`OpenFLUID.getAttribute`
`OpenFLUID.setAttribute`

Examples

```
## Not run:  
OpenFLUID.removeAttribute(ofsim, "SU", "length")  
  
## End(Not run)
```

`OpenFLUID.removeModelGlobalParam`
Removes a model global parameter value

Description

Removes a model global parameter value

Usage

```
OpenFLUID.removeModelGlobalParam(ofblob, paramname)
```

Arguments

<code>ofblob</code>	the simulation definition blob
<code>paramname</code>	the name of the parameter

See Also

`OpenFLUID.getModelGlobalParam`
`OpenFLUID.setModelGlobalParam`

Examples

```
## Not run:  
OpenFLUID.removeModelGlobalParam(ofsim, "gvalue")  
  
## End(Not run)
```

```
OpenFLUID.removeObserverParam  
    Removes a observer parameter
```

Description

Removes a observer parameter

Usage

```
OpenFLUID.removeObserverParam(ofblob, obsid, paramname)
```

Arguments

ofblob	the simulation definition blob
obsid	the simulation observer id
paramname	the name of the parameter

See Also

```
OpenFLUID.getObserverParam  
OpenFLUID.setObserverParam
```

Examples

```
## Not run:  
OpenFLUID.removeObserverParam(ofsim, "my.observer", "value")  
## End(Not run)
```

```
OpenFLUID.removeSimulatorParam  
    Removes a simulator parameter
```

Description

Removes a simulator parameter

Usage

```
OpenFLUID.removeSimulatorParam(ofblob, simid, paramname)
```

Arguments

ofblob	the simulation definition blob
simid	the simulation simulator id
paramname	the name of the parameter

See Also

`OpenFLUID.getSimulatorParam`
`OpenFLUID.setSimulatorParam`

Examples

```
## Not run:  
OpenFLUID.removeSimulatorParam(ofsim, "my.simulator", "coeff")  
  
## End(Not run)
```

`OpenFLUID.resetExtraObserversPaths`

Resets list of added paths to search for observers

Description

Resets list of added paths to search for observers

Usage

```
OpenFLUID.resetExtraObserversPaths()
```

See Also

`OpenFLUID.addExtraObserversPaths`
`OpenFLUID.getObserversPaths`
`OpenFLUID.getExtraObserversPaths`

Examples

```
## Not run:  
OpenFLUID.resetExtraObserversPaths()  
  
## End(Not run)
```

```
OpenFLUID.resetExtraSimulatorsPaths  
      Resets list of added paths to search for simulators
```

Description

Resets list of added paths to search for simulators

Usage

```
OpenFLUID.resetExtraSimulatorsPaths()
```

See Also

```
OpenFLUID.addExtraSimulatorsPaths  
OpenFLUID.getSimulatorsPaths  
OpenFLUID.getExtraSimulatorsPaths
```

Examples

```
## Not run:  
OpenFLUID.resetExtraSimulatorsPaths()  
  
## End(Not run)
```

```
OpenFLUID.runProject  
      Runs a project and returns a simulation definition blob
```

Description

Runs a project and returns a simulation definition blob

Usage

```
OpenFLUID.runProject(path, verbose = FALSE)
```

Arguments

path	the full path of the dataset to open
verbose	enable/disable verbose mode

Value

a simulation definition blob

See Also

`OpenFLUID.runSimulation`
`OpenFLUID.openProject`

Examples

```
## Not run:  
ofsim = OpenFLUID.runProject("/path/to/dataset")  
ofsim = OpenFLUID.runProject("/path/to/dataset", verbose=TRUE)  
  
## End(Not run)
```

OpenFLUID.runSimulation

Runs a simulation from a simulation definition blob

Description

Runs a simulation from a simulation definition blob

Usage

```
OpenFLUID.runSimulation(ofblob, verbose = FALSE)
```

Arguments

<code>ofblob</code>	the simulation definition blob
<code>verbose</code>	enable/disable verbose mode

See Also

`OpenFLUID.runProject`
`OpenFLUID.openProject`
`OpenFLUID.openDataset`

Examples

```
## Not run:  
OpenFLUID.runSimulation(ofsim)  
OpenFLUID.runSimulation(ofsim, verbose=TRUE)  
  
## End(Not run)
```

```
OpenFLUID.setAttribute
```

Sets an attribute value for a given spatial unit

Description

Sets an attribute value for a given spatial unit

Usage

```
OpenFLUID.setAttribute(ofblob, unitclass, unitid, attrname, attrval)
```

Arguments

ofblob	the simulation definition blob
unitclass	the unit class
unitid	the unit ID
attrname	the name of the attribute
attrval	the value of the attribute

See Also

```
OpenFLUID.createAttribute  
OpenFLUID.getAttribute  
OpenFLUID.removeAttribute
```

Examples

```
## Not run:  
OpenFLUID.setAttribute(ofsim,"SU",18,"length",12.3)  
OpenFLUID.setAttribute(ofsim,"SU",18,"CODE","ABC")  
  
## End(Not run)
```

```
OpenFLUID.setCurrentOutputDir  
      Sets the current output directory for simulations
```

Description

Sets the current output directory for simulations

Usage

```
OpenFLUID.setCurrentOutputDir(path)
```

Arguments

path	the output directory path
------	---------------------------

Examples

```
## Not run:  
OpenFLUID.setCurrentOutputDir("/path/to/output")  
  
## End(Not run)
```

```
OpenFLUID.setDefaultDeltaT  
      Sets the simulation time step
```

Description

Sets the simulation time step

Usage

```
OpenFLUID.setDefaultDeltaT(ofblob, deltat)
```

Arguments

ofblob	the simulation definition blob
deltat	the time step value in seconds

See Also

```
OpenFLUID.getDefaultDeltaT
```

Examples

```
## Not run:  
OpenFLUID.setDefaultDeltaT(60)  
OpenFLUID.setDefaultDeltaT(86400)  
  
## End(Not run)
```

```
OpenFLUID.setGeneratorParam  
      Sets a generator parameter value
```

Description

Sets a generator parameter value

Usage

```
OpenFLUID.setGeneratorParam(ofblob, unitclass, varname, paramname, paramval)
```

Arguments

ofblob	the simulation definition blob
unitclass	the unit class to which the generator is applied
varname	the variable name to which the generator is applied
paramname	the name of the parameter
paramval	the value of the parameter

See Also

`OpenFLUID.getGeneratorParam`

Examples

```
## Not run:  
OpenFLUID.setGeneratorParam(ofsim, "SU", "var.flux", "fixedvalue", 12.3)  
  
## End(Not run)
```

```
OpenFLUID.setModelGlobalParam  
      Sets a model global parameter value
```

Description

Sets a model global parameter value

Usage

```
OpenFLUID.setModelGlobalParam(ofblob, paramname, paramval)
```

Arguments

ofblob	the simulation definition blob
paramname	the name of the parameter
paramval	the value of the parameter

See Also

```
OpenFLUID.getModelGlobalParam  
OpenFLUID.removeModelGlobalParam
```

Examples

```
## Not run:  
OpenFLUID.setModelGlobalParam(ofsim, "gvalue", 37.2)  
## End(Not run)
```

```
OpenFLUID.setObserverParam  
      Sets an observer parameter value
```

Description

Sets an observer parameter value

Usage

```
OpenFLUID.setObserverParam(ofblob, obsid, paramname, paramval)
```

Arguments

ofblob	the simulation definition blob
obsid	the simulation observer id
paramname	the name of the parameter
paramval	the parameter value

See Also

`OpenFLUID.getObserverParam`
`OpenFLUID.removeObserverParam`

Examples

```
## Not run:  
OpenFLUID.setObserverParam(ofsim, "my.observer", "value", 3)  
  
## End(Not run)
```

`OpenFLUID.setPeriodBeginDate`
Sets the simulation period begin date

Description

Sets the simulation period begin date

Usage

`OpenFLUID.setPeriodBeginDate(ofblob, begindate)`

Arguments

ofblob	the simulation definition blob
begindate	the begin date as an ISO datetime string (%Y-%m-%d %H:%M:%S)

See Also

`OpenFLUID.getPeriodBeginDate`
`OpenFLUID.setPeriodEndDate`
`OpenFLUID.getPeriodEndDate`

Examples

```
## Not run:  
OpenFLUID.setPeriodBeginDate(ofsim, "1997-06-05 04:00:00")  
  
## End(Not run)
```

```
OpenFLUID.setPeriodEndDate  
      Sets the simulation period end date
```

Description

Sets the simulation period end date

Usage

```
OpenFLUID.setPeriodEndDate(ofblob, enddate)
```

Arguments

ofblob	the simulation definition blob
enddate	the end date as an ISO datetime string (%Y-%m-%d %H:%M:%S)

See Also

```
OpenFLUID.getPeriodEndDate  
OpenFLUID.setPeriodBeginDate  
OpenFLUID.getPeriodBeginDate
```

Examples

```
## Not run:  
OpenFLUID.setPeriodEndDate(ofsim, "1997-06-05 16:07:17")  
  
## End(Not run)
```

```
OpenFLUID.setSimulatorParam  
Sets a simulator parameter value
```

Description

Sets a simulator parameter value

Usage

```
OpenFLUID.setSimulatorParam(ofblob, simid, paramname, paramval)
```

Arguments

ofblob	the simulation definition blob
simid	the simulation simulator id
paramname	the name of the parameter
paramval	the parameter value

See Also

```
OpenFLUID.getSimulatorParam  
OpenFLUID.removeSimulatorParam
```

Examples

```
## Not run:  
OpenFLUID.setSimulatorParam(ofsim, "my.simulator", "coeff", 3)  
## End(Not run)
```

Description

Provides a collection of functions to load, parameterize, run and analyze OpenFLUID simulations within the GNU R environment.

Details

Package: ROpenFLUID
Type: Package
Version:
Date:
License: GPLv3 with special exception
LazyLoad: yes

Author(s)

Jean-Christophe Fabre <fabrejc@supagro.inra.fr>

Examples

```
## Not run:  
# load OpenFLUID library  
library("ROpenFLUID")  
  
# add optional paths to search for simulators  
OpenFLUID.addExtraSimulatorsPaths("/path/to/simulators")  
  
# open an input dataset  
ofsim = OpenFLUID.openDataset("/path/to/dataset")  
  
# set the output dir  
OpenFLUID.setCurrentOutputDir("/path/to/output")  
  
# run the simulation  
OpenFLUID.runSimulation(ofsim)  
  
## End(Not run)
```