Read the Docs Template Documentation

Release 1.0

Read the Docs

Jan 16, 2023

CONTENTS

Contents:

CHAPTER

ONE

GETTING STARTED

SWATy is a Python package to support the Soil & Water Assessment Tool (SWAT) model simulation and calibration.

CHAPTER

TWO

AUTHORS

- Chang Liao

CHAPTER

THREE

CONTRIBUTION

Swaty was developed and maintained by

- Chang Liao (Pacific Northwest National Laboratory)

CHAPTER

FOUR

GLOSSARY

4.1 SWAT

Soil & Water Assessment Tool

4.2 HRU

Hydrologic Response Units

4.3 PEST

Parameter Estimation (PEST), the software package, automates calibration, and calibration-constrained uncertainty analysis of any numerical model.

CHAPTER

FIVE

HISTORY

- 2017-05-12: Design
- 2020-04-12: Publish

CHAPTER

SIX

API REFERENCE

swaty.classes.pycase.CaseClassEncoder : public JSONEncoder

```
The JSON encoder for the pycase class

Args:
    JSONEncoder (_type_): The json encoder for hru class
```

Public Functions

default(*self*, *obj*)

swaty.classes.hru.HruClassEncoder : public JSONEncoder

```
The JSON encoder for the hru class

Args:
    JSONEncoder (_type_): The json encoder for hru class
```

Public Functions

default(*self*, *obj*)

swaty.classes.swatpara.ParaClassEncoder : public JSONEncoder

```
The general parameter JSON encoder

Args:
    JSONEncoder (_type_): _description_
```

Public Functions

default(*self*, *obj*)

swaty.classes.hru.pyhru : public object

```
The HRU class

Args:
    object (_type_): _description_

Returns:
    _type_: _description_
```

Public Functions

__init__(*self*, *aConfig_in=None*)

setup_parameter_by_dict(*self*, *aPara_in=None*)

```
Set up the hru class object parameter

Args:
    aPara_in (dict, optional): The dictionary that stores parameters. Defaults␣
↪to None.
```

setup_parameter_by_list(*self*, *aPara_in=None*)

```
Another function to set up the hru class object parameter

Args:
    aPara_in (list, optional): The list that stores parameters. Defaults to␣
↪None.
```

tojson(*self*)

```
Convert a hru object to a JSON object

Returns:
    _type_: _description_
```

Public Members

nParameter_hru

Public Static Attributes

lIndex_hru = -1

iFlag_hru = 0

nSoil_layer = 1

nParameter_hru = 0

aParameter_hru = None

aParameter_hru_name = None

aSoil = None

sSoil_type = ''

swaty.classes.soil.pysoil : public object

```
The soil class

Args:
    object (_type_): _description_

Returns:
    _type_: _description_
```

Public Functions

__init__(*self*, *aConfig_in=None*)

setup_parameter_by_dict(*self*, *aPara_in=None*)

```
Set up the soil class object parameter

Args:
    aPara_in (dict, optional): The dictionary that stores parameters. Defaults␣
↪to None.
```

setup_parameter_by_list(*self*, *aPara_in=None*)

```
Another function to set up the soil class object parameter

Args:
    aPara_in (list, optional): The list that stores parameters. Defaults to␣
↪None.
```

tojson(*self*)

```
Convert the object to a JSON object

Returns:
    _type_: _description_
```

Public Members

nParameter_soil

Public Static Attributes

lIndex_hru = -1

lIndex_soil_layer = -1

iFlag_soil = 0

sSoil_type = ''

nParameter_soil = 0

aParameter_soil = None

aParameter_soil_name = None

swaty.classes.subbasin.pysubbasin : public object

```
The subbasin class

Args:
    object (_type_): _description_

Returns:
    _type_: _description_
```

Public Functions

__init__(*self*, *aConfig_in=None*)

setup_parameter_by_dict(*self*, *aPara_in=None*)

```
Set up the subbasin class object parameter

Args:
    aPara_in (dict, optional): The dictionary that stores parameters. Defaults␣
↪to None.
```

setup_parameter_by_list(*self*, *aPara_in=None*)

```
Another function to set up the subbasin class object parameter

Args:
    aPara_in (list, optional): The list that stores parameters. Defaults to␣
↪None.
```

tojson(*self*)

```
Convert a subbasin object to a JSON object

Returns:
    _type_: _description_
```

Public Members

nParameter_subbasin

Public Static Attributes

lIndex_subbasin = -1

iFlag_subbasin = 0

nSoil_layer = 1

nParameter_subbasin = 0

aParameter_subbasin = None

aParameter_subbasin_name = None

swaty.classes.watershed.pywatershed : public object

```
The watershed class

Args:
    object (_type_): _description_

Returns:
    _type_: _description_
```

Public Functions

__init__(*self*, *aConfig_in=None*)

setup_parameter_by_dict(*self*, *aPara_in*)

```
Set up the watershed class object parameter

Args:
    aPara_in (dict, optional): The dictionary that stores parameters. Defaults␣
↪to None.
```

tojson(*self*)

```
Convert a watershed object to a JSON object

Returns:
    _type_: _description_
```

Public Members

nParameter_watershed

Public Static Attributes

lIndex_watershed = -1

iFlag_watershed = 0

nSoil_layer = 1

nParameter_watershed = 0

aParameter_watershed = None

aParameter_watershed_name = None

swaty.classes.soil.SoilClassEncoder : public JSONEncoder

```
The JSON encoder for the soil class

Args:
    JSONEncoder (_type_): _description_
```

Public Functions

default(*self*, *obj*)

swaty.classes.subbasin.SubbasinClassEncoder : public JSONEncoder

```
The subbasin class json encoder

Args:
    JSONEncoder (_type_): _description_
```

Public Functions

default(*self*, *obj*)

swaty.classes.pycase.swatcase : public object

```
The swat case class

Args:
    object (_type_): _description_

Returns:
    _type_: _description_
```

Public Functions

__init__(*self*, *aConfig_in*, *iFlag_read_discretization_in=None*, *iFlag_standalone_in=None*, *sDate_in=None*, *sWorkspace_output_in=None*, *aParameter_in=None*)

```
_summary_

:param aConfig_in: _description_
:type aConfig_in: _type_
:param iFlag_read_discretization_in: _description_, defaults to None
:type iFlag_read_discretization_in: _type_, optional
:param iFlag_standalone_in: _description_, defaults to None
:type iFlag_standalone_in: _type_, optional
```

(continues on next page)

(continued from previous page)

```
:param sDate_in: _description_, defaults to None
:type sDate_in: _type_, optional
:param sWorkspace_output_in: _description_, defaults to None
:type sWorkspace_output_in: _type_, optional
:param aParameter_in: _description_, defaults to None
:type aParameter_in: _type_, optional
```

copy_TxtInOut_files(*self*)

```
Copy the raw SWAT input files
```

prepare_pest_template_files(*self*)

```
Prepare all the PEST calibration template files
```

setup(*self*)

```
Set up a SWAT case
```

convert_pest_parameter_to_model_input(*self*, *sFilename_pest_parameter_watershed_in=None*, *sFilename_watershed_parameter_default_in=None*, *sFilename_watershed_parameter_bounds_in=None*, *sFilename_pest_parameter_subbasin_in=None*, *sFilename_subbasin_parameter_default_in=None*, *sFilename_subbasin_parameter_bounds_in=None*, *sFilename_pest_parameter_hru_in=None*, *sFilename_hru_parameter_default_in=None*, *sFilename_hru_parameter_bounds_in=None*, *sFilename_pest_parameter_soil_in=None*, *sFilename_soil_parameter_bounds_in=None*, *sWorkspace_soil_parameter_default_in=None*)

```
Convert the pest parameters into SWAT input file

Args:
    sFilename_pest_parameter_watershed_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_watershed_parameter_default_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_watershed_parameter_bounds_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_pest_parameter_subbasin_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_subbasin_parameter_default_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_subbasin_parameter_bounds_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_pest_parameter_hru_in (str, optional): _description_. Defaults to␣
↪None.
    sFilename_hru_parameter_default_in (str, optional): _description_. Defaults␣
↪to None.
    sFilename_hru_parameter_bounds_in (str, optional): _description_. Defaults␣
```

(continues on next page)

(continued from previous page)

```
↪to None.
    sFilename_pest_parameter_soil_in (str, optional): _description_. Defaults␣
↪to None.
    sFilename_soil_parameter_bounds_in (str, optional): _description_. Defaults␣
↪to None.
    sWorkspace_soil_parameter_default_in (str, optional): _description_.␣
↪Defaults to None.
```

convert_pest_parameter_to_actual_parameter(*self*, *sFilename_pest_parameter_watershed_in=None*, *sFilename_watershed_parameter_default_in=None*, *sFilename_watershed_parameter_bounds_in=None*, *sFilename_pest_parameter_subbasin_in=None*, *sFilename_subbasin_parameter_default_in=None*, *sFilename_subbasin_parameter_bounds_in=None*, *sFilename_pest_parameter_hru_in=None*, *sFilename_hru_parameter_default_in=None*, *sFilename_hru_parameter_bounds_in=None*, *sFilename_pest_parameter_soil_in=None*, *sFilename_soil_parameter_bounds_in=None*, *sWorkspace_soil_parameter_default_in=None*)

```
Convert PEST parameters to actual SWAT parameters

Args:
    sFilename_pest_parameter_watershed_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_watershed_parameter_default_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_watershed_parameter_bounds_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_pest_parameter_subbasin_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_subbasin_parameter_default_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_subbasin_parameter_bounds_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_pest_parameter_hru_in (_type_, optional): _description_. Defaults␣
↪to None.
    sFilename_hru_parameter_default_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_hru_parameter_bounds_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_pest_parameter_soil_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_soil_parameter_bounds_in (_type_, optional): _description_.␣
↪Defaults to None.
    sWorkspace_soil_parameter_default_in (_type_, optional): _description_.␣
↪Defaults to None.
```

convert_pest_watershed_parameter_to_actual_parameter(*self*, *sFilename_pest_parameter_watershed_in=None*, *sFilename_watershed_parameter_default_in=None*, *sFilename_watershed_parameter_bounds_in=None*)

```
Convert PEST watershed parameter to actual parameter

:param sFilename_pest_parameter_watershed_in: _description_, defaults to None
:type sFilename_pest_parameter_watershed_in: _type_, optional
:param sFilename_watershed_parameter_bounds_in: _description_, defaults to None
:type sFilename_watershed_parameter_bounds_in: _type_, optional
```

convert_pest_subbasin_parameter_to_actual_parameter(*self*, *sFilename_pest_parameter_subbasin_in=None*, *sFilename_subbasin_parameter_default_in=None*, *sFilename_subbasin_parameter_bounds_in=None*)

```
Convert PEST subbasin parameter to actual parameter

Args:
    sFilename_pest_parameter_subbasin_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_subbasin_parameter_default_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_subbasin_parameter_bounds_in (_type_, optional): _description_.␣
↪Defaults to None.
```

convert_pest_hru_parameter_to_actual_parameter(*self*, *sFilename_pest_parameter_hru_in=None*, *sFilename_hru_parameter_default_in=None*, *sFilename_hru_parameter_bounds_in=None*)

```
Convert PEST hru parameter to actual parameter

Args:
    sFilename_pest_parameter_hru_in (_type_, optional): _description_. Defaults␣
↪to None.
    sFilename_hru_parameter_default_in (_type_, optional): _description_.␣
↪Defaults to None.
    sFilename_hru_parameter_bounds_in (_type_, optional): _description_.␣
↪Defaults to None.
```

convert_pest_soil_parameter_to_actual_parameter(*self*, *sFilename_pest_parameter_soil_in=None*, *sFilename_soil_parameter_bounds_in=None*, *sWorkspace_soil_parameter_default_in=None*)

```
Convert PEST soil parameter to actual parameter

Args:
    sFilename_pest_parameter_soil_in (_type_, optional): _description_.␣
```

(continues on next page)

(continued from previous page)

```
↪Defaults to None.
    sFilename_soil_parameter_bounds_in (_type_, optional): _description_.␣
↪Defaults to None.
    sWorkspace_soil_parameter_default_in (_type_, optional): _description_.␣
↪Defaults to None.
```

run(*self*)

```
Run the SWAT simulation using a subprocess
```

analyze(*self*, *sFilename_output_in=None*)

```
Analyze the SWAT simulation

Args:
    sFilename_output_in (_type_, optional): _description_. Defaults to None.
```

evaluate(*self*)

```
Evaluate the SWAT model simualtion
```

swaty_generate_model_structure_files(*self*)

```
Generate the SWAT model spatial discretization configuration
```

generate_parameter_bounds(*self*, *sFilename_watershed_parameter_bounds_in=None*, *sFilename_subbasin_parameter_bounds_in=None*, *sFilename_hru_parameter_bounds_in=None*, *sFilename_soil_parameter_bounds_in=None*)

```
Generate the upper and lower bound of SWAT parameters

Args:
    sFilename_watershed_parameter_bounds_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_subbasin_parameter_bounds_in (str, optional): _description_.␣
↪Defaults to None.
    sFilename_hru_parameter_bounds_in (str, optional): _description_. Defaults␣
↪to None.
    sFilename_soil_parameter_bounds_in (str, optional): _description_. Defaults␣
↪to None.
```

extract_default_parameter_value(*self*, *aParameter_in*, *sFilename_watershed_in=None*, *sFilename_subbasin_in=None*, *sFilename_hru_in=None*, *sWorkspace_soil_in=None*)

```
Extract the default SWAT model parameters

Args:
    aParameter_in (_type_): _description_
    sFilename_watershed_in (str, optional): _description_. Defaults to None.
    sFilename_subbasin_in (str, optional): _description_. Defaults to None.
```

(continues on next page)

(continued from previous page)

```
    sFilename_hru_in (str, optional): _description_. Defaults to None.
    sWorkspace_soil_in (str, optional): _description_. Defaults to None.
```

extract_default_parameter_value_watershed(*self*, *aParameter_watershed*, *sFilename_watershed_in=None*)

```
Extract the default watershed parameter

Args:
    aParameter_watershed (_type_): _description_
    sFilename_watershed_in (str, optional): _description_. Defaults to None.
```

extract_default_parameter_value_subbasin(*self*, *aParameter_subbasin*, *sFilename_subbasin_in=None*)

```
Extract the default subbaisn parameter

Args:
    aParameter_subbasin (_type_): _description_
    sFilename_subbasin_in (_type_, optional): _description_. Defaults to None.
```

extract_default_parameter_value_hru(*self*, *aParameter_hru*, *sFilename_hru_in=None*)

```
Extract the default hru parameters

Args:
    aParameter_hru (_type_): _description_
    sFilename_hru_in (str, optional): _description_. Defaults to None.
```

extract_default_parameter_value_soil(*self*, *aParameter_soil*, *sWorkspace_soil_in=None*)

```
Extract the default soil parameter

Args:
    aParameter_soil (_type_): _description_
    sWorkspace_soil_in (str, optional): _description_. Defaults to None.
```

swaty_prepare_watershed_configuration(*self*)

```
Prepare the watershed configuration
```

swaty_retrieve_soil_info(*self*)

```
Retrieve the soil information from the existing files
```

swaty_prepare_watershed_parameter_file(*self*)

```
prepare the pest control file
```

swaty_prepare_watershed_template_file(*self*, *sFilename_watershed_template_in=None*)

```
#prepare the pest control file
```

swaty_prepare_subbasin_parameter_file(*self*)

```
#prepare the pest control file
```

swaty_prepare_subbasin_template_file(*self*, *sFilename_subbasin_template_in=None*)

```
#prepare the pest control file
```

swaty_prepare_hru_parameter_file(*self*)

```
#prepare the pest control file
```

swaty_prepare_hru_template_file(*self*, *sFilename_hru_template_in=None*)

```
Prepare the hru template file for PEST

Args:
    sFilename_hru_template_in (str, optional): _description_. Defaults to None.
```

swaty_prepare_soil_parameter_file(*self*)

```
Prepare the soil parameter file
```

swaty_prepare_soil_template_file(*self*, *sFilename_soil_template_in=None*)

```
Prepare the soil template file for PEST

Args:
    sFilename_soil_template_in (str, optional): _description_. Defaults to None.
```

swaty_create_pest_instruction_file(*self*, *sFilename_instruction*)

```
Prepare pest instruction file

Args:
    sFilename_instruction (str): The pest instruction filename
```

swaty_write_watershed_input_file(*self*)

```
write the input files from the new parameter generated by PEST to each hru file
```

swaty_write_subbasin_input_file(*self*)

```
write the input files from the new parameter generated by PEST to each hru file
```

swaty_write_hru_input_file(*self*)

```
write the input files from the new parameter generated by PEST to each hru file
```

swaty_copy_executable_file(*self*)

```
Prepare executable file to the workspace
```

swaty_prepare_simulation_bash_file(*self*)

```
Generate a swat simulation bash file.

Returns:
    _type_: _description_
```

swaty_prepare_simulation_job_file(*self*)

```
Generate a HPC job file for the SWAT simulation

Returns:
    _type_: _description_
```

swaty_prepare_observation_discharge_file(*self*)

```
Pre-process the observed stream discharge
```

swaty_extract_stream_discharge(*self*, *sFilename_output_in=None*)

```
Extract discharge from swat model simulation

Args:
    sFilename_output_in (str, optional): the destination filename. Defaults to␣
↪None.
```

swaty_tsplot_stream_discharge(*self*)

```
Plot the time series swat simulated stream discharge
```

export_config_to_json(*self*, *sFilename_output*)

```
Export the configuration to a JSON object

Returns:
    _type_: _description_
```

tojson(*self*)

```
Convert a swat case object to a JSON object

Returns:
    _type_: _description_
```

Public Members

iFlag_run

iFlag_standalone

iFlag_read_discretization

iFlag_initialization

iFlag_calibration

iFlag_simulation

iFlag_watershed

iFlag_subbasin

iFlag_hru

iFlag_soil

iFlag_mode

iFlag_replace_parameter

iYear_start

iYear_end

iMonth_start

iMonth_end

iDay_start

iDay_end

nstress

sRegion

sModel

sPython

sFilename_model_configuration

sWorkspace_input

sWorkspace_output

sWorkspace_bin

sDate

iCase_index

sCase

sJob

sWorkspace_simulation_copy

sFilename_LandUseSoilsReport

sFilename_HRULandUseSoilsReport

sFilename_parameter_bounds

sFilename_hru_combination

sFilename_watershed_configuration

sFilename_hru_info

sFilename_soil_combination

sFilename_soil_info

nsubbasin

nsegment

nhru_combination

nhru

nsoil_combination

sFilename_observation_discharge

sTime_step_calibration

sFilename_swat

nstress_month

nParameter_watershed

nParameter_subbasin

nParameter_hru

nParameter_soil

sFilename_swat_current

Public Static Attributes

iCase_index = 0

iSiteID = 0

iFlag_run = 0

iFlag_standalone = 1

iFlag_simulation = 1

iFlag_initialization = 1

iFlag_calibration = 0

iFlag_watershed = 0

```
iFlag_subbasin = 0

iFlag_hru = 0

iFlag_soil = 0

iFlag_mode = 0

iYear_start = 0

iYear_end = 0

iMonth_start = 0

iMonth_end = 0

iDay_start = 0

iDay_end = 0

nstress = 0

nsegment = 0

nhru = 0

nhru_combination = 0

nsoil_combination = 0

aConfig_in = None

aParameter_watershed_name = None

aParameter_subbasin_name = None

aParameter_hru_name = None

aParameter_soil_name = None

pWatershed = None
```

```
aSubbasin = None

aHru = None

aHru_combination = None

aSoil_combinaiton = None

nParameter = 0

nParameter_watershed = 0

nParameter_subbasin = 0

nParameter_hru = 0

nParameter_soil = 0

sFilename_swat_current = ''

sFilename_model_configuration = ''

sWorkspace_input = ''

sWorkspace_output = ''

sTime_step_calibration = ''

sFilename_observation_discharge = ''

sFilename_LandUseSoilsReport = ''

sFilename_HRULandUseSoilsReport = ''

sRegion = ''

sModel = ''

sCase = ''

sDate = ''
```

sSiteID = ''

sDate_start = ''

sDate_end = ''

swaty.classes.swatpara.swatpara : public object

```
The parameter class

Args:
    object (_type_): _description_

Returns:
    _type_: _description_
```

Public Functions

__init__(*self*, *aConfig_in*)

```
Initialize a parameter object through a dictionary

Args:
    aConfig_in (dict): The dictionary that stores parameters
```

tojson(*self*)

```
Convert a parameter object to a JSON object

Returns:
    _type_: _description_
```

Public Members

iParameter_type

iFlag_pseudo

lIndex_subbasin

lIndex_hru

lIndex_soil_layer

sName

dValue_init

dValue_current

dValue_lower

dValue_upper

Public Static Attributes

sName = ''

iParameter_type = 1

lIndex_subbasin = -1

lIndex_hru = -1

lIndex_soil_layer = -1

iFlag_pseudo = 0

dValue_init = 0.0

dValue_current = 0.5

dValue_lower = -1

dValue_upper = 1

swaty.classes.watershed.WatershedClassEncoder : public JSONEncoder

```
The watershed class json encoder

Args:
    JSONEncoder (_type_): _description_
```

Public Functions

default(*self*, *obj*)

module define_global_variables

module swaty

module auxiliary

module line_count

Functions

line_count(*sFilename_in*)

```
Count the line number of a text-based file

Args:
    sFilename_in (string): text filename

Returns:
    int: line number
```

module text_reader_string

Functions

text_reader_string(*sFilename_in*, *ncolumn_in=None*, *nrow_in=None*, *cDelimiter_in=None*, *iFlag_remove_quota=None*, *iSkipline_in=None*)

```
Read a text based file
sFilename_in,
ncolumn_in = None,
nrow_in = None,
cDelimiter_in = None,
iSkipline_in =  None
```

module classes

module hru

module pycase

Variables

pDate = datetime.datetime.today()

sDate_default = "{:04d}".format(pDate.year) + "{:02d}".format(pDate.month) + "{:02d}".format(pDate.day)

module soil

module subbasin

module swatpara

module watershed

module swaty_create_template_configuration_file

Functions

swaty_create_template_configuration_file(*sFilename_json*, *sPath_bin*, *sWorkspace_input*, *sWorkspace_output*, *iFlag_standalone_in=None*, *iCase_index_in=None*, *iFlag_read_discretization_in=None*, *sDate_in=None*, *aParameter_in=None*)

```
Generat a template configuration file for users

Args:
    sFilename_json (string): The output json file
    sPath_bin (string): The swat binary file path
    sWorkspace_input (string): The input workspace
    sWorkspace_output (string): The output workspace
    iCase_index_in (int, optional): The case study ID. Defaults to None.
    aParameter_in (dict, optional): The dictionary that stores all the␣
↪parameters. Defaults to None.

Returns:
    int: None
```

module swaty_read_model_configuration_file

Functions

swaty_read_model_configuration_file(*sFilename_configuration_in*, *iFlag_read_discretization_in=None*, *iFlag_standalone_in=None*, *iCase_index_in=None*, *sDate_in=None*, *iYear_start_in=None*, *iMonth_start_in=None*, *iDay_start_in=None*, *iYear_end_in=None*, *iMonth_end_in=None*, *iDay_end_in=None*, *sWorkspace_input_in=None*, *sWorkspace_output_in=None*, *aParameter_in=None*)

```
_summary_

Args:
    sFilename_configuration_in (str): Filename of the configuration json file
    iFlag_read_discretization_in (int, optional): _description_. Defaults to␣
↪None.
    iFlag_standalone_in (int, optional): _description_. Defaults to None.
    iCase_index_in (int, optional): _description_. Defaults to None.
    sDate_in (str, optional): _description_. Defaults to None.
    iYear_start_in (int, optional): _description_. Defaults to None.
    iMonth_start_in (int, optional): _description_. Defaults to None.
    iDay_start_in (int, optional): _description_. Defaults to None.
    iYear_end_in (int, optional): _description_. Defaults to None.
    iMonth_end_in (int, optional): _description_. Defaults to None.
    iDay_end_in (int, optional): _description_. Defaults to None.
    sWorkspace_input_in (str, optional): _description_. Defaults to None.
    sWorkspace_output_in (str, optional): _description_. Defaults to None.
    aParameter_in (dict, optional): _description_. Defaults to None.

Returns:
    _type_: _description_
```

Variables

pDate = datetime.datetime.today()

sDate_default = "{:04d}".format(pDate.year) + "{:02d}".format(pDate.month) + "{:02d}".format(pDate.day)

module tools

file **__init__.py**

file **__init__.py**

file **__init__.py**

file __init__.py

file line_count.py

file text_reader_string.py

file hru.py

file pycase.py

file soil.py

file subbasin.py

file swatpara.py

file watershed.py

file swaty_create_template_configuration_file.py

file swaty_read_model_configuration_file.py

dir
/home/docs/checkouts/readthedocs.org/user_builds/swaty/checkouts/latest/swaty/auxiliary

dir /home/docs/checkouts/readthedocs.org/user_builds/swaty/checkouts/latest/swaty/classes

dir /home/docs/checkouts/readthedocs.org/user_builds/swaty/checkouts/latest/swaty

dir /home/docs/checkouts/readthedocs.org/user_builds/swaty/checkouts/latest/swaty/tools

CHAPTER

SEVEN

INDICES AND TABLES

- genindex
- modindex
- search

INDEX

Symbols

A

B

C

D

E

G

I

L

N

P

R

S

T