**PyOrator setup guidance**

This guidance applies to Windows environment only, however, since Python is available on all mainstream platforms, notably Linux and macOS, PyOrator can also be ported to these on request.

It is necessary to have Python version 3 installed with the additional modules:

* openpyxl
* pandas
* pyqt5

**Description of required files**

PyOrator can be run directly using a Windows desktop icon to reference a batch script file named **pyorator.bat** in the distribution**.** The batch file invokes the Python interpreter to run PyOrator program.

The desktop shortcut can be displayed with the PyOrator icon file.

**pyorator.bat:**

It is necessary to change the highlighted paths to correspond to the local filesystem

|  |  |
| --- | --- |
| Line |  |
| 1 | echo off |
| 2 | rem @ tells the command processor to be less verbose |
| 3 | @set PYTHONPATH=E:\AbUniv\GlblEcosseModules2 |
| 4 | @set initial\_working\_dir=%cd% |
| 5 | @chdir /D E:\ORATOR\setup |
| 6 | @E:\Python38\python.exe -W ignore E:\AbUniv\PyOrator\PyOratorGUI.py |
| 7 | @chdir /D %initial\_working\_dir% |

|  |  |
| --- | --- |
| Line | Additional line description |
| 3 | extend the interpreter module search path to pick up GlobalEcosse modules |
| 4 | change the working directory so PyOrator can locate the setup file – see below for setup file details |
| 5 | invoke the Python interpreter to read the PyOrator entry script, PyOratorGUI.py with the warning messages switched off (-W ignore) |

**The setup and configuration files**

Where possible JSON ([JavaScript Object Notation](https://www.w3schools.com/whatis/whatis_json.asp)) files are used as these are "self-describing" and easy to understand. A JSON file uses human-readable text to store and transmit data objects consisting of attribute-value pairs and array data types.

**pyorator\_setup.json**

The setup file needs to be edited to point to readable paths.

Note: if the HWSD and weather sets are not present then PyOrator will use only the input Excel file for the climate values and soil parameters.

{

"setup": {

"config\_dir": "E:\\ORATOR\\config",

"fname\_png": "E:\\ORATOR\\Images\\orator\_logo.png",

"hwsd\_dir": "G:\\GlobalEcosseData\\HWSD\_NEW",

"log\_dir": "E:\\ORATOR\\logs",

"shp\_dir": "E:\\GlobalEcosseData\\CountryShapefiles",

"weather\_dir": "E:\\GlobalEcosseData\\"

}

}

|  |  |
| --- | --- |
| config\_dir | path for configuration files. The configuration file is read at program start up and overwritten with new user settings on exit |
| fname\_png | logo file which appears in the LH side of the user interface (GUI) |
| hwsd\_dir | path to Harmonized World Soil Database |
| log\_dir | path to where log files will be written |
| shp\_dir | Not active |
| weather\_dir | path to weather datasets |

**pyorator\_Haramaya.json**

A PyOrator configuration file uses an underscore character as a separator to indicate the study name which is the last segment e.g. “Haramaya” in the above example.

Many of the lines in the configuration file, see below, relate to Global Ecosse e.g. the historic and future start and end years.

{

"cmnGUI": {

"climScnr": "A1B",

"futEndYr": "2100",

"futStrtYr": "1970",

"histEndYr": "2000",

"histStrtYr": "1980",

"study": "Haramaya"

},

"minGUI": {

"aveWthrFlag": false,

"location": [

38.2,

7.5

],

"use\_xlsoil": false,

"use\_xlwthr": false,

"weatherResource": "CRU",

"xls\_inp\_fname": "E:/ORATOR/ORATOR\_inputs.xlsx"

}

}

xls\_inp\_fname identifies the Excel file of inputs required to run PyOrator.

**ORATOR\_inputs.xlsx**

A conformant Excel file of inputs is required to run PyOrator

The the Excel file is read via the **read\_input\_excel** class

**Inputs**

Sheets read:

|  |  |
| --- | --- |
| Inputs1- Farm location |  |
| Inputs3b- Soils & Rotations | steady state management |
| Inputs3d- Changes in rotations | forward run management |
| N constants |  |
| Crop parameters |  |
| Org Waste parameters |  |
| Weather |  |