

Installing Rosetta-v3beta (Updated May 14, 2020)

This is a document that provides instructions for the BETA version of the code described in Zhang and Schaap (2017). This document is intended for users/developers familiar with the python programming language.

Step 0.

Step 1.

Uncompress Rosetta-3.0beta_py3.tar.gz

(Unix/Linux: tar -zxvf Rosetta-3.0beta-py3.tar.gz, on Mac-OSX or windows 7/8/10 there are utilities available that will do this for you)

Step 2

Enter the folder Rosetta-3.0beta-py3

(Unix/Linux/Mac-OSX: cd Rosetta-3.0beta-py3)

This folder contains all the files needed to work with the code. If you know what you are doing: copy these to an appropriate place and stop here.

Using the code

The ANN_Module.py and DB_Module.py include all functionality, and while these have some comments, you probably do not want to look at these first. I tried to hide all the messy stuff here in the hope no-one else needs to look & modify this.

The Rpredict.py contains an implementation example and you should get some output.

To use the Rosetta-V3 **H2w** model, please make sure that at line 88 in Rpredict.py, the first input in 'PTF_MODEL' function is **2**, which means that the 'PTF_MODEL' function is ptf_model=PTF_MODEL(**2**, db). The input data for Rosetta-V3 H2w to estimate is soil sand, silt, and clay percentages (in weight %). To make an estimation, you can type (or copy/paste) the following command at terminal:

```
python Rpredict.py -i ./output/test_input_H2w.txt -o ./output/test_output_H2w.txt --predict --sqlite=./sqlite/Rosetta.sqlite
```

To use the Rosetta-V3 **H3w** model, please make sure that at line 88 in Rpredict.py, the first input in 'PTF_MODEL' function is **3**, which means that the 'PTF_MODEL' function is: ptf_model=PTF_MODEL(**3**, db). This model uses an additional soil bulk density as input, i.e., silt, clay percentages (in weight %), and bulk density (g/cm³). To make an estimation, you can type (or copy/paste) the following command at terminal:

```
python Rpredict.py -i ./output/test_input_H3w.txt -o ./output/test_output_H3w.txt --predict --sqlite=./sqlite/Rosetta.sqlite
```

Please also note that our code has been modified to be compatible with python 2.7, python 3.0, and higher versions. The directory "output" contains an exemplary input (in

“test_input_H2w.txt” file) and the estimation (in “test_output_H2w.txt” file). Please find the run_Rosetta.sh file for detailed information. Please make sure that you are using the correct data input format and correct Rosetta model, i.e., PTF_MODEL(**2**, db), PTF_MODEL(**3**, db)... PTF_MODEL(**102**, db), PTF_MODEL(**103**, db)...

Available Models

Note that there are two sets of models: 2..5 and 102..105. The latter series are the **OLD** (Schaap et al., 2001) models. The models 2..5 are **NEW** and better (see Zhang and Schaap, 2017).

NOT included in the current beta version

the class textural averages. Some extra code must be written to make these work seamlessly with the old and new models estimation of unsaturated conductivity

Both are on the TODO list.

Please understand that this is NOT the final version (it is a beta version), and that there may be some bugs. However, we have checked the estimates and found these in good order. If you find any bugs or have feature requests (or need help), please let me know.

I did some (minimal) testing under windows/MacOSX and found that the code works without the need for changes. However, I cannot guarantee that the setup.py script will install the files in a sane place on these OS's

References

- Zhang, Y. and Schaap, M.G., 2017. Weighted recalibration of the Rosetta pedotransfer model with improved estimates of hydraulic parameter distributions and summary statistics (Rosetta3). *Journal of Hydrology*, 547, pp.39-53.
- Schaap, M.G., Leij, F.J., and Van Genuchten, M.T., 2001. ROSETTA: a computer program for estimating soil hydraulic parameters with hierarchical pedotransfer functions. *Journal of hydrology*, 251(3), pp.163-176.