Exercise 3:
The purpose of this exercise is to train you in the sensitivity analysis routine with parsac of GOTM-WET models. To do this exercise, you will need to have a working GOTM-WET model set-up for Shahe Reservoir (see exercise 1).

We have created a tutorial to explain how to install parsac and other required Python packages (SALib). You can find the tutorial on workshop page or on the provided USB stick under *Tutorials*.

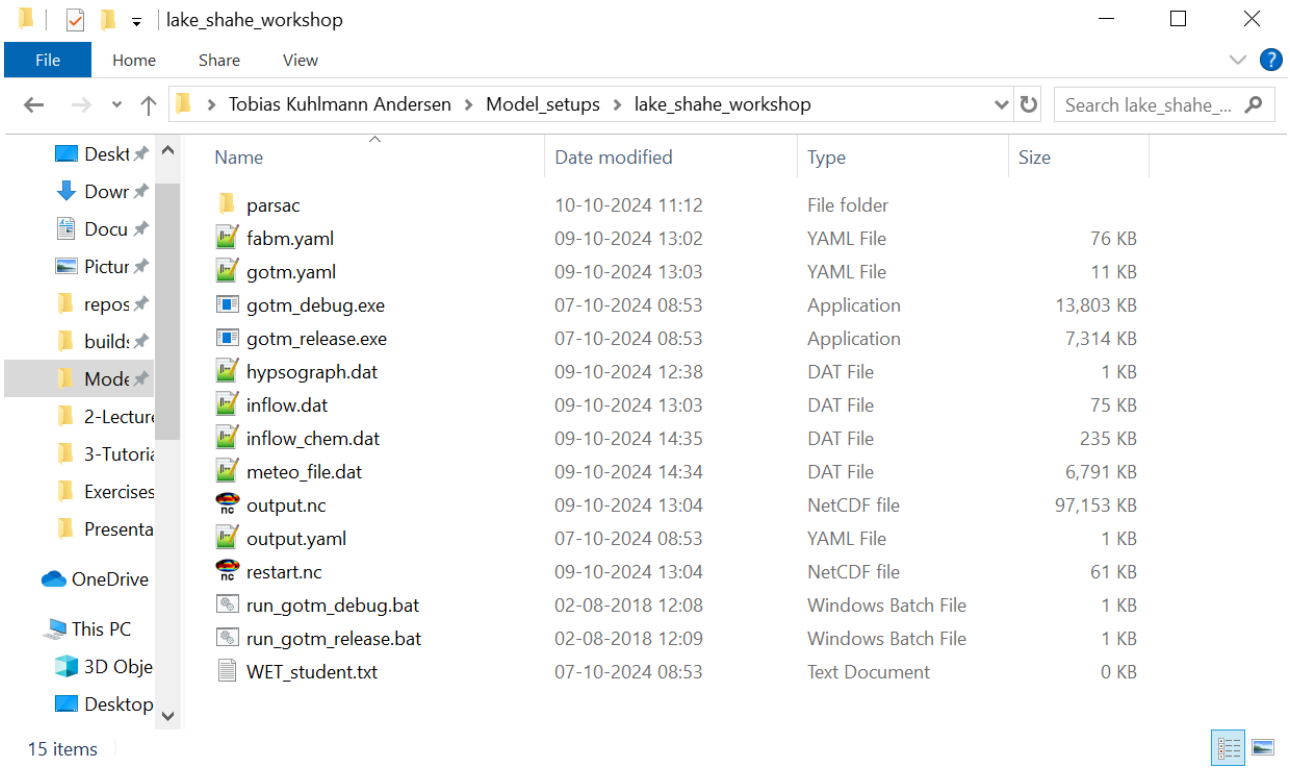
Exercise content:

If you do not have parsac installed, you must download and install parsac. Please follow the installation guide provided.

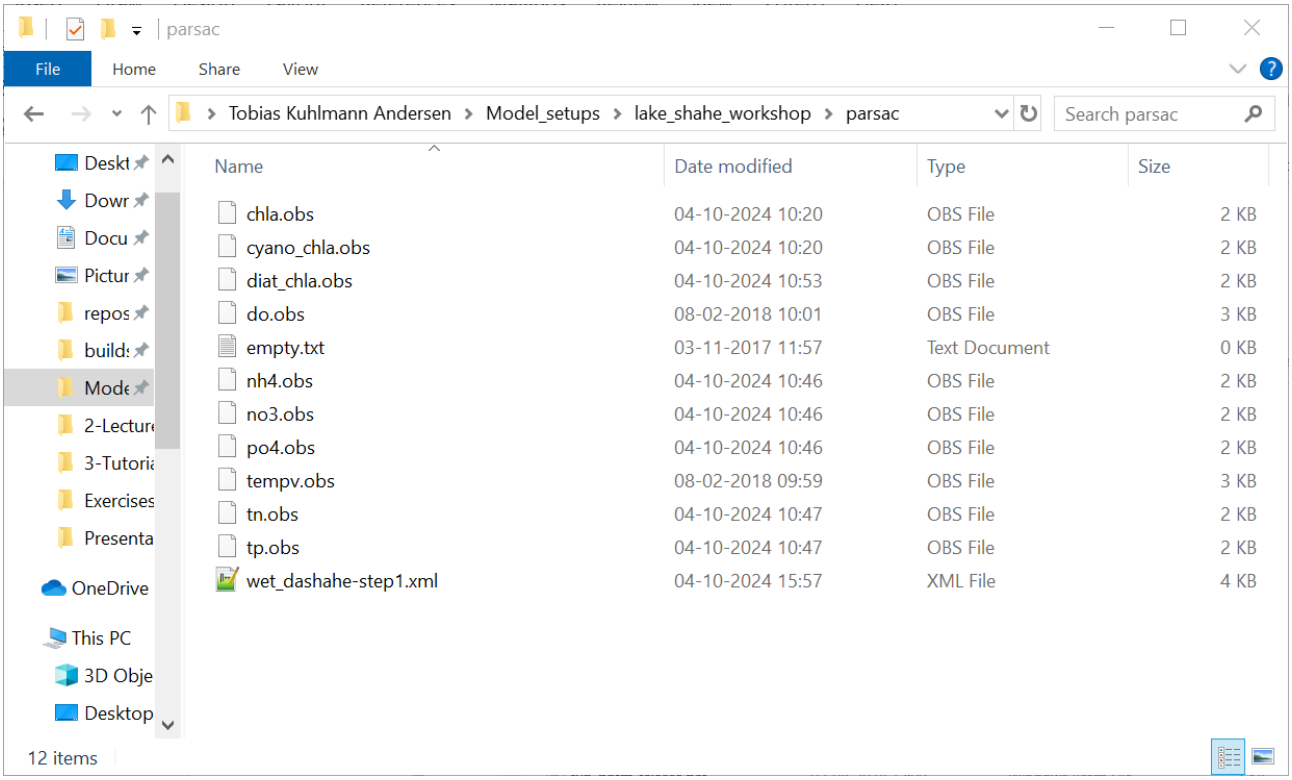
A. Perform sensitivity analysis of water temperature

In this task, you will perform an auto-calibration on water temperature for Shahe Reservoir.

If you do not already have a working model folder with a parsac folder, you need to configure your model folder for Shahe Reservoir. We recommend you copy your model folder you created with QWET. You can find your QWET model folder by //QWET/lake_project_name/LAKEMODEL/Default . You must include a folder named *parsac*. Your folder setup should look like this:



Within your *parsac* folder you must include a xml file with configurations of parsac for sensitivity analysis. For this exercise, download wet_dashahe_step1.xml from exercise 3 on sensitivity analysis from the workshop page or USB stick provided. Open the xml file and investigate if the parameter ranges in wet_dashahe_step1.xml matches your expectations (based on your knowledge of GOTM).



Now, you are ready to perform your first sensitivity analysis.

During the sampling step, you must select sampling size. In this exercise, select 10 samples per parameter included in the xml file. 10 samples per parameter is too small to run a full SA, but is used in this exercise only to practice parsac.

Follow the tutorial on sensitivity analysis with parsac and go through all three steps (run, plot and plotbest).

When you evaluate your sensitivity analysis result, consider

I) How can you improve the model performance in the next calibration iteration?

II) Which parameter gave the strongest calibration signal and what was its optimal parameter value?

You will have to wait some time (depending on the amount of CPUs on your computer) for the execution of all model simulations in the SA.