

Aim of this lab:

The aim of this lab is to introduce you the process of setting up, running a model and evaluating various objective functions in a MATLAB environment.

What you need to do:

1. If you don't write any scripts in an exercise: Take snapshots of your MATLAB screen at the end of each exercise and save them as image files. Copy and paste the image in a word document (crop the image so that only the MATLAB screen is visible), and number it according to the exercise number.
2. If the exercise involves writing a script ('.m' file): Use 'publish' to generate a report for the exercise. This should create a new folder with a '.html' file within it. In your word document menu, go to Insert→File, and select the .html file to insert the published report in the lab submission. Once the report is inserted, number it according to the exercise number.
3. Write a one-line caption for each image/report explaining what it shows. If the exercise asks you to answer a question, write the answer along with the caption.
4. You need to email the word document to ce6511@gmail.com. Save the word document as your roll number_lab1.doc (ex: ce13m100101_lab1.doc).

Deadline:

You have to email the lab assignment latest by 5 pm the Tuesday following the class. (example: for the class on 20th January, you have to email the lab work by 5 pm on Tuesday, 27th January).

1. Run the PDM model for any random set of model parameters. Provide your random parameter set as a part of the answer. Plot the following graphs:
 - a. Figure 1: Simulated runoff vs. observed runoff
 - b. Figure 2: Cumulative simulated runoff vs. cumulative precipitation
 - c. Figure 3: Cumulative simulated runoff vs. cumulative rainfall (precipitation excluding snow)
 - d. Figure 4: Frequency duration curve for simulative runoff (in red) and observed runoff (in blue).
2. Write a generalized MATLAB code (.m file) for any two objective functions of your choice. Now, evaluate the model parameter set in (1) above for these two objective functions. Report your answer.
3. How will you find out whether the following assumptions are true:
 - a. Residuals are normally distributed
 - b. Residuals have constant variance
 - c. Residuals are un-correlated in time

Test (a-c) above with the parameter set chosen by you in (1). You can show your results in the form of analysis or plots.