x03-Discharge of River Elbe: Homework Project

2024-11-15

The project is related to the lab exercise "Discharge of River Elbe: Date and Time Computation, Data Management and Plotting with R".

1 Task 1: Distribution of discharge

Interpret the results of Sections 3.3 and 3.4. Discuss which of the plots best shows the shape of the **distribution** of discharge data. You can include up to 4 plots. Add a table with the statistical parameters (min, max, $\bar{x}, s_x$, median, geometric mean and quartiles).

Then discuss all results (parameters and figures) in connection.

2 Task 2: Dry and wet years

Analyse the data and identify 2 dry and 2 wet years. Try to spot years with different seasonal characteristics, e.g. one with a dry winter and the other with a dry summer, or one with a wet winter and a dry summer and so on.

Describe the selected years with appropriate plots, e.g. time series from Section 3.2 or annual cumulative sums (Section 3.5). A boxplot, histograms or own ideas are also possible (2-4 plots at maximum).

3 Outline and formal requirements

Combine all tasks together and tell a story, using a standard scientific outline, the so-called IMRAD scheme:

1. Introduction
2. Methods
3. Results
4. Discussion
5. References

Please consult Wikipedia for a detailed explanation.

As it is a tiny report, Methods and Results may be merged in this case. However, Introduction and Discussion must be separated. Use the internet and find about 2-3 literature references for the Discussion.

3.1 Communicate in your team, with other teams and with tutors

Communicate results and ideas in your team and also with other teams and with the tutors. It is a good idea to speak (or email) with your collegues first, then collect material and create a first version (this is often longer as the 5 pages).

Then discuss and improve the result, select the most important parts and create the final version.

Communication can be done in person or in the Matrix[1] chat group. The idea of the chat group is that all (= "the community") can learn from each other. Private communication channels for teamwork are of course allowed, just find an agreement what fits your needs best. If you want, it is also possible to create separate communication channels in OPAL[2] or in the Matrix for your group.

If you ask in the forum or the Matrix, please formulate specific questions and not only "this is my result, is this correct". Good examples will hopefully develop during the work. Please feel free to post questions and contribute to the answers.

3.2 Technical recommendations

The report should read nicely. Space needed for figures, tables and explanatory text should be in good balance.

- The report should have 5 pages A4 at maximum. Quality instead of quantity! Distill the essential messages.
- Font size of the text should be 11 or 12 points.
- A line spacing of 1.2 lines is recommended to improve readability.
- Figures (lines, font size of annotations) must be well readable.
- Literature must be properly cited. We encourage to use author-year style citations. Good examples can be found at the APA style web page.

You will have four weeks time for the preparation of the report. Then upload it as PDF od HTML document and (optionally) an .R or Quarto (.qmd) script to the **File** folder of your group in the OPAL learning management system. Submissions after the deadline cannot be considered.

[1] TU Dresden uses the Matrix instant messenger.
[2] OPAL is the learning managament platform used by TU Dresden.