**Actual ET of Hupsel – step 3 + 4  
Answer sheet**

|  |  |
| --- | --- |
| Student (name) |  |

First collect some of your insights from Step 1 and Step 2 here, just to have them in one place (i.e. these were the outcomes from the last questions in step 1 and step 2).

# Preparation

## Step 1: crop factors for grass – 2011 Hupsel data.

What is the overall magnitude the CSM/crop factor? Is the crop factor constant over time, and if not, can you explain the variations (or at least bring forward a hypothesis)?

|  |  |
| --- | --- |
|  | **Comment** |
| **Typical value of the CSM/crop factor (mean, median, …)** |  |
| **Variability of CSM/crop factor from day to day (how much, how, when)** |  |
| **What determines the day-to-day variation?** |  |

In the table below, distinguish a number of situations with distinct values for the CSM/crop factor.

* Give the typical value for the CSM/crop factor in the first column
* Characterize the conditions with typical values for the relevant variables (columns 2 and further) (e.g. crop factor = … (column 1) when no rain (column 2) and high temperatures (column 3). It is up to you to see how many conditions you distinguish (i.e. how many rows you fill) and how many variables you need to describe a given condition (how many columns you need).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Value of**  **CSM/Crop factor** | **Variable:** | **Variable** | **Variable** | **Variable** |
| … | … | … | … |
|  |  |  |  |  |
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|  |  |  |  |  |
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## Step 2: crop factors for bare soil – 2009 Transregio data.

What is the overall magnitude the CSM/crop factor? Is the crop factor constant over time, and if not, can you explain the variations (or at least bring forward a hypothesis)?

|  |  |
| --- | --- |
|  | **Comment** |
| **Typical value of the CSM/crop factor (mean, median, …)** |  |
| **Variability of CSM/crop factor from day to day (how much, how, when)** |  |
| **What determines the day-to-day variation?** |  |

In the table below, distinguish a number of situations with distinct values for the CSM/crop factor.

* Give the typical value for the CSM/crop factor in the first column
* Characterize the conditions with typical values for the relevant variables (columns 2 and further) (e.g. crop factor = … (column 1) when no rain (column 2) and high temperatures (column 3). It is up to you to see how many conditions you distinguish (i.e. how many rows you fill) and how many variables you need to describe a given condition (how many columns you need).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Value of**  **CSM/Crop factor** | **Variable:** | **Variable** | **Variable** | **Variable** |
| … | … | … | … |
|  |  |  |  |  |
|  |  |  |  |  |
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# Characterize conditions in the May 2025 dataset

In the table below describe the weather conditions in the 3-week period in broad terms. Insert graphs of some of the variables and describe in words the variation that you observe (keep it concise).

Do this in very broad terms (do not study individual days, but rather in terms of e.g. 'in the first 5 days the weather was sunny'. Think of it as a report to your family or friends when you return from field work. Select the variables that you think will characterize the weather best (e.g. sunshine duration, precipitation, ....), plot a time series of that variable and summarize that in words.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Graph** | **Description** |
|  |  |  |
|  |  |  |
|  |  |  |
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|  |  |  |

Based on your analysis above, try to identify a number of periods of similar weather and concisely describe them. Try to formulate a one-sentence description of characteristic periods (e.g. 10-12 May: 'windy weather, mostly overcast with maximum temperatures around 18 °C and most days a few mm of rain per day')

|  |  |  |
| --- | --- | --- |
| **Start date** | **End date** | **Characterize in words** |
| 01-05 |  |  |
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|  |  |  |
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|  |  |  |

# Reference evapotranspiration

Include your values below and/or include a graph that shows the time series of reference ET for May 2025.

Provide some comments on the values you obtained: are the values reasonable, how do they compare to the values you computed for 2011?

|  |
| --- |
| Data / graph |
| Comments / remarks |

# Day-to-day CSM/crop factor for grass

In the table below explain how you constructed your time series for the CSM/crop factor for grass (if you clearly explained it un the preparation section above, just refer there) and give the values and/or include a graph.

|  |  |
| --- | --- |
| **Explanation of method** |  |
| **Values / graph** |  |

# Day-to-day CSM/crop factor for bare soil

In the table below explain how you constructed your time series for the CSM/crop factor for grass (if you clearly explained it un the preparation section above, just refer there) and give the values and/or include a graph.

|  |  |
| --- | --- |
| **Explanation of method** |  |
| **Values / graph** |  |

# Actual ET for grass and bare soil

In the table below explain how you constructed your time series for the actual ET of grass and bare soil and give the values and/or include a graph showing how the actual ET of grass and bare soil each vary with time.

|  |  |
| --- | --- |
| **Explanation of method** |  |
| **Values / graph** |  |

# Actual ET of the Hupsel catchment

In the table below explain how you constructed your time series for the actual ET of the Hupsel catchment and give the values and/or include a graph.

|  |  |
| --- | --- |
| **Explanation of method** |  |
| **Values / graph** |  |

# Prepare and upload the Excel file with actual ET data

See the notebook:

* Prepare the Excel file with actual ET data, as explained in the Jupyter notebook.
* Upload that Excel file to the appropriate assignment in Brightspace.
* Also upload *this* file to the appropriate assignment in Brightspace.