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| **Protocol**  Meeting Bachelor Thesis, FS 2024 | | | | | | | | | | | |
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| **Protocol-No.:** | 08 | | | | | **Project name:** | Bachelor Thesis | | | | |
| **Meeting type:** | Discussion | | | | | **Location:** | GIUB, Bern | | | | |
| **Date / Time:** | 10.05.2024 / 10:00 | | | | |  |  | | | | |
| **Topic / Goals:** | Global Modelling | | | | | | | | | | |
| **Lead:** | Benjamin Stocker | | | | | **Logger:** | Patricia Gribi | | | | |
|  | | | | | | | | | | | |
| **Participants** | |  |  | | **E-mail** | | | **Present** | **Excused** | **Distribution** |
| Prof. Benjamin Stocker | |  | GECO-Group | | benjamin.stocker@unibe.ch | | | x |  |  |
| Patricia Gribi | |  | Unibe | | patricia.gribi@students.unibe.ch | | | x |  |  |
|  | | | | | | | | | | | |
| **Items discussed:** | | | | | | | | | | | |
| 1 global Modelling | | | | | | | | | | | |
| **Next meeting:** | | | | **Attachments:** | | | | | | | |
| * 17.06.24/11.00 | | | |  | | | | | | | |

| *(Legend for type: D = Decision, P = Pending, I = Information)* | Typ | Resp.: | Date: |
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| Modelling |  |  |  |
| * run make\_tidy\_cmip6 but without elevation (did not work) | I |  | 4.06 |
| * Elevation was not applied in the map2tidy function. This is because the elevation NetCDF has the same grid as the other CMIP6-NG variables but lacks the time dimension. The elevation is read in the cwd\_byilon function from a NetCDF file. It is then converted into the desired format: a DataFrame with longitude, latitude, and elevation columns. This DataFrame is subsequently joined with other necessary variables to calculate PCWD | I |  | 5.06 |
| * **Elevation grid:** does very negative values mean (-4’000) that this point is underwater? Yes they are. | I |  | 10.06 |
| * **Evapotranspiration:** Is sometimes negative due to condensation. During the night when the land cools down and the atmosphere is still warm. | I |  | 10.06 |
| * **Reading information on NetCDF from linux shell:** ncdump -h file | I |  | 10.06 |
| * **Map2tidy:** The evspsbl data contained sometimes 2 records in one month. This was probably because the cmip6-ng netcdf files leap years are not considered.\* We adjusted the map2tidy function to calculate the years correctly.   + overwrite=True in map2tidy to overwrite the new files * **many-to-many relationship:** As mentioned above there are multiple rows in df\_evap containing 2 values per month or lacking a value per month. When joining with the other variables to one dataset there is a many-to-many relationship, resulting in double data in one day for example. What I did until now is:   + **A red numbers and black text      Description automatically generated with medium confidence**Aggregated double records by taking the mean   + The issue should be solved now with the implemented functionality of noleap | I |  | 10.06 |
| * **cwd/pcwd function:** returns the cwd and pcwd timeseries as a nested dataframe. longitude/latitude are in separate columns, while the gridcells (rows) in the data column contain the nested time-series. The daily values are returned.   + The cwd function returns two tibles $inst and $df. The time and deficit variables were taken from the $df tibble and returned as dataframe. | I |  | 08.06 |
| * **Next steps:**    + Test if the data shows plausible results based on a gridcell which is known and compared with other data. For example: De-Tha, comparison with the fluxnet data.   + **Annual maxima:** deficitgruppieren nach jahr, pro Jahr, pro gitterzelle, pro band das max zusammenfassen und diese dann zusammentragen (diese Funktion gibt es schon). Alles dann in ein NetCDF schreiben. Das Datum von maximum pro jahr sollte auch bekannt sein und ausgelesen werden. | I |  | 10.06 |
| * **Debugging Issue Solved:** Was able to create a NAMESPACE file by clicking under the tab build: more. | I |  | 10.06 |
| * **calc\_patm():** copied function because couldn’t find the function in rpmodel. Don’t know why it didn’t work. | I |  | 8.06 |
| Workflow |  |  |  |
| * **CWD outputs and map2tidy outputs here:** /data\_1/CMIP6 |  |  |  |
| * **Moved original data-download:** /data/scratch/CMIP6ng\_CESM2\_ssp585/cmip6-ng |  |  |  |
| * **Folder structure:** In the R folder der are just functions, which are used again and again. In the analysis folder there are scripts which are used just once, like for example making the data tidy (make\_tidy\_cmip6). | I |  | 10.06 |
| * Rename the function cwd\_byilon to cwd\_byilon\_cmip6 | P |  |  |
| * **Test:** To verify the functionality of the workflow, the code was executed for a single longitudinal band. It worked. | I |  | 08.06 |
| * **Github Issue:** There is an issue with my github. I cannot push to the cwd\_global repo. This problem needs to be solved. | P |  |  |

\*Days in the NetCDF files without leap years, but we counted days with leap year, so the interpretation of the days was false (function helpers in map2tidy). If it was a leap year for example it would indicate the 31. December but the model counts as 1. January and we calculate it as 31. December. The model lies in advance.