**Protocol for data gathering and preliminary calculations for meta-analyses of the soil water excess (SW-excess)**

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***Compile all papers and fill in metadata***

1. Look for all the papers listed in the tables in the supplementary material in Evaristo & Mcdonnell 2017 (Nature Scientific Reports, only those that column ISOSYSTEM = Dual, that means that both O and H isotopes were measured). Complete with any additional paper listed in Barbeta & Peñuelas 2017 (Nature Scientific Reports), and the additional list of studies in the paper to come (authors, publication name and year to be confirmed). Find the papers (do not hesitate to use Sci hub).
2. Perform a quick screening of the papers. Only keep the papers where:
   1. Both H and O were measured
   2. Some data for soil water isotopic composition (both H and O) were measured
   3. Some data of the isotopic composition of precipitation, stream or groundwater was measured.
3. Read the paper paying special attention to the methods section. Fill in as many details as possible in the sheet “Data” from “Dexcess\_meta\_nalysis.xls”. Check the Sheet “Var\_def” for definitions and explanations of the variables. When possible, fill in the information from the Evaristo and Barbeta papers. Write down any details that could help interpret data in the column “OBS” of the “Dexcess\_meta\_nalysis.xls”.

***Calculate the soil water line***

1. Look of the isotopic composition (δ2H and δ18O in ‰) of the soil water at different depths or dates in the tables or figures (usually in the dual isotopic plot).
2. Extract (using xy-extract or similar) or copy the δ2H and δ18O (in ‰) of the soil water and fill in file “data\_SWL.csv”. In the column “label” indicate the sampling soil depth or water source.
3. Run scrip “calcSWL.R” to calculate the slope and intercept of the soil water line for each one of the different studies.
4. Check that all linear regressions are significant.

***Calculate the soil water excess***

1. Look of the isotopic composition (δ2H and δ18O in ‰) of the xylem (if other tissue was sampled indicate so) extracted water.
2. Extract (using xy-extract or similar) or copy the δ2H and δ18O (in ‰) of the xyle water and fill in file “data\_plant\_water.csv”. In the column “species” indicate the species and make sure it matches the exact name in file “Dexcess\_meta\_nalysis.xls”.
3. Run scrip “calcSWexcess.R” to calculate the slope and intercept of the soil water line for each one of the different studies.
4. Check the values