README file for "PL-SWAT-51_20: a high-resolution simulated water balance and streamflow data set for 1951-2020 for the territory of Poland"

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Content: daily streamflow and water balance components simulated with the SWAT model for the territory of Poland and parts of neighbouring countries from which waters drain into Poland, for the time period 1951-2020.

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Data usage:

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File nomenclature and units:

The dataset is available NetCDF files. Additional shapefiles containing river outlets, reaches and sub-basins are also available. Below one can find description of the NetCDF files:

"**PL_SWAT_51_20**_streamflow.nc" contains simulated average daily streamflow out of reach (m^3/s) for 4381 reaches. The file has two dimensions: reach number and time, which is given as number of days since the 1951-01-01; Variable name flow_out;

"**PL_SWAT_51_20**_*VariableShortName1_(...)_VariableShortName4*_subbasin.nc" is organized in three files, each storing data on four variables. All of them contain water balance components for 4381 sub-basins. The files have two dimensions: sub-basin number (that corresponds to the

reach number) and time, which is given as number of days since the 1951-01-01. The variables included in this file are listed and described below. Variable descriptions are taken directly from the SWAT model documentation.

Variable short name in file name	Variable name in NetCDF file	Description	Units
File1: PL_SWAT_51_20_ prec_pet_et_wyld_subbasin.nc			
prec	precipitation_amount	Total amount of precipitation falling on the sub-basin during time step (mm H2O).	mm
pet	potential_evapotranspiration_amount	Potential evapotranspiration from the sub-basin during the time step (mm H2O)	mm
et	actual_evapotranspiration_amount	Actual evapotranspiration from the sub-basin during the time step (mm).	mm
wyld	runoff_amount	Water yield (mm H2O). The net amount of water that leaves the sub-basin and contributes to streamflow in the reach during the time step. (WYLD = SURQ + LATQ + GWQ – TLOSS – pond abstractions).	mm
File2: PL_SWAT_51_20_ snowmelt_snowfall_soilwater_perc_subbasin.nc			
snowmelt	snow_melt_amount	Amount of snow or ice melting during time step (water-equivalent mm H2O).	mm
snowfall	snowfall_amount	Amount of freezing rain/snow fall during time step (water-equivalent mm H2O)	mm
soilwater	soil_moisture_content	Soil water content (mm). Amount of water in the soil profile at the end of the time period (day).	mm
perc	percolation_amount	Water that percolates past the root zone during the time step (mm). There is potentially a lag between the time the water leaves the bottom of the root zone and reaches the shallow aquifer. Over a long period of time, this variable should equal groundwater percolation.	mm
File3: PL_SWAT_51_20_ surq__gwrchg_baseflow_tileq_subbasin.nc			
surq	surface_runoff_amount	Surface runoff contribution to streamflow during time step (mm H2O).	mm
gwrchg	groundwater_recharge_amount	Recharge entering aquifers (mm). Total amount of water entering shallow and deep aquifers during the time step.	mm
gwq	baseflow_amount	Groundwater contribution to streamflow (mm). Water from the shallow aquifer that returns to the reach during the time step.	mm
tileq	tile_flow_amount	Drainage tile flow contribution to stream during the time step (mm).	mm

Additional shapefiles:

- "**PL_SWAT_51_20**_outlets.shp" contains 4381 outlets from the SWAT model setup. These outlets can be joined by the "reach_no" field with the values of simulated streamflow in the reaches from the "**PL_SWAT_51_20**_streamflow.nc" file;
- "**PL_SWAT_51_20**_reach.shp" contains 4381 reaches from the SWAT model setup. These reaches can be joined by the "reach_no" field with the values of simulated streamflow in the reaches from the "**PL_SWAT_51_20**_streamflow.nc" file;
- "**PL_SWAT_51_20**_subbasin.shp" contains 4381 sub-basins from the SWAT model setup. These sub-basins can be joined by the "sub_no" field with the values of the water balance components at sub-basin level from the "**PL_SWAT_51_20**_subbasin.nc" file.