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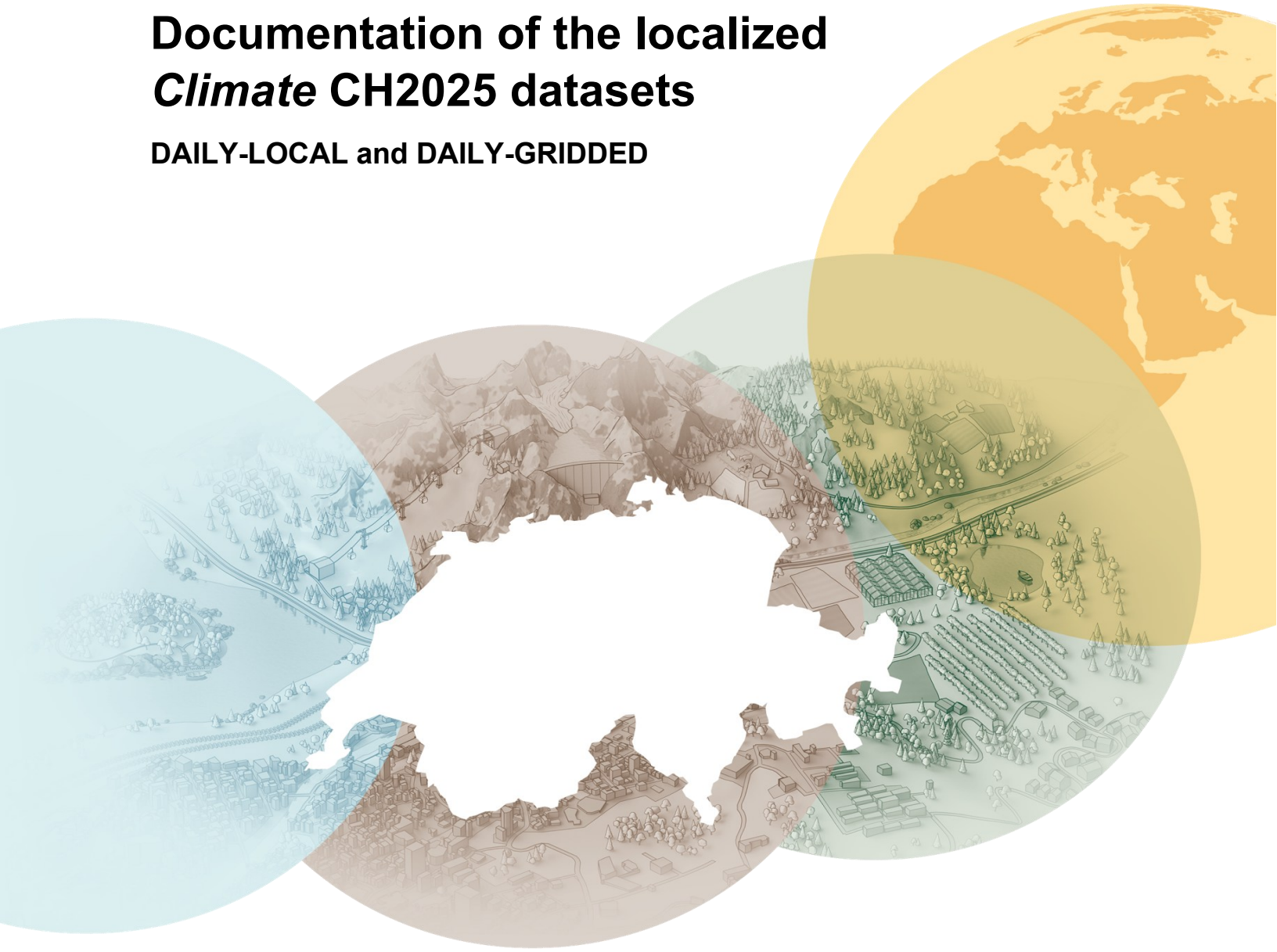
Climate CH2025

Documentation of the localized *Climate* CH2025 datasets

DAILY-LOCAL and DAILY-GRIDDED



***Climate* CH2025**

Documentation of the localized *Climate* CH2025 datasets

30-year daily time series at the local scale: DAILY-LOCAL, DAILY-GRIDDED

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1. Overview

The localized *Climate* CH2025 datasets consist of 30-year daily time series for each Global Warming Level (GWL) and the model reference period 1991-2020 for several variables at individual Swiss stations (DAILY-LOCAL) and on a regular 1 km grid covering the area of Switzerland (DAILY-GRIDDED). These data are primarily useful for research purposes or professional consulting and are available via the Open Government Data (OGD) platform of MeteoSwiss (Link). They are largely consistent with all further *Climate* CH2025 data products. The data were produced by applying a statistical bias-correction and downscaling method (Quantile Mapping, QM) to the original output of all EURO-CORDEX climate model simulations employed in *Climate* CH2025. As observational reference, station observations and observation-based gridded analyses were used. A detailed description of the method and the underlying datasets is provided by the *Climate* CH2025 Scientific Report (MeteoSwiss & ETH Zurich (2025), Chapters 2 and 6).

2. Available simulations and variables

The *Climate* CH2025 scenarios are based on the EURO-CORDEX climate projections. These consist of a large number of transient regional climate simulations carried out by different combinations of global and regional climate models (GCMs, RCMs; see www.euro-cordex.net) and assuming three different greenhouse gas scenarios. In total, the *Climate* CH2025 scenarios ensemble is composed of 26 GCM-RCM combinations for GWLs 1.5, 2.0 and 2.5 and of 24 combinations for GWL3.0, derived from a total of 54 actual simulations covering three different greenhouse gas scenarios (RCP2.6, RCP4.5 and RCP8.5); see Tables 1, 2 and 5 for an overview of the available model simulations.

All simulations employ the same resolution of about 12 km (EUR12). The regional simulations themselves are driven by global climate models of the CMIP5 project at the lateral boundaries but were merged with the more recent global CMIP6 ensemble in the *Climate* CH2025 framework (see Chapter 2 in MeteoSwiss & ETH Zurich (2025)). In terms of meteorological variables, the DAILY-LOCAL scenarios cover seven variables while the DAILY-GRIDDED product only covers four of them (see Table 3). The reason for this reduced set is the lack of a gridded observational dataset to serve as reference for the bias correction for the remaining three variables. Note that due to missing EURO-CORDEX RCM output, not all variables can be provided for all simulations. Daily mean temperature (tas), daily maximum temperature (tasmax), daily minimum temperature (tasmin), daily precipitation sum (pr), daily mean global radiation (rsds) and daily mean surface wind speed (sfcWind) are available for all 26 simulations per GWL while daily mean relative humidity (hurs) is available for a subset of 21 simulations only (see Table 1).

Depending on the variable, the DAILY-LOCAL product is provided for a differing set of stations; see Table 4 for a complete list of available stations and the accompanying file for the respective station meta

information (full station name, station location and station elevation). The largest number of stations (405) can be provided for daily precipitation. The reason for this differing number of stations is the differing availability of observational series in the period 1991-2020 that serve as reference for the bias correction. See Chapter 5.2.2 of CH2018 (2018) for further details on the criteria for station selection. The station selection differs from the set of stations used in CH2018 because *Climate* CH2025 uses a different observational reference period (1991-2020 instead of 1981-2010).

The *Climate* CH2025 localized datasets provide 30-year daily time series for four GWLs between GWL1.5 and GWL3.0 in steps of 0.5 and, additionally, for the reference period 1991-2020. Per GWL, all simulations that were used to produce the *Climate* CH2025 web atlas plots are provided (see Chapter 2 of MeteoSwiss & ETH Zurich (2025) for additional information on the ensemble composition). Note that the data file names do not include the specific SSP-RCP that is being used for a given GWL and a given GCM-RCM chain. Table 5 provides this information. For a given model chain, data for the reference period 1991-2020 is provided by the climate model simulation with the lowest SSP-RCP available. Recently, a user-targeted *Climate* CH2025 ensemble sub-selection was published (Senoner et al., 2026). The sub-selection suggests three representative model combinations per GWL and application case out of the 26 (24 for GWL3.0) simulations of the full ensemble (a lower, a medium and an upper simulation).

3. Data formats

The DAILY-LOCAL product is provided in CSV (ASCII) and in Unidata's NetCDF format (www.unidata.ucar.edu/software/netcdf) and the DAILY-GRIDDED product as NetCDF. For a quick view and for basic data operations in NetCDF we recommend the use of the Climate Data Operators (CDO) tool (www.mpimet.mpg.de/cdo). Here, a brief overview of the file structures, file names and data formats is provided.

DAILY-LOCAL

For a given meteorological variable and a given GWL, the DAILY-LOCAL scenarios are provided as CSV files and ZIP files containing NetDCF.

The CSV files are named according to the convention

[collection-ID]_[stations-ID]_[parameter-ID]_[GWL-ID].csv

and the ZIP files

[collection-ID]_[stations-ID]_[parameter-ID]_[GWL-ID].zip

where [collection-ID] is the OGD identification (e.g., ogd-climate-scenarios-ch2025), [stations-ID] represents the station abbreviation according to this CSV file, [parameter-ID] is the variable abbreviation according to Table 3 and [GWL-ID] is the GWL abbreviation for the 5 periods (4x GWLs and 1x ref91-20).

As an example, the CSV file for daily mean temperature, the station Adelboden and GWL1.5 is named

ogd-climate-scenarios-ch2025_ABO_tas_GWL1.5.csv

In one ZIP-archive there are 24 or 26 NetCDF files (number of model simulations available for a given GWL) which follow the naming convention

[collection-ID]_[stations-ID]_[parameter-ID]_[Simulation-ID]_[GWL-ID].nc

As an example, the NetCDF file for daily mean temperature, the station Adelboden, GWL1.5 and the simulation CLMCOM-CCLM4-ECEARTH is named

ogd-climate-scenarios-ch2025_ABO_tas_CLMCOM-CCLM4-ECEARTH_GWL1.5.nc

The CSV files contain all model chains, while there exists one file per model chain for the NetCDFs. In the header you find important meta data about the file, the variables, the stations etc.

Data for partner stations located in neighboring countries (hydrological Switzerland) are available upon request (see Section 6).

DAILY-GRIDDED

For a given climate model chain and a given meteorological variable, the DAILY-GRIDDED data are provided as a NetCDF file that is named according to the convention

[collection-ID]_[parameter-ID]_[Simulation-ID]_[GWL-ID].nc

For example, the data file for daily mean temperature, the simulation CLMCOM-CCLM4-ECEARTH and ref91-20 is named

ogd-climate-scenarios-ch2025-grid_tas_CLMCOM-CCLM4-ECEARTH_ref91-20.nc

The data files contain daily fields for the respective GWL period and on a 1 km grid covering the whole of Switzerland. This grid corresponds to the same grid on which daily observational fields are provided by MeteoSwiss for historical periods (e.g., TabsD or RhiresD; see Link for further information). The grid information as well as additional meta data are provided in the NetCDF attributes that are part of each data file.

The precipitation grids also exist for hydrological Switzerland (hydrological catchment areas extending beyond the Swiss political boundaries) and are available upon request (see Section 6).

The observational datasets for the stations and the grids are not provided together with the model data. Check out the OGD Documentation Website of MeteoSwiss for the available observational datasets.

4. Calendar and Metadata

The calendar is a standard 365-day calendar without leap years. Note that depending on the underlying climate model simulation, the data series might contain missing values. These were introduced randomly in order to convert climate model output for simulations that employ reduced calendar lengths (360 days) to 365 days calendars. For full Gregorian calendars (366 days), leap days were deleted. If a 366-day calendar is needed, leap days have to be added manually by the user. Consistent 365-day calendars ensure internal consistency, i.e. for a given climate model simulation missing values were introduced randomly but at the very same days for all *Climate* CH2025 data products (DAILY-LOCAL and DAILY-GRIDDED) - including all individual stations of the DAILY-LOCAL product - and for all meteorological variables. Missing values are represented as “NA” in CSV files and as “-999.” in NetCDF files.

The generic calendar ranges from 0001-01-01 to 0030-12-31 for every file, which corresponds to the 30 years of each GWL or the reference period (1991-2020). Since the exact GWL time period depends on each simulation and its underlying emission scenario we do not provide the exact years but the generic calendar from year 0001 to 0030. The model data reference period also has the generic calendar from 0001-01-01 to 0030-12-31.

The headers of the NetCDF and CSV files contain additional meta information such as station details, variable units or the respective literature references. The attributes X_COORD and Y_COORD refer to the

East (E) and North (N) coordinates of the Swiss reference system LV95, respectively. The header of the CSV files has a length of 23 lines, followed by the dates (first column) and the actual values, separated by a semicolon (";").

5. Data access and license

All *Climate* CH2025 datasets are published under the CC BY 4.0 license that includes the right to share (copy and redistribute in any medium or format) and adapt (remix, transform, and build upon for any purpose, even commercially) the data under the condition that proper reference to *Climate* CH2025 is given (see doi.org/10.18751/climate/scenarios/ch2025/data/1.0). While some datasets are available via the *Climate* CH2025 web atlas, the DAILY-LOCAL and DAILY-GRIDDED data are available via the OGD platform of Meteoswiss (see MeteoSwiss Open Data Documentation). In the documentation, some code snippets show how the data may be accessed with the STAC API, and links to the STAC Browser for the interactive download of DAILY-LOCAL and DAILY-GRIDDED datasets are given.

6. Hydrological Switzerland

As an extension of the DAILY-LOCAL and DAILY-GRIDDED datasets, additional datasets covering hydrological Switzerland were published in April 2026. This includes the entire territory of political Switzerland plus those catchment areas outside its borders that drain into political Switzerland. It consists of a precipitation grid dataset (1 km, spatially expanded DAILY-GRIDDED) as well as a dataset for partner stations outside of political Switzerland for all available climate parameters (see CSV file for the metadata of the available partner stations). Figure 1 shows the extent of hydrological Switzerland (pink) and the location of the 78 partner stations (colored points). The data of partner stations is not homogenized and only a few plausibility checks have been performed. MeteoSwiss provides no guarantee for the correctness of content, accuracy, reliability or completeness of the data. The precipitation grids and the data of partner stations are available upon request (Contact: klimaszenarien@meteoswiss.ch).

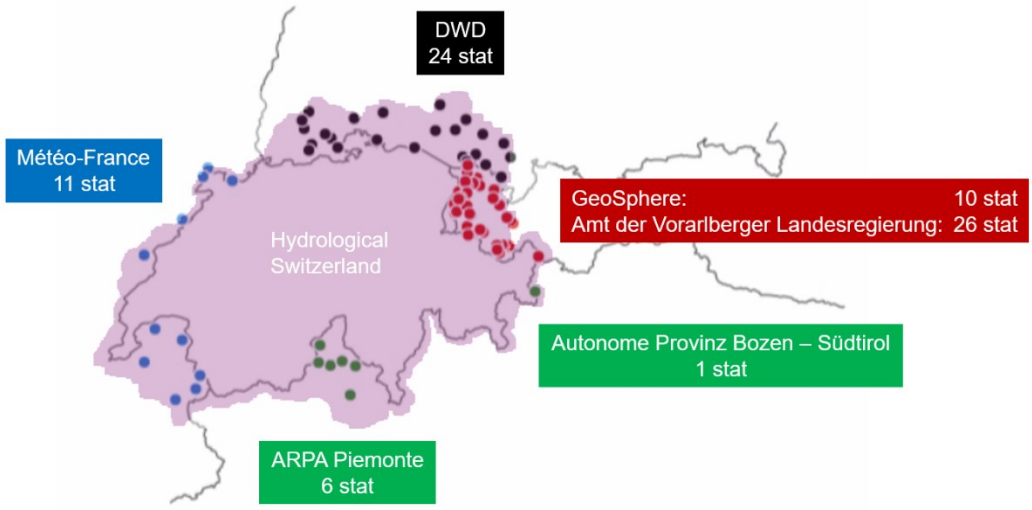

Figure 1 Map of the 78 available partner stations in hydrological Switzerland and the respective station networks of neighboring countries. In pink is the extent of the precipitation grids for hydrological Switzerland.

7. Instructions for use and limitations

The DAILY-LOCAL and DAILY-GRIDDED scenarios provide 30-year daily time series for several variables unlike CH2018 where there were transient daily data available for the period 1981-2099. The GWL periods should not be put together to get a transient time series. In the period 1991-2020, which has served as reference for the bias correction and downscaling procedure and in a given time of year, the statistical distribution of the daily values in both products approximately corresponds to the distribution of their observational counterparts. Among others, this implies an approximate account of mean and extreme values in the reference period as well as, for the case of precipitation, a realistic representation of the wet day frequency.

Despite these attractive properties, the DAILY-LOCAL and DAILY-GRIDDED products are subject to a number of caveats and limitations. These are mostly connected to the fact that the statistical bias correction and downscaling method employed (QM) is entirely based on empirical evidence (comparison of observed and simulated data in the reference period); it does not introduce further process knowledge that might drive local-scale weather and climate processes which are not represented by the coarse-resolved underlying climate model output.

Chapter 6 of MeteoSwiss & ETH Zurich (2025), Chapter 5 of CH2018 (2018) and Feigenwinter et al. (2018) list the most important caveats and limitations of the datasets. These include the following aspects:

- For a given climate model simulation, the temporal consistency of values between different products (DAILY-LOCAL and DAILY-GRIDDED), for different stations/grid points and between different variables is basically given. However, there is **no temporal correspondence with the observed evolution of weather** in the historical period 1991-2020. In simple words, the sequence of weather patterns is random and not correlated to the sequence that actually happened in reality. This is because the underlying GCM experiments were carried out in a free-running mode. Likewise, the data derived from different climate model simulations are not temporally consistent with each other.
- Quantile mapping corrects for distributional biases in the historical period, but **remaining biases** of the corrected series are possible. This can be the case for temporal climate variability, such as the sequence of wet and dry days. Temporal variability is inherited from the underlying climate model simulation and its potential biases are not corrected for. As the adjustment by quantile mapping is of an approximate nature only, even remaining biases in mean values are possible, though they are small in most cases.
- In *Climate* CH2025, bias adjustment and downscaling are carried out in a univariate mode, i.e. independently for each individual meteorological variable. Potential biases of the raw climate models in the representation of **inter-variable dependencies** are not adjusted and might to some extent be misrepresented in the DAILY-LOCAL and DAILY-GRIDDED datasets. For example, for some model chains tasmin can be higher than tasmax for individual days of the time series. Users are advised to verify and correct the relevant dependencies in the *Climate* CH2025 data before forcing impact models. For the above example of tasmin > tasmax, both values could simply be set the daily mean temperature value for the respective days.
- The application of quantile mapping involves certain assumptions about systematic biases in the extreme tails of the distribution. These assumptions directly impact changes of **extreme values** as represented by the bias-adjusted data. Climate extremes in the daily *Climate* CH2025 data products should hence be handled with special care by users.
- **Spatial climate variability** at daily scale is not necessarily represented by the downscaled and bias-adjusted daily data. This is especially true for the DAILY-GRIDDED product.

- A basic assumption of quantile mapping as employed in *Climate* CH2025 is that the **model bias structure is stationary in time**, i.e. is also valid for a future climate. Although there are indications that this assumption is valid (e.g., Ivanov and Kotlarski, 2017), it can't be comprehensively evaluated. The DAILY-LOCAL and DAILY-GRIDDED products are hence subject to inherent uncertainties relating to model bias assumptions.
- As a consequence of the assumption of intensity-dependent biases by quantile mapping, the method can account for future changes in the mean model bias. This implies that **the application of quantile mapping can modify the raw models' climate change signals** to some extent. This modification can be meaningful, but can in some cases also be a statistical artifact resulting from the adjustment of distributional widths. One example is the tendency of quantile mapping to overestimate temperature climate change signals at high elevations during parts of the year, and to underestimate them at valley locations.
- As a consequence of the previous issue and, in a more general sense, due the neglect of physical mechanisms underlying systematic model biases and potentially misrepresented local scale climate variability, users should be careful when deriving **complex local-scale climate features** from the DAILY-LOCAL and DAILY-GRIDDED datasets. This concerns, for instance, the intercomparison of climate change signals at two nearby stations or grid cells (frequency of inversions, etc.) or the analysis of elevation dependencies. More complex downscaling methods may improve results, but need to be specifically designed for each application.
- **Uncertainties in the observational reference** (daily station series and 1 km grids) also translate into the bias-adjusted and downscaled *Climate* CH2025 products. For instance, the effective resolution of the 1 km gridded reference for precipitation is coarser than the nominal 1 km resolution (about 15-20 km over many parts of Switzerland, according to the mean station distance in the underlying station network, and even coarser in the Alps). As a consequence, the bias-adjusted DAILY-GRIDDED product does not fully represent spatial climate variability at the 1 km scale. A further issue concerns the fact that the observational precipitation data employed as reference for quantile mapping has not been corrected for the systematic undercatch of rain gauges which can be substantial especially for snowfall. As a result, the DAILY-LOCAL and DAILY-GRIDDED precipitation data as well are subject to a systematic undercatch that needs to be corrected for in hydrological applications.
- While producing the local *Climate* CH2025 datasets, all products for the variables tas, tasmax, tasmin and pr have been thoroughly checked and validated. These variables are considered as most important and central to *Climate* CH2025. The verification has been less rigorous for the **auxiliary variables rsds, hurs and sfcWind** that are part of the DAILY-LOCAL dataset (see Table 3). These variables are mainly provided in order to fulfil additional user requirements at the station scale, e.g. for energy balance applications that require an enlarged but internally consistent set of meteorological variables as input. Users are advised to treat bias-adjusted and downscaled *Climate* CH2025 data for rsds, hurs and sfcWind with special care and after thorough validation in the historical period.

The mentioned issues should be accounted for and respected by climate impact applications. In many cases, their influence can be assessed by driving an impact model with the DAILY-LOCAL or DAILY-GRIDDED data for the historical reference period 1991-2020 and by comparing the resulting statistics to the case where the impact model is driven by observational data for the same period. Thereby, the sensitivity of the impact model with respect to remaining biases in the *Climate* CH2025 data can be assessed and quantified. In case of doubt concerning the applicability of the DAILY-LOCAL or DAILY-GRIDDED products for a specific application, the *Climate* CH2025 data providers should be contacted (klimaszenarien@meteoswiss.ch).

To account for the inherent climate model uncertainty, we also advise users to always employ a maximum number of *Climate* CH2025 simulations, wherever possible the full ensemble available for a given GWL. In some cases, and due to computational constraints, this might not be possible and an appropriate selection of simulations is helpful. Such a selection has to be application-specific and should, generally, take into account the sensitivity of the investigated system, model performance in historical periods and the range of simulated climate change signals.

Last but not least, users should be aware of the general guidelines for using EURO-CORDEX climate model data, which are available from www.euro-cordex.net/imperia/md/content/csc/cordex/euro-cordex-guidelines-version1.0-2017.08.pdf. The EURO-CORDEX homepage (www.euro-cordex.net) also provides access to an errata service from which information on potential errors of individual simulations or individual variables from specific simulations can be obtained in the future.

To keep this EURO-CORDEX errata service up-to-date and to ensure a high-quality of the *Climate* CH2025 datasets in the future, we ask users to inform the *Climate* CH2025 data providers (klimaszenarien@meteoswiss.ch) on any spurious issues of the *Climate* CH2025 data that are discovered in subsequent climate impact applications and analyses. Thank you!

References

CH2018 (2018) CH2018 – Climate Scenarios for Switzerland, Technical Report, National Centre for Climate Services, Zurich, 271 pp. ISBN: 978-3-9525031-4-0.

Feigenwinter I, Kotlarski S, Casanueva A, Fischer AM, Schwierz C, Liniger MA (2018) Exploring quantile mapping as a tool to produce user-tailored climate scenarios for Switzerland, Technical Report No. 270, MeteoSwiss, Zurich, 44 pp.

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Senoner, A., Kotlarski S., and Mülchi R. (2026) Climate CH2025: Climate model ensemble sub-selection for impact studies: Guide for users, available at: https://www.meteoswiss.admin.ch/climate/climate-change/swiss-climate-scenarios/understanding-climate-change-scenarios/ch2025-ensemble-sub-selection.html

Appendix

Table 1 The EURO-CORDEX climate model combinations employed in *Climate* CH2025 and their available variables. The first column lists the simplified *Climate* CH2025 model identifier used in the *Climate* CH2025 data files and following the scheme [RCM]_[GCM]. [RCM] and [GCM] represent abbreviations of the full CORDEX model names (see Table 2). Note that, for a given climate model combination, several simulations assuming different RCPs might be available (see Table 5).

***Climate* CH2025 climate model combination**	**tas**	**tasmax**	**tasmin**	**pr**	**rsds**	**hurs**	**sfcWind**
CLMCOM-CCLM4-CCCMA	X	X	X	X	X	X	X
CLMCOM-CCLM4-ECEARTH	X	X	X	X	X		X
CLMCOM-CCLM4-HADGEM	X	X	X	X	X		X
CLMCOM-CCLM4-MIROC	X	X	X	X	X	X	X
CLMCOM-CCLM4-MPIESM	X	X	X	X	X		X
CNRM-ALADIN-CNRM	X	X	X	X	X	X	X
CNRM-ALADIN-HADGEM	X	X	X	X	X	X	X
CNRM-ALADIN-MPIESM	X	X	X	X	X	X	X
CNRM-ALADIN-NORESM	X	X	X	X	X	X	X
DMI-HIRHAM-ECEARTH	X	X	X	X	X	X	X
DMI-HIRHAM-HADGEM	X	X	X	X	X	X	X
GERICS-REMO-CNRM	X	X	X	X	X	X	X
ICTP-REGCM-HADGEM	X	X	X	X	X	X	X
IPSL-WRF-IPSL	X	X	X	X	X	X	X
MOHC-HADREM-CNRM	X	X	X	X	X	X	X
MOHC-HADREM-ECEARTH	X	X	X	X	X	X	X
MOHC-HADREM-HADGEM	X	X	X	X	X	X	X
MOHC-HADREM-MPIESM	X	X	X	X	X	X	X
MOHC-HADREM-NORESM	X	X	X	X	X	X	X
MPICSC-REMO1-MPIESM	X	X	X	X	X		X
MPICSC-REMO2-MPIESM	X	X	X	X	X		X
SMHI-RCA-ECEARTH	X	X	X	X	X	X	X
SMHI-RCA-HADGEM	X	X	X	X	X	X	X
SMHI-RCA-IPSL	X	X	X	X	X	X	X
SMHI-RCA-MPIESM	X	X	X	X	X	X	X
SMHI-RCA-NORESM	X	X	X	X	X	X	X
Total	**26**	**26**	**26**	**26**	**26**	**21**	**26**

Table 2 RCM and GCM abbreviations employed in the *Climate* CH2025 data file names. Full names refer to the model names as provided by the EURO-CORDEX initiative. For further details see www.euro-cordex.net. rxi1p1 refer to different realizations. For the exact model simulation names see Figure 2.7 in *Climate* CH2025 Scientific Report (MeteoSwiss & ETH Zurich (2025)).

Full EURO-CORDEX RCM name	***Climate* CH2025 abbreviation [RCM]**
CLMcom-CCLM4-8-17	CLMCOM-CCLM4
CNRM-ALADIN63	CNRM-ALADIN
DMI-HIRHAM5	DMI-HIRHAM
ICTP-RegCM4-6	ICTP-REGCM
MOHC-HadREM3-GA7-05	MOHC-HADREM
MPI-CSC-REMO2009 (r1i1p1)	MPICSC-REMO1
MPI-CSC-REMO2009 (r2i1p1)	MPICSC-REMO2
SMHI-RCA4	SMHI-RCA
Full EURO-CORDEX/CMIP5 GCM name	***Climate* CH2025 abbreviation [GCM]**
ICHEC-EC-EARTH (r12i1p1 & r3i1p1)	ECEARTH
MOHC-HadGEM2-ES (r1i1p1)	HADGEM
MPI-M-MPI-ESM-LR (r1i1p1 & r2i1p1)	MPIESM
MIROC-MIROC5 (r1i1p1)	MIROC
IPSL-IPSL-CM5A-MR (r1i1p1)	IPSL
CCCma-CanESM2 (r1i1p1)	CCCMA
NCC-NorESM1-M (r1i1p1)	NORESM
CNRM-CERFACS-CNRM-CM5 (r1i1p1)	CNRM

Table 3 List of meteorological variables covered by the *Climate* CH2025 datasets DAILY-LOCAL and DAILY-GRIDDED and their respective availability including the number of available stations for the DAILY-LOCAL product.

Variable name	**Abbreviation**	**Unit**	**DAILY-LOCAL (No. of stations)**	**DAILY-GRIDDED**
Daily mean 2m temperature	***tas***	°C	X (89)	X
Daily maximum 2m temperature	***tasmax***	°C	X (88)	X
Daily minimum 2m temperature	***tasmin***	°C	X (89)	X
Daily precipitation sum	***pr***	mm/day	X (405)	X
Daily mean global radiation	***rsds***	W/m^2	X (67)	-
Daily mean relative humidity	***hurs***	%	X (88)	-
Daily mean 10m wind speed	***sfcWind***	m/s	X (87)	-

Table 4 Available stations in the DAILY-LOCAL product. Only the respective station abbreviations are listed. For the full station meta information (including full station name, location and elevation) we refer to the accompanying metadata document available here.

Variable	Available stations (station abbreviation)
tas	ABO AIG ALT ANT ARO BAS BER BLA BRL BUF BUS CDF CGI CHA CHD CHM CHU CIM COM COV DAV DEM DIS DOL EBK EIN ELM ENG EVO FAH FRE GLA GRA GRC GRH GRO GSB GUE GUT GVE HAI HLL HOE INT JUN KLO KOP LAE LAG LUG LUZ MAG MER MLS MVE NAP NEU OTL PAY PIL PIO PLF PUY RAG REH ROB ROE RUE SAE SAM SBE SBO SCU SHA SIA SIO SMA SMM STG TAE ULR VAD VIS WAE WFJ WYN ZER NABZUE NABLAU
tasmax	ABO AIG ALT ARO BAS BER BLA BRL BUF BUS CDF CGI CHA CHD CHM CHU CIM COM COV DAV DEM DIS DOL EBK EIN ELM ENG EVO FAH FRE GLA GRA GRC GRH GRO GSB GUE GUT GVE HAI HLL HOE INT JUN KLO KOP LAE LAG LUG LUZ MAG MER MLS MVE NAP NEU OTL PAY PIL PIO PLF PUY RAG REH ROB ROE RUE SAE SAM SBE SBO SCU SHA SIA SIO SMA SMM STG TAE ULR VAD VIS WAE WFJ WYN ZER NABZUE NABLAU
tasmin	ABO AIG ALT ANT ARO BAS BER BLA BRL BUF BUS CDF CGI CHA CHD CHM CHU CIM COM COV DAV DEM DIS DOL EBK EIN ELM ENG EVO FAH FRE GLA GRA GRC GRH GRO GSB GUE GUT GVE HAI HLL HOE INT JUN KLO KOP LAE LAG LUG LUZ MAG MER MLS MVE NAP NEU OTL PAY PIL PIO PLF PUY RAG REH ROB ROE RUE SAE SAM SBE SBO SCU SHA SIA SIO SMA SMM STG TAE ULR VAD VIS WAE WFJ WYN ZER NABZUE NABLAU
pr	ABE ABG ABO AFI AFT AIE AIG AIR ALM ALS ALT ALV ALW AMW AND ANT APP APT ARB ARI ARO AST AUB AVA AVB AVE BAM BAS BAT BAU BAW BEP BER BEX BEY BEZ BIA BIE BIN BIO BIS BIV BIZ BLA BLS BLU BLZ BMU BNE BNU BOL BOS BOV BOZ BRA BRI BRL BRO BRP BRT BRW BRZ BSG BSP BUC BUD BUE BUF BUS CAC CAV CDF CDM CEV CGI CHA CHB CHD CHM CHU CHY CHZ CIM CMD CNZ COG COL COM COP COS COU COV COY CTA CTO CUE DAV DEH DEM DIB DIE DIS DIT DMA DOB DOL EBK ECH EFF EGL EGO EGR EHM EIN EIT EKO ELM ENG ENT EPT ERB ERI ESZ EUT EVO FAH FAI FIL FIO FIT FLI FLU FLW FRA FRC FRE FRF FRI FRU GAD GEA GEP GHS GIH GIN GLA GOA GOE GOS GRA GRC GRH GRI GRO GRY GSB GSG GSS GTT GUE GUG GUT GVE GWA HAI HAU HEB HEK HER HES HIW HLL HON HOY HTW HUT ILZ INF INN INT IST JAU JON JUS KAI KAR KAS KIB KIE KIS KLA KLO KLT KOP KRO KSE KUA KUB KUE LAB LAC LAF LAG LAN LAP LAT LEH LEI LEU LFB LGA LOB LOC LOH LON LOT LSN LTB LUG LUN LUT LUZ MAB MAC MAD MAG MAL MAR MAS MAT MBA MDO MER MES MEV MGB MGI MGL MLS MMO MOA MOB MOD MOE MOS MOU MSG MST MTE MTO MUB MUE MUL MUR MUS MUT MVE NAP NEU NIE OBD OBI OED OLI OPF ORS ORZ OTE OTL PAV PAY PDM PFA PIG PIL PIO PLF PON POT PSI PUD PUY RAG REG REH REM RIC RIH RIX ROB ROE ROM ROT RUE SAB SAE SAF SAG SAI SAM SAN SAP SAR SAX SBE SBO SCA SCD SCE SCH SCU SDO SED SEM SEV SGD SHA SIA SIE SIH SIM SIO SIS SKO SMA SMM SNS SOG SON SPA SPZ SRE SRN STB STE STG STP STU SUA SUS SVG SWA SWZ SZB TAE TAF TAM TAV TAW TDG TEU TFD THS THU TIC TRO TRU TST UBB ULR UNK UNS URB URN UST VAD VAE VAR VEL VEV VIG VIO VIS VIT VLS VRI VST VVI WAE WAG WAN WBR WCH WDO WEE WEF WET WFJ WHA WHF WID WIE WIN WIS WIT WIW WYN YVN ZER ZEV ZNZ ZOF ZUB ZWE ZWK
rsds	ABO AIG ALT BAS BER BUS CDF CGI CHA CHU CIM COM COV DAV DIS DOL ENG EVO FAH FRE GLA GRH GSB GUE GUT GVE HOE INT JUN KLO LAE LUG LUZ MAG MLS MVE NAP NEU OTL PAY PIL PIO PLF PUY REH ROB ROE RUE SAE SAM SBE SBO SCU SHA SIO SMA STG TAE ULR VAD VIS WAE WFJ WYN ZER NABZUE NABLAU
hurs	ABO AIG ALT ANT ARO BAS BER BRL BUF BUS CDF CGI CHA CHD CHM CHU CIM COM COV DAV DEM DIS DOL EBK EIN ELM ENG EVO FAH FRE GLA GRA GRC GRH GRO GSB GUE GUT GVE HAI HLL HOE INT JUN KLO KOP LAE LAG LUG LUZ MAG MER MLS MVE NAP NEU OTL PAY PIL PIO PLF PUY RAG REH ROB ROE RUE SAE SAM SBE SBO SCU SHA SIA SIO SMA SMM STG TAE ULR VAD VIS WAE WFJ WYN ZER NABZUE NABLAU
sfcWind	ABO AIG ALT ARO BAS BER BRL BUF BUS CDF CGI CHA CHD CHM CHU CIM COM COV DAV DEM DIS DOL EBK EIN ELM ENG EVO FAH FRE GLA GOE GRA GRH GSB GUE GUT GVE HAI HLL HOE INT JUN KLO KOP LAE LAG LEI LUG LUZ MAG MER MLS MUB MVE NAP NEU OTL PAY PIL PIO PLF PUY RAG REH ROB ROE RUE SAE SAM SBE SBO SCU SHA SIO SMA SMM STG TAE ULR VAD VIS WAE WFJ WYN ZER NABZUE NABLAU

Table 5 The EURO-CORDEX climate model combinations employed in *Climate* CH2025 and the respective RCP used for each GWL. For the reference period 1991-2020 the same RCPs were used as for GWL1.5. A missing RCP information for some GWL3.0 entries means that this GWL is not reached by the respective model combination, resulting in a smaller ensemble size for GWL3.0 compared to the other GWLs.

***Climate* CH2025 climate model combination**	**GWL1.5**	**GWL2.0**	**GWL2.5**	**GWL3.0**
CLMCOM-CCLM4-CCCMA	RCP85	RCP85	RCP85	RCP85
CLMCOM-CCLM4-ECEARTH	RCP26	RCP45	RCP85	RCP85
CLMCOM-CCLM4-HADGEM	RCP45	RCP45	RCP45	RCP45
CLMCOM-CCLM4-MIROC	RCP85	RCP85	RCP85	RCP85
CLMCOM-CCLM4-MPIESM	RCP45	RCP85	RCP85	-
CNRM-ALADIN-CNRM	RCP26	RCP26	RCP45	RCP85
CNRM-ALADIN-HADGEM	RCP85	RCP85	RCP85	RCP85
CNRM-ALADIN-MPIESM	RCP85	RCP85	RCP85	RCP85
CNRM-ALADIN-NORESM	RCP85	RCP85	RCP85	RCP85
DMI-HIRHAM-ECEARTH	RCP26	RCP45	RCP85	RCP85
DMI-HIRHAM-HADGEM	RCP26	RCP26	RCP45	RCP45
GERICS-REMO-CNRM	RCP26	RCP85	RCP85	RCP85
ICTP-REGCM-HADGEM	RCP26	RCP26	RCP85	RCP85
IPSL-WRF-IPSL	RCP45	RCP45	RCP85	RCP85
MOHC-HADREM-CNRM	RCP85	RCP85	RCP85	RCP85
MOHC-HADREM-ECEARTH	RCP85	RCP85	RCP85	RCP85
MOHC-HADREM-HADGEM	RCP26	RCP85	RCP85	RCP85
MOHC-HADREM-MPIESM	RCP85	RCP85	RCP85	RCP85
MOHC-HADREM-NORESM	RCP85	RCP85	RCP85	RCP85
MPICSC-REMO1-MPIESM	RCP26	RCP85	RCP85	-
MPICSC-REMO2-MPIESM	RCP45	RCP45	RCP85	RCP85
SMHI-RCA-HADGEM	RCP45	RCP45	RCP85	RCP85
SMHI-RCA-ECEARTH	RCP26	RCP45	RCP85	RCP85
SMHI-RCA-IPSL	RCP45	RCP45	RCP85	RCP85
SMHI-RCA-MPIESM	RCP26	RCP45	RCP85	RCP85
SMHI-RCA-NORESM	RCP26	RCP45	RCP85	RCP85
Total	**26**	**26**	**26**	**24**