

# Climate risk indicator data files

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## File naming

All the filenames have the following general format:

**indicator\_ensemble\_scenario\_scale.csv**

### Indicators

Indicator	Unit	File name element
<b>Climate</b>		
Change in average seasonal temperature	°C difference from 1981-2010 mean	tavg_*_dc * = DJF, MAM, JJA or SON
Change in average seasonal rainfall	% difference from 1981-2010 mean	rain_*_pc * = DJF, MAM, JJA or SON
<b>Heat and cold</b>		
Met Office heatwave frequency	Heatwaves per year	mohw_null_events
Met Office heatwave duration	Days per year	mohw_null_duration
Met Office heatwave chance	Annual chance of a heatwave	mohw_null_chance
Cold weather alert frequency	Alerts per year	coldweather_null_events
Cold weather alert duration	Days per year	coldweather_null_duration
Heating degree days relative to 15.5°C	Average annual heating degree-days	hdd_155_dd
Cooling degree days relative to 22°C	Average annual cooling degree-days	cdd_22_dd
Days with maximum temperature above 24°C	Days per year	railtemp_gt24_dyr
Rail network adverse weather days	Days per year	railops_adverse_dyr
<b>Agriculture</b>		
Growing season length	Days per year	gsl_null_duration
Growing degree days	Average annual growing degree-days	gdd_null_dd
Frost days	Days per year	frost_null_dyr
Potential soil moisture deficit	mm deficit	psmd_null_mm
Rainfall drought (Standardised Precipitation Index < -3)	Proportion of time	spi_null_prop
Rainfall and evaporation drought (Standardised Precipitation Evaporation Index < -3)	Proportion of time	spei_null_prop

<b>Fire and water</b>		
Met Office Fire Severity Index 'very high'	Days per year	mofsi_veryhigh_dyr
Change in seasonal average runoff	% change from 1981-2010	runoff_*_pc * = DJF, MAM, JJA or SON

See Arnell et al. (2021; 2026) and uk-cri.org for a full description

### Ensembles

Ensemble	Description	File name element
HadGEM 30-year mean	UKCP18 HadGEM PPE15 ensemble	ghadgem
HadGEM annual	UKCP18 HadGEM PPE15 ensemble	ghadgem_ann
CMIP5 30-year mean	UKCP18 CMIP5 12-member ensemble	gcmip5
CMIP5 annual	UKCP18 CMIP5 12-member ensemble	gcmip5_ann

### Scenarios

Scenario	Description	File name element
3 degree world	Global average temperatures reach 3°C above pre-industrial levels by 2100	3deg
4 degree world	Global average temperatures reach 4°C above pre-industrial levels by 2100	4deg
HILL-1	Enhanced global warming	rcp85
HILL-2	Rapidly reduced aerosol forcing, in a 3°C or a 4°C world	3deghill2 4deghill2
HILL-3	Volcanic eruptions (five eruptions, in 2030, 2038, 2044, 2052 and 2060)	3deghill35
HILL-4	Stronger Arctic Amplification, in a 3°C or a 4°C world	3deghill4 4deghill4
HILL-5a	Ocean circulation change: collapse of Atlantic Meridional Overturning Circulation, in a 3°C or a 4°C world	3deghill51 4deghill51
HILL-5b	Ocean circulation change: collapse of Sub-Polar Gyre, in a 3°C or a 4°C world	3deghill52 4deghill52

See Arnell et al. (2025) for a full description

### Scale

Always **admin-region**

Example:

The file containing the regional values for the 30-year mean Met Office Heatwave Frequency with the HILL2 scenario applied to the 3°C world HadGEM PPE15 ensemble is:

mohw\_null\_events\_ghadgem\_3deghill2\_admin-region.csv

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## File format

All the files have the same column format:

year	mid-year of 30-year slice (ghadgem and gcmip5) or year (ghadgem_ann and gcmip5_ann)
location	regional identifier code (see admin-region-names.csv for names)
lowest, 2 <sup>nd</sup> lowest, median, 2 <sup>nd</sup> highest, highest	calculated from the ensemble members
m_1, m_2....	Individual ensemble members (15 for the HadGEM PPE15 ensemble, and 12 for the CMIP5 ensemble)

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## References

- Arnell, N.W. et al. (2021) Changing climate risk in the UK: a multi-sectoral analysis using policy-relevant indicators. *Climate Risk Management* 31, 100265  
[10.1016/j.crm.2020.100265](https://doi.org/10.1016/j.crm.2020.100265)
- Arnell, N.W. et al. (2025) High-impact low-likelihood climate scenarios for risk assessment in the UK. *Earth's Future* 13, e2025EF006946