

Appendix 13.2 Climate Projections Data



Appendix 13.2: Summary of Evolving Baseline Climate Projections

This document summarises the UK Climate Change Projections 2018 (UKCP18), produced by the UK Met Office, under the RCP 8.5 probabilistic land projections for the 25 km grid cell within which the Site is located (562500, 137500). This Appendix presents the climate projections for year 2028, 2036, 2050, 2075, and 2099.

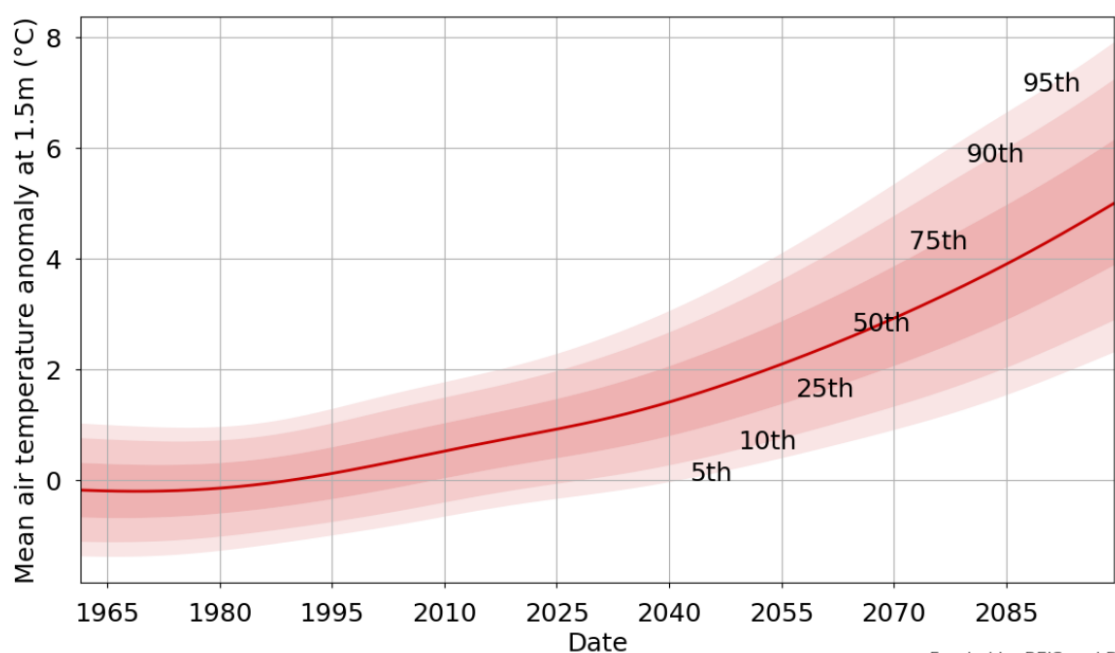
Average Climatic Norms

Temperature

Figure 1.1 and **Table 1.1** show the projections for annual average mean air temperature. The projections show an almost continuous increase in annual average temperature over the next 60 years.



Annual average Mean air temperature anomaly at 1.5m (°C) for years 1961 up to and including 2099, for grid square 512500, 212500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



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Figure 1.1 Annual average mean air temperature anomaly at 1.5m(°C) for years 2025-2099

Table 1.1: Mean average anomaly at 1.5 m (°C)

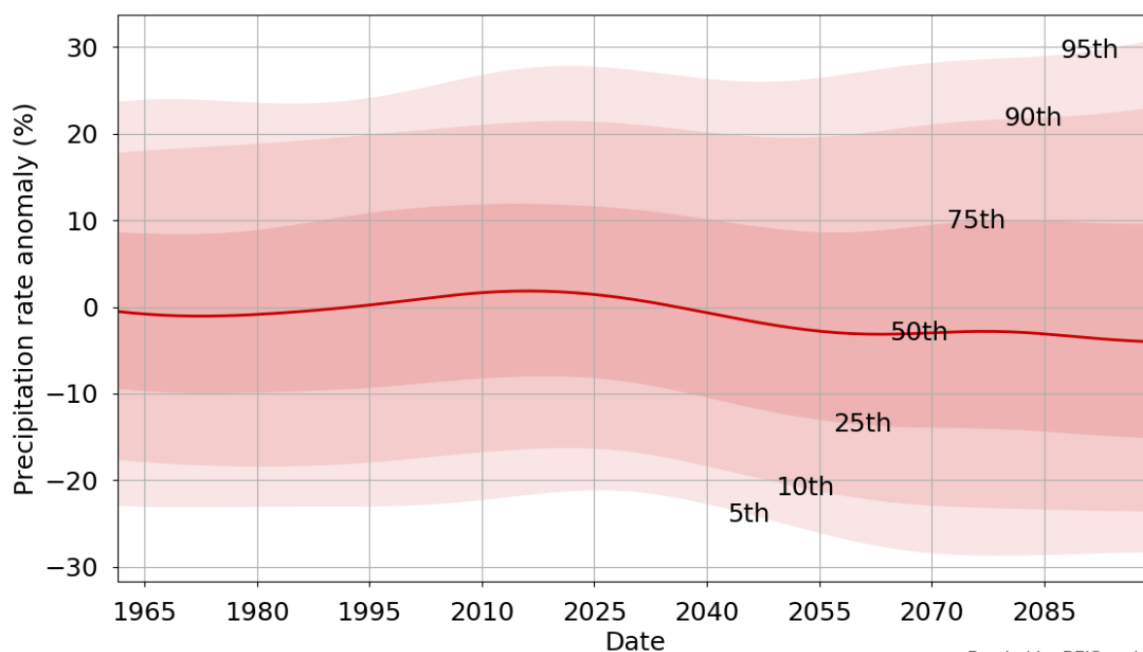
Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2028	-0.2735566	0.003962642	0.47793537	1.0182056	1.5819964	2.105775	2.431237
2036	-0.116777256	0.17694697	0.68642837	1.2759736	1.8951403	2.4771707	2.8422604
2050	0.25545213	0.59344137	1.1827971	1.870177	2.5982733	3.3023007	3.748119
2075	1.112144	1.5591049	2.3377132	3.2590537	4.253384	5.2097383	5.814994
2099	2.3112166	2.8888178	3.8814251	5.00194	6.145215	7.2359495	7.906416

Precipitation

Figure 1.2 and **Table 1.2** shows the projections for the annual average precipitation rate.



Annual average Precipitation rate anomaly (%) for years 1961 up to and including 2099, for grid square 512500, 212500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



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Figure 1.2: Annual average precipitation rate anomaly (%) for years 2025-2099.**Table 1.2: Annual Precipitation rate anomaly (%)**

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2028	-21.23149	-16.584204	-8.525567	1.0866612	11.394143	21.205196	27.508366
2036	-22.09701	-17.700094	-9.765937	-0.06503571	10.602285	20.527369	26.68795
2050	-25.034641	-20.447584	-12.39615	-2.2943156	8.9073	19.538788	26.061989
2075	-28.68591	-23.14622	-14.017949	-2.8310034	9.91112	21.463531	28.517498
2099	-28.312847	-23.64141	-15.150883	-4.032283	9.605545	22.987635	30.74792

Overall, the 50th percentile projection shows a decrease in precipitation. However, natural variability suggests that the future climate has an equal likelihood of becoming either drier or wetter as shown across the 5th-95 percentile projections.

Seasonal Changes

Summer

Figure 1.3 and **Table 1.3** show the projections for average summer (June, July, August) maximum air temperature. The projections show an overall increase in maximum temperature over the next 80 years.

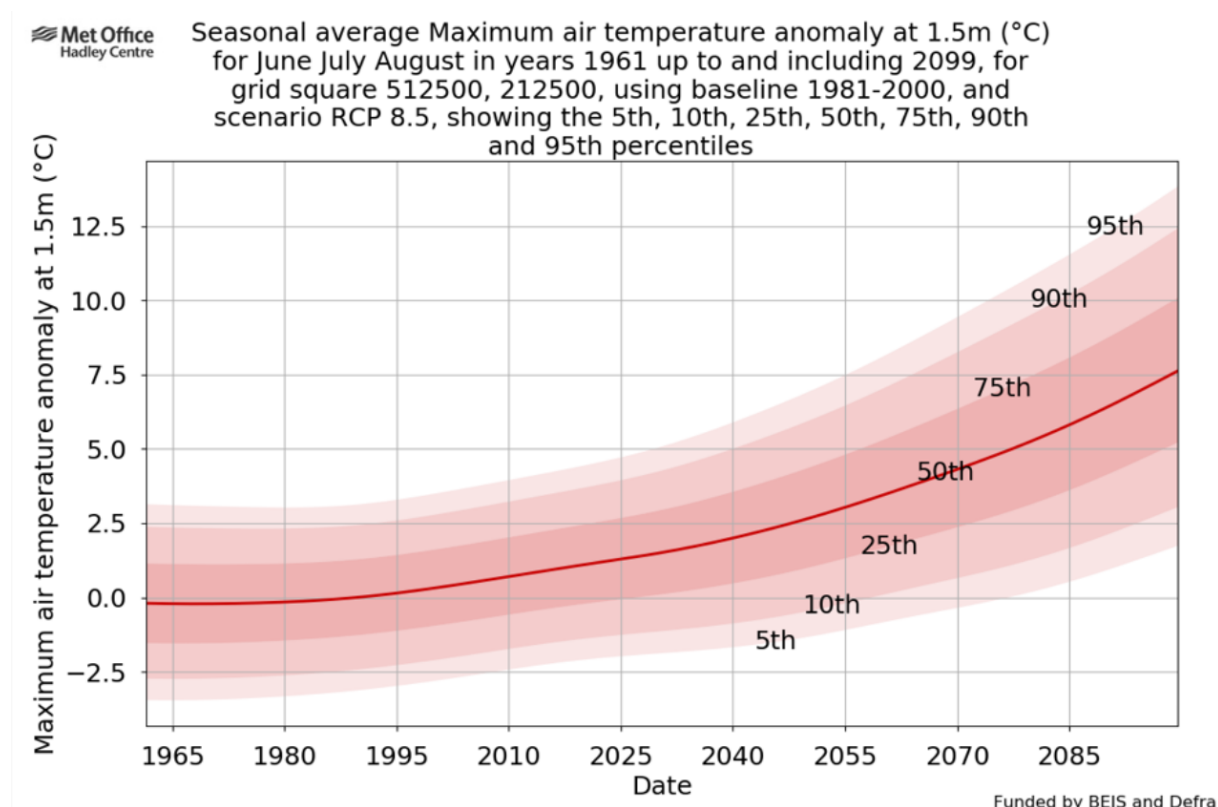


Figure 1.3 Summer average maximum air temperature anomaly at 1.5m (A°C) between 2025-2099.

Table 1.3 Maximum Summer air temperature anomaly at 1.5m (A°C)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2028	-1.9097632	-1.1762812	0.044518236	1.427526	2.8432412	4.1445093	4.9384036
2036	-1.7556535	-0.97888076	0.3240993	1.8040372	3.3129497	4.7115207	5.5695148
2050	-1.3054311	-0.43684116	1.0285189	2.689957	4.3988023	5.9841704	6.963541
2075	-0.07154805	0.9768136	2.7704964	4.8208036	6.950606	8.947774	10.186608
2099	1.737918	3.0385678	5.2114663	7.6205463	10.083219	12.417526	13.826892

Figure 1.4 and **Table 1.4** show the projections for average summer precipitation rate. The projections show an overall decline in precipitation over the next 60 years.

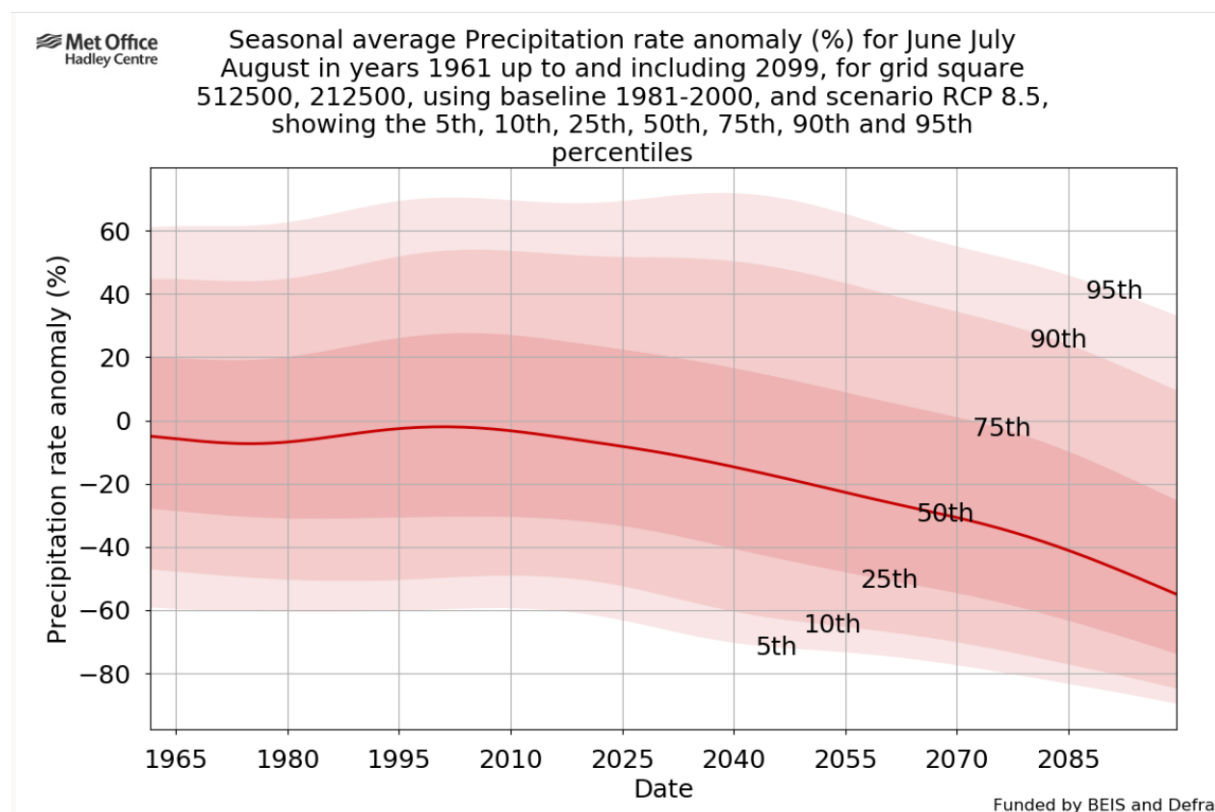


Figure 1.4 Summer average precipitation rate anomaly (%) for years 2025-2099.

Table 1.4: Average Summer Precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2028	-64.95905	-54.169544	-34.74356	-9.515885	21.204723	51.55773	70.208
2036	-68.9803	-58.69179	-38.727222	-12.992642	18.073553	50.997063	71.83875
2050	-72.57175	-64.06887	-45.91292	-20.279886	11.3142395	46.002876	68.193855
2075	-79.45678	-72.522224	-57.4432	-33.986355	-2.2700884	31.056528	51.878624
2099	-89.57891	-84.78102	-73.85625	-54.9484	-25.20986	9.511227	33.166706

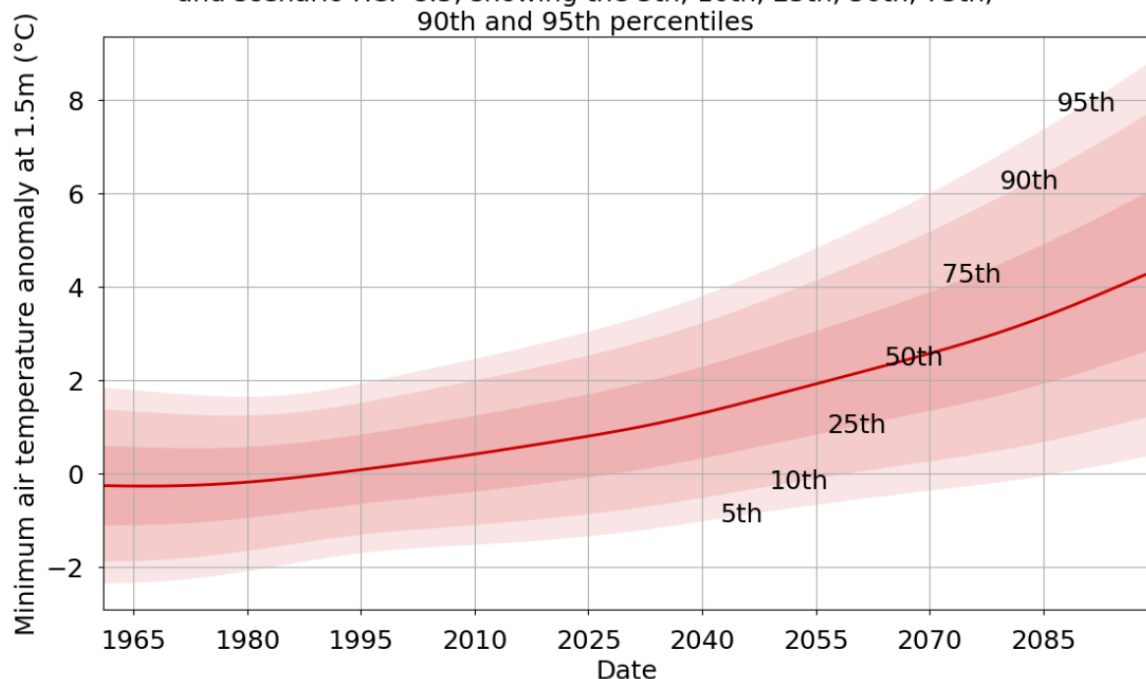
Together, the above projections suggest that summers will become warmer and drier. Nevertheless, natural variations may still result in some cooler and/or wetter summers.

Winter

Figure 1.5 and **Table 1.5** show the projections for average winter (December, January, February) minimum air temperature. The projections show an overall increase in minimum temperature over the next 60 years.



Seasonal average Minimum air temperature anomaly at 1.5m (°C) for December January February in years 1961 up to and including 2099, for grid square 512500, 212500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



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Figure 1.5 Winter average minimum air temperature anomaly at 1.5m (A°C) between 1965-2099.

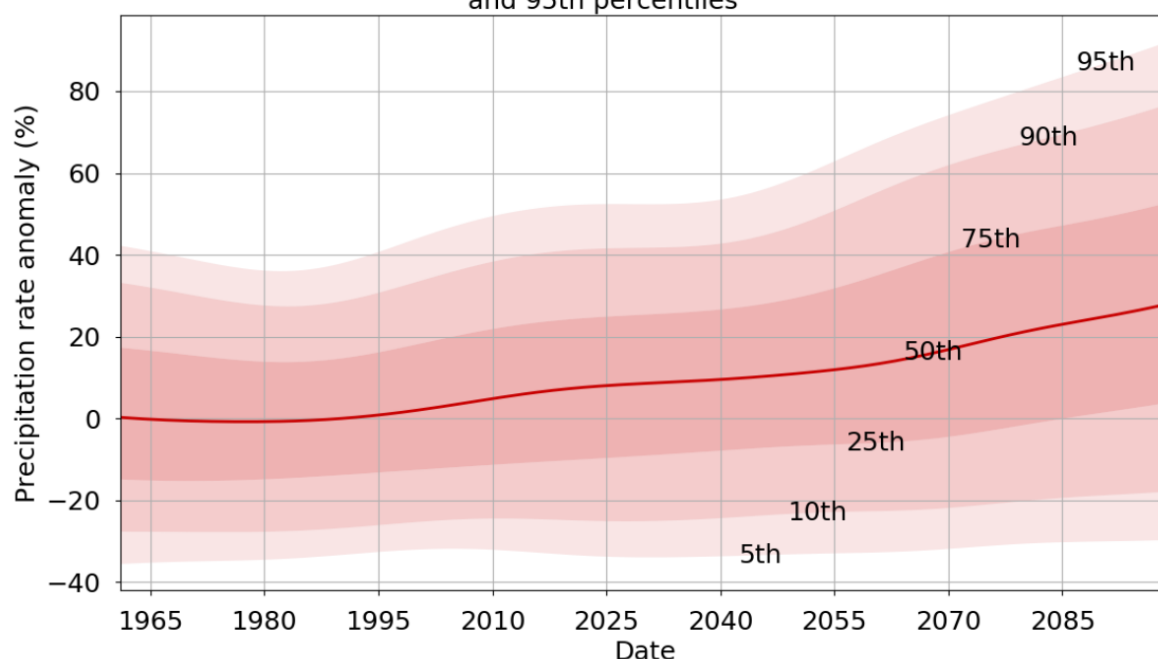
Table 1.5: Minimum Winter air temperature anomaly at 1.5m (A°C)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2028	-1.2915196	-0.8099024	-0.013336874	0.8850717	1.8017517	2.6471725	3.169502
2036	-1.1223344	-0.6242601	0.20099272	1.1417875	2.109144	3.0125394	3.5695374
2050	-0.7797865	-0.24138847	0.65964377	1.705584	2.784192	3.815112	4.459711
2075	-0.2719367	0.38454205	1.5154809	2.8059673	4.2010045	5.564892	6.434274
2099	0.37570807	1.219732	2.6363103	4.296191	6.045149	7.7249823	8.798806

Figure 1.6 and **Table 1.6** shows the projections for average winter precipitation rate. The projections show an overall increase in precipitation over the next 60 years.



Seasonal average Precipitation rate anomaly (%) for December January February in years 1961 up to and including 2099, for grid square 512500, 212500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



Funded by BEIS and Defra

Figure 1.6 Winter average precipitation rate anomaly (%) between 2025-2099

Table 1.6: Average Winter Precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2028	-33.884377	-25.10038	-9.28826	8.3858595	25.187967	41.675526	52.37863
2036	-33.820255	-24.720333	-8.342307	9.122289	26.02017	42.049145	52.621384
2050	-33.137657	-23.18988	-6.690207	10.989688	29.506834	47.188736	58.88309
2075	-31.145624	-21.005802	-3.0891838	19.115559	43.27115	64.683136	77.258995
2099	-29.674019	-17.835548	3.9171243	28.054325	52.768818	76.81019	92.169205

In the UK, the heaviest snowfalls tend to occur when the air temperature is between zero and 2°C¹. The climate models show a downward trend in both falling and lying snow over time, but there is less certainty in the magnitude of change in snow occurrence and amount.

Together, the above projections suggest that winters will become milder and wetter. Nonetheless, natural variations mean that occasional cold and/or dry winters may still occur.

¹ <https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/snow/how-does-snow-form>