

Appendix D.2

Climate Change Risk Assessment



Figures of Evolving Baseline Climate Projections

This document summarises in figure form the UK Climate Change Projections 2018 (UKCP18), produced by the UK Met Office, under the RCP8.5 probabilistic land projections for the 25 km grid cell within which the Site is located (UKCP18 312500, 362500) between 2020 and 2075, as this is the last available year with data. This document should be read alongside [Chapter 8 Climate Change](#).

Average Climatic Norms

Temperature

Figure 8.2.1 and **Table 8.2.1** show the projections for annual average mean air temperature. The projections show an almost continuous increase in annual average temperature over the next 50 years.

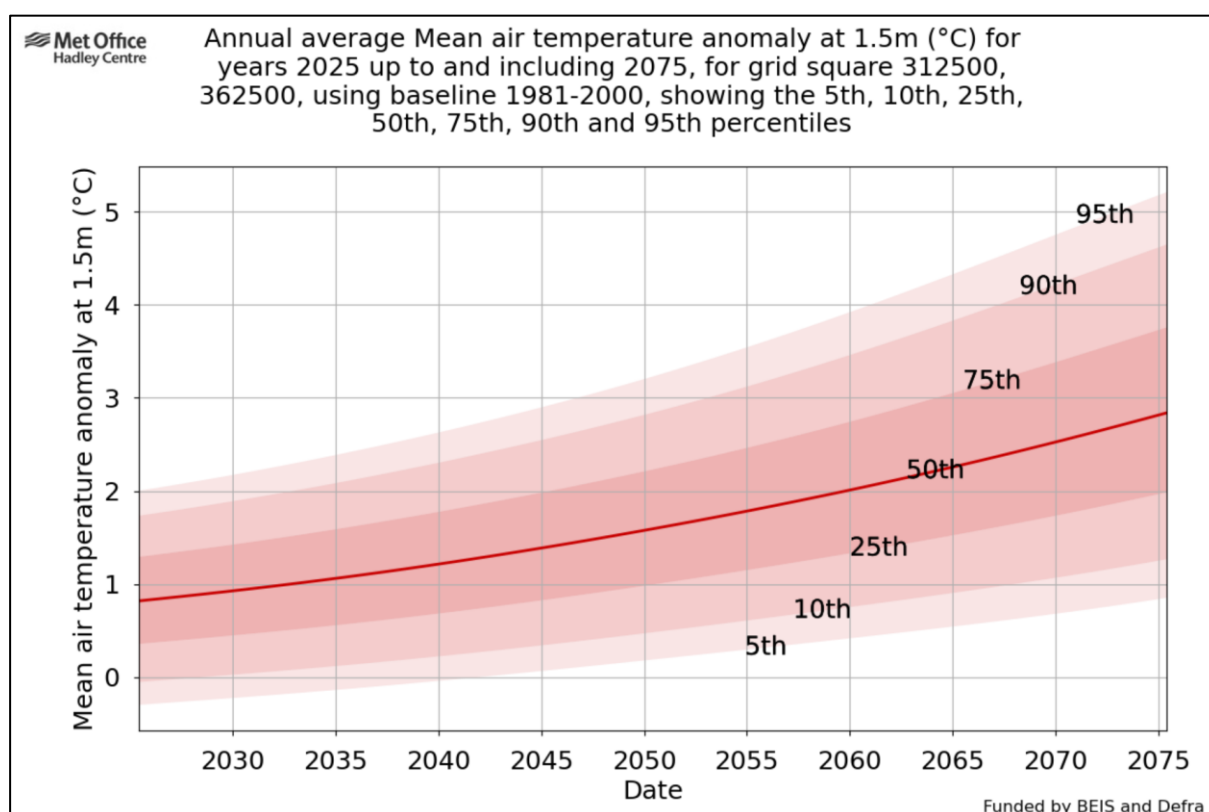


Figure 8.2.1 Annual average mean air temperature anomaly at 1.5m(°C) for years 2025-2075

Table 8.2.1: Annual average mean air temperature anomaly at 1.5m (°C)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2025	-0.29846	-0.0532	0.356395	0.818293	1.291565	1.733597	2.002424
2027	-0.26648	-0.019	0.395406	0.86431	1.347313	1.799291	2.073779
2029	-0.23416	0.015494	0.435359	0.912264	1.406156	1.868888	2.149805
2050	0.188164	0.480961	0.994106	1.592813	2.230238	2.841361	3.229237
2075	0.851562	1.266329	1.985254	2.839007	3.75794	4.648137	5.211068

Between 2027 and 2029 (the construction period), mean annual air temperature may increase from 0.86°C to 0.91°C above 1981-2000 baseline temperatures. This is a change of 0.05°C for this time period. The 50th percentile shows a 0.77°C increase by 2050 and a 1.24°C increase by 2075.

Precipitation

Figure 8.2.2 and **Table 8.2.2** shows the projections for the annual average precipitation rate. The projections show that annual precipitation is likely to vary from year to year, with both increases and decreases over the next 50 years.

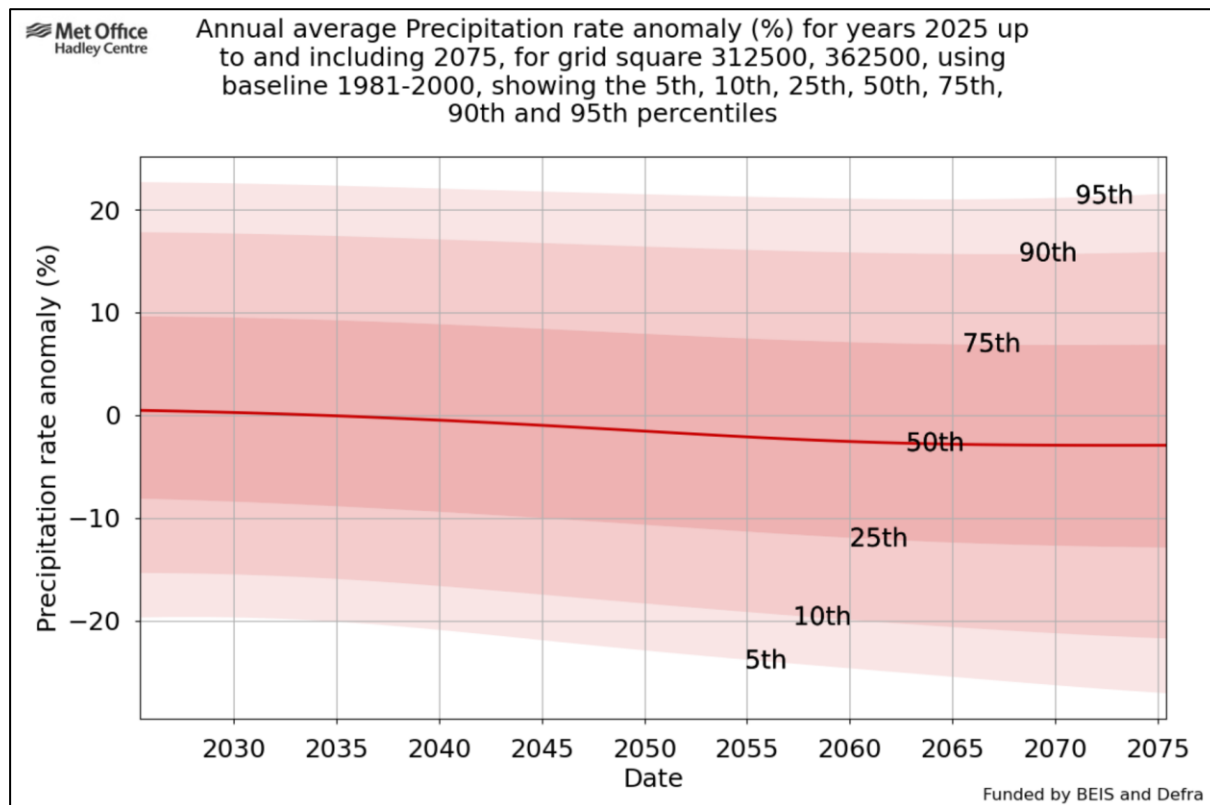


Figure 8.2.2: Annual average precipitation rate anomaly (%) for years 2025-2075.

Table 8.2.2 Annual average precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2025	-19.7149	-15.372	-8.13652	0.458185	9.60682	17.79955	22.67604
2027	-19.67	-15.4085	-8.25226	0.37445	9.573474	17.7577	22.6335
2029	-19.6889	-15.487	-8.3902	0.276746	9.516524	17.69702	22.5742
2050	-22.9925	-18.4149	-10.7414	-1.61474	7.873797	16.37976	21.48104
2075	-27.0788	-21.7544	-12.9042	-2.94243	6.857569	15.87418	21.55207

Between 2027 and 2029 (the construction period), average annual precipitation may decrease from 0.37% to 0.27% above 1981-2000 baseline temperatures. This is a decrease of 0.1% for this time period. The 50th percentile shows a 2.07% decrease by 2050 and a 1.33% decrease by 2075.

Seasonal Changes

Summer

Figure 8.2.3 and **Table 8.2.3** show the projections for maximum summer (June, July, August) maximum air temperature. The projections show an overall increase in maximum temperature over the next 50 years.

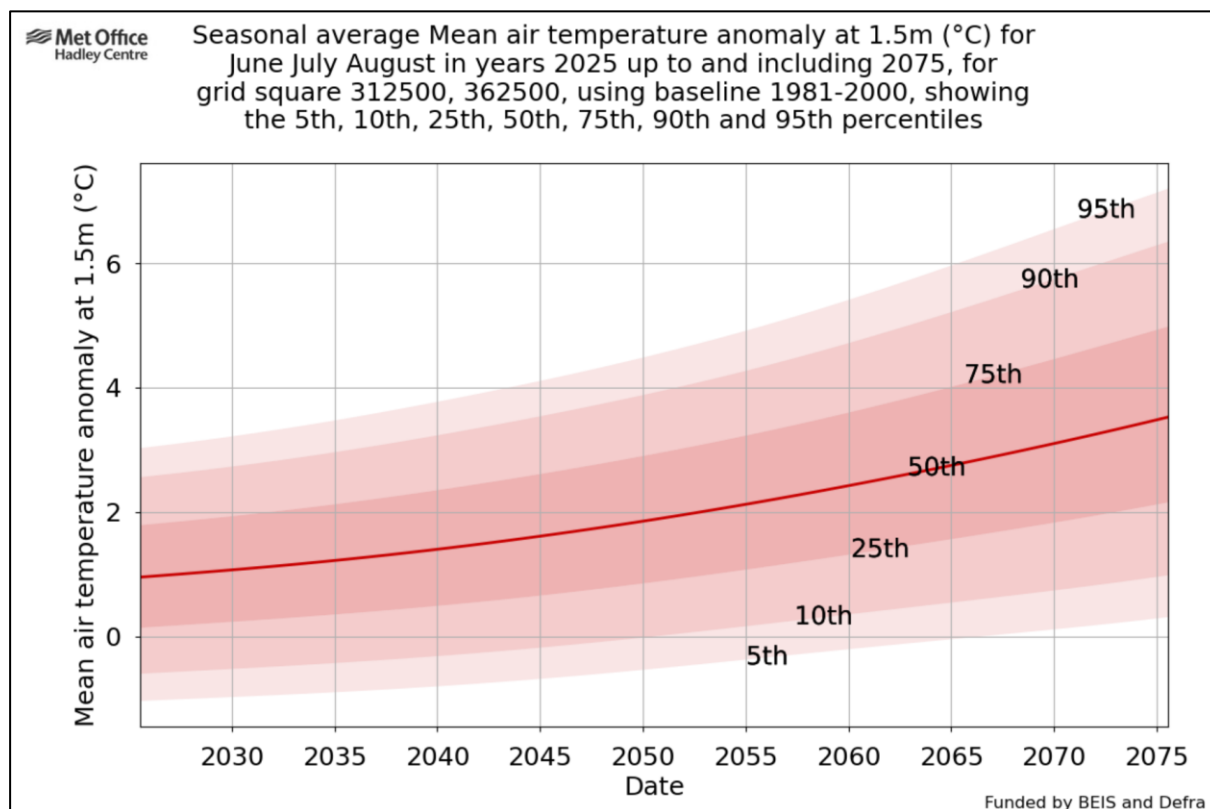


Figure 8.2.3 Summer average maximum air temperature anomaly at 1.5m (A°C) between 2025 - 2075.

Table 8.2.3 Maximum Summer air temperature anomaly at 1.5m (A°C)

Date	Percentile						
	5 th	10 th	25 th	50 th	75 th	90 th	95 th
2025	-1.63414	-1.04456	-0.06452	1.022057	2.130261	3.15473	3.770103
2027	-1.61014	-1.0119	-0.02033	1.076884	2.197721	3.235659	3.85887
2029	-1.58584	-0.97902	0.024729	1.134067	2.269797	3.322954	3.955344
2050	-1.08615	-0.40332	0.749312	2.057652	3.424648	4.687736	5.460358
2075	-0.10574	0.740411	2.212395	3.922504	5.705804	7.392095	8.441651

Between 2027 and 2029 (the construction period), maximum summer air temperature may increase from 1.07°C to 1.13°C above 1981-2000 baseline temperatures. This is a change of 0.06°C for this time period. The 50th percentile shows a 0.93°C increase by 2050 and a 1.87°C increase by 2075.

Figure 8.2.4 and **Table 8.2.4** show the projections for average summer precipitation rate. The projections show an overall decline in precipitation over the next 50 years.

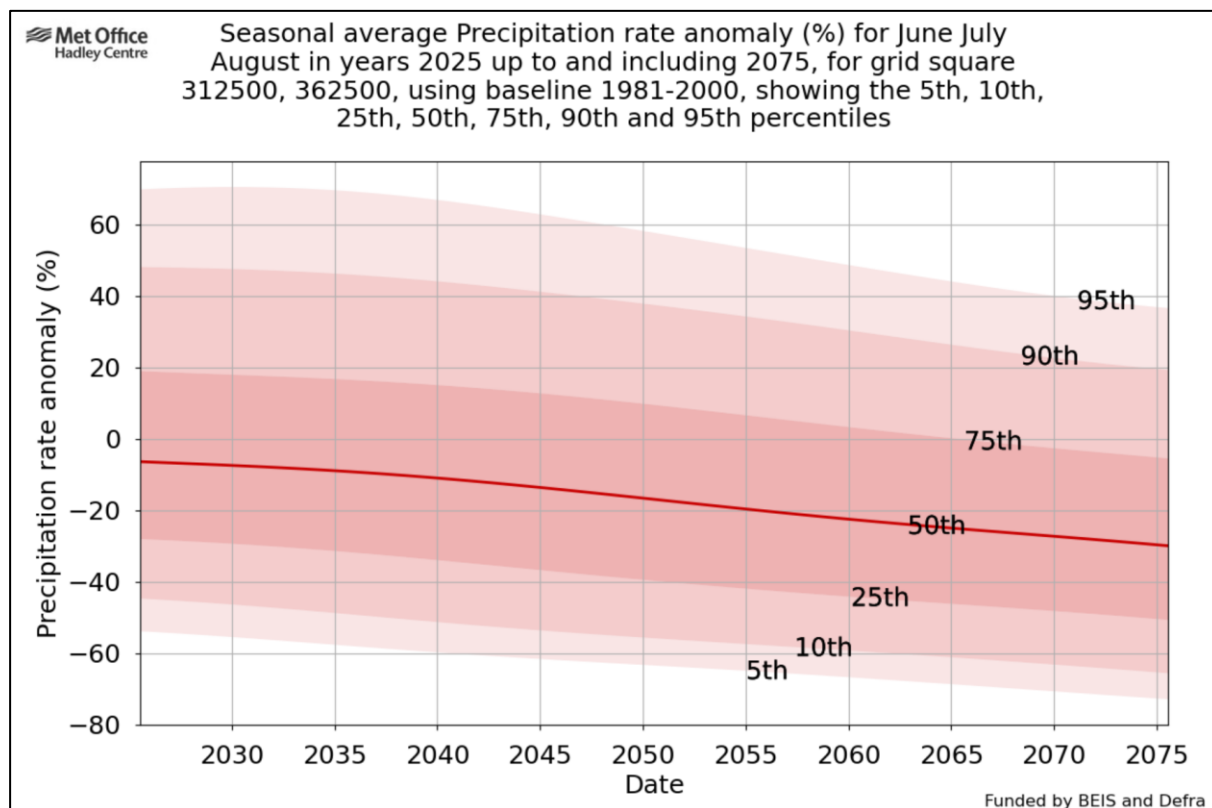


Figure 8.2.4 Summer average precipitation rate anomaly (%) for years 2025 - 2075.

Table 8.2.4: Average summer precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2025	-53.8238	-44.6608	-28.0179	-6.36299	18.97518	48.10017	69.83823
2027	-54.5029	-45.348	-28.5537	-6.82053	18.51361	47.91819	70.3007
2099	-55.2648	-46.1393	-29.1728	-7.29603	18.07239	47.64541	70.51212
2050	-63.4102	-55.7867	-39.7093	-16.908	9.519007	37.49631	57.70617
2075	-72.8648	-65.5668	-50.6607	-29.9104	-5.44357	19.29611	36.63055

Between 2027 and 2029 (the construction period), average summer precipitation may change from -6.82 % to -7.29% compared to 1981-2000 baseline precipitation. This is a change of 0.47% for this time period. The 50th percentile shows a 10.55% decrease in 2050 and a 13.01% decrease in 2075.

Winter

Figure 8.2.5 and **Table 8.2.5** show the projections for average winter (December, January, February) minimum air temperature. The projections show an overall increase in minimum temperature over the next 50 years.

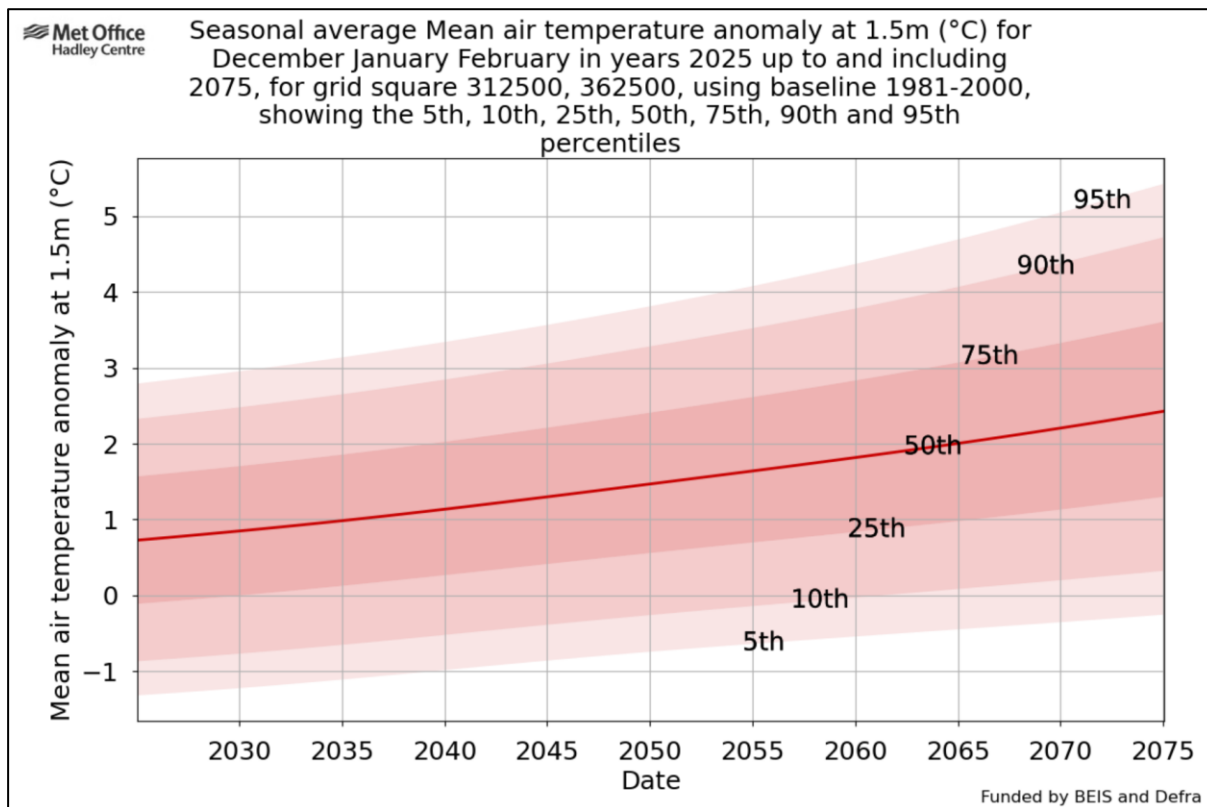


Figure 8.2.5 Winter average minimum air temperature anomaly at 1.5m (A°C) between 2025 - 2075.

Table 8.2.5: Minimum winter air temperature anomaly at 1.5m (A°C)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2025	-1.32956	-0.87499	-0.10787	0.744991	1.602073	2.384453	2.86252
2027	-1.29483	-0.83757	-0.06416	0.794744	1.658997	2.450888	2.934108
2029	-1.25721	-0.79739	-0.018	0.846799	1.718862	2.520762	3.009484
2050	-0.7475	-0.24388	0.604661	1.560997	2.557398	3.501076	4.087246
2075	-0.28132	0.334789	1.375492	2.570717	3.841435	5.085728	5.879401

Between 2027 and 2029 (the construction period), minimum winter air temperature may increase from 0.79°C to 0.85°C above 1981-2000 baseline temperatures. This is a change of 0.6°C for this time period. The 50th percentile shows a 0.74°C increase by 2050 and a 1.01°C increase by 2075.

Figure 8.2.6 and **Table 8.2.6** shows the projections for average winter precipitation rate. The projections show an overall increase in precipitation over the next 50 years.

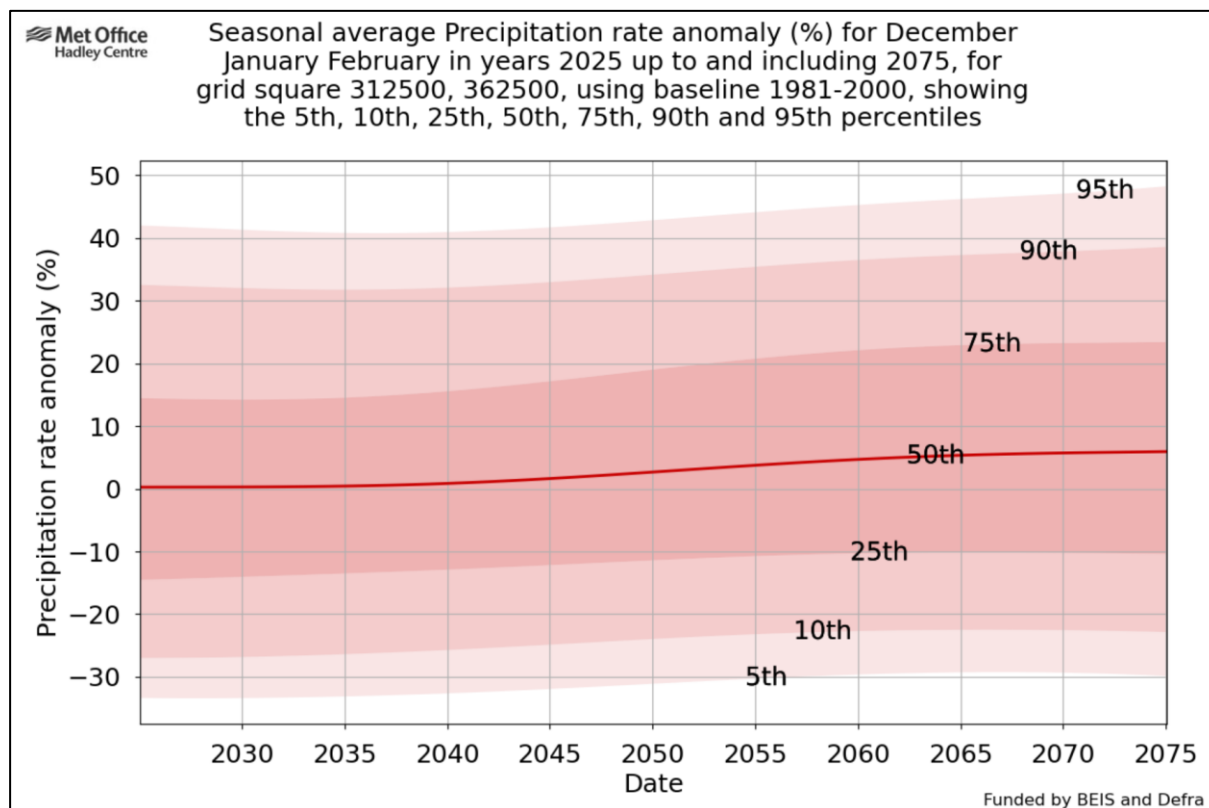


Figure 8.2.6 Winter average precipitation rate anomaly (%) between 2025 - 2099.

Table 8.2.6: Average winter precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2025	-33.3746	-27.0025	-14.5344	0.255004	14.45781	32.52964	42.01639
2027	-33.4233	-26.9786	-14.3519	0.266057	14.32246	32.33335	41.75879
2029	-33.4177	-26.8998	-14.1535	0.277087	14.23912	32.1223	41.46924
2050	-31.1076	-23.9642	-11.4087	2.67014	19.01394	34.16611	42.84794
2075	-29.8688	-22.8577	-10.389	5.93232	23.41202	38.60104	48.27149

Between 2027 and 2029 (the construction period), average winter precipitation may change from 0.26% to 0.27% compared to 1981-2000 baseline precipitation. This is a change of 0.01% for this time period. The 50th percentile shows a 2.42% increase in 2050.

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

Together, the above projections suggest that winters will become milder and wetter. Natural variations may mean that some 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>

Figure 8.2.7 and **Table 8.2.7** shows the projects for total cloud anomaly (%). The projections show the total cloud anomaly reducing over the next 50 years.

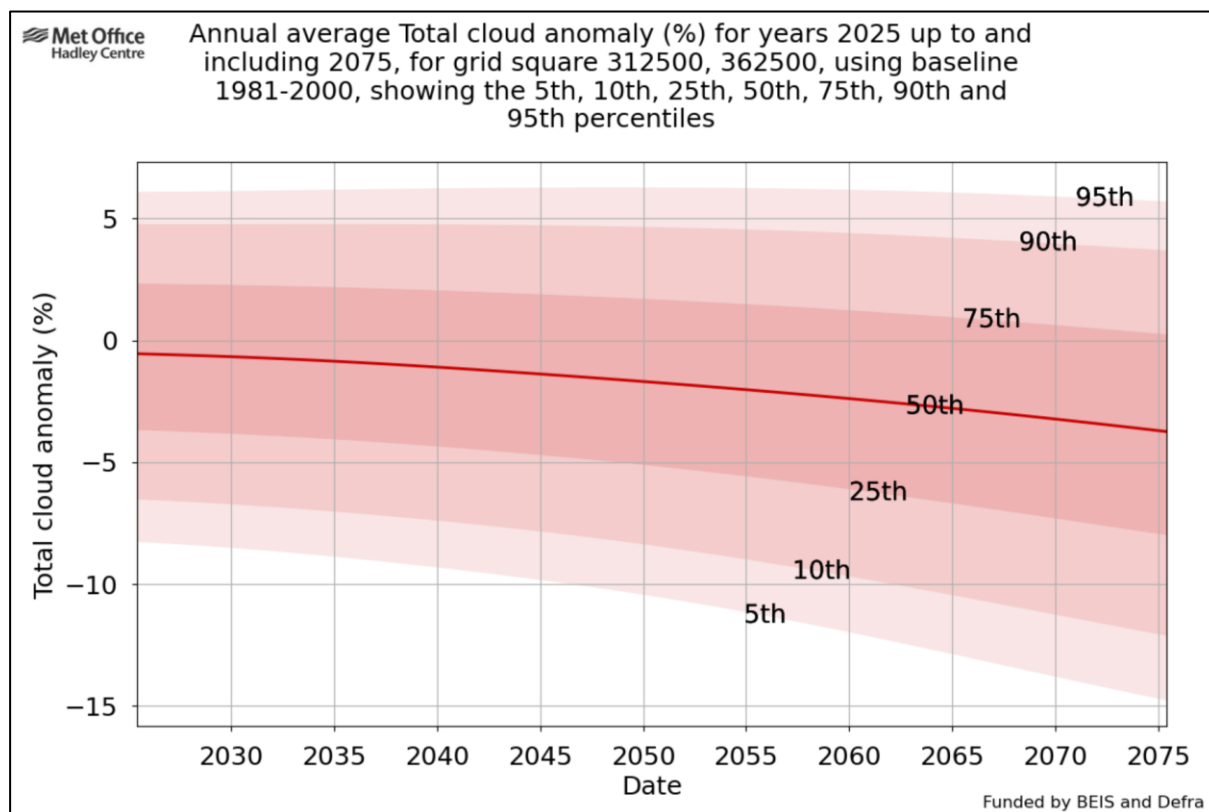


Figure 8.2.7: Total Cloud Anomaly (%) between 2025 – 2075

Table 8.2.7: Total Cloud Anomaly (%) between 2025 – 2075

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2025	-8.26	-6.51	-3.67	-0.52	2.32	4.76	6.09
2027	-8.32	-6.60	-3.74	-0.59	2.31	4.76	6.10
2029	-8.47	-6.69	-3.81	-0.65	2.28	4.76	6.11
2050	-10.48	-8.41	-5.14	-1.71	4.64	4.64	6.26
2075	-14.76	-12.11	-7.99	-3.74	3.69	3.69	5.69

Between 2027 and 2029 (the construction period), the total cloud anomaly may increase from -0.52% to -0.59% above 1981-2000 baseline percentages. This is a decrease of 0.7% for this time period. The 50th percentile shows a decrease by 3.09% from 2029 to 2075.

Sea Level Rise

Figure 8.2.8 and **Table 8.2.8** shows the projects for time-mean sea level anomaly (m) The projections show the total sea level anomaly significantly increasing over the next 50 years.

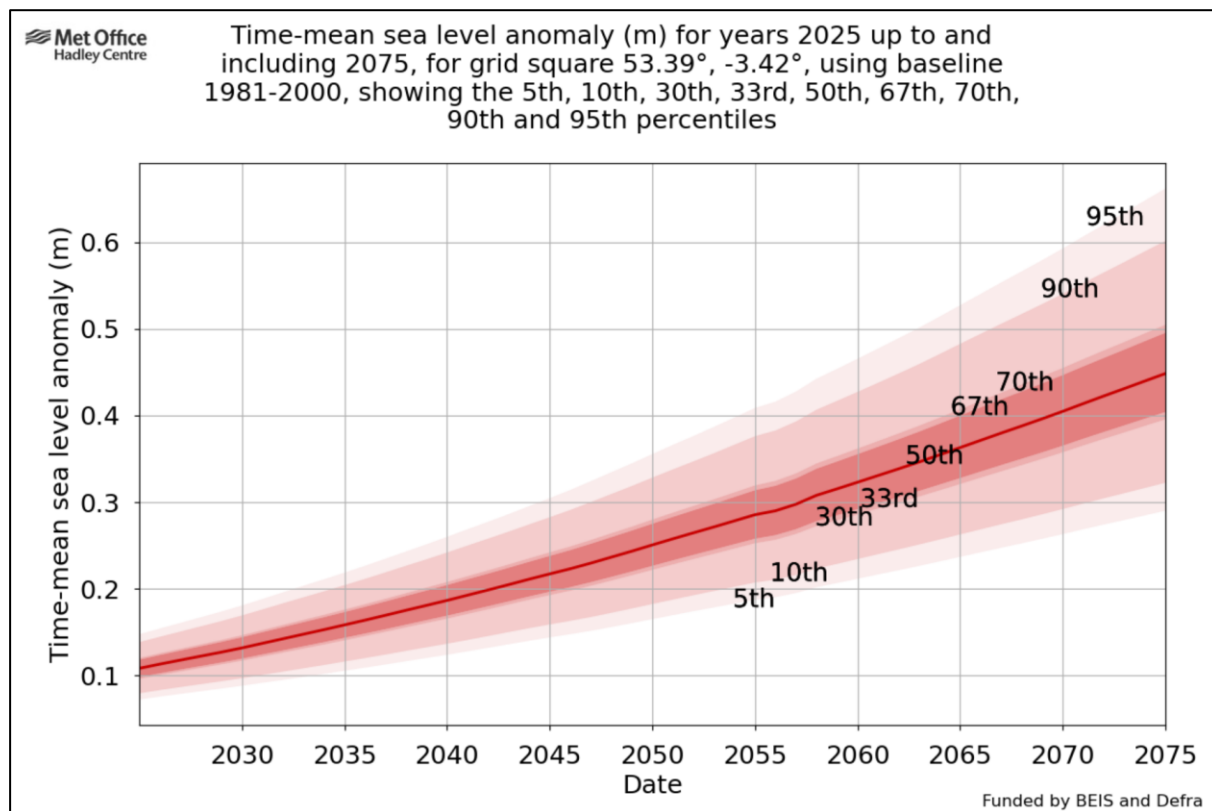


Figure 8.2.8: Time-mean Sea Level Anomaly (m) between 2025-2075

Table 8.2.8: Time-mean Sea Level Anomaly (m) between 2025-2075

Date	Percentile							
	5th	10th	30th	33rd	50th	70th	90th	95th
2025	0.07	0.08	0.09	0.09	0.10	0.12	0.13	0.14
2027	0.07	0.08	0.10	0.10	0.11	0.13	0.15	0.16
2029	0.08	0.09	0.11	0.11	0.12	0.14	0.16	0.17
2050	0.16	0.18	0.22	0.22	0.25	0.27	0.32	0.35
2075	0.29	0.32	0.39	0.40	0.44	0.5	0.60	0.66

Between 2027 and 2029 (the construction period), the total-mean sea level anomaly (m) may increase from 0.11m to 0.12m above 1981-2000 baseline values. This is an increase of 0.01m for this time period. The 50th percentile shows an increase of 0.13m from 2029 to 2050 and 0.18m from 2050 to 2075.