

Supplementary Materials: Reliable Future Climatic Projections for Sustainable Hydro-Meteorological Assessments in the Western Lake Erie Basin

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Table S1. Statistical properties of daily precipitation (mm) for Adrian, MI; Fort Wayne, IN; and Norwalk, OH from the different climate projection sources in comparison with observed values.

Dataset	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	Days with no Precipitation (%)	Maximum	Minimum
Adrian, MI									
Observed	2.4	0.0	6.5	4.9	36.0	0.4	66.9	120.4	0.0
GDO	(2.3–2.4), 2.4	(0.2–0.2), 0.2	(5.4–5.8), 5.6	(4.1–5.3), 4.5	(22.8–43.3), 29.3	(0.4–0.4), 0.4	(29.8–31.9), 30.9	(70.6–110.1), 84.7	(0–0), 0
MACA	(2.5–2.6), 2.5	(0–0), 0	(5.4–5.7), 5.6	(3.8–4), 3.9	(18.8–21.9), 20.8	(0.4–0.5), 0.5	(53.5–54.1), 53.9	(67.2–71), 69.7	(0–0), 0
Fort Wayne, IN									
Observed	2.5	0.0	6.7	4.7	32.2	0.4	63.5	111.8	0.0
GDO	(2.5–2.6), 2.5	(0.4–0.5), 0.4	(4.9–5.3), 5.1	(3.4–4.0), 3.7	(15.2–22.0), 18.3	(0.5–0.5), 0.5	(15.4–20.7), 17.7	(52.0–72.0), 63.7	(0–0), 0
MACA	(2.6–2.7), 2.6	(0–0), 0	(5.8–6), 5.9	(3.9–4.1), 4	(20.5–23.3), 22	(0.4–0.4), 0.4	(54.6–55.5), 54.9	(65–74.5), 72.3	(0–0), 0
Norwalk, OH									
Observed	2.6	0.0	7.0	7.5	133.0	0.4	64	229.1	0.0
GDO	(2.5–2.5), 2.5	(0.7–0.8), 0.8	(4.0–4.3), 4.1	(2.7–3.3), 2.9	(9.9–15.5), 11.7	(0.6–0.6), 0.6	(10.7–13.0), 11.9	(40.1–48.0), 43.6	(0–0), 0
MACA	(2.6–2.7), 2.7	(0–0), 0	(5.4–5.7), 5.6	(3.4–4), 3.9	(14.3–26.9), 23.8	(0.5–0.5), 0.5	(51–51.7), 51.4	(54.5–112.8), 101.6	(0–0), 0

[Values against GDO and MACA represents the format (Minimum of the value from all 9 GCMs – Maximum of the value from all 9 GCMs), Median of the value from all 9 GCMs. Values in the parenthesis represent range of the value from all 9 GCMs.].

Table S2. Performance evaluation in simulating number of wet days in a month by two different climate projection source (GDO and MACA) data for Adrian, MI, Fort Wayne, In, and Norwalk, OH.

	Number of Wet Days in a Month											
Dataset	January	February	March	April	May	June	July	August	September	October	November	December
Adrian, MI												
Observed	10	8	10	11	11	10	9	8	9	10	10	11
GDO	(14–16), 15	(13–14), 13	(16–17), 17	(17–19), 18	(18–19), 18	(16–19), 18	(18–20), 19	(16–19), 17	(15–16), 15	(14–16), 15	(15–17), 16	(16–17), 16
MACA	(14–15), 15	(11–11), 11	(14–14), 14	(15–15), 15	(15–16), 16	(14–15), 14	(15–16), 15	(14–15), 14	(12–14), 13	(13–14), 14	(12–13), 13	(14–15), 15
Fort Wayne, IN												
Observed	12	10	12	13	12	10	10	10	9	10	12	13
GDO	(18–20), 19	(16–18), 17	(19–21), 20	(21–23), 22	(22–23), 22	(21–22), 22	(21–23), 22	(19–22), 20	(16–18), 17	(16–18), 17	(17–20), 18	(19–21), 20
MACA	(13–14), 14	(11–11), 11	(14–14), 14	(15–16), 15	(16–17), 16	(15–16), 16	(14–15), 15	(13–14), 14	(10–12), 11	(12–13), 12	(12–13), 12	(14–15), 15
Norwalk, OH												
Observed	11	10	12	13	13	11	10	9	9	10	11	12
GDO	(23–24), 23	(20–21), 20	(23–24), 24	(23–25), 24	(24–26), 25	(22–25), 24	(24–26), 25	(22–24), 23	(20–22), 21	(19–21), 20	(21–22), 22	(23–24), 24
MACA	(14–15), 15	(12–13), 12	(15–16), 15	(15–16), 16	(16–17), 17	(15–17), 16	(15–17), 16	(15–16), 16	(13–14), 14	(13–14), 13	(13–14), 14	(15–16), 16

Table S3. Performance evaluation in simulating number of dry days in a month by two different climate projection source (GDO and MACA) for Adrian, MI, Fort Wayne, In, and Norwalk, OH.

	Number of Dry Days in a Month											
Dataset	January	February	March	April	May	June	July	August	September	October	November	December
Adrian, MI												
Observed	21	20	20	18	19	19	21	22	21	21	18	19
GDO	(11–15), 13	(12–14), 12	(11–14), 12	(9–11), 10	(10–12), 10	(9–13), 10	(9–13), 10	(10–13), 11	(11–14), 12	(12–16), 13	(11–13), 11	(11–13), 12
MACA	(16–17), 17	(17–18), 17	(17–17), 17	(15–15), 15	(15–16), 16	(15–16), 16	(15–16), 16	(16–17), 17	(16–18), 17	(17–18), 18	(17–18), 17	(16–17), 16
Fort Wayne, IN												
Observed	19	18	19	17	19	20	21	22	21	21	18	18
GDO	(11–13), 12	(10–12), 11	(10–11), 11	(7–9), 8	(8–9), 8	(8–9), 8	(8–10), 9	(9–12), 11	(12–14), 13	(13–15), 14	(10–12), 11	(10–12), 11
MACA	(17–18), 18	(17–18), 17	(17–17), 17	(14–15), 15	(14–15), 15	(14–15), 15	(16–17), 16	(17–18), 17	(18–20), 19	(18–19), 19	(17–18), 18	(16–17), 17
Norwalk, OH												
Observed	19	19	19	17	18	19	21	22	20	21	19	18
GDO	(7–8), 7	(7–8), 8	(6–8), 7	(5–7), 6	(5–7), 6	(5–8), 6	(5–7), 6	(7–9), 8	(8–10), 9	(10–12), 11	(7–9), 8	(6–8), 7
MACA	(16–17), 17	(16–16), 16	(16–17), 16	(14–15), 14	(14–15), 14	(14–15), 14	(15–16), 15	(15–16), 16	(16–18), 17	(17–18), 18	(16–17), 16	(15–16), 15

Table S4. Extreme event and general climate indices analysis for Adrian, MI; Fort Wayne, IN; and Norwalk, OH from the climate projection sources in comparison with values from observed data.

	Extreme Event and General Climate Indices													
Dataset	Maximum Dry Length	Maximum Wet Length	Number of dry sequences	Number of wet sequences	Number of days for optimum growth of corn	Snow Days	Pdd	Pww	Pwd	Pdw	Ld	Lw	Td	Tw
Adrian, MI														
Observed	26	9	33	153	51	30	0.7	0.5	0.3	0.5	4	1	1	4
GDO	(13–19), 17	(17–24), 21	(0–4), 2	(397–572), 462	(48–63), 52	(38–55), 42	(0.4–0.5), 0.5	(0.7–0.7), 0.7	(0.5–0.6), 0.5	(0.3–0.3), 0.3	(1.7–1.9), 1.8	(2.1–2.4), 2.2	(13.2–32.5), 20.8	(0.7–0.8), 0.7
MACA	(17–29), 22	(16–23), 19	(4–17), 11	(318–450), 387	(57–61), 60	(40–43), 42	(0.6–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.4), 0.3	(0.4–0.4), 0.4	(2.8–3.2), 3	(1.5–1.6), 1.5	(1.9–2.5), 2.1	(1.3–1.5), 1.3
MACA Treated	(17–32), 24	(15–23), 19	(4–19), 12	(314–446), 381	(28–30), 29	(60–62), 61	(0.6–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.4), 0.3	(0.4–0.4), 0.4	(2.8–3.2), 3	(1.5–1.6), 1.5	(1.9–2.5), 2.1	(1.3–1.5), 1.3
Fort Wayne, IN														
Observed	30	11	16	166	63	33	0.7	0.5	0.3	0.5	3	1	1	3
GDO	(12–22), 16	(25–38), 30	(0–4), 2	(448–534), 501	(67–76), 72	(51–63), 57	(0.3–0.4), 0.4	(0.8–0.8), 0.8	(0.6–0.7), 0.6	(0.2–0.2), 0.2	(1.5–1.7), 1.6	(2.5–3), 2.6	(52.3–174), 81	(0.5–0.6), 0.5
MACA	(22–37), 27	(15–29), 21	(8–23), 16	(310–432), 377	(63–67), 65	(34–37), 36	(0.7–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.3), 0.3	(0.4–0.4), 0.4	(2.9–3.3), 3.2	(1.4–1.5), 1.5	(1.7–2.3), 1.9	(1.3–1.5), 1.4
MACA Treated	(22–37), 27	(14–29), 21	(9–23), 17	(309–432), 375	(65–67), 66	(42–44), 43	(0.7–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.3), 0.3	(0.4–0.4), 0.4	(2.9–3.3), 3.1	(1.4–1.5), 1.5	(1.7–2.3), 1.9	(1.3–1.5), 1.4
Norwalk, OH														
Observed	25	18	15	183	55	31	0.7	0.5	0.3	0.5	3	1	1	3
GDO	(10–14), 12	(37–50), 44	(0–0), 0	(394–575), 453	(64–74), 69	(63–71), 68	(0.2–0.3), 0.3	(0.9–0.9), 0.9	(0.7–0.8), 0.7	(0.1–0.1), 0.1	(1.3–1.5), 1.4	(3.1–4.4), 3.5	(256–2016), 738	(0.5–0.5), 0.5
MACA	(16–29), 21	(14–27), 20	(2–15), 7	(346–473), 410	(62–66), 64	(38–41), 40	(0.6–0.7), 0.6	(0.6–0.6), 0.6	(0.3–0.4), 0.4	(0.4–0.4), 0.4	(2.6–3), 2.9	(1.5–1.6), 1.5	(2.2–3.1), 2.5	(1.1–1.3), 1.2
MACA Treated	(18–29), 22	(13–27), 19	(4–17), 9	(322–456), 394	(51–54), 52	(50–53), 52	(0.6–0.7), 0.6	(0.6–0.6), 0.6	(0.3–0.4), 0.4	(0.4–0.4), 0.4	(2.6–3), 2.9	(1.5–1.6), 1.5	(2.2–3.1), 2.5	(1.1–1.3), 1.2

Table S5. Statistical properties of daily maximum air temperature (°C) for Adrian, MI; Fort Wayne, IN; and Norwalk, OH from the climate projection sources in comparison with observed data.

Treatment	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	Number of days with Maximum Temperature more than 35°C (expressed in %)	Maximum	Minimum
Adrian, MI									
Observed	15.0	16.1	11.5	−0.2	−1.1	1.3	0.3	40.0	−20.0
GDO	(14.9–15.2), 15.0	(15.8–16.3), 16.1	(11.4–11.7), 11.5	(−0.2–−0.2), −0.2	(−1.2–−1.1), −1.1	(1.3–1.3), 1.3	(0–0.4), 0.2	(36.0–38.9), 37.4	(−20.4–−16.2), −18.5
MACA	(15.3–15.5), 15.4	(16–16.5), 16.2	(11.4–11.6), 11.5	(−0.2–−0.2), −0.2	(−1.1–−1.1), −1.1	(1.3–1.4), 1.3	(0.5–0.7), 0.6	(39.5–40.2), 39.9	(−17.5 —16.5), −17.1
Fort Wayne, IN									
Observed	15.4	16.7	11.8	−0.3	−1.0	1.3	0.3	41.1	−23.9
GDO	(15.5–15.8), 15.6	(16.8–17.3), 17.1	(11.5–11.8), 11.6	(−0.3–−0.3), −0.3	(−1.1–−1.0), −1.1	(1.3–1.4), 1.3	(0.1–0.5), 0.2	(36.7–39.5), 38.1	(−23.2–−17.4), −19.7
MACA	(15.5–15.9), 15.7	(16.7–17.3), 16.9	(11.4–11.7), 11.5	(−0.3–−0.3), −0.3	(−1–−1), −1	(1.3–1.4), 1.4	(0.5–0.8), 0.7	(40.6–42.1), 41.8	(−22.1–−20.3), −21.4
Norwalk, OH									
Observed	15.0	16.1	11.4	−0.3	−1.0	1.3	0.2	39.4	−22.2
GDO	(15.3–15.6), 15.4	(16.4–16.9), 16.7	(11.0–11.4), 11.2	(−0.3–−0.3), −0.3	(−1.1–−1.0), −1.1	(1.3–1.4), 1.4	(0–0.3), 0.1	(34.8–39.8), 36.9	(−21.3–−14.9), −18.2
MACA	(15.1–15.4), 15.2	(16–16.5), 16.2	(10.9–11.2), 11	(−0.3–−0.2), −0.2	(−1.1–−1), −1.1	(1.4–1.4), 1.4	(0.2–0.3), 0.2	(37.6–37.8), 37.7	(−19.2–−17.8), −18.8

Supplementary Table S6 Statistical properties of daily minimum air temperature, °C, for Adrian, MI; Fort Wayne, IN; and Norwalk, OH from the climate projection sources in comparison with observed data..

Treatment	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	Days with Minimum Temperature < 2°C (expressed in %)	Maximum	Minimum
Adrian, MI									
Observed	3.1	3.3	10.0	−0.3	−0.5	0.3	46.3	24.4	−30.0
GDO	(3.2–3.5), 3.3	(3.3–3.8), 3.5	(9.5–10), 9.7	(−0.3–−0.2), −0.2	(−0.9–−0.7), −0.8	(0.3–0.4), 0.4	(44.4–46.0), 45.4	(21.7–26.3), 23.6	(−31.2–−25.8), −29.0
MACA	(3.5–3.7), 3.6	(3.4–3.7), 3.5	(9.6–9.7), 9.7	(−0.2–−0.2), −0.2	(−0.7–−0.6), −0.7	(0.4–0.4), 0.4	(44.8–45.7), 45.3	(23.8–24), 24	(−28.2–−26.4), −27.9
Fort Wayne, IN									
Observed	4.8	5.0	10.3	−0.4	−0.5	0.5	41.1	25.6	−30.0
GDO	(4.8–5.1), 4.9	(5.1–5.5), 5.3	(9.9–10.5), 10.2	(−0.4–−0.3), −0.3	(−0.8–−0.6), −0.7	(0.5–0.5), 0.5	(39.5–41.2), 40.3	(22.7–26.8), 25.0	(−33.8–−26.8), −30.2
MACA	(4.9–5.2), 5.1	(5.1–5.5), 5.3	(9.9–10.1), 10	(−0.3–−0.2), −0.3	(−0.7–−0.6), −0.6	(0.5–0.5), 0.5	(39.9–40.7), 40.4	(25.2–25.5), 25.5	(−28.9–−26.9), −28.4
Norwalk, OH									
Observed	4.4	4.4	10.1	−0.3	−0.6	0.4	41.8	25.0	−29.4
GDO	(4.6–4.9), 4.7	(4.9–5.2), 5.0	(9.5–10.1), 9.8	(−0.3–−0.2), −0.3	(−0.9–−0.7), −0.8	(0.5–0.5), 0.5	(39.9–41.6), 40.9	(22.0–27.8), 24.6	(−29.7–−23.6), −27.2
MACA	(4.6–4.8), 4.7	(4.6–5), 4.7	(9.5–9.7), 9.6	(−0.3–−0.2), −0.2	(−0.8–−0.7), −0.7	(0.5–0.5), 0.5	(41–41.6), 41.4	(24–24), 24	(−28–−27), −27.5

Table S7. Performance evaluation in simulating Growth Degree Days (GDD) by two different climate projection sources (GDO and MACA) for Adrian, MI, Fort Wayne, IN, and Norwalk, OH.

	Growth Degree Days (GDD)			
	1–May	15–May	1–Oct	15–Oct
Adrian, MI				
Observed	60	104	1364	1386
GDO	(47–69), 64	(93–126), 113	(1364–1462), 1449	(1455–1526), 1495
MACA	(56–76), 68	(110–135), 125	(1437–1508), 1481	(1494–1570), 1531
Fort Wayne, IN				
Observed	86	148	1615	1648
GDO	(74–95), 86	(138–160), 148	(1627–1676), 1652	(1685–1754), 1720
MACA	(77–103), 91	(146–175), 163	(1602–1679), 1650	(1667–1769), 1713
Norwalk, OH				
Observed	80	129	1493	1516
GDO	(60–90), 82	(115–151), 137	(1503–1588), 1552	(1562–1666), 1615
MACA	(58–82), 72	(113–141), 129	(1490–1545), 1515	(1528–1620), 1565

Table S8. Statistical properties of daily precipitation for Adrian, MI, Fort Wayne, IN, and Norwalk, OH based on the different bias correction methods presented on a daily and seasonal basis.

Period/ Season										
	Dataset	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	Days with no Precipitation (%)	Maximum	Minimum
Adrian, MI										
Daily	Observed	2.4	0.0	6.5	4.9	36.0	0.4	66.9	120.4	0.0
	MACANoTreatment	(2.5–2.6), 2.5	(0–0), 0	(5.4–5.7), 5.6	(3.8–4), 3.9	(18.8–21.9), 20.8	(0.4–0.5), 0.5	(53.5–54.1), 53.9	(67.2–71), 69.7	(0–0), 0
	MACAConventional	(2.4–2.5), 2.4	(0–0), 0	(6.5–6.6), 6.6	(5.3–5.6), 5.5	(41.9–50.7), 47.9	(0.4–0.4), 0.4	(53.5–54.1), 53.9	(116.6–134.3), 125.1	(0–0), 0
	MACACLIGEN75	(0.6–0.7), 0.7	(0.5–0.6), 0.5	(0.5–0.5), 0.5	(1.3–1.5), 1.4	(2.5–3.4), 2.9	(1.3–1.3), 1.3	(7.5–9.2), 8.4	(3.9–5.5), 4.7	(0–0), 0
	MACACLIGEN90	(1.9–2), 1.9	(1.7–1.8), 1.8	(1–1.1), 1.1	(0.8–1), 0.9	(0.9–1.8), 1.2	(1.7–1.9), 1.8	(0.1–0.2), 0.1	(7.9–9.6), 8.6	(0–0), 0
	MACALARSWG75	(2.3–2.6), 2.4	(1.8–2.1), 1.9	(1.9–2), 1.9	(1.4–1.7), 1.5	(2.9–4.4), 3.5	(1.2–1.3), 1.2	(2–3.7), 2.6	(13.9–20.1), 18.1	(0–0), 0
	MACALARSWG90	(7.4–7.8), 7.6	(6.7–7.1), 6.8	(4.2–4.5), 4.3	(1–1.1), 1.1	(1.3–2.1), 1.7	(1.7–1.8), 1.7	(0–0), 0	(30.5–40.1), 35.4	(0–0.1), 0
Fall	Observed	2.3	0.0	5.7	4.1	21.0	0.4	65.2	59.4	0.0
	MACANoTreatment	(2.2–2.3), 2.3	(0–0), 0	(5–5.3), 5.2	(3.7–4.1), 3.9	(17.6–23.8), 20.9	(0.4–0.4), 0.4	(54.5–56.4), 55.3	(47.2–65.5), 59.9	(0–0), 0
	MACAConventional	(2.3–2.3), 2.3	(0–0), 0	(5.7–5.9), 5.8	(4.5–4.8), 4.7	(25.8–34.5), 29.9	(0.4–0.4), 0.4	(54.5–56.4), 55.3	(59.5–90.6), 74.7	(0–0), 0
	MACACLIGEN75	(0.5–0.7), 0.6	(0.4–0.6), 0.5	(0.4–0.5), 0.4	(1.2–1.6), 1.4	(1.8–3.8), 2.9	(1.3–1.5), 1.4	(8–11), 9.5	(2.9–3.8), 3.3	(0–0), 0
	MACACLIGEN90	(1.7–1.9), 1.8	(1.6–1.7), 1.6	(0.9–1), 0.9	(0.7–1), 0.9	(0.5–1.7), 1.1	(1.8–2), 1.9	(0.1–0.1), 0.1	(6–8.5), 7	(0–0), 0
	MACALARSWG75	(1.8–2.2), 2	(1.4–1.8), 1.6	(1.5–1.7), 1.6	(1.3–1.9), 1.6	(2.1–6.7), 4.2	(1.2–1.4), 1.3	(2.1–5), 3.3	(10.6–19.8), 14.4	(0–0), 0
	MACALARSWG90	(2.3–7.1), 6.3	(0–6.5), 5.4	(3.5–5.7), 4	(0.9–4.1), 1.4	(0.8–21), 4	(0.4–1.9), 1.6	(0–63.8), 7.1	(24.9–59.4), 33.3	(0–0.4), 0.1
Spring	Observed	3.0	0.0	7.2	4.0	22.7	0.4	63.5	80.3	0.0
	MACANoTreatment	(2.9–3.1), 3	(0–0), 0	(6–6.4), 6.3	(3.4–3.7), 3.5	(14.6–18.4), 16.6	(0.5–0.5), 0.5	(50.5–51.4), 50.8	(56–71), 67	(0–0), 0
	MACAConventional	(3–3), 3	(0–0), 0	(7.3–7.5), 7.4	(4.4–4.8), 4.6	(25.7–34.4), 30.9	(0.4–0.4), 0.4	(50.5–51.4), 50.8	(88.4–115.2), 102.5	(0–0), 0

	MACACLIGEN75	(0.8–0.9), 0.9	(0.6–0.8), 0.7	(0.5–0.6), 0.6	(1–1.4), 1.1	(1.4–3), 1.9	(1.4–1.6), 1.5	(3–3.9), 3.5	(3.7–5.5), 4.5	(0–0), 0
	MACACLIGEN90	(2.3–2.5), 2.4	(2.1–2.3), 2.2	(1–1.1), 1.1	(0.7–1), 0.8	(0.7–2), 1.1	(2–2.3), 2.2	(0–0.1), 0	(7.2–9.1), 8.1	(0–0.3), 0.1
	MACALARSWG75	(2.8–3.3), 3.1	(2.4–2.8), 2.6	(2–2.2), 2.1	(1.2–1.5), 1.4	(2.2–3.6), 2.8	(1.3–1.5), 1.5	(0.7–1.6), 1.1	(13.9–18.7), 16.9	(0–0), 0
	MACALARSWG90	(3–9.6), 8.4	(0–8.9), 7.5	(4.2–7.2), 4.9	(0.8–4), 1.3	(0.8–22.7), 3.6	(0.4–2.1), 1.8	(0–61.3), 6.8	(29.9–80.3), 38.4	(0–0.7), 0.2
Summer	Observed	2.8	0.0	7.9	5.1	38.4	0.4	70.7	120.4	0.0
	MACANoTreatment	(2.9–3), 2.9	(0–0), 0	(6–6.4), 6.2	(3.5–3.8), 3.6	(16.5–19.9), 18.4	(0.5–0.5), 0.5	(52.7–54.3), 53.4	(67.2–67.2), 67.2	(0–0), 0
	MACAConventional	(2.8–2.8), 2.8	(0–0), 0	(7.7–8), 7.9	(5.6–6.2), 5.9	(45.1–60.8), 53	(0.4–0.4), 0.4	(52.7–54.3), 53.4	(116.6–134.3), 125.1	(0–0), 0
	MACACLIGEN75	(0.8–0.9), 0.8	(0.6–0.8), 0.7	(0.5–0.6), 0.6	(1–1.4), 1.2	(1.2–2.8), 2	(1.4–1.6), 1.4	(5–7.3), 5.7	(3.5–5.4), 4.2	(0–0), 0
	MACACLIGEN90	(2.2–2.4), 2.3	(2.1–2.2), 2.1	(1.1–1.2), 1.1	(0.7–1), 0.8	(0.7–1.6), 1	(1.9–2.2), 2.1	(0–0.1), 0.1	(7.7–9.6), 8.4	(0–0.2), 0
	MACALARSWG75	(2.7–3.2), 3	(2.3–2.7), 2.5	(2.1–2.3), 2.2	(1–1.4), 1.2	(0.8–3.1), 2	(1.3–1.4), 1.4	(1–4.4), 2.2	(13.6–20.1), 16.6	(0–0), 0
	MACALARSWG90	(2.8–9.3), 8.3	(0–8.7), 7.5	(4.3–7.9), 4.8	(0.9–5.1), 1.4	(1.3–38.4), 5.7	(0.4–2.2), 1.8	(0–69.4), 7.7	(30–120.4), 43.8	(0–0.4), 0.2
Winter	Observed	1.7	0.0	4.6	4.8	32.8	0.4	68.1	59.7	0.0
	MACANoTreatment	(1.7–1.9), 1.8	(0–0), 0	(4.1–4.5), 4.4	(4–4.8), 4.5	(20.2–31.8), 27.4	(0.4–0.4), 0.4	(55.5–56.4), 56	(41–56.4), 53.4	(0–0), 0
	MACAConventional	(1.7–1.7), 1.7	(0–0), 0	(4.5–4.6), 4.6	(4.8–5.5), 5.2	(29.8–43.6), 37.4	(0.4–0.4), 0.4	(55.5–56.4), 56	(50.8–66.1), 60.7	(0–0), 0
	MACACLIGEN75	(0.4–0.5), 0.4	(0.3–0.3), 0.3	(0.3–0.4), 0.3	(1.5–2.2), 1.7	(3.7–10.5), 5.7	(1.2–1.3), 1.3	(13.6–17.4), 15.1	(2.3–3.9), 3	(0–0), 0
	MACACLIGEN90	(1.3–1.4), 1.3	(1.1–1.3), 1.2	(0.7–0.8), 0.8	(1–1.3), 1.1	(1–3.5), 1.9	(1.6–1.8), 1.7	(0.2–0.3), 0.2	(5.4–8.2), 6.4	(0–0), 0
	MACALARSWG75	(1.4–1.9), 1.6	(1.2–1.5), 1.3	(1.2–1.4), 1.3	(1.4–2), 1.7	(3.1–7), 4.8	(1.2–1.3), 1.2	(2.4–4.8), 3.6	(8.8–12.4), 11	(0–0), 0
	MACALARSWG90	(1.7–5.6), 4.9	(0–4.9), 4.1	(3–4.6), 3.4	(1.1–4.8), 1.6	(1.5–32.8), 5.6	(0.4–1.7), 1.5	(0–66.8), 7.4	(21.1–59.7), 29.8	(0–0.3), 0.1
Fort Wayne, IN										
Daily	Observed	2.5	0.0	6.7	4.7	32.2	0.4	63.5	111.8	0.0
	MACANoTreatment	(2.6–2.7), 2.6	(0–0), 0	(5.8–6), 5.9	(3.9–4.1), 4	(20.5–23.3), 22	(0.4–0.4), 0.4	(54.6–55.5), 54.9	(65–74.5), 72.3	(0–0), 0
	MACAConventional	(2.5–2.5), 2.5	(0–0), 0	(6.7–6.7), 6.7	(5–5.5), 5.3	(35.8–45.1), 40.3	(0.4–0.4), 0.4	(54.6–55.5), 55	(92.7–127.6), 108.5	(0–0), 0

	MACACLIGEN75	(0.7–0.7), 0.7	(0.5–0.6), 0.6	(0.5–0.6), 0.5	(1.2–1.5), 1.3	(2.1–3.4), 2.5	(1.2–1.3), 1.3	(9.6–12.4), 11.2	(4.1–5.4), 4.6	(0–0), 0
	MACACLIGEN90	(2–2.1), 2	(1.9–1.9), 1.9	(1.1–1.1), 1.1	(0.8–1), 0.9	(0.8–1.3), 1.1	(1.8–1.9), 1.8	(0.1–0.3), 0.2	(8.1–11.8), 9.1	(0–0), 0
	MACALARSWG75	(2.4–2.7), 2.5	(1.9–2.3), 2	(2–2.1), 2	(1.4–1.6), 1.4	(2.7–4.2), 3	(1.2–1.3), 1.2	(3.6–5.4), 4.4	(15.2–22.9), 18.4	(0–0), 0
	MACALARSWG90	(7.7–8.2), 7.9	(7–7.5), 7.1	(4.3–4.6), 4.5	(1–1.1), 1	(1.4–2.5), 1.8	(1.7–1.8), 1.8	(0–0), 0	(35.5–49.8), 40.5	(0–0), 0
Fall	Observed	2.3	0.0	6.0	4.4	25.1	0.4	62.9	68.3	0.0
	MACANoTreatment	(2.3–2.5), 2.4	(0–0), 0	(5.3–5.6), 5.5	(3.6–3.9), 3.8	(16.2–20.3), 18.6	(0.4–0.4), 0.4	(57–58.9), 57.8	(56.1–56.6), 56.5	(0–0), 0
	MACAConventional	(2.4–2.4), 2.4	(0–0), 0	(6.4–6.5), 6.4	(4.3–4.7), 4.4	(22.1–27.7), 24.3	(0.4–0.4), 0.4	(59–62), 60.7	(57.2–77.7), 64.6	(0–0), 0
	MACACLIGEN75	(0.5–0.6), 0.6	(0.4–0.5), 0.5	(0.4–0.5), 0.5	(1.2–1.5), 1.4	(1.9–3.2), 2.7	(1.1–1.3), 1.2	(12.6–16.9), 14.8	(2.9–4.2), 3.6	(0–0), 0
	MACACLIGEN90	(1.8–2), 1.9	(1.7–1.9), 1.8	(1–1), 1	(0.6–0.9), 0.8	(0.3–1.3), 1	(1.9–2.1), 1.9	(0.2–0.4), 0.2	(6–8), 7.1	(0–0), 0
	MACALARSWG75	(1.7–2.2), 2	(1.2–1.8), 1.6	(1.6–1.9), 1.8	(1.3–1.8), 1.6	(2.5–5.2), 3.6	(1–1.3), 1.1	(4.7–8), 6.3	(12–15.6), 13.5	(0–0), 0
	MACALARSWG90	(6.8–7.6), 7.3	(6.3–7), 6.7	(3.7–4.2), 4	(0.8–1.1), 0.9	(0.7–2.5), 1.3	(1.7–1.9), 1.8	(0–0.1), 0	(24.7–35.2), 29.5	(0–0.4), 0
Spring	Observed	3.2	0.0	7.7	4.7	35.6	0.4	60.4	111.8	0.0
	MACANoTreatment	(3.2–3.3), 3.2	(0.3–0.3), 0.3	(6.4–6.7), 6.5	(3.4–3.7), 3.6	(14.9–18.7), 17.1	(0.5–0.5), 0.5	(47.8–48.8), 48.3	(57.2–69.9), 65.7	(0–0), 0
	MACAConventional	(2.8–2.8), 2.8	(0–0.1), 0	(6.5–6.6), 6.6	(4.3–4.7), 4.5	(25.1–30), 27.8	(0.4–0.4), 0.4	(50–51.1), 50.5	(74.2–87.6), 79.5	(0–0), 0
	MACACLIGEN75	(0.9–1), 0.9	(0.7–0.9), 0.8	(0.6–0.6), 0.6	(0.9–1.2), 1.1	(1.1–2.5), 1.6	(1.5–1.7), 1.6	(2.2–3.8), 3	(3.7–4.5), 4.2	(0–0), 0
	MACACLIGEN90	(2.3–2.5), 2.4	(2.2–2.4), 2.3	(1.1–1.1), 1.1	(0.7–0.9), 0.8	(0.4–1.3), 0.8	(2.1–2.3), 2.2	(0–0.1), 0	(7.1–9.2), 8.2	(0–0.3), 0.1
	MACALARSWG75	(3.1–3.8), 3.5	(2.7–3.4), 3.1	(2.1–2.3), 2.2	(1–1.4), 1.1	(1.3–3.7), 2	(1.4–1.8), 1.6	(0.5–2.4), 0.9	(14.8–22.1), 16.5	(0–0), 0
	MACALARSWG90	(9–9.8), 9.5	(8.4–9.2), 8.9	(4.3–4.7), 4.5	(0.8–1.1), 0.9	(0.7–3.4), 1.6	(2–2.2), 2.1	(0–0), 0	(32.8–49), 37.5	(0–1.3), 0.4
Summer	Observed	2.8	0.0	7.8	4.1	20.4	0.4	69.1	71.9	0.0
	MACANoTreatment	(2.9–3), 2.9	(0–0), 0	(6.5–6.8), 6.7	(3.8–4.2), 4	(19–23.5), 21.7	(0.4–0.5), 0.4	(55.7–57.6), 56.5	(65–74.5), 72.1	(0–0), 0

	MACAConventional	(3.1–3.1), 3.1	(0–0), 0	(8.3–8.4), 8.3	(5.1–5.8), 5.4	(34.5–47.6), 40.9	(0.4–0.4), 0.4	(51.6–53), 52	(92.7–127.6), 108.5	(0–0), 0
	MACACLIGEN75	(0.7–0.8), 0.8	(0.5–0.7), 0.6	(0.5–0.6), 0.6	(1.1–1.4), 1.2	(1.7–3.3), 2.3	(1.2–1.3), 1.3	(10.5–14.2), 11.7	(3.6–5.4), 4.5	(0–0), 0
	MACACLIGEN90	(2.2–2.4), 2.3	(2–2.2), 2.2	(1.2–1.3), 1.2	(0.7–0.9), 0.8	(0.4–1.3), 0.8	(1.8–2), 1.9	(0.1–0.3), 0.2	(7.7–11.8), 8.7	(0–0), 0
	MACALARSWG75	(2.5–3.1), 2.8	(2–2.8), 2.4	(2.1–2.3), 2.2	(1.1–1.5), 1.3	(1.8–4), 2.6	(1.2–1.4), 1.3	(3.1–7.3), 5.1	(15.2–22.9), 17.9	(0–0), 0
	MACALARSWG90	(8.4–9.5), 8.8	(7.5–8.6), 8	(4.7–5), 4.8	(0.9–1.1), 1	(0.9–2.7), 1.7	(1.8–1.9), 1.8	(0–0.1), 0	(30.7–49.8), 38.5	(0–0.5), 0.1
Winter	Observed	1.9	0.0	4.7	4.6	33.8	0.4	61.6	77.0	0.0
	MACANoTreatment	(1.9–2), 1.9	(0–0), 0	(4.5–4.8), 4.7	(4.1–4.6), 4.5	(23–31.5), 28.7	(0.4–0.4), 0.4	(56.6–58.1), 57.2	(52.1–57), 56.3	(0–0), 0
	MACAConventional	(1.9–1.9), 1.9	(0–0), 0	(4.9–5), 4.9	(5–5.4), 5.2	(35–42.9), 39.6	(0.4–0.4), 0.4	(56.1–57.1), 56.7	(63.5–71.6), 66.4	(0–0), 0
	MACACLIGEN75	(0.4–0.5), 0.5	(0.4–0.4), 0.4	(0.3–0.4), 0.4	(1.3–1.7), 1.5	(2.7–4.6), 3.5	(1.2–1.4), 1.2	(12.5–16.8), 15.1	(2.6–3.4), 3.1	(0–0), 0
	MACACLIGEN90	(1.4–1.6), 1.5	(1.2–1.5), 1.4	(0.8–0.9), 0.9	(0.8–1.1), 1	(0.5–2.2), 1.4	(1.6–1.9), 1.7	(0.1–0.3), 0.2	(5.4–8.5), 7.2	(0–0), 0
	MACALARSWG75	(1.4–2), 1.6	(1.1–1.7), 1.3	(1.3–1.4), 1.4	(1.7–2), 1.8	(5–6.5), 5.4	(1.1–1.4), 1.2	(3.9–7.7), 5.1	(10.7–13.9), 11.9	(0–0), 0
	MACALARSWG90	(5.5–6), 5.8	(4.7–5.5), 5.1	(3.3–3.5), 3.5	(0.9–1.2), 1.1	(1–3), 1.8	(1.6–1.8), 1.7	(0–0.1), 0	(21.8–35.9), 27.7	(0–0.3), 0.1
Norwalk, OH										
Daily	Observed	2.6	0.0	7.0	7.5	133.0	0.4	64	229.1	0.0
	MACANoTreatment	(2.6–2.7), 2.7	(0–0), 0	(5.4–5.7), 5.6	(3.4–4), 3.9	(14.3–26.9), 23.8	(0.5–0.5), 0.5	(51–51.7), 51.4	(54.5–112.8), 101.6	(0–0), 0
	MACAConventional	(2.6–2.6), 2.6	(0–0), 0	(6.9–7), 7	(5.6–8.2), 7.3	(48.4–166.3), 122.6	(0.4–0.4), 0.4	(51–51.7), 51.4	(133.7–258.4), 220.7	(0–0), 0
	MACACLIGEN75	(0.7–0.8), 0.8	(0.6–0.7), 0.7	(0.5–0.6), 0.5	(1.1–1.3), 1.2	(1.7–2.7), 2.2	(1.4–1.5), 1.4	(5.2–6.3), 5.7	(3.8–4.8), 4.3	(0–0), 0
	MACACLIGEN90	(2–2.1), 2	(1.8–2), 1.9	(1–1), 1	(0.7–1), 0.9	(0.7–2.2), 1.2	(1.9–2.1), 2	(0–0.1), 0.1	(7.9–13.6), 9	(0–0), 0
	MACALARSWG75	(2.6–2.9), 2.7	(2.1–2.5), 2.3	(1.9–2), 2	(1.4–1.6), 1.5	(2.8–4.1), 3.3	(1.3–1.4), 1.4	(1.3–2.2), 1.8	(15–21.2), 17.9	(0–0), 0
	MACALARSWG90	(7.6–8.2), 7.9	(6.9–7.5), 7.2	(4.2–4.5), 4.3	(0.8–1), 0.9	(0.8–1.4), 1.1	(1.8–1.9), 1.8	(0–0), 0	(31.9–37.7), 34.3	(0–0.3), 0.1
Fall	Observed	2.3	0.0	5.5	4.0	21.3	0.4	63.6	57.4	0.0
	MACANoTreatment	(2.3–2.4), 2.4	(0–0), 0	(5.1–5.3), 5.2	(3.6–3.8), 3.7	(16.3–18.6), 17.2	(0.4–0.5), 0.5	(53.2–54.5), 53.8	(46.1–47.3), 47.1	(0–0), 0

	MACAConventional	(2.2–2.3), 2.2	(0–0), 0	(5.5–5.5), 5.5	(4.2–4.4), 4.3	(22.8–25.6), 24.3	(0.4–0.4), 0.4	(53.2–54.5), 53.8	(53.1–61.4), 56.4	(0–0), 0
	MACACLIGEN75	(0.6–0.7), 0.7	(0.4–0.6), 0.5	(0.4–0.5), 0.5	(1–1.4), 1.3	(1.6–3.3), 2.2	(1.3–1.5), 1.4	(7.2–9.4), 8.1	(2.9–4.5), 3.5	(0–0), 0
	MACACLIGEN90	(1.9–2), 1.9	(1.7–1.8), 1.8	(0.9–1), 0.9	(0.7–0.9), 0.8	(0.4–1.5), 1	(2–2.2), 2.1	(0–0.1), 0.1	(5.6–8.2), 7	(0–0), 0
	MACALARSWG75	(1.9–2.4), 2.2	(1.5–2.1), 1.8	(1.5–1.7), 1.6	(1.3–1.7), 1.6	(2.5–5.4), 3.9	(1.2–1.5), 1.3	(2.1–4.7), 2.8	(11.2–14.5), 12.7	(0–0), 0
	MACALARSWG90	(6.8–7.4), 7.1	(6.1–6.8), 6.5	(3.8–4), 3.9	(0.9–1.1), 1	(0.9–1.8), 1.3	(1.7–1.9), 1.8	(0–0), 0	(25.6–33.5), 29.7	(0–0.7), 0.2
Spring	Observed	3.2	0.0	7.2	3.7	19.9	0.4	60	87.6	0.0
	MACANoTreatment	(3.2–3.3), 3.2	(0.4–0.5), 0.4	(5.9–6.1), 6	(2.8–3.2), 3.1	(9.3–14.2), 12.5	(0.5–0.5), 0.5	(46.1–47.4), 46.9	(44.1–70.5), 63.3	(0–0), 0
	MACAConventional	(3.2–3.2), 3.2	(0.1–0.2), 0.1	(7.6–7.9), 7.8	(4.2–6.7), 5.6	(23–94.7), 58.8	(0.4–0.4), 0.4	(46.1–47.4), 46.9	(74.8–187), 146.7	(0–0), 0
	MACACLIGEN75	(0.9–1.1), 1	(0.8–1), 0.9	(0.6–0.6), 0.6	(0.8–1), 0.9	(0.6–1.7), 1.2	(1.6–1.8), 1.7	(1–1.6), 1.3	(3.8–4.7), 4.1	(0–0), 0
	MACACLIGEN90	(2.3–2.5), 2.4	(2.2–2.4), 2.3	(1–1), 1	(0.6–0.8), 0.7	(0.4–1.1), 0.7	(2.3–2.5), 2.4	(0–0), 0	(6.9–8), 7.4	(0.2–0.3), 0.2
	MACALARSWG75	(3.5–3.9), 3.7	(3.2–3.6), 3.4	(2.1–2.2), 2.1	(1.1–1.3), 1.2	(1.7–3.3), 2.6	(1.6–1.8), 1.7	(0.1–0.7), 0.4	(14.5–20.1), 17	(0–0), 0
	MACALARSWG90	(9.3–9.8), 9.5	(8.6–9.2), 8.9	(4.2–4.4), 4.3	(0.8–1), 0.8	(0.6–1.4), 0.9	(2.1–2.3), 2.2	(0–0), 0	(28–32.9), 30.8	(0.1–1), 0.6
Summer	Observed	3.1	0.0	9.5	8.7	140.5	0.3	68.7	229.1	0.0
	MACANoTreatment	(3–3.1), 3	(0–0), 0	(6–6.6), 6.4	(3.2–4.5), 4.2	(13.3–38.6), 31.6	(0.5–0.5), 0.5	(50.3–52), 51.2	(54.5–112.8), 101.6	(0–0), 0
	MACAConventional	(3.1–3.1), 3.1	(0–0), 0	(8.9–9.1), 9	(5.8–9.7), 8.2	(47.1–195.9), 135.9	(0.3–0.4), 0.3	(50.3–52), 51.2	(133.7–258.4), 220.7	(0–0), 0
	MACACLIGEN75	(0.8–1), 0.9	(0.8–0.9), 0.8	(0.5–0.6), 0.5	(0.9–1.3), 1.1	(1.2–3.4), 2.2	(1.5–1.8), 1.6	(4–6.1), 4.9	(3.6–4.8), 4	(0–0), 0
	MACACLIGEN90	(2.1–2.4), 2.2	(1.9–2.3), 2.1	(1–1.1), 1.1	(0.7–1.2), 0.9	(0.7–4.8), 1.6	(2–2.4), 2.1	(0–0.1), 0.1	(7.5–13.6), 9	(0–0.2), 0
	MACALARSWG75	(3–3.5), 3.2	(2.6–3), 2.7	(2–2.3), 2.2	(1.1–1.5), 1.3	(1.6–4), 2.5	(1.3–1.6), 1.5	(0.9–3.6), 1.8	(12.7–21.2), 16.2	(0–0), 0
	MACALARSWG90	(8.9–9.6), 9.3	(8.3–9.2), 8.8	(4.3–4.7), 4.5	(0.6–0.8), 0.7	(0.2–1.2), 0.8	(2–2.1), 2.1	(0–0.1), 0	(30.4–37.7), 33.9	(0–0.7), 0.4
Winter	Observed (MACA)	1.8	0.0	4.6	4.5	28.0	0.4	63.8	55.9	0.0

	MACANoTreatment	(1.9–2), 2	(0–0), 0	(4.3–4.7), 4.6	(4–4.5), 4.3	(20.5–26.5), 24.4	(0.4–0.4), 0.4	(53.1–54.7), 53.8	(44.5–51.6), 50.8	(0–0), 0
	MACAConventional	(1.8–1.8), 1.8	(0–0), 0	(4.6–4.7), 4.6	(4.6–5.1), 4.8	(27.2–35.1), 31.7	(0.4–0.4), 0.4	(53.1–54.7), 53.8	(49.2–63.7), 57.4	(0–0), 0
	MACACLIGEN75	(0.5–0.6), 0.5	(0.4–0.5), 0.4	(0.3–0.4), 0.4	(1.2–1.5), 1.4	(2.4–4), 3.1	(1.4–1.6), 1.5	(6.8–9.5), 8.3	(2.5–3.1), 2.7	(0–0), 0
	MACACLIGEN90	(1.5–1.6), 1.5	(1.3–1.5), 1.4	(0.7–0.8), 0.8	(0.8–1), 0.9	(0.8–1.4), 1.1	(1.8–2), 1.9	(0.1–0.1), 0.1	(5.3–7), 6.2	(0–0), 0
	MACALARSWG75	(1.7–2), 1.9	(1.4–1.8), 1.6	(1.2–1.4), 1.3	(1.5–1.7), 1.5	(3.1–5.1), 3.7	(1.3–1.5), 1.4	(1.7–2.9), 2.3	(9.3–13.3), 11.1	(0–0), 0
	MACALARSWG90	(5.5–6.1), 5.8	(4.9–5.5), 5.2	(3.1–3.4), 3.3	(1–1.4), 1.2	(1.3–4.2), 2.5	(1.7–1.8), 1.8	(0–0), 0	(23.5–34.3), 28.3	(0.1–0.5), 0.3

Table S9. Statistical properties of daily precipitation, mm, presented on a seasonal basis for Adrian, MI, Fort Wayne, IN, and Norwalk, OH from the MACA climate projections for two different future climate scenarios (RCP 4.5 and RCP 8.5), treated with power transformation bias correction method and default publicly available dataset for period from 2006–2099 compared with observed data.

FALL									
Adrian, MI									
Dataset	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	No. of days with no Precipitation (%)	Maximum	Minimum
Observed	2.3	0.0	5.7	4.1	21.0	0.4	65.2	59.4	0.0
RCP4.5	(2.3–2.7), 2.4	(0–0), 0	(5.4–6.3), 5.8	(3.5–4.9), 4.3	(14.5–39.4), 27	(0.4–0.4), 0.4	(53.9–56.1), 55	(52.1–117.3), 77.3	(0–0), 0
RCP4.5Treated	(2.2–2.7), 2.5	(0–0), 0	(6–7.5), 6.7	(4–6.7), 5.3	(20.4–84.4), 43	(0.4–0.4), 0.4	(53.9–56.1), 55	(69.5–193.6), 108.5	(0–0), 0
RCP8.5	(2.1–2.8), 2.4	(0–0), 0	(5.4–6.3), 5.9	(3.7–5.3), 4.6	(18.2–43.5), 30	(0.4–0.4), 0.4	(54–56.7), 55.8	(63.9–95.5), 79.8	(0–0), 0
RCP8.5Treated	(2.1–2.9), 2.5	(0–0), 0	(6.1–7.5), 6.8	(4.4–6.6), 5.6	(26.3–66), 46.1	(0.3–0.4), 0.4	(54–56.7), 55.8	(81.6–136.2), 105.4	(0–0), 0
Fort Wayne, IN									
Observed	2.3	0.0	6.0	4.4	25.1	0.4	62.9	68.3	0.0
RCP4.5	(2.3–2.8), 2.5	(0–0), 0	(5.5–6.5), 6	(3.4–4.7), 4.2	(13.6–37.9), 24.6	(0.4–0.4), 0.4	(56.4–59), 57.9	(58.6–122.8), 76.8	(0–0), 0
RCP4.5Treated	(2.3–2.8), 2.5	(0–0), 0	(6.1–7.5), 6.7	(3.9–5.9), 5	(19.6–60.9), 36.8	(0.4–0.4), 0.4	(56.4–59), 57.9	(75.9–155.4), 97.9	(0–0), 0
RCP8.5	(2–2.9), 2.5	(0–0), 0	(5.3–6.5), 6.1	(3.7–5.2), 4.5	(19.5–47.8), 31.1	(0.4–0.4), 0.4	(57–59.9), 58.7	(70.7–136.6), 97.5	(0–0), 0
RCP8.5Treated	(2–2.9), 2.5	(0–0), 0	(5.9–7.4), 6.9	(4.5–6.5), 5.5	(31.1–72.3), 47.1	(0.3–0.4), 0.4	(57–59.9), 58.7	(89.3–174.9), 126.3	(0–0), 0
Norwalk, OH									
Observed	2.3	0.0	5.5	4.0	21.3	0.4	63.6	57.4	0.0
RCP4.5	(2.3–2.7), 2.5	(0–0), 0	(5.5–6.2), 5.8	(3.6–4.3), 4	(16.9–26.6), 21.5	(0.4–0.4), 0.4	(52.7–54.7), 53.7	(56.7–79.9), 69.8	(0–0), 0
RCP4.5Treated	(2.2–2.6), 2.4	(0–0), 0	(5.8–6.9), 6.2	(4.2–5), 4.7	(26.4–36.8), 31.6	(0.4–0.4), 0.4	(52.7–54.7), 53.7	(66.6–113.2), 87	(0–0), 0
RCP8.5	(2.1–2.9), 2.5	(0–0), 0	(5.2–6.3), 5.8	(3.5–4.3), 4.1	(15.6–25), 22.1	(0.4–0.5), 0.4	(53.3–55.4), 54.5	(57.6–77), 68	(0–0), 0
RCP8.5Treated	(2–2.8), 2.4	(0–0), 0	(5.3–7), 6.3	(4.1–5.2), 4.8	(23.6–38.7), 32.6	(0.4–0.4), 0.4	(53.3–55.4), 54.5	(64.3–100.3), 87	(0–0), 0

SPRING									
Adrian, MI									
Treatment	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	No. of days with no Precipitation (%)	Maximum	Minimum
Observed	3.0	0.0	7.2	4.0	22.7	0.4	63.5	80.3	0.0
RCP4.5	(3–3.4), 3.2	(0–0.3), 0.1	(6.1–7.4), 6.7	(3.4–4.6), 3.9	(15.3–35.6), 23.3	(0.5–0.5), 0.5	(46.3–51.1), 49.6	(69.5–125.6), 94.7	(0–0), 0
RCP4.5Treated	(2.9–3.5), 3.2	(0–0.2), 0.1	(6.9–9.1), 8.2	(4.4–7.4), 5.5	(27.1–113.1), 53.1	(0.4–0.4), 0.4	(46.3–51.1), 49.6	(100.8–249.7), 158.8	(0–0), 0
RCP8.5	(3–3.5), 3.2	(0–0.3), 0.2	(6.4–7.4), 6.9	(3.6–4.5), 3.9	(17.5–33.3), 23.3	(0.5–0.5), 0.5	(47.7–51.4), 49.6	(83–122.1), 100.1	(0–0), 0
RCP8.5Treated	(3–3.6), 3.3	(0–0.2), 0.1	(7.3–9.3), 8.5	(4.7–6.3), 5.4	(33.3–68.3), 47.9	(0.4–0.4), 0.4	(47.7–51.4), 49.6	(120.7–214.8), 158.9	(0–0), 0
Fort Wayne, IN									
Observed	3.2	0.0	7.7	4.7	35.6	0.4	60.4	111.8	0.0

RCP4.5	(3.2–3.7), 3.4	(0–0.4), 0.3	(6.6–7.5), 7.1	(3.4–4.2), 3.8	(15.6–29.3), 21.8	(0.5–0.5), 0.5	(44.7–50.2), 47.5	(78–124.5), 92.4	(0–0), 0
RCP4.5Treated	(3.2–3.8), 3.5	(0–0.2), 0.1	(7.8–9.4), 8.5	(4.3–6.6), 5.3	(26–89.2), 45.6	(0.4–0.4), 0.4	(44.7–50.2), 47.5	(106–223.1), 145.5	(0–0), 0
RCP8.5	(3.2–3.7), 3.4	(0–0.4), 0.3	(6.7–7.6), 7.2	(3.7–4.3), 4	(18.3–31.5), 23.4	(0.5–0.5), 0.5	(44.3–51.1), 48.3	(72–110.2), 93.7	(0–0), 0
RCP8.5Treated	(3.2–3.8), 3.5	(0–0.2), 0.1	(7.9–9.3), 8.7	(4.7–6.4), 5.3	(29.5–71.8), 43.8	(0.4–0.4), 0.4	(44.3–51.1), 48.3	(109.3–188.9), 141.3	(0–0), 0
Norwalk, OH									
Observed	3.2	0.0	7.2	3.7	19.9	0.4	60	87.6	0.0
RCP4.5	(3.1–3.6), 3.4	(0.4–0.5), 0.4	(6–6.7), 6.4	(3–3.7), 3.3	(10.8–23.6), 16.3	(0.5–0.5), 0.5	(43.8–47.5), 45.9	(58.6–113.8), 86	(0–0), 0
RCP4.5Treated	(3–3.6), 3.4	(0.1–0.2), 0.1	(7.5–9.2), 8.6	(4.4–12.9), 7.3	(27.4–361.7), 135.1	(0.4–0.4), 0.4	(43.8–47.5), 45.9	(108.4–340.2), 235	(0–0), 0
RCP8.5	(3.2–3.7), 3.4	(0.3–0.5), 0.4	(6.2–7.1), 6.6	(3.1–3.7), 3.3	(12.1–20.5), 15.6	(0.5–0.5), 0.5	(43.7–48.2), 46.1	(61.4–91.6), 80.6	(0–0), 0
RCP8.5Treated	(3.1–3.9), 3.4	(0.1–0.2), 0.1	(7.8–9.9), 8.8	(4.9–7.4), 6.3	(37.7–117.3), 83.5	(0.4–0.4), 0.4	(43.7–48.2), 46.1	(136.6–274.2), 222	(0–0), 0

SUMMER

Adrian, MI									
	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	No. of days with no Precipitation (%)	Maximum	Minimum
Observed	2.8	0.0	7.9	5.1	38.4	0.4	70.7	120.4	0.0
RCP4.5	(2.6–3.2), 2.9	(0–0), 0	(5.9–6.9), 6.3	(3.6–4.9), 4	(19.3–40), 25.3	(0.4–0.5), 0.5	(51.3–54.9), 52.7	(65.7–127.3), 91.4	(0–0), 0
RCP4.5Treated	(2.5–3), 2.8	(0–0), 0	(7.4–9.6), 8.3	(5.9–10.2), 7.3	(50.8–200.8), 93.4	(0.3–0.4), 0.3	(51.3–54.9), 52.7	(113.6–302.6), 191.2	(0–0), 0
RCP8.5	(2.7–3), 2.9	(0–0), 0	(5.9–6.9), 6.4	(3.6–4.6), 4	(18.7–33), 23.6	(0.4–0.5), 0.5	(52.2–54.8), 53.6	(75.4–104.4), 87.2	(0–0), 0
RCP8.5Treated	(2.6–3), 2.8	(0–0), 0	(7.6–9.4), 8.4	(6.2–8.1), 7	(60–132.4), 81.3	(0.3–0.4), 0.3	(52.2–54.8), 53.6	(155.3–258), 181.3	(0–0), 0
Fort Wayne, IN									
Observed	2.8	0.0	7.8	4.1	20.4	0.4	69.1	71.9	0.0
RCP4.5	(2.6–3.3), 3	(0–0), 0	(6.2–7.4), 6.8	(3.8–6.5), 4.6	(19.9–106.4), 36.5	(0.4–0.5), 0.4	(53.7–57.1), 55.1	(81.9–208.6), 107.5	(0–0), 0
RCP4.5Treated	(2.5–3.4), 3	(0–0), 0	(8.4–10.1), 9.3	(5.6–15.3), 7.8	(43.7–544.6), 127.4	(0.3–0.3), 0.3	(53.7–57.1), 55.1	(134.9–454.6), 208.7	(0–0), 0
RCP8.5	(2.6–3.1), 2.9	(0–0), 0	(5.9–7.5), 6.9	(4.1–5.1), 4.6	(22.4–46.7), 32.2	(0.4–0.4), 0.4	(54.5–57.4), 56.3	(77.8–151.2), 106.4	(0–0), 0
RCP8.5Treated	(2.5–3.2), 3	(0–0), 0	(7.6–10.5), 9.4	(5.8–8.8), 7.2	(47.5–149.8), 85.2	(0.3–0.3), 0.3	(54.5–57.4), 56.3	(151.5–293.8), 204.8	(0–0), 0
Norwalk, OH									
Observed	3.1	0.0	9.5	8.7	140.5	0.3	68.7	229.1	0.0
RCP4.5	(2.7–3.3), 3	(0–0.3), 0.2	(6–7.2), 6.5	(4–5.4), 4.6	(28–66.7), 40	(0.4–0.5), 0.5	(49.1–53.5), 50.5	(100.7–166.3), 123.3	(0–0), 0
RCP4.5Treated	(2.7–3.4), 3.2	(0–0.1), 0	(8.4–12.2), 9.8	(8.2–13.6), 10.1	(120.1–387.6), 207.3	(0.3–0.4), 0.3	(49.1–53.5), 50.5	(214–461.7), 306.9	(0–0), 0
RCP8.5	(2.9–3.3), 3	(0–0.3), 0.1	(6.2–7.3), 6.8	(4.1–6.7), 5.2	(26.7–99.4), 55.1	(0.4–0.5), 0.5	(49.3–53), 50.9	(89.8–200.1), 145	(0–0), 0
RCP8.5Treated	(2.9–3.5), 3.2	(0–0.1), 0	(8.6–11.8), 10.5	(8–17.2), 12.6	(124.3–604.5), 324.5	(0.3–0.3), 0.3	(49.3–53), 50.9	(255.4–536.9), 381.9	(0–0), 0

WINTER

Adrian, MI

	Mean	Median	Std. Dev.	Skewness	Kurtosis	CV	No. of days with no Precipitation (%)	Maximum	Minimum
Observed (MACA)	1.7	0.0	4.6	4.8	32.8	0.4	68.1	59.7	0.0
RCP4.5	(1.8–2.1), 2	(0–0), 0	(4.5–5.2), 4.9	(4.4–5.2), 4.7	(26.9–42.2), 32.7	(0.4–0.4), 0.4	(53.9–56.2), 54.9	(53.6–103.5), 72.5	(0–0), 0
RCP4.5Treated	(1.7–2), 1.9	(0–0), 0	(4.6–5.5), 5.2	(5.1–6.4), 5.7	(36.3–70), 48.8	(0.4–0.4), 0.4	(53.9–56.2), 54.9	(70.5–130), 89.2	(0–0), 0
RCP8.5	(1.9–2.3), 2.1	(0–0), 0	(4.6–5.6), 5.1	(4.6–5.1), 4.8	(31.5–40.1), 34.4	(0.4–0.4), 0.4	(53.8–56.9), 54.9	(64.2–92.1), 79.7	(0–0), 0
RCP8.5Treated	(1.8–2.1), 2	(0–0), 0	(5–5.9), 5.5	(5.4–6.3), 5.8	(41.3–66.2), 52.3	(0.4–0.4), 0.4	(53.8–56.9), 54.9	(78.3–114.3), 100.1	(0–0), 0
Fort Wayne, IN									
Observed (MACA)	1.9	0.0	4.7	4.6	33.8	0.4	61.6	77.0	0.0
RCP4.5	(1.9–2.3), 2.1	(0–0), 0	(4.9–5.5), 5.2	(4.2–6.1), 4.7	(24.1–67.3), 34.8	(0.4–0.4), 0.4	(55.7–57.8), 56.6	(64.3–102), 76	(0–0), 0
RCP4.5Treated	(1.9–2.2), 2.1	(0–0), 0	(5.1–5.9), 5.5	(4.7–7.1), 5.4	(29.8–88.2), 45.4	(0.4–0.4), 0.4	(55.7–57.8), 56.6	(71.1–117.9), 88.4	(0–0), 0
RCP8.5	(2–2.4), 2.2	(0–0), 0	(5–5.7), 5.4	(4–5.4), 4.7	(21.3–51), 34.4	(0.4–0.4), 0.4	(55–58.1), 56.3	(60.5–109.8), 78.9	(0–0), 0
RCP8.5Treated	(1.9–2.3), 2.2	(0–0), 0	(5.3–6.1), 5.7	(4.5–6.3), 5.4	(26.5–69.4), 45.1	(0.4–0.4), 0.4	(55–58.1), 56.3	(66.5–127.8), 90.7	(0–0), 0
Norwalk, OH									
Observed (MACA)	1.8	0.0	4.6	4.5	28.0	0.4	63.8	55.9	0.0
RCP4.5	(2.1–2.3), 2.2	(0–0), 0	(4.9–5.3), 5.1	(4.1–5.3), 4.6	(22.7–41.4), 30.4	(0.4–0.4), 0.4	(52.3–54.5), 53.2	(53.9–97), 74.2	(0–0), 0
RCP4.5Treated	(1.9–2.1), 2	(0–0), 0	(5–5.6), 5.3	(4.7–6.2), 5.4	(29.3–62.2), 43.9	(0.4–0.4), 0.4	(52.3–54.5), 53.2	(64–116.6), 90.9	(0–0), 0
RCP8.5	(2–2.5), 2.3	(0–0), 0	(4.9–5.7), 5.4	(4–5.3), 4.6	(20.1–41.9), 29.6	(0.4–0.5), 0.4	(52.3–54.6), 53.3	(55.5–89.5), 71.8	(0–0), 0
RCP8.5Treated	(2–2.3), 2.1	(0–0), 0	(5.2–6), 5.6	(4.4–6.2), 5.2	(25.9–59.5), 40.5	(0.4–0.4), 0.4	(52.3–54.6), 53.3	(63.9–108.6), 87.7	(0–0), 0

Table S10. Performance evaluation in simulating number of wet and dry days in a month for Adrian, MI, Fort Wayne, IN, and Norwalk, OH from the MACA climate projections for two different future climate scenarios (RCP 4.5 and RCP 8.5), treated with power transformation bias correction method and default publicly available dataset for period from 2006–2099 compared with observed data.

Number of Wet Days in a Month												
Dataset	January	February	March	April	May	June	July	August	September	October	November	December
Adrian, MI												
Observed	10	8	10	11	11	10	9	8	9	10	10	11
RCP4.5	(15–15), 15	(11–12), 12	(14–15), 15	(15–17), 16	(15–17), 16	(14–16), 14	(15–16), 15	(14–15), 15	(12–15), 14	(13–14), 14	(12–14), 13	(14–15), 15
RCP4.5Treated	(15–15), 15	(11–12), 12	(14–15), 15	(15–17), 16	(15–17), 16	(13–16), 14	(14–15), 14	(13–14), 13	(12–13), 13	(13–14), 14	(12–14), 13	(14–15), 15
RCP8.5	(15–15), 15	(11–12), 12	(13–15), 15	(15–17), 16	(15–18), 16	(14–15), 14	(14–16), 15	(14–15), 15	(13–16), 14	(13–15), 13	(12–13), 13	(14–15), 15
RCP8.5Treated	(15–15), 15	(11–12), 12	(13–15), 15	(15–17), 16	(15–18), 16	(13–15), 14	(13–15), 14	(13–14), 13	(12–14), 13	(13–15), 13	(12–13), 13	(14–15), 15
Fort Wayne, IN												
Observed	12	10	12	13	12	10	10	10	9	10	12	13
RCP4.5	(13–14), 14	(11–12), 11	(14–15), 14	(15–16), 16	(16–18), 17	(14–18), 15	(15–16), 15	(13–15), 14	(11–14), 12	(12–13), 12	(11–13), 12	(14–15), 14
RCP4.5Treated	(13–14), 14	(11–12), 11	(14–15), 14	(15–16), 16	(16–18), 17	(14–18), 15	(14–15), 14	(12–13), 13	(11–13), 11	(12–13), 12	(11–13), 12	(14–15), 14
RCP8.5	(13–14), 14	(11–12), 11	(13–16), 15	(15–17), 16	(16–18), 17	(14–16), 15	(14–15), 15	(13–15), 14	(11–14), 12	(11–13), 12	(11–12), 12	(14–15), 14
RCP8.5Treated	(13–14), 14	(11–12), 11	(13–16), 15	(15–17), 16	(16–18), 17	(14–16), 15	(13–15), 14	(12–13), 13	(11–14), 11	(11–13), 12	(11–12), 12	(14–15), 14
Norwalk, OH												
Observed	11	10	12	13	13	11	10	9	9	10	11	12
RCP4.5	(14–15), 14	(12–13), 13	(14–16), 15	(16–17), 17	(16–18), 17	(15–17), 16	(16–17), 16	(14–17), 16	(13–15), 14	(13–14), 13	(13–14), 14	(15–16), 16
RCP4.5Treated	(14–15), 14	(12–13), 13	(14–16), 15	(16–17), 17	(16–18), 17	(13–15), 14	(14–15), 15	(13–14), 14	(13–15), 14	(13–14), 13	(13–14), 14	(15–16), 16
RCP8.5	(14–15), 14	(12–13), 13	(14–16), 15	(16–18), 17	(16–18), 17	(15–17), 16	(15–18), 16	(15–16), 15	(13–16), 14	(12–14), 13	(13–14), 14	(15–16), 15
RCP8.5Treated	(14–15), 14	(12–13), 13	(14–16), 15	(16–18), 17	(16–18), 17	(13–14), 14	(14–15), 15	(13–14), 14	(13–16), 14	(12–14), 13	(13–14), 14	(15–16), 15
Number of Dry Days in a Month												
Adrian, MI												
Observed	21	20	20	18	19	19	21	22	21	21	18	19
RCP4.5	(16–17), 17	(16–17), 17	(16–17), 16	(13–15), 14	(14–16), 15	(14–16), 16	(16–16), 16	(16–17), 16	(15–18), 16	(17–18), 17	(16–18), 17	(16–17), 16
RCP4.5Treated	(16–17), 17	(16–17), 17	(16–17), 16	(13–15), 14	(14–16), 15	(14–17), 16	(16–17), 17	(17–18), 18	(17–18), 18	(17–18), 17	(16–18), 17	(16–17), 16
RCP8.5	(16–17), 16	(16–17), 17	(16–18), 16	(13–15), 14	(13–16), 15	(15–17), 16	(16–17), 16	(16–17), 17	(14–17), 17	(17–18), 18	(17–18), 17	(16–17), 16

RCP8.5Treated	(16–17), 16	(16–17), 17	(16–18), 16	(13–15), 14	(13–16), 15	(15–17), 16	(16–18), 17	(17–18), 18	(16–18), 17	(17–18), 18	(17–18), 17	(16–17), 16
Fort Wayne, IN												
Observed	19	18	19	17	19	20	21	22	21	21	18	18
RCP4.5	(17–18), 18	(17–17), 17	(16–18), 17	(14–15), 14	(13–15), 14	(12–16), 15	(15–17), 16	(16–18), 17	(17–19), 18	(18–19), 19	(17–19), 18	(16–17), 17
RCP4.5Treated	(17–18), 18	(17–17), 17	(16–18), 17	(14–15), 14	(13–15), 14	(12–16), 15	(17–17), 17	(18–19), 18	(17–20), 19	(18–19), 19	(17–19), 18	(16–17), 17
RCP8.5	(17–18), 18	(16–17), 17	(16–18), 16	(13–15), 14	(13–16), 14	(14–17), 15	(16–17), 16	(16–18), 17	(16–19), 18	(18–20), 19	(18–19), 18	(16–17), 17
RCP8.5Treated	(17–18), 18	(16–17), 17	(16–18), 16	(13–15), 14	(13–16), 14	(14–17), 15	(17–18), 17	(18–19), 18	(16–19), 19	(18–20), 19	(18–19), 18	(16–17), 17
Norwalk, OH												
Observed	19	19	19	17	18	19	21	22	20	21	19	18
RCP4.5	(16–17), 17	(15–16), 16	(15–17), 16	(13–14), 14	(13–15), 14	(13–15), 14	(14–16), 15	(14–17), 15	(15–17), 16	(17–18), 18	(16–17), 16	(15–16), 16
RCP4.5Treated	(16–17), 17	(15–16), 16	(15–17), 16	(13–14), 14	(13–15), 14	(15–17), 16	(16–17), 16	(17–18), 17	(15–17), 16	(17–18), 18	(16–17), 16	(15–16), 16
RCP8.5	(16–17), 17	(15–16), 16	(15–17), 16	(12–14), 13	(14–15), 14	(13–15), 14	(13–16), 15	(15–17), 16	(14–17), 16	(17–19), 18	(16–17), 17	(15–16), 16
RCP8.5Treated	(16–17), 17	(15–16), 16	(15–17), 16	(12–14), 13	(14–15), 14	(16–17), 17	(16–17), 16	(17–19), 17	(14–17), 16	(17–19), 18	(16–17), 17	(15–16), 16

Table S11. Extreme event and general climate indices analysis for Adrian, MI; Fort Wayne, IN; and Norwalk, OH from the MACA climate projections for two different future climate scenarios (RCP 4.5 and RCP 8.5), treated with power transformation bias correction method and default publicly available dataset for period from 2006–2099 compared with observed data.

Dataset	Maximum Dry Length	Maximum Wet Length	Number of dry sequence	No. of wet sequence	No. of days for optimum growth of corn	Snow Days	Pdd	Pww	Pwd	Pdw	Ld	Lw	Td	Tw
Adrian, MI														
Observed	26	9	33	153	51	30	0.7	0.5	0.3	0.5	4	1	1	4
RCP4.5	(20–37), 25	(18–29), 21	(15–49), 30	(854–1057), 953	(62–71), 66	(23–37), 31	(0.6–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.4), 0.3	(0.4–0.4), 0.4	(3–3), 3	(2–2), 2	(2–3), 2	(1–1), 1
RCP4.5 Treated	(21–45), 27	(16–29), 20	(22–58), 33	(834–1024), 931	(28–31), 29	(61–66), 62	(0.6–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.4), 0.3	(0.4–0.4), 0.4	(3–3), 3	(2–2), 2	(2–3), 2	(1–1), 1
RCP8.5	(20–46), 26	(17–26), 21	(20–61), 33	(870–1082), 973	(58–64), 61	(18–33), 27	(0.6–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.4), 0.3	(0.4–0.4), 0.4	(3–3), 3	(1–2), 2	(2–3), 2	(1–1), 1
RCP8.5 Treated	(20–46), 28	(17–26), 20	(23–70), 39	(833–1071), 953	(28–30), 29	(60–65), 62	(0.6–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.4), 0.3	(0.4–0.4), 0.4	(3–3), 3	(1–2), 2	2–3), 2	(1–1), 1
Fort Wayne, IN														
Observed	30	11	16	166	63	33	0.7	0.5	0.3	0.5	3	1	1	3
RCP4.5	(22–45), 30	(16–22), 19	(32–73), 45	(836–1039), 943	(64–72), 67	(20–30), 27	(0.7–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.3), 0.3	(0.4–0.4), 0.4	(3–3), 3	(1–2), 2	(2–2), 2	(1–1), 1
RCP4.5 Treated	(22–45), 30	(16–22), 18	(37–81), 51	(800–1019), 919	(65–69), 67	(43–46), 44	(0.7–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.3), 0.3	(0.4–0.4), 0.4	(3–3), 3	(1–2), 2	(2–2), 2	(1–1), 1
RCP8.5	(23–41), 31	(15–26), 22	(38–80), 57	(835–1082), 955	(56–64), 61	(16–28), 23	(0.7–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.3), 0.3	(0.4–0.4), 0.4	(3–4), 3	(1–2), 1	(2–2), 2	(1–1), 1
RCP8.5 Treated	(27–41), 32	(15–26), 22	(43–86), 61	(825–1072), 941	(63–68), 66	(42–45), 43	(0.7–0.7), 0.7	(0.6–0.6), 0.6	(0.3–0.3), 0.3	(0.4–0.4), 0.4	(3–4), 3	(1–2), 1	(2–2), 2	(1–1), 1
Norwalk, OH														
Observed	25	18	15	183	55	31	0.7	0.5	0.3	0.5	3	1	1	3
RCP4.5	(19–41), 26	(16–25), 21	(12–30), 20	(919–1106), 1019	(66–76), 70	(21–34), 29	(0.6–0.7), 0.7	(0.6–0.7), 0.6	(0.3–0.4), 0.3	(0.3–0.4), 0.4	(3–3), 3	(2–2), 2	(2–3), 3	(1–1), 1
RCP4.5 Treated	(19–41), 27	(16–25), 20	(13–33), 24	(881–1078), 986	(50–55), 53	(50–55), 53	(0.6–0.7), 0.7	(0.6–0.7), 0.6	(0.3–0.4), 0.3	(0.3–0.4), 0.4	(3–3), 3	(2–2), 2	(2–3), 3	(1–1), 1
RCP8.5	(22–34), 28	(18–28), 22	(17–44), 27	(918–1153), 1029	(59–68), 64	(17–31), 25	(0.6–0.7), 0.7	(0.6–0.7), 0.6	(0.3–0.4), 0.3	(0.3–0.4), 0.4	(3–3), 3	(2–2), 2	(2–3), 2	(1–1), 1
RCP8.5 Treated	(22–34), 29	(18–27), 21	(24–51), 32	(870–1143), 996	(51–54), 52	(50–54), 52	(0.6–0.7), 0.7	(0.6–0.7), 0.6	(0.3–0.4), 0.3	(0.3–0.4), 0.4	(3–3), 3	(2–2), 2	(2–3), 2	(1–1), 1

Table S12. Details of select statistical properties computed from nine different climate model projections for precipitation (mm) and maximum and minimum temperature (, °C) under medium and high emission scenarios (RCP 4.5 and RCP 8.5) for eight different stations in WLEB.

Precipitation (mm)																
Dataset	RCP 4.5								RCP 8.5							
	Adrian	BowlingGreen	Bucyrus	Defiance	FortWayne	Lima	Norwalk	Sandusky	Adrian	BowlingGreen	Bucyrus	Defiance	FortWayne	Lima	Norwalk	Sandusky
	Mean								Mean							
Observed	2.5	2.4	2.7	2.5	2.6	2.7	2.7	2.4	2.5	2.4	2.7	2.5	2.6	2.7	2.7	2.4
CCSM4	2.5	2.4	2.7	2.6	2.6	2.7	2.6	2.2	2.5	2.4	2.8	2.6	2.7	2.8	2.6	2.2
ESM2G	2.6	2.5	2.9	2.6	2.7	2.8	2.8	2.3	2.8	2.6	3.0	2.8	2.9	2.9	2.9	2.4
ESM2M	2.7	2.6	2.9	2.7	2.8	2.9	2.8	2.4	3.1	2.6	3.0	2.7	2.8	2.9	2.9	2.4
IPSLALR	2.6	2.5	2.8	2.6	2.7	2.8	2.7	2.3	2.6	2.5	2.8	2.7	2.7	2.8	2.7	2.3
IPSLAMR	2.6	2.5	2.8	2.6	2.7	2.8	2.8	2.3	2.5	2.3	2.7	2.5	2.6	2.6	2.6	2.2
MICROESM	2.7	2.6	3.0	2.7	2.8	2.9	2.8	2.3	2.7	2.5	2.9	2.6	2.7	2.8	2.8	2.3
MICROESMCHEM	2.7	2.6	3.0	2.7	2.7	2.8	2.8	2.3	2.7	2.6	3.0	2.7	2.7	2.8	2.9	2.3
NORES M1	2.5	2.4	2.9	2.6	2.6	2.7	2.7	2.2	2.7	2.6	3.1	2.8	2.8	2.9	2.9	2.3
BCCCSM	2.5	2.4	3.1	2.7	2.6	2.9	2.6	2.3	2.7	2.6	3.2	2.9	2.8	3.1	2.8	2.5
	Standard Deviation								Standard Deviation							
Observed	6.6	6.6	7.1	7.0	6.9	7.1	7.1	6.9	6.6	6.6	7.1	7.0	6.9	7.1	7.1	6.9
CCSM4	7.1	6.7	7.3	7.6	7.1	6.9	7.0	6.3	6.8	6.7	7.3	7.6	7.5	7.1	7.1	6.2
ESM2G	7.6	7.2	7.9	7.6	7.7	7.3	8.1	6.8	7.9	7.6	8.5	8.4	7.8	7.7	8.8	7.1
ESM2M	7.6	7.4	8.0	7.9	7.6	7.5	8.0	7.1	8.3	7.9	8.6	8.1	7.6	7.7	8.5	7.0
IPSLALR	7.3	7.0	7.4	7.7	7.4	7.1	7.7	7.3	7.4	7.2	7.7	8.1	7.6	7.3	7.7	7.0
IPSLAMR	6.9	7.1	7.3	7.6	7.4	7.1	7.3	6.4	7.1	7.0	7.2	7.7	7.5	6.9	7.5	6.5
MICROESM	7.4	7.3	7.7	8.0	7.7	7.5	8.5	6.4	7.5	7.2	7.4	7.8	7.3	7.2	8.3	6.5
MICROESMCHEM	7.5	7.4	7.5	7.8	7.3	7.1	8.0	6.4	7.5	7.5	7.6	8.1	7.4	7.2	8.7	6.8
NORES M1	6.8	6.8	7.4	7.6	7.1	7.1	7.6	6.4	7.3	7.4	8.2	8.3	7.6	7.7	7.9	6.6
BCCCSM	7.1	6.8	8.0	8.2	7.1	7.6	7.2	6.8	7.7	7.4	8.8	8.9	7.7	8.2	8.2	7.3
	Maximum								Maximum							
Observed	120.4	114.0	220.5	254.0	111.8	129.0	229.1	152.7	120.4	114.0	220.5	254.0	111.8	129.0	229.1	152.7
CCSM4	302.6	195.7	248.4	210.6	126.2	158.7	314.7	196.4	173.3	182.8	174.9	182.5	234.6	217.4	284.0	231.9
ESM2G	268.7	152.2	243.5	167.6	231.0	147.7	282.6	252.2	215.2	246.2	378.7	264.5	174.8	215.5	536.9	232.0
ESM2M	197.6	215.8	208.8	168.6	123.7	184.2	340.2	425.2	328.1	366.7	290.3	328.3	171.0	215.4	400.2	253.3

IPSLALR	249.7	147.7	205.5	191.3	326.5	201.1	399.5	644.5	172.6	163.7	158.5	168.8	222.0	156.3	255.4	334.5
IPSLAMR	172.5	215.2	155.1	214.8	154.3	182.7	268.6	208.9	184.9	192.5	153.2	238.9	173.4	173.0	339.6	243.8
MICROESM	211.7	189.6	200.0	241.7	268.8	235.1	461.7	225.9	214.8	157.6	147.1	230.5	159.2	185.2	342.4	303.3
MICROESMCHEM	193.6	186.7	197.0	192.7	159.8	136.1	301.6	242.9	157.5	142.8	146.2	156.9	180.5	144.5	432.9	287.6
NORES M1	169.3	164.1	162.8	204.6	181.7	139.8	332.1	265.6	160.7	217.6	288.1	226.1	220.9	309.7	366.1	177.3
BCCCSM	164.2	199.2	250.9	276.6	120.1	211.9	215.3	276.0	182.5	257.5	313.0	431.9	137.0	215.2	479.8	264.0
Maximum Temperature, , °C																
	RCP 4.5								RCP 8.5							
	Adrian	BowlingGreen	Bucyrus	Defiance	FortWayne	Lima	Norwalk	Sandusky	Adrian	BowlingGreen	Bucyrus	Defiance	FortWayne	Lima	Norwalk	Sandusky
	Mean								Mean							
Observed	15.0	15.5	15.1	15.4	15.5	15.9	15.0	14.4	15.0	15.5	15.1	15.4	15.5	15.9	15.0	14.4
CCSM4	17.6	17.9	17.8	17.9	18.0	18.4	17.5	17.1	18.7	19.0	18.8	19.0	19.1	19.5	18.5	18.1
ESM2G	17.0	17.3	17.2	17.3	17.4	17.9	16.9	16.5	18.0	18.3	18.2	18.3	18.3	18.8	17.9	17.5
ESM2M	16.7	17.0	16.9	17.0	17.0	17.5	16.6	16.2	18.5	17.9	17.8	17.9	17.9	18.5	17.5	17.1
IPSLALR	17.8	18.1	18.0	18.1	18.1	18.6	17.7	17.3	18.7	19.0	18.9	19.1	19.1	19.5	18.6	18.2
IPSLAMR	17.6	17.9	17.7	17.9	17.9	18.4	17.4	17.1	18.9	19.1	18.9	19.2	19.2	19.6	18.6	18.2
MICROESM	18.4	18.5	18.2	18.6	18.8	18.9	18.0	17.7	20.0	20.2	19.7	20.3	20.4	20.6	19.5	19.2
MICROESMCHEM	18.5	18.7	18.4	18.8	19.0	19.1	18.2	17.9	20.0	20.1	19.7	20.3	20.4	20.6	19.4	19.1
NORES M1	17.9	18.2	18.0	18.2	18.2	18.7	17.7	17.4	19.0	19.2	19.0	19.3	19.3	19.7	18.8	18.4
BCCCSM	17.6	17.9	17.8	17.9	17.9	18.4	17.5	17.1	18.7	18.9	18.8	18.9	18.9	19.4	18.5	18.1
	Standard Deviation								Standard Deviation							
Observed	11.6	11.8	11.6	11.9	11.8	11.5	11.5	11.2	11.6	11.8	11.6	11.9	11.8	11.5	11.5	11.2
CCSM4	11.9	12.0	11.8	12.0	12.0	11.8	11.5	11.1	12.0	12.1	11.9	12.1	12.1	11.9	11.6	11.2
ESM2G	11.5	11.6	11.4	11.7	11.6	11.4	11.1	10.7	11.7	11.8	11.6	11.8	11.8	11.6	11.3	10.9
ESM2M	11.6	11.7	11.4	11.7	11.6	11.5	11.2	10.8	11.9	12.0	11.7	12.0	11.9	11.8	11.4	11.1
IPSLALR	11.6	11.7	11.5	11.8	11.7	11.5	11.2	10.8	12.1	12.1	11.9	12.2	12.1	11.9	11.6	11.3
IPSLAMR	11.7	11.8	11.6	11.8	11.7	11.6	11.3	10.9	12.0	12.1	11.9	12.1	12.0	11.9	11.6	11.2
MICROESM	11.0	11.0	10.9	11.1	11.1	10.8	10.7	10.3	11.3	11.5	11.3	11.6	11.7	11.4	10.9	10.5
MICROESMCHEM	10.8	10.9	10.8	11.0	11.1	10.7	10.6	10.2	11.2	11.4	11.2	11.5	11.6	11.3	10.8	10.4
NORES M1	11.9	12.1	11.8	12.1	12.1	11.9	11.5	11.1	11.8	11.9	11.7	12.0	11.9	11.7	11.3	10.9
BCCCSM	11.6	11.7	11.6	11.8	11.7	11.6	11.3	10.9	12.0	12.2	12.0	12.2	12.2	12.0	11.7	11.3
	Maximum								Maximum							
Observed	40.0	40.0	38.9	41.7	41.1	39.4	39.4	39.4	40.0	40.0	38.9	41.7	41.1	39.4	39.4	39.4
CCSM4	46.5	45.9	46.3	46.8	48.6	46.7	43.9	42.7	49.3	48.5	48.2	49.9	50.9	49.1	46.0	46.4

ESM2G	48.7	48.9	49.1	48.3	50.2	48.9	47.9	46.7	52.3	50.3	50.9	51.0	52.9	50.7	48.3	48.3
ESM2M	48.4	47.9	47.9	48.1	48.5	47.5	45.9	45.3	51.5	49.7	51.2	50.2	51.6	50.6	48.9	46.9
IPSLALR	42.8	44.8	45.3	43.7	46.6	48.1	44.1	43.8	52.6	52.8	54.3	52.8	54.7	53.2	52.2	51.6
IPSLAMR	45.6	43.8	42.8	44.8	46.5	43.7	41.7	41.2	51.7	49.9	48.5	50.3	50.3	48.7	47.9	47.2
MICROESM	43.4	42.4	41.4	43.0	46.6	42.0	41.0	40.2	49.1	47.2	46.2	48.1	52.9	47.8	44.8	44.4
MICROESMCHEM	42.7	42.8	43.2	43.1	45.9	43.2	41.0	40.4	46.2	47.0	46.1	47.3	52.2	50.4	44.8	42.8
NORES M1	51.2	49.8	48.6	51.2	53.9	51.4	46.5	45.7	52.6	51.8	53.5	53.9	56.5	54.0	49.3	48.0
BCCCSM	42.9	43.5	44.7	44.4	45.2	45.1	42.8	41.7	47.1	47.5	47.6	48.1	50.0	47.7	45.3	44.8
Maximum Temperature, , °C																
	RCP 4.5								RCP 8.5							
	Adrian	BowlingGreen	Bucyrus	Defiance	FortWayne	Lima	Norwalk	Sandusky	Adrian	BowlingGreen	Bucyrus	Defiance	FortWayne	Lima	Norwalk	Sandusky
	Mean								Mean							
Observed	3.3	4.5	4.0	4.1	4.8	5.5	4.5	5.9	3.3	4.5	4.0	4.1	4.8	5.5	4.5	5.9
CCSM4	5.2	6.1	6.1	6.0	6.6	7.1	6.3	7.9	6.3	7.1	7.0	7.0	7.5	8.0	7.2	8.9
ESM2G	5.1	6.1	6.0	6.0	6.6	7.1	6.2	7.8	6.1	7.1	7.0	6.9	7.5	8.0	7.2	8.8
ESM2M	4.9	5.8	5.7	5.7	6.3	6.8	5.9	7.6	7.5	6.7	6.6	6.5	7.1	7.6	6.8	8.4
IPSLALR	6.0	6.9	6.8	6.8	7.4	7.9	7.0	8.7	7.0	8.0	7.8	7.8	8.5	8.9	8.0	9.7
IPSLAMR	6.0	6.9	6.8	6.8	7.4	7.9	7.0	8.6	7.2	8.1	7.9	8.0	8.6	9.0	8.1	9.8
MICROESM	6.9	7.8	7.5	7.7	8.3	8.7	7.7	9.4	8.0	8.8	8.6	8.7	9.3	9.6	8.9	10.6
MICROESMCHEM	6.9	7.8	7.6	7.7	8.4	8.8	7.8	9.5	8.1	8.9	8.7	8.8	9.4	9.8	9.0	10.7
NORES M1	5.6	6.5	6.4	6.4	7.0	7.5	6.6	8.3	6.7	7.5	7.4	7.4	8.0	8.5	7.6	9.3
BCCCSM	5.8	6.7	6.5	6.6	7.2	7.6	6.8	8.4	7.0	7.8	7.7	7.7	8.3	8.8	7.9	9.6
	Standard Deviation								Standard Deviation							
Observed	10.0	10.1	10.1	10.4	10.3	10.3	10.1	10.2	10.0	10.1	10.1	10.4	10.3	10.3	10.1	10.2
CCSM4	9.5	9.6	9.6	9.8	9.9	9.8	9.5	9.6	9.6	9.8	9.8	10.0	10.1	10.0	9.6	9.8
ESM2G	9.5	9.6	9.6	9.8	9.9	9.8	9.4	9.6	9.7	9.8	9.8	10.0	10.1	10.0	9.7	9.8
ESM2M	9.7	9.8	9.8	10.0	10.0	10.0	9.7	9.8	10.3	10.0	10.0	10.2	10.3	10.2	9.9	10.0
IPSLALR	9.7	9.7	9.7	9.9	10.0	9.9	9.6	9.8	10.2	10.2	10.2	10.4	10.5	10.3	10.1	10.2
IPSLAMR	9.8	9.9	9.9	10.1	10.1	10.0	9.8	9.9	10.1	10.2	10.2	10.4	10.5	10.4	10.1	10.2
MICROESM	9.0	9.2	9.2	9.4	9.7	9.5	9.0	9.1	9.2	9.5	9.5	9.7	9.9	9.8	9.2	9.4
MICROESMCHEM	9.0	9.2	9.2	9.4	9.7	9.5	9.0	9.1	9.2	9.4	9.4	9.7	9.9	9.7	9.2	9.3
NORES M1	9.5	9.7	9.7	9.9	10.0	9.9	9.5	9.7	9.5	9.7	9.7	9.9	10.0	9.9	9.5	9.6
BCCCSM	9.1	9.3	9.3	9.5	9.5	9.5	9.1	9.3	9.4	9.6	9.7	9.8	9.9	9.9	9.5	9.6
	Maximum								Maximum							

Observed	24.4	25.6	24.4	28.3	25.6	31.7	26.1	31.7	24.4	25.6	24.4	28.3	25.6	31.7	26.1	31.7
CCSM4	26.3	27.5	26.9	27.6	28.1	27.9	27.3	27.4	30.1	29.9	30.0	30.6	31.0	32.4	29.7	30.6
ESM2G	27.4	28.1	26.8	28.4	30.6	28.8	26.6	26.8	30.1	30.6	30.4	30.4	31.9	31.5	29.7	30.3
ESM2M	26.5	27.5	28.3	27.0	29.1	29.1	27.6	27.3	32.2	31.3	31.8	30.8	31.2	31.5	30.8	30.9
IPSLALR	28.0	28.5	28.3	28.9	30.4	29.4	28.0	28.6	33.1	33.5	33.1	34.0	34.7	34.9	33.4	33.6
IPSLAMR	28.8	30.1	29.2	29.2	29.7	30.2	28.8	29.3	33.1	34.1	33.8	33.9	34.9	34.4	34.0	34.5
MICROESM	28.1	29.0	28.4	28.5	29.6	28.8	27.5	28.2	30.6	30.8	30.4	31.2	32.3	31.7	30.2	30.9
MICROESMCHEM	27.2	27.5	27.3	27.8	29.4	28.1	27.6	28.8	30.1	30.3	30.8	31.0	32.2	31.8	29.8	31.1
NORES M1	27.0	27.4	26.6	27.8	29.9	28.7	25.7	27.5	29.9	30.7	29.2	31.0	32.4	31.0	29.2	30.4
BCCCSM	27.7	27.9	27.0	28.1	29.1	29.0	27.1	28.4	30.8	31.7	30.0	30.2	31.4	31.0	30.2	30.8

FIGURES

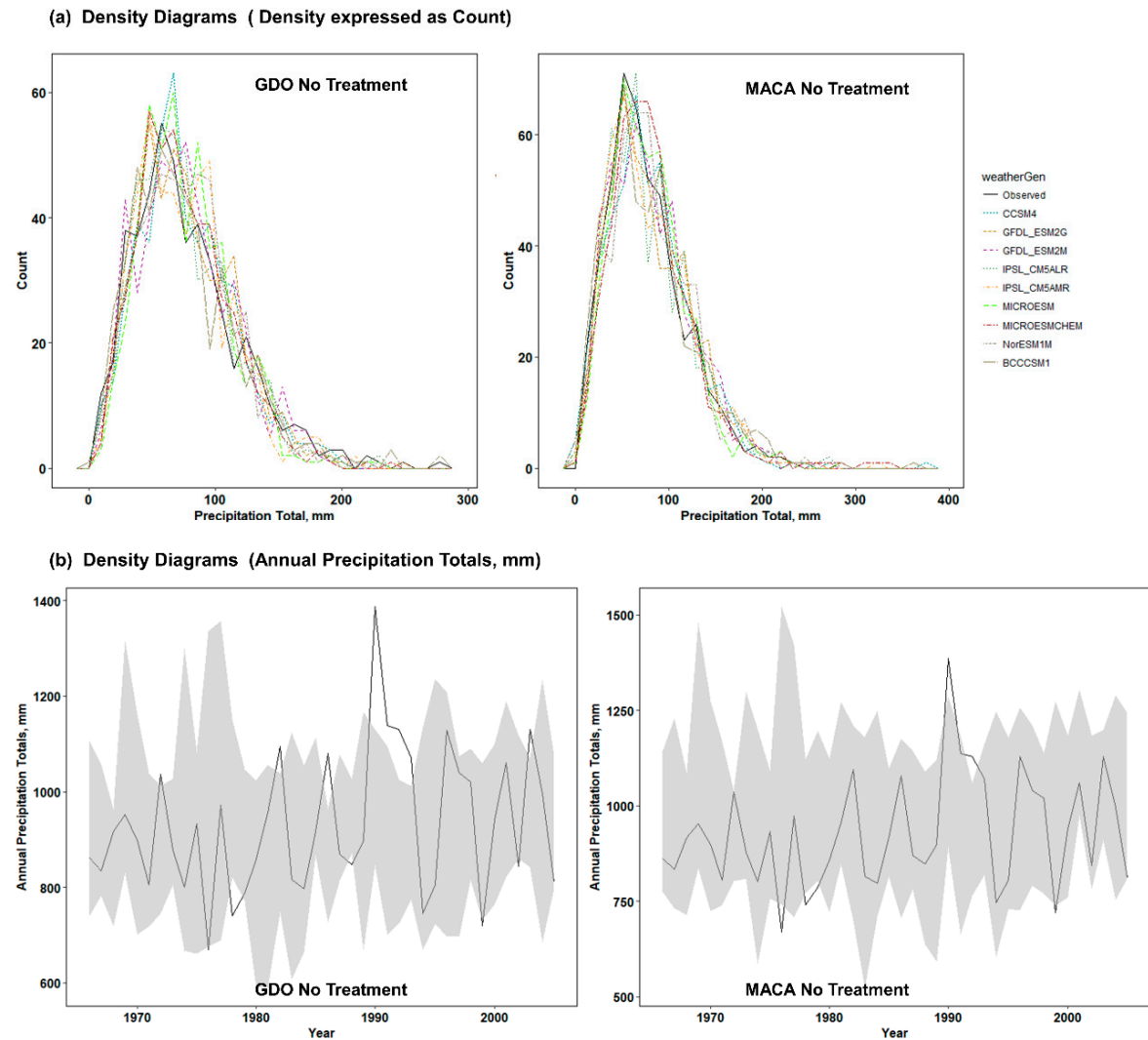


Figure S1. (A) (a) Density distribution charts for Fort Wayne, IN for count of monthly precipitation totals, mm, in each year (b) Distribution of annual precipitation totals, mm, with range bound from different climate model outputs. (For the period from 1966–2015 for GDO (right frame) and 1966–2005 for MACA (left frame)).

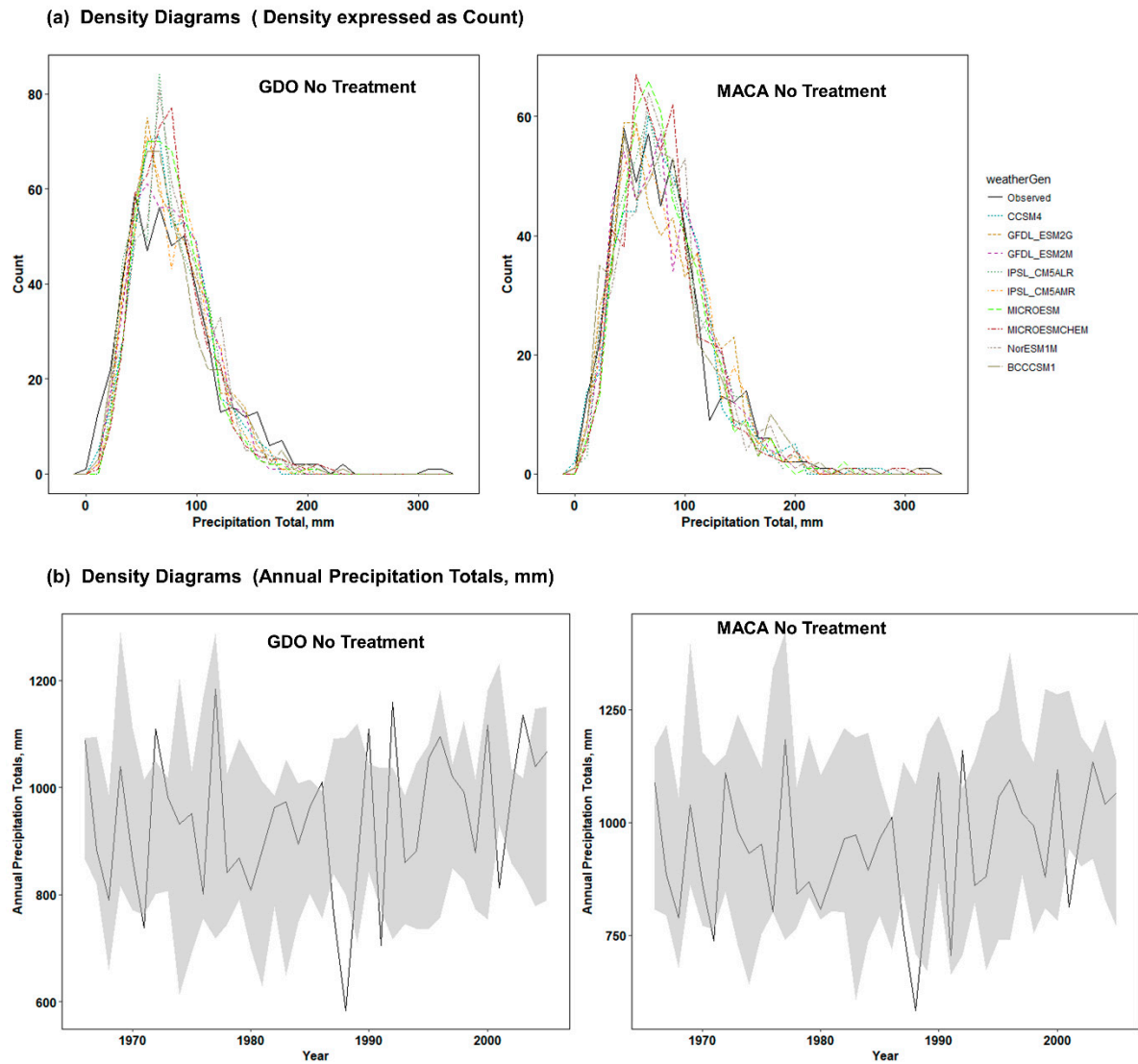


Figure S1. (B) (a) Density distribution charts for Norwalk, OH for count of monthly precipitation totals, mm, in each year (b) Distribution of annual precipitation totals, mm, with range bound from different climate model outputs. (For the period from 1966–2015 for GDO (right frame) and 1966–2005 for MACA (left frame)).

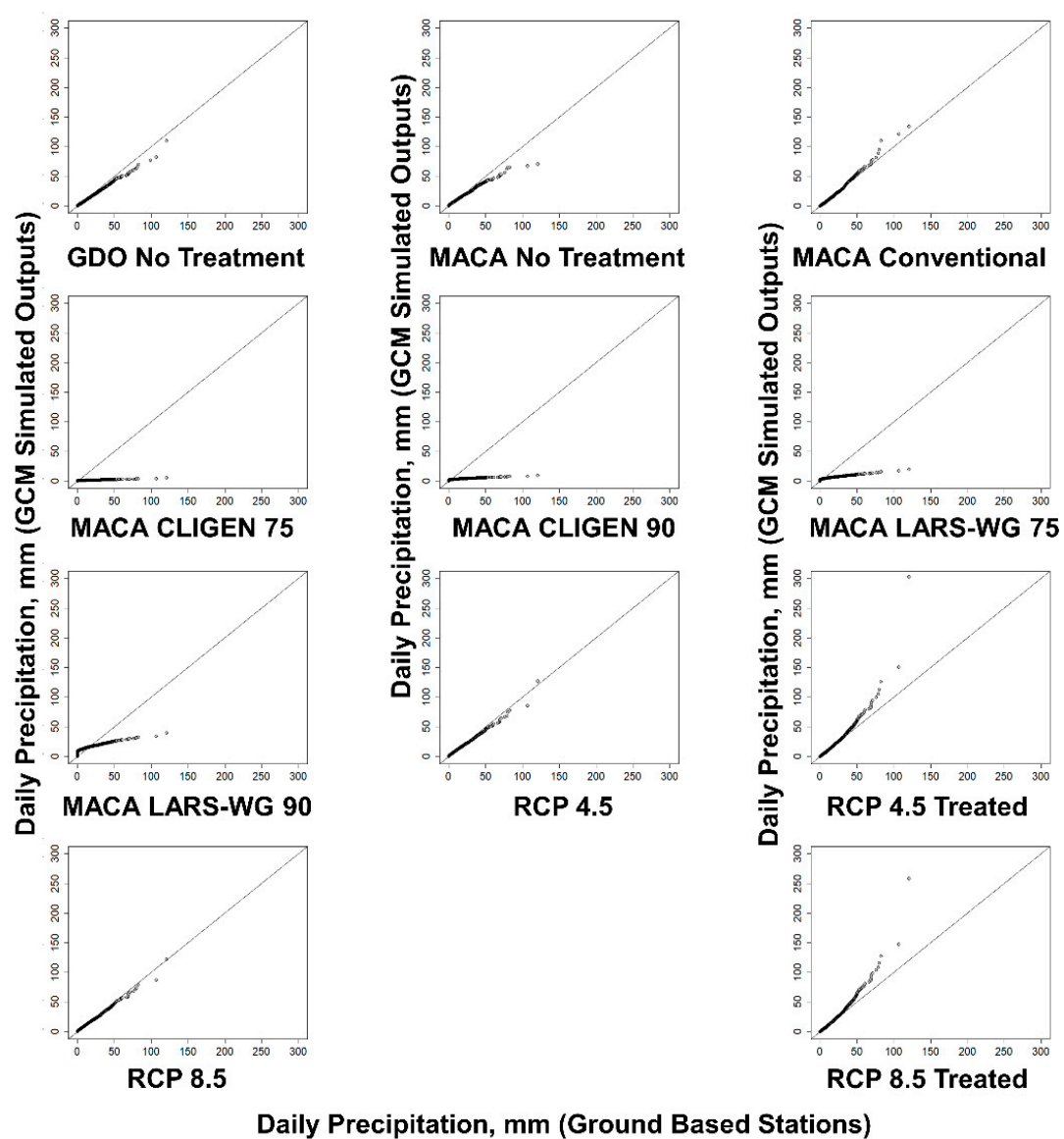


Figure S2. (A) Q–Q Plots to evaluate the performance of different bias correction methods for period between 1966 and 2005 to reduce the bias in simulating values for daily precipitation, mm and to present the future climatic scenarios (2006–2099) for Adrian, MI.

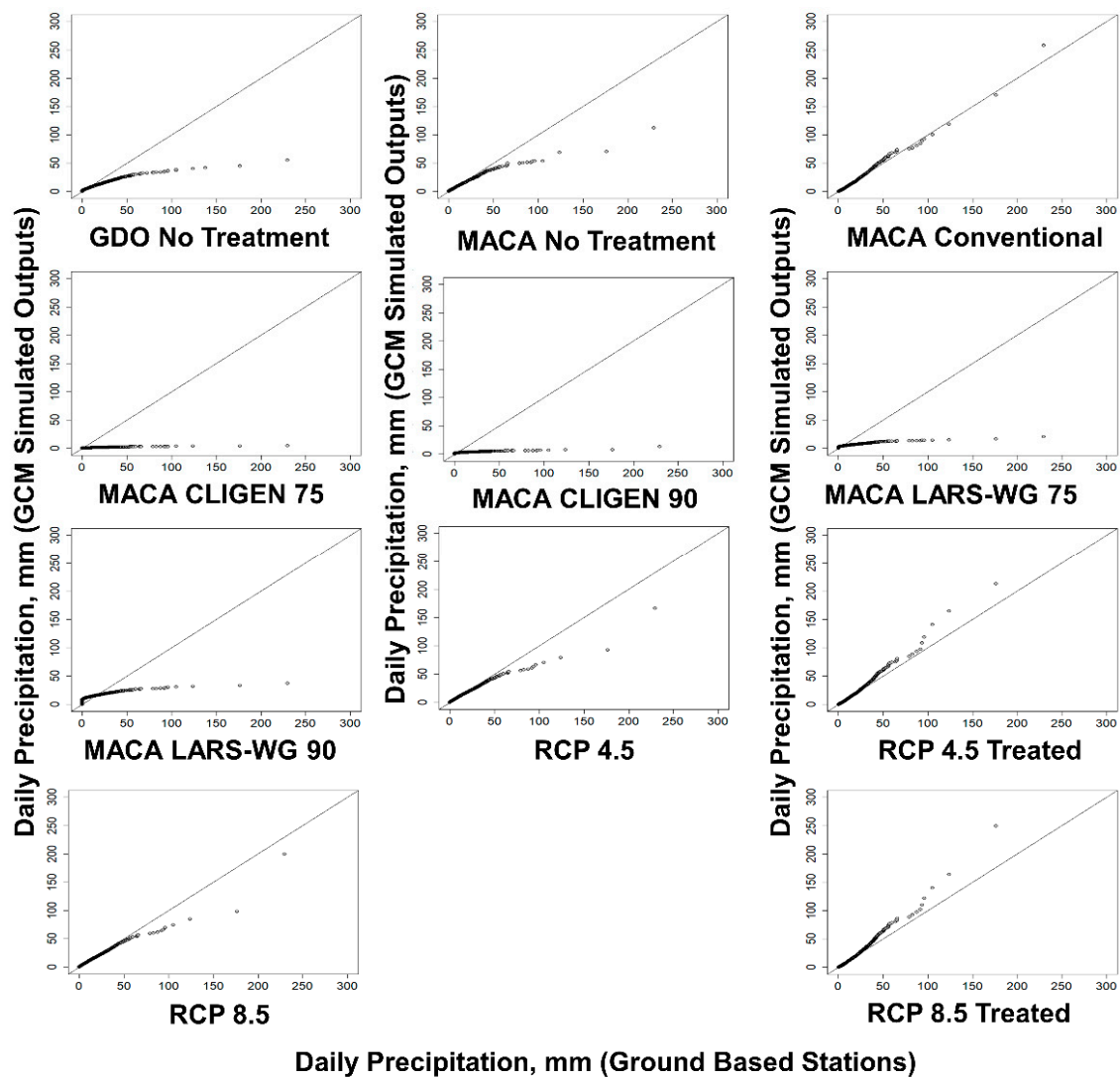


Figure S2. (B) Q–Q Plots to evaluate the performance of different bias correction methods for period between 1966 and 2005 to reduce the bias in simulating values for daily precipitation, mm and to present the future climatic scenarios (2006–2009) for Norwalk, OH.

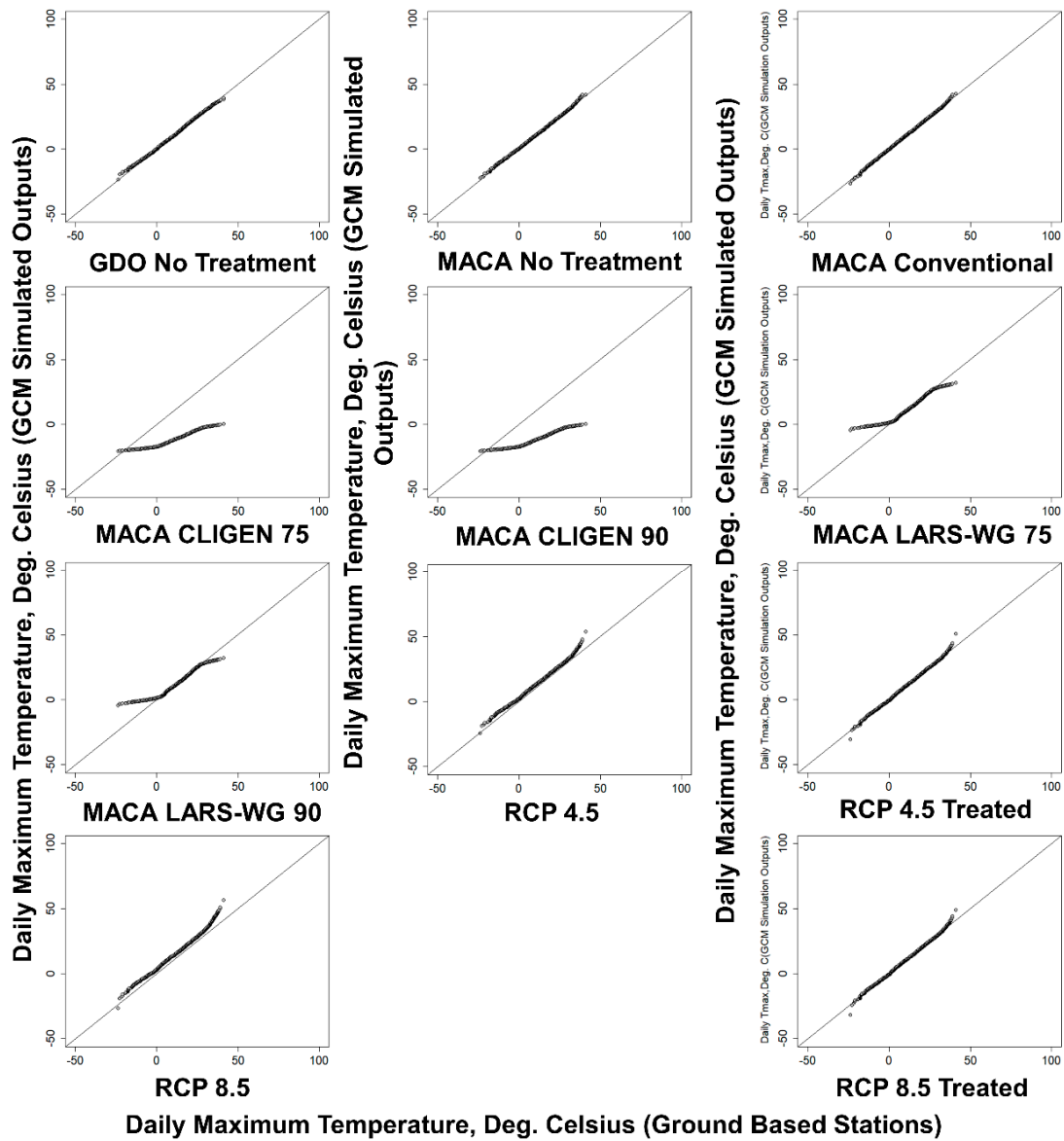


Figure S2. (C) Q–Q Plots to evaluate the performance of different bias correction methods for period between 1966 and 2005 to reduce the bias in simulating values for daily maximum temperature, °C and to present the future climatic scenarios (2006–2099) for Fort Wayne, IN.

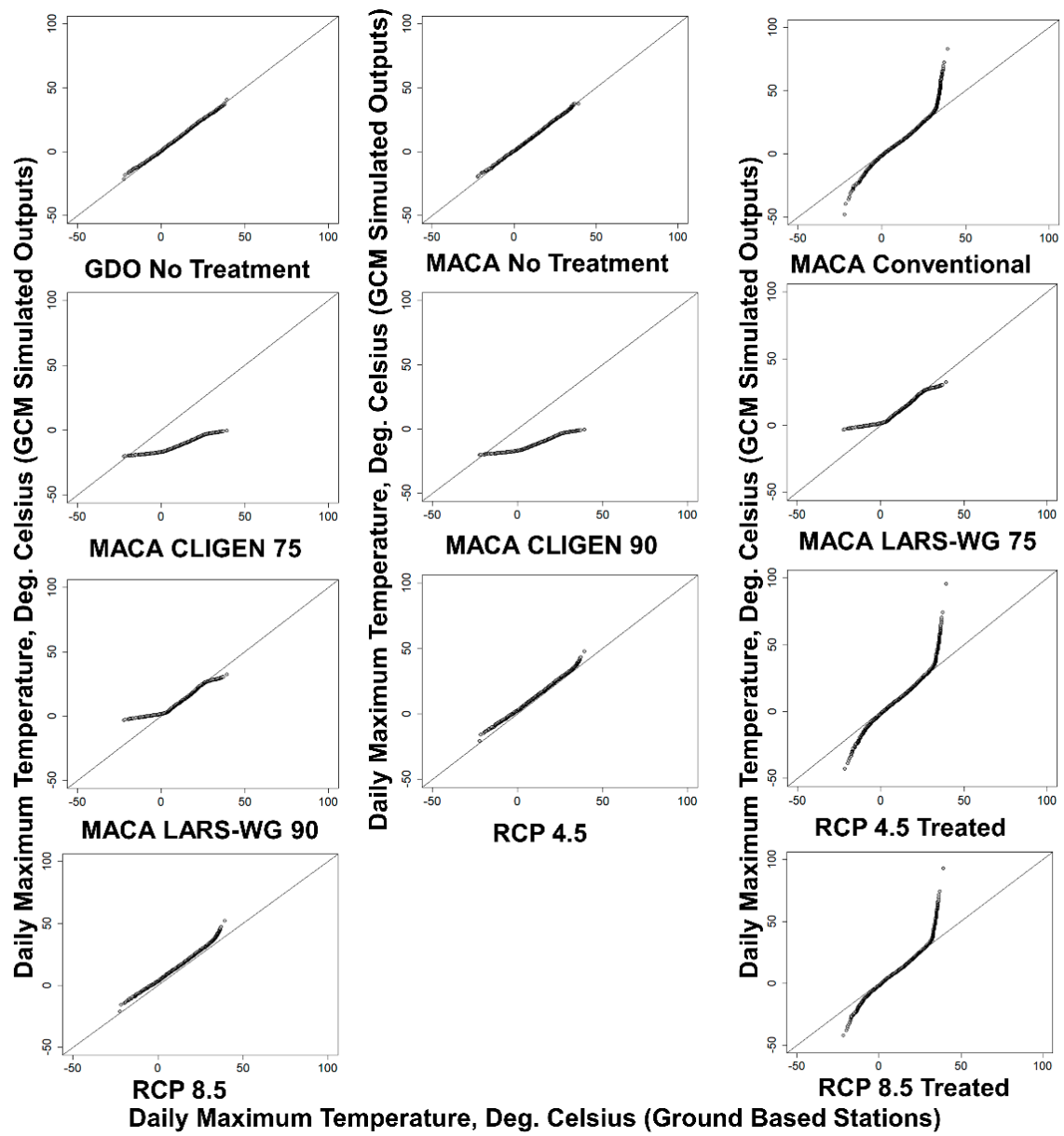


Figure S2. (D) Q-Q Plots to evaluate the performance of different bias correction methods for period between 1966 and 2005 to reduce the bias in simulating values for daily maximum temperature, °C and to present the future climatic scenarios (2006–2099) for Norwalk, OH.

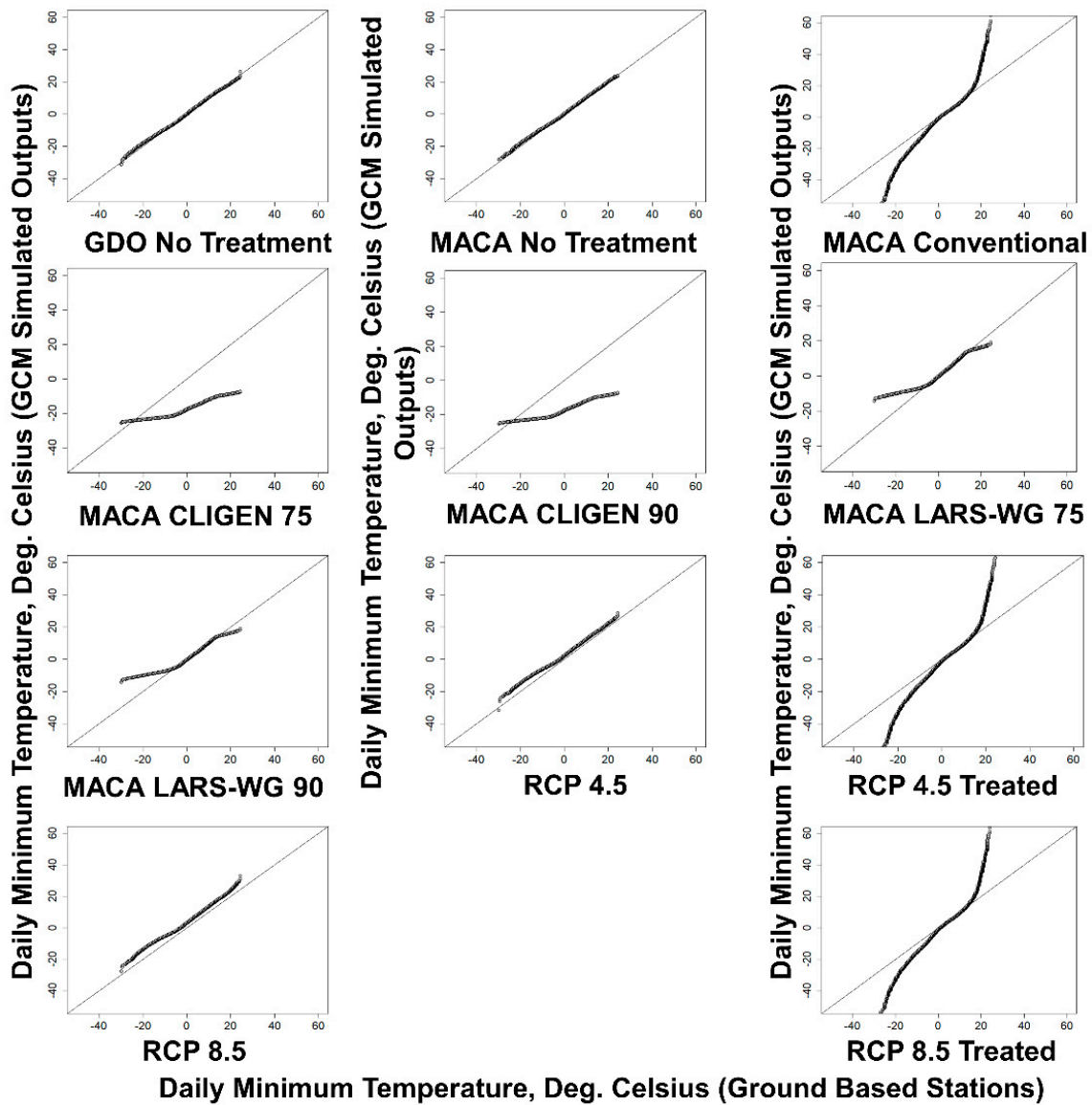


Figure S2. (E) Q–Q Plots to evaluate the performance of different bias correction methods for period between 1966 and 2005 to reduce the bias in simulating values for daily minimum temperature, °C and to present the future climatic scenarios (2006–2099) for Adrian, MI.

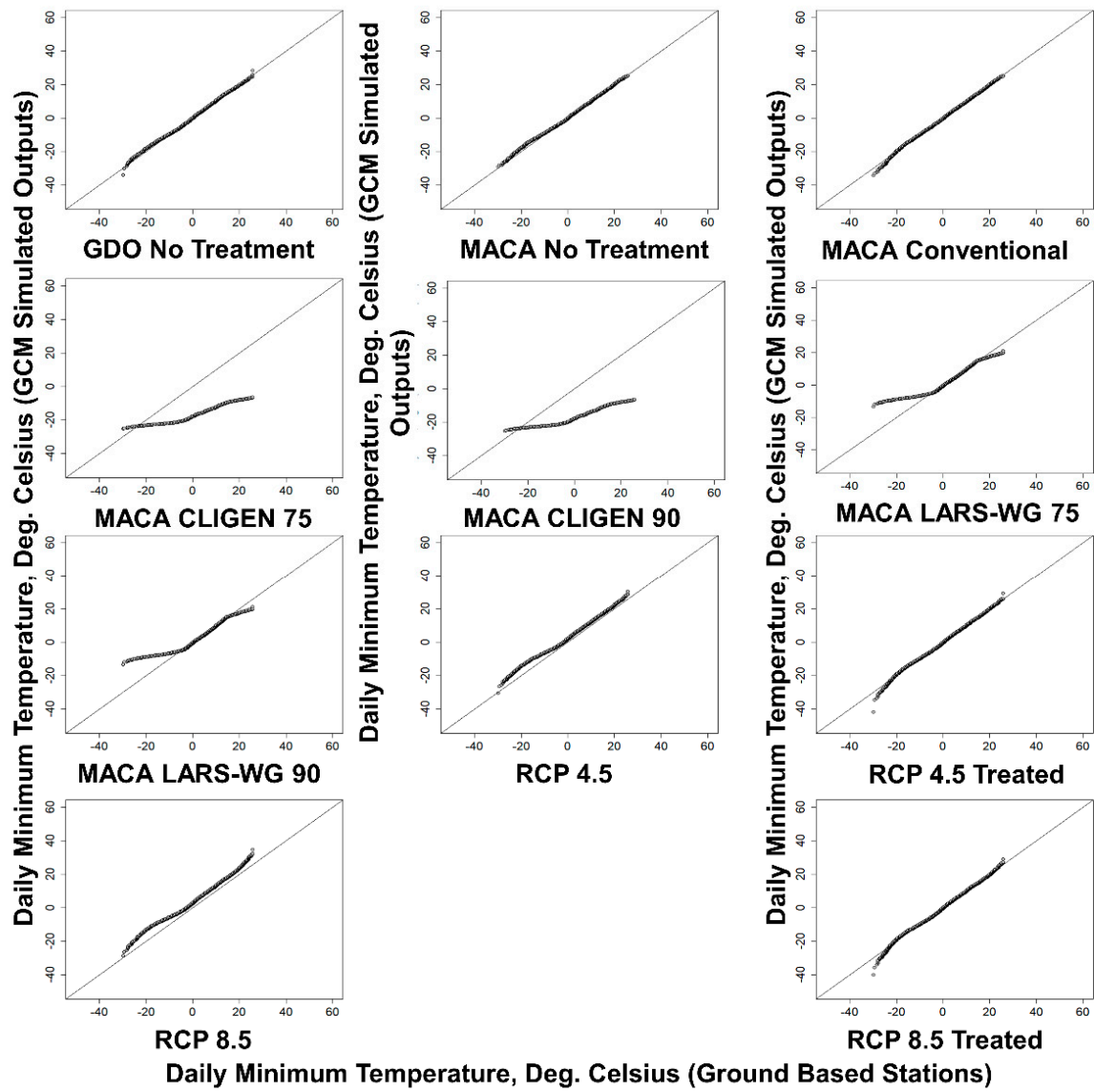


Figure S2. (F) Q–Q Plots to evaluate the performance of different bias correction methods for period between 1966 and 2005 to reduce the bias in simulating values for daily minimum temperature, °C and to present the future climatic scenarios (2006–2099) for Fort Wayne, IN.

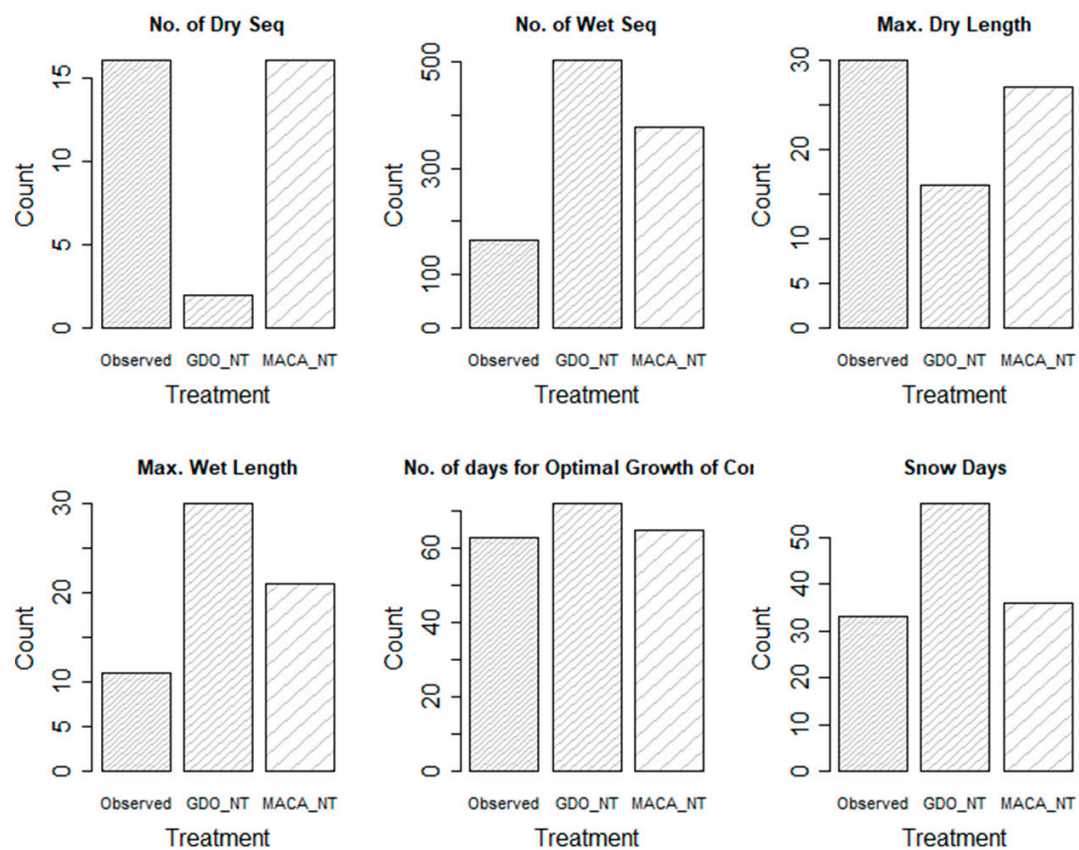


Figure S3. (A) Comparison of GDO and MACA climate projection sources for different climate indices for Fort Wayne IN between 1966 and 2005 (GDO_NT: GDO No Treatment; MACA_NT: MACA No Treatment).

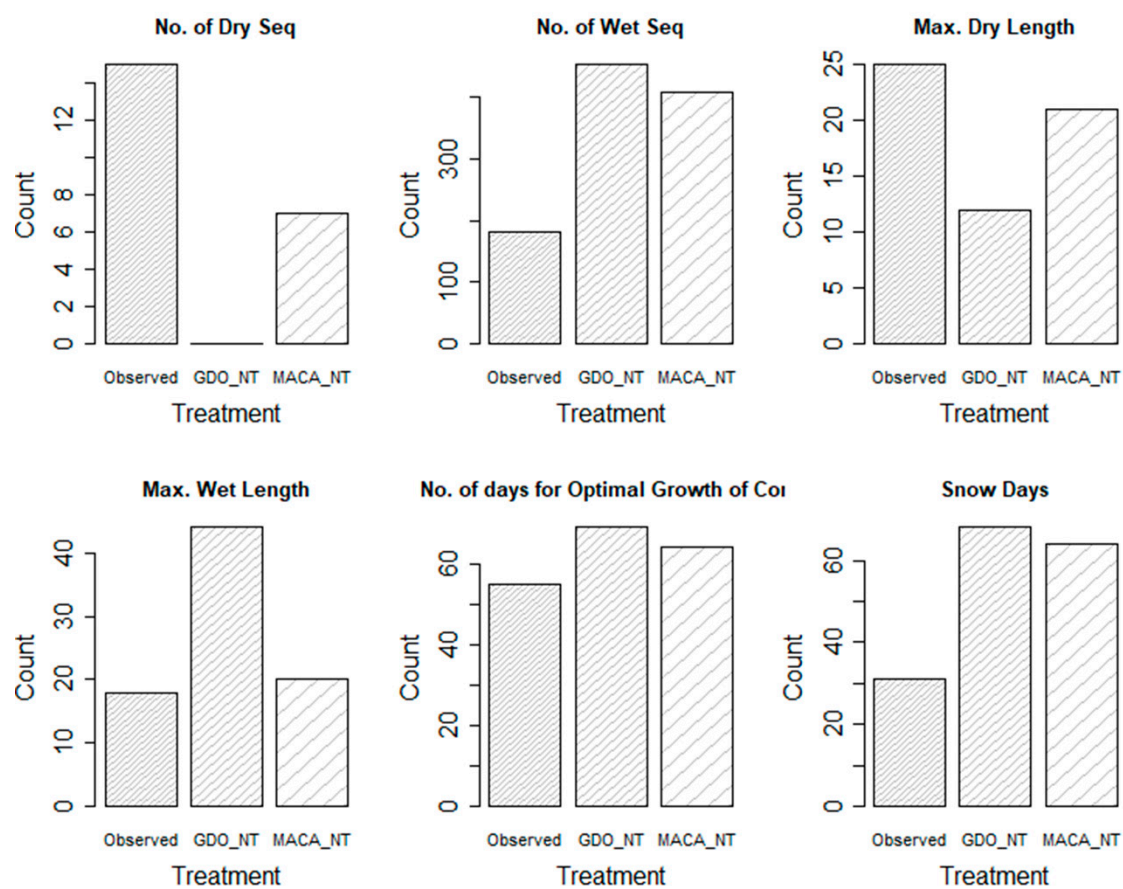


Figure S3. (B) Comparison of GDO and MACA climate projection sources for different climate indices for Norwalk, OH between 1966 and 2005 (GDO_NT: GDO No Treatment; MACA_NT: MACA No Treatment).