

Table 5.18(i) Banded weather data: Newcastle

Hour	Dry-bulb / °C	Incident solar irradiation / W·m ⁻²									
		Horizontal		N		NE		E		SE	
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse
May											
1	10.79	0	0	0	0	0	0	0	0	0	0
2	10.69	0	0	0	0	0	0	0	0	0	0
3	10.79	0	0	0	0	0	0	0	0	0	0
4	11.10	0	5	3	4	5	7	5	6	1	2
5	11.59	8	47	23	39	53	46	52	46	20	39
6	12.22	25	93	18	71	71	84	83	87	46	78
7	12.96	47	141	0	100	71	118	101	125	71	118
8	13.76	69	190	0	93	55	148	101	160	88	156
9	14.55	88	236	0	116	30	174	88	189	94	191
10	15.29	103	276	0	136	0	193	64	211	90	218
11	15.92	112	304	0	150	0	150	34	222	77	234
12	16.41	115	314	0	155	0	155	0	155	56	236
13	16.72	112	304	0	150	0	150	0	150	30	221
14	16.82	103	276	0	136	0	136	0	136	0	136
15	16.72	88	236	0	116	0	116	0	116	0	116
16	16.41	69	190	0	94	0	94	0	94	0	94
17	15.92	47	142	0	100	0	69	0	69	0	69
18	15.29	25	93	18	71	0	45	0	45	0	45
19	14.55	8	47	23	40	0	22	0	22	0	22
20	13.75	0	5	4	5	0	2	0	2	0	2
21	12.96	0	0	0	0	0	0	0	0	0	0
22	12.22	0	0	0	0	0	0	0	0	0	0
23	11.59	0	0	0	0	0	0	0	0	0	0
24	11.10	0	0	0	0	0	0	0	0	0	0

Hour	Dry-bulb / °C	Incident solar irradiation / W·m ⁻²								Altitude	Azimuth
		S		SW		W		NW			
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse		
1	10.79	0	0	0	0	0	0	0	0	0	14.47
2	10.69	0	0	0	0	0	0	0	0	0	28.50
3	10.79	0	0	0	0	0	0	0	0	0	41.80
4	11.10	0	2	0	2	0	2	0	2	0.83	54.34
5	11.59	0	22	0	22	0	22	0	22	8.3	66.31
6	12.22	0	45	0	45	0	45	0	45	16.49	78.03
7	12.96	0	69	0	69	0	69	0	69	25.04	89.99
8	13.76	23	140	0	93	0	93	0	93	33.58	102.83
9	14.55	45	178	0	116	0	116	0	116	41.66	117.42
10	15.29	64	211	0	136	0	136	0	136	48.62	134.82
11	15.92	76	234	30	221	0	150	0	150	53.53	155.90
12	16.41	80	242	56	236	0	219	0	155	55.35	180.00
13	16.72	76	234	77	234	34	222	0	150	53.55	204.11
14	16.82	64	211	90	218	64	211	0	193	48.65	225.20
15	16.72	45	178	94	191	88	189	30	174	41.7	242.62
16	16.41	23	140	88	157	101	160	55	148	33.64	257.22
17	15.92	0	69	71	118	101	126	71	118	25.1	270.06
18	15.29	0	45	46	78	84	87	72	84	16.57	282.03
19	14.55	0	22	21	39	52	47	53	47	8.4	293.76
20	13.75	0	2	1	2	5	6	6	8	0.94	305.72
21	12.96	0	0	0	0	0	0	0	0	0	318.26
22	12.22	0	0	0	0	0	0	0	0	0	331.55
23	11.59	0	0	0	0	0	0	0	0	0	345.55
24	11.10	0	0	0	0	0	0	0	0	0	360.00

Dirfac = 0.16; Diffac = 1.13; Maximum dry-bulb = 21.40 °C; Minimum dry-bulb = 10.69 °C; Adaptive comfort range = 21.4–25.4 °C

Table continues

Table 5.18(i) Banded weather data: Newcastle — *continued*

Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²									
		Horizontal		N		NE		E		SE	
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse
June											
1	13.66	0	0	0	0	0	0	0	0	0	0
2	13.20	0	0	0	0	0	0	0	0	0	0
3	12.90	0	0	0	0	0	0	0	0	0	0
4	12.80	1	21	8	19	13	30	10	24	2	6
5	12.90	7	62	15	49	33	53	32	53	12	48
6	13.20	17	109	12	81	42	89	48	90	25	85
7	13.66	29	157	2	113	41	123	55	127	38	123
8	14.28	40	207	0	98	31	156	54	162	45	160
9	14.99	50	254	0	121	18	186	47	194	48	195
10	15.75	58	296	0	141	2	211	34	220	46	224
11	16.51	63	326	0	155	0	155	18	237	39	243
12	17.23	65	337	0	160	0	160	0	160	28	248
13	17.84	63	326	0	155	0	155	0	155	14	236
14	18.30	58	296	0	141	0	141	0	141	0	141
15	18.60	50	254	0	121	0	121	0	121	0	121
16	18.70	40	207	0	98	0	98	0	98	0	98
17	18.60	29	157	2	113	0	75	0	75	0	75
18	18.30	17	109	12	81	0	51	0	51	0	51
19	17.84	7	62	15	49	0	29	0	29	0	29
20	17.23	1	21	8	19	0	9	0	9	0	9
21	16.51	0	0	0	0	0	0	0	0	0	0
22	15.75	0	0	0	0	0	0	0	0	0	0
23	14.99	0	0	0	0	0	0	0	0	0	0
24	14.28	0	0	0	0	0	0	0	0	0	0

Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²								Altitude	Azimuth
		S		SW		W		NW			
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse		
1	13.66	0	0	0	0	0	0	0	0	0	13.98
2	13.20	0	0	0	0	0	0	0	0	0	27.56
3	12.90	0	0	0	0	0	0	0	0	0	40.50
4	12.80	0	9	0	9	0	9	0	9	3.58	52.76
5	12.90	0	29	0	29	0	29	0	29	10.92	64.50
6	13.20	0	51	0	51	0	51	0	51	19.01	76.03
7	13.66	0	75	0	75	0	75	0	75	27.52	87.82
8	14.28	10	151	0	98	0	98	0	98	36.09	100.51
9	14.99	22	187	0	121	0	121	0	121	44.27	115.04
10	15.75	31	220	0	141	0	141	0	141	51.42	132.64
11	16.51	38	243	14	236	0	155	0	155	56.54	154.49
12	17.23	40	251	28	248	0	240	0	160	58.46	180.00
13	17.84	38	243	39	243	18	237	0	155	56.54	205.51
14	18.30	31	220	46	224	34	220	2	211	51.42	227.36
15	18.60	22	187	48	195	47	194	18	186	44.27	244.96
16	18.70	10	151	45	160	54	162	31	156	36.08	259.49
17	18.60	0	75	38	123	55	127	41	123	27.52	272.18
18	18.30	0	51	25	85	48	90	42	89	19.01	283.97
19	17.84	0	29	12	48	32	53	33	53	10.92	295.50
20	17.23	0	9	2	6	10	24	13	30	3.58	307.24
21	16.51	0	0	0	0	0	0	0	0	0	319.50
22	15.75	0	0	0	0	0	0	0	0	0	332.44
23	14.99	0	0	0	0	0	0	0	0	0	346.02
24	14.28	0	0	0	0	0	0	0	0	0	360.00

Dirfac = 0.09; Diffac = 1.15; Maximum dry-bulb = 18.70 °C; Minimum dry-bulb = 12.80 °C; Adaptive comfort range = 21.9–25.9 °C

Table continues

Table 5.18(i) Banded weather data: Newcastle — *continued*

Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²									
		Horizontal		N		NE		E		SE	
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse
July											
1	14.74	0	0	0	0	0	0	0	0	0	0
2	14.79	0	0	0	0	0	0	0	0	0	0
3	15.09	0	0	0	0	0	0	0	0	0	0
4	15.63	0	3	6	3	11	5	9	4	2	1
5	16.35	21	45	59	46	138	65	136	65	54	45
6	17.23	65	90	46	74	188	108	219	116	123	92
7	18.18	123	138	0	75	188	140	267	160	190	141
8	19.16	181	186	0	103	145	162	268	193	233	184
9	20.09	231	231	0	129	78	174	233	215	251	219
10	20.91	271	270	0	150	0	150	170	224	241	243
11	21.57	296	298	0	165	0	165	90	220	207	252
12	22.01	304	308	0	171	0	171	0	171	151	243
13	22.22	296	298	0	165	0	165	0	165	80	217
14	22.17	270	270	0	150	0	150	0	150	0	177
15	21.86	231	231	0	128	0	128	0	128	0	128
16	21.33	180	186	0	103	0	103	0	103	0	103
17	20.60	123	138	0	75	0	75	0	75	0	75
18	19.73	65	90	45	73	0	48	0	48	0	48
19	18.77	21	44	59	46	0	22	0	22	0	22
20	17.79	0	3	5	2	0	1	0	1	0	1
21	16.86	0	0	0	0	0	0	0	0	0	0
22	16.04	0	0	0	0	0	0	0	0	0	0
23	15.39	0	0	0	0	0	0	0	0	0	0
24	14.94	0	0	0	0	0	0	0	0	0	0

Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²								Altitude	Azimuth
		S		SW		W		NW			
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse		
1	14.74	0	0	0	0	0	0	0	0	0	14.51
2	14.79	0	0	0	0	0	0	0	0	0	28.57
3	15.09	0	0	0	0	0	0	0	0	0	41.90
4	15.63	0	2	0	2	0	2	0	2	0.6	54.47
5	16.35	0	23	0	23	0	23	0	23	8.07	66.46
6	17.23	0	48	0	48	0	48	0	48	16.25	78.21
7	18.18	1	94	0	75	0	75	0	75	24.79	90.20
8	19.16	62	140	0	103	0	103	0	103	33.32	103.07
9	20.09	122	185	0	129	0	129	0	129	41.37	117.67
10	20.91	171	224	0	177	0	150	0	150	48.29	135.06
11	21.57	202	251	80	217	0	165	0	165	53.16	156.06
12	22.01	214	261	151	243	0	200	0	171	54.95	180.00
13	22.22	203	251	207	252	90	219	0	165	53.15	203.94
14	22.17	171	224	241	243	170	224	0	150	48.26	224.92
15	21.86	122	185	251	219	233	214	78	174	41.33	242.30
16	21.33	62	140	233	184	268	193	145	161	33.26	256.88
17	20.60	1	94	190	141	267	160	188	140	24.72	269.74
18	19.73	0	48	123	92	219	115	187	108	16.17	281.72
19	18.77	0	22	54	44	135	64	137	65	7.97	293.47
20	17.79	0	1	1	1	7	3	8	4	0.48	305.46
21	16.86	0	0	0	0	0	0	0	0	0	318.03
22	16.04	0	0	0	0	0	0	0	0	0	331.38
23	15.39	0	0	0	0	0	0	0	0	0	345.46
24	14.94	0	0	0	0	0	0	0	0	0	360.00

Dirfac = 0.43; Diffac = 1.12; Maximum dry-bulb = 22.23 °C; Minimum dry-bulb = 14.73 °C; Adaptive comfort range = 22.9–26.9 °C

Table continues

Table 5.18(i) Banded weather data: Newcastle — *continued*

Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²									
		Horizontal		N		NE		E		SE	
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse
August											
1	16.15	0	0	0	0	0	0	0	0	0	0
2	15.96	0	0	0	0	0	0	0	0	0	0
3	15.94	0	0	0	0	0	0	0	0	0	0
4	16.08	0	0	0	0	0	0	0	0	0	0
5	16.37	0	3	1	2	3	4	3	4	2	2
6	16.80	8	44	6	33	41	40	52	43	33	39
7	17.34	25	86	0	42	50	72	79	78	62	75
8	17.94	45	127	0	62	40	99	87	110	82	109
9	18.58	62	165	0	81	19	122	78	135	91	138
10	19.19	76	196	0	97	0	97	58	153	90	160
11	19.75	84	218	0	108	0	108	31	162	79	173
12	20.22	87	226	0	112	0	112	0	112	60	174
13	20.56	84	218	0	108	0	108	0	108	35	163
14	20.74	76	196	0	97	0	97	0	97	8	141
15	20.77	62	164	0	81	0	81	0	81	0	81
16	20.63	44	126	0	62	0	62	0	62	0	62
17	20.34	25	85	0	41	0	41	0	41	0	41
18	19.91	8	43	6	32	0	20	0	20	0	20
19	19.37	0	2	1	1	0	1	0	1	0	1
20	18.76	0	0	0	0	0	0	0	0	0	0
21	18.13	0	0	0	0	0	0	0	0	0	0
22	17.51	0	0	0	0	0	0	0	0	0	0
23	16.95	0	0	0	0	0	0	0	0	0	0
24	16.49	0	0	0	0	0	0	0	0	0	0

Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²								Altitude	Azimuth
		S		SW		W		NW			
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse		
1	16.15	0	0	0	0	0	0	0	0	0	16.00
2	15.96	0	0	0	0	0	0	0	0	0	31.34
3	15.94	0	0	0	0	0	0	0	0	0	45.68
4	16.08	0	0	0	0	0	0	0	0	0	58.98
5	16.37	0	1	0	1	0	1	0	1	0.57	71.50
6	16.80	0	21	0	21	0	21	0	21	8.95	83.66
7	17.34	8	63	0	42	0	42	0	42	17.53	95.97
8	17.94	30	97	0	62	0	62	0	62	25.91	109.03
9	18.58	52	129	0	81	0	81	0	81	33.61	123.52
10	19.19	69	156	8	142	0	97	0	97	40	140.14
11	19.75	81	174	35	163	0	108	0	108	44.35	159.18
12	20.22	85	180	60	174	0	160	0	112	45.89	180.00
13	20.56	81	173	79	173	31	162	0	108	44.32	200.81
14	20.74	69	155	90	160	58	153	0	97	39.95	219.84
15	20.77	52	129	92	138	78	135	18	121	33.53	236.43
16	20.63	30	97	82	108	87	109	40	99	25.82	250.90
17	20.34	8	63	62	74	79	78	50	72	17.42	263.94
18	19.91	0	20	33	38	52	42	41	40	8.81	276.24
19	19.37	0	1	1	1	2	3	2	3	0.41	288.39
20	18.76	0	0	0	0	0	0	0	0	0	300.91
21	18.13	0	0	0	0	0	0	0	0	0	314.21
22	17.51	0	0	0	0	0	0	0	0	0	328.56
23	16.95	0	0	0	0	0	0	0	0	0	343.95
24	16.49	0	0	0	0	0	0	0	0	0	360.00

Dirfac = 0.14; Diffac = 0.98; Maximum dry-bulb = 20.76 °C; Minimum dry-bulb = 15.93 °C; Adaptive comfort range = 22.6–26.6 °C

Table continues

Table 5.18(i) Banded weather data: Newcastle — *continued*

Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²									
		Horizontal		N		NE		E		SE	
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse
September											
1	14.51	0	0	0	0	0	0	0	0	0	0
2	14.18	0	0	0	0	0	0	0	0	0	0
3	14.18	0	0	0	0	0	0	0	0	0	0
4	14.51	0	0	0	0	0	0	0	0	0	0
5	15.15	0	0	0	0	0	0	0	0	0	0
6	16.06	0	1	0	0	2	1	2	1	2	1
7	17.17	24	47	0	24	84	52	151	67	130	63
8	18.41	70	90	0	48	78	81	210	111	219	113
9	19.70	120	129	0	71	27	95	209	137	268	151
10	20.94	161	161	0	90	0	90	161	148	276	175
11	22.05	187	182	0	102	0	102	87	144	249	183
12	22.96	195	189	0	106	0	106	0	106	197	175
13	23.60	186	182	0	102	0	102	0	102	126	153
14	23.93	160	161	0	89	0	89	0	89	48	120
15	23.93	120	129	0	71	0	71	0	71	0	71
16	23.60	69	90	0	48	0	48	0	48	0	48
17	22.96	23	46	0	23	0	23	0	23	0	23
18	22.05	0	0	0	0	0	0	0	0	0	0
19	20.94	0	0	0	0	0	0	0	0	0	0
20	19.70	0	0	0	0	0	0	0	0	0	0
21	18.41	0	0	0	0	0	0	0	0	0	0
22	17.17	0	0	0	0	0	0	0	0	0	0
23	16.06	0	0	0	0	0	0	0	0	0	0
24	15.15	0	0	0	0	0	0	0	0	0	0
Hour	Dry-bulb /°C	Incident solar irradiation / W·m ⁻²								Altitude	Azimuth
		S		SW		W		NW			
		Direct	Diffuse	Direct	Diffuse	Direct	Diffuse	Direct	Diffuse		
1	14.51	0	0	0	0	0	0	0	0	0	18.07
2	14.18	0	0	0	0	0	0	0	0	0	35.10
3	14.18	0	0	0	0	0	0	0	0	0	50.59
4	14.51	0	0	0	0	0	0	0	0	0	64.60
5	15.15	0	0	0	0	0	0	0	0	0	77.53
6	16.06	0	0	0	0	0	0	0	0	0.12	89.91
7	17.17	33	40	0	24	0	24	0	24	8.65	102.30
8	18.41	99	85	0	48	0	48	0	48	16.77	115.24
9	19.70	171	128	0	71	0	71	0	71	24.03	129.27
10	20.94	229	164	48	121	0	90	0	90	29.88	144.78
11	22.05	266	187	126	153	0	102	0	102	33.73	161.87
12	22.96	278	195	197	175	0	128	0	106	35.07	180.00
13	23.60	266	187	249	183	87	144	0	102	33.7	198.12
14	23.93	229	163	276	175	161	147	0	89	29.82	215.19
15	23.93	171	128	268	151	208	137	27	94	23.94	230.69
16	23.60	99	85	218	112	209	110	78	80	16.66	244.69
17	22.96	33	40	129	62	150	67	83	51	8.52	257.61
18	22.05	0	0	0	0	0	0	0	0	0	269.97
19	20.94	0	0	0	0	0	0	0	0	0	282.34
20	19.70	0	0	0	0	0	0	0	0	0	295.26
21	18.41	0	0	0	0	0	0	0	0	0	309.27
22	17.17	0	0	0	0	0	0	0	0	0	324.77
23	16.06	0	0	0	0	0	0	0	0	0	341.86
24	15.15	0	0	0	0	0	0	0	0	0	360.00

Dirfac = 0.43; Diffac = 1.08; Maximum dry-bulb = 23.98 °C; Minimum dry-bulb = 14.14 °C; Adaptive comfort range = 23.00–27.00 °C