



Allunga Exposure Laboratory

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 Tel: 61-7-4778-1697 Fax: 61-7-4422-0009 1209-1231 Flinders Hwy Brookhill Qld 4811

January 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Dew Point		Relative Humidity %		Rain	Evap.	Wet Time	Sun Shine	Global Radiation (MJ/m ²)			Remarks
	Max	Min	9am	9pm	9am	9pm	mm	mm	Hours	Hours	Horiz	19°N	Horiz	
1	31	23	21	23	68	85	0.0	9.2	9.7	9.2	21.1	20.3	1.03	Fine
2	30	22	19	20	62	68	0.5	5.8	7.5	11.9	27.0	24.9	1.41	Fine
3	30	23	19	20	60	70	0.0	8.0	3.7	10.1	25.0	23.3	1.30	Fine
4	31	23	18	21	55	76	0.0	8.0	0.0	12.0	24.5	22.6	1.23	Fine
5	30	24	22	20	69	66	0.0	7.6	9.4	8.4	23.5	22.1	1.18	Fine
6	31	26	20	21	63	71	0.0	9.8	3.4	10.3	25.7	25.2	1.41	Fine
7	31	26	22	22	72	79	0.5	7.4	6.7	8.8	22.1	21.6	1.18	Fine, Cld
8	30	24	23	22	79	90	1.5	6.6	9.0	5.3	13.0	12.8	0.67	Shwr, Cloud
9	28	23	22	20	83	79	15.5	3.4	19.3	2.2	12.4	12.1	0.64	Cloud, Shwr
10	31	23	22	22	81	79	12.5	5.8	17.2	4.7	15.8	15.2	0.83	Cloud, Shwr
11	30	24	22	24	72	84	0.5	4.2	3.0	8.7	23.9	22.5	1.22	Fine
12	31	26	25	22	77	96	18.0	6.4	12.3	6.6	20.0	19.3	1.01	o/n rain cld
13	30	23	24	23	84	81	26.0	5.6	18.5	6.9	20.4	19.5	1.04	o/n rain cld
14	31	24	23	23	74	78	2.0	6.4	10.3	10.9	23.6	22.1	1.18	Fine
15	31	25	23	24	68	86	1.5	6.0	11.4	11.1	20.2	18.8	0.99	Fine
16	30	24	24	23	82	80	2.0	7.6	13.1	6.2	17.6	16.9	0.89	Fine & shwr
17	30	24	24	22	78	74	0.5	5.0	9.5	5.7	17.1	16.4	0.85	Fine,
18	31	25	21	21	62	71	12.5	8.8	10.3	11.7	27.9	26.0	1.44	Fine
19	31	24	20	21	60	68	0.0	9.8	8.4	12.0	25.9	24.2	1.31	Fine
20	31	23	19	22	56	73	0.0	8.4	7.0	11.7	27.3	25.5	1.37	Fine
21	31	25	21	20	64	68	0.0	12.0	3.8	11.5	25.0	23.4	1.26	Fine
22	31	23	23	23	69	77	0.0	10.0	6.0	12.1	25.6	23.9	1.33	Fine
23	31	25	21	23	62	78	0.0	7.4	8.9	12.3	25.6	23.9	1.30	Fine
24	32	26	23	23	70	76	0.0	11.2	12.5	9.8	19.5	18.4	0.94	Fine
25	32	24	21	23	61	74	0.0	8.0	12.9	11.4	20.7	19.4	1.05	Fine
26	30	25	23	21	77	75	4.0	8.2	10.6	4.8	16.9	16.3	0.87	Shwrs
27	31	23	22	22	72	69	7.5	7.8	11.9	8.6	19.4	18.5	0.99	Shwrs
28	32	24	21	23	62	76	11.5	8.4	11.9	9.1	20.2	19.2	1.03	Shwrs
29	30	24	24	23	90	87	9.5	7.6	12.8	4.3	14.6	14.0	0.75	Shwrs
30	29	23	23	20	76	70	34.0	6.0	17.6	0.2	10.7	10.5	0.57	Rain, Cld
31	29	25	20	23	66	95	47.0	5.8	10.4	0.0	7.2	7.0	0.40	Rain, Cld

Avge.	Temperature C°		Dew Point		Humidity		Rain	Evap.	Wet Hrs	Sun Hrs	Radiation		
	Max	Min	9am	9pm	am	pm	mm	mm	mm	mm	Horiz	19° N	UV-R
	30.5	24.1	21.8	21.9	70.1	77.4		7.5	10.0	8.3	20.6	19.5	1.05
Total							207.0	232.2	309.0	258.5	639.4	605.8	32.67

Per Month
15,294 14,491 Total Langleys
493 467 Average Langleys

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.



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February 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain	Evap.	Wet	Sun	Global Radiation (MJ/m ²)			Remarks		
	Ambient Max	Ambient Min	Dew Point 9am	Dew Point 9pm	mm	mm	Time Hours	Shine Hours	Horiz	19°N	UV-R			
1	34	27	26	25	72	78	0.0	8.8	3.6	11.3	25.5	22.7	1.26	o/n storm
2	33	27	25	22	71	89	48.0	11.6	7.1	9.4	23.3	21.7	1.04	Rain, Fine
3	32	23	24	24	73	78	16.0	9.4	7.5	11.4	24.6	23.8	1.33	Fine
4	33	27	24	24	68	74	2.5	7.8	8.9	8.8	23.7	23.1	1.30	Fine
5	33	27	24	23	67	73	0.0	9.2	8.2	10.7	24.7	24.0	1.35	Fine
6	33	26	24	24	66	76	0.0	9.4	8.4	10.6	24.9	24.2	1.24	Fine
7	33	27	24	24	65	75	0.0	7.4	6.1	7.8	17.8	17.5	1.04	o/n shwr
8	33	26	23	24	66	81	21.0	12.2	20.3	8.5	19.7	19.4	1.08	Rain, Fine
9	30	24	23	23	85	77	27.5	8.0	19.7	2.8	14.7	14.6	0.83	Shwr
10	30	23	23	22	98	88	38.5	1.0	24.0	2.8	10.0	9.9	0.77	Shwr
11	28	22	22	23	99	92	61.5	1.0	24.0	0.0	6.5	6.5	0.41	Rain
12	30	22	22	24	76	84	32.5	0.0	18.9	3.8	18.3	18.1	1.07	Rain, Cloud, Fine
13	28	24	23	23	94	92	15.5	5.8	13.7	1.0	8.7	8.6	0.42	Rain, Cloud
14	32	23	23	24	74	81	27.0	0.8	16.5	10.8	25.5	25.0	1.35	Fine
15	32	25	25	24	79	81	0.0	6.2	11.9	11.6	24.8	24.3	1.28	Fine
16	34	26	24	25	73	83	0.0	6.6	8.2	11.9	25.8	25.4	1.35	Fine
17	33	27	25	24	73	79	0.0	7.0	7.7	12.2	26.6	26.2	1.49	Fine
18	33	27	25	25	73	80	0.0	8.0	10.3	12.3	26.1	25.7	1.46	Fine
19	34	27	25	26	73	88	0.0	7.4	8.4	12.0	25.6	25.3	1.30	Fine
20	33	27	25	24	71	76	0.0	9.0	9.2	11.4	24.5	24.2	1.27	Fine
21	33	27	26	24	77	71	0.0	6.6	5.3	10.3	23.6	23.2	1.28	Fine, O/N Storm
22	32	24	24	23	76	73	32.5	9.6	17.1	7.6	13.1	13.1	0.70	Rain, Lt Cloud
23	31	23	22	20	74	71	28.5	7.0	21.0	5.6	14.9	14.9	0.81	Rain, Lt Cloud
24	30	25	20	19	64	67	2.0	7.4	12.1	0.6	14.7	14.7	0.79	Overcast
25	28	25	21	16	63	77	0.5	8.0	8.8	0.8	12.2	12.1	0.73	Overcast
26	29	24	20	21	69	79	4.5	7.2	8.1	3.4	14.7	14.5	0.75	Rain, Cloud, Fine
27	30	23	23	23	95	91	0.5	6.6	6.5	4.3	12.4	12.3	0.61	Fine, Lt Cloud, Rain
28	32	25	24	24	75	87	15.5	3.0	22.5	6.5	20.4	20.0	1.05	Shower, Fine

Avg.	Temperature C°		Humidity		Rain	Evap.	Wet	Sun	Radiation				
	Max	Min	Dew Point	am	pm	mm	mm	Hrs	Sun Hrs	Horiz	19° N	UV-R	
	31.6	25.1	23.5	23.1	75.3	80.0		6.9	12.3	7.5	19.5	19.1	1.0
Total							374.0	192.0	344.0	210.2	547.3	535.0	29.36

Per Month

13,091 **12,797** **Total Langleys**
451 **441** **Average Langleys**

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.



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March 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain	Evap.	Wet	Sun	Global Radiation (MJ/m ²)			Remarks		
	Ambient Max	Ambient Min	Dew Point 9am	Dew Point 9pm	mm	mm	Time Hours	Shine Hours	Horiz	19°N	Horiz			
1	33	26	26	24	84	94	7.5	5.4	11.9	5.8	18.0	18.1	0.86	Shws, Fine, Lt Cloud
2	33	25	26	26	82	86	33.5	7.2	12.6	8.2	20.0	20.1	1.14	Shws, Fine, Lt Cloud
3	33	27	26	27	92	87	66.0	7.4	13.0	4.4	16.4	16.5	1.11	Fine, Storm & Rain
4	33	26	25	26	80	84	9.5	4.6	11.4	1.4	13.5	13.5	0.45	Cloud, Rain
5	33	26	24	26	75	82	0.0	6.2	5.4	7.1	18.5	18.6	1.02	Fine, O/N Storm
6	29	24	24	25	95	91	109.5	8.8	12.7	0.1	6.5	6.5	0.42	Overcast, Shower
7	32	24	25	26	79	89	8.0	0.6	1.6	10.8	20.8	21.1	1.35	Fine
8	33	23	23	25	78	83	14.5	6.8	11.5	7.6	22.7	23.0	1.09	Fine, O/N Shower
9	32	26	24	25	74	86	3.5	5.2	11.5	7.6	20.5	20.7	1.09	Fine
10	32	25	24	25	74	85	4.0	7.2	12.5	7.6	22.9	23.2	0.94	Fine
11	32	25	23	25	67	89	0.0	3.8	13.1	8.3	18.9	19.2	0.78	Fine
12	34	25	22	14	65	46	37.5	7.0	11.1	10.2	23.8	24.3	1.28	O/N Rain, Fine
13	31	23	12	14	42	53	0.0	10.0	14.1	9.0	23.4	23.7	1.15	Fine
14	32	18	12	18	44	62	0.0	7.0	0.0	11.5	27.7	28.5	1.53	Fine
15	32	21	15	17	47	58	0.0	9.4	5.3	11.5	27.1	27.9	1.45	Fine
16	31	22	16	18	49	62	0.0	10.2	8.4	11.1	26.4	27.3	1.48	Fine
17	32	21	15	19	47	62	0.0	8.4	0.0	11.5	26.0	26.9	1.39	Fine
18	32	22	21	19	64	62	0.0	10.6	8.3	10.4	26.0	26.8	1.41	Fine
19	31	23	18	20	57	90	0.0	9.2	0.0	8.0	23.2	23.8	1.23	Fine
20	31	22	18	18	61	61	0.0	7.2	0.0	4.5	16.0	16.2	0.84	Cloud, Fine
21	31	23	17	19	56	77	0.0	8.0	2.1	7.2	19.9	20.4	1.05	Fine
22	30	23	16	18	53	61	0.0	7.4	4.7	7.3	21.6	22.2	0.96	Fine
23	31	23	15	21	49	85	8.0	7.2	4.5	7.9	20.3	21.0	0.93	Fine, O/N Shower
24	31	22	15	18	51	60	0.5	7.8	4.3	7.4	18.5	19.1	1.03	Fine
25	30	21	16	17	55	60	0.0	8.0	4.0	8.2	18.7	19.3	0.92	Fine
26	31	20	17	18	60	75	0.5	7.0	2.2	9.1	20.5	21.4	0.98	Fine
27	27	22	17	20	64	83	0.0	8.6	5.6	1.5	12.0	12.0	0.66	Cloud, Shower
28	30	23	18	19	65	67	14.0	4.0	4.6	7.5	15.7	16.3	0.94	Rain, Fine
29	31	21	19	20	65	78	0.0	8.0	4.6	10.2	20.4	21.5	1.08	Fine, O/N Rain
30	30	20	18	21	67	85	41.5	9.4	13.0	10.6	22.6	23.8	1.17	Rain, Fine
31	32	19	17	20	63	77	0.0	6.8	3.8	10.6	20.4	21.5	1.03	Fine

Avge.	Temperature C°		Humidity		Rain	Evap.	Wet Hrs	Sun Hrs	Radiation				
	Max	Min	Dew	Point	am	pm	mm	mm	mm	19° N	UV-R		
	31.5	22.9	19.5	20.9	65	75		7.2	7.0	7.9	20.3	20.8	1.06
Total							358.0	224.4	217.8	244.1	628.9	644.4	32.76

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.

15,043 15,414 Total Langleys
485 497 Average Langleys



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April 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain mm	Evap. mm	Wet Time Hours	Sun Shine Hours	Global Radiation (MJ/m ²)			Remarks
	Max	Min	9am	9pm					Horiz	19°N	Horiz	
1	31	20	19	20	0.0	7.8	7.1	11.0	22.9	24.9	1.19	Fine
2	31	22	18	18	0.0	7.6	3.5	11.0	23.5	26.5	1.38	Fine
3	30	21	17	18	0.0	7.6	8.0	10.3	23.2	25.3	1.35	Fine
4	31	22	18	19	0.0	9.8	4.2	10.9	19.6	21.5	1.03	Fine
5	31	21	18	21	4.5	11.0	8.7	6.4	15.6	16.2	0.81	Fine, Shower
6	31	22	19	20	14.0	7.0	10.5	10.5	22.6	24.1	1.23	Fine
7	31	19	19	19	0.0	7.8	8.7	10.8	24.1	26.3	1.39	Fine
8	30	18	19	21	0.0	8.6	10.8	10.6	23.5	25.9	1.35	Fine
9	31	22	19	19	0.0	6.2	8.1	10.3	22.2	23.8	1.10	Fine
10	30	23	18	19	0.0	10.0	9.9	3.3	9.8	10.1	0.60	Cloud, O/N Shower
11	31	20	17	20	11.5	6.6	10.7	7.9	18.6	19.7	0.87	Shower, Fine
12	31	22	18	18	0.0	7.8	0.0	7.6	20.5	21.7	1.09	Fine
13	29	19	18	18	0.0	8.2	5.9	7.4	16.4	17.3	0.75	Fine
14	31	21	17	18	0.0	6.6	9.5	11.0	22.2	24.1	1.26	Fine
15	30	18	19	19	0.0	9.0	11.5	11.0	21.2	22.9	1.16	Fine
16	31	21	17	18	0.0	9.6	7.5	10.7	20.7	22.5	1.11	Fine
17	31	20	16	19	0.0	10.6	3.9	10.0	20.0	21.6	1.08	Fine
18	30	22	17	18	2.5	8.4	4.3	7.3	17.9	19.0	0.92	Fine, Shower
19	30	20	18	18	0.0	6.0	3.0	8.5	18.2	19.6	0.95	Fine
20	30	20	17	16	0.0	8.2	3.4	10.6	22.2	23.7	1.15	Fine
21	31	21	16	16	0.0	8.0	0.0	10.2	21.2	23.2	1.13	Fine
22	30	21	14	19	0.0	11.2	2.6	8.1	19.0	20.3	0.94	Fine
23	30	20	15	17	1.0	8.0	3.8	9.3	21.9	24.5	1.31	Fine
24	26	20	17	19	7.0	9.0	8.8	0.3	8.3	8.3	0.50	Cloud, Shower
25	29	18	18	18	5.5	1.2	12.3	6.4	15.7	16.7	0.80	Fine
26	28	20	16	16	1.5	8.8	5.2	10.4	19.4	21.0	1.07	Fine
27	30	19	17	16	0.0	8.4	0.7	6.8	17.0	18.7	0.82	Fine
28	29	17	17	15	0.0	7.6	8.4	10.2	21.4	23.7	1.18	Fine
29	29	17	15	17	0.0	8.6	3.6	10.7	20.8	23.2	1.24	Fine
30	29	19	17	17	0.0	9.4	3.2	6.8	16.0	17.2	0.84	Fine

Avg.	Temperature C°		Humidity		Rain mm	Evap. mm	Wet Hrs	Sun Hrs	Radiation		
	Max	Min	Dew	Point					am	pm	Horiz
	30.1	20.2	17.3	18.2	1.6	8.2	6.3	8.9	19.5	21.1	1.05
Total					47.5	244.6	187.8	266.3	585.6	633.5	31.60

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

14,008 15,153 Total Langleys
467 505 Average Langleys

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.



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May 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain	Evap.	Wet	Sun	Global Radiation (MJ/m ²)			Remarks		
	Ambient Max	Ambient Min	Dew Point 9am	Dew Point 9pm	mm	mm	Time Hours	Shine Hours	Horiz	19°N	Horiz			
1	29	22	22	19	95	77	20.5	3.8	11.7	5.5	11.5	12.2	0.70	O/N Rain, Fine
2	30	18	18	20	66	76	2.5	5.0	14.2	8.7	20.1	22.5	1.04	Fine
3	30	20	20	21	69	79	0.0	7.8	8.2	9.8	19.0	21.4	0.90	Fine
4	30	20	19	15	69	53	0.0	4.0	8.8	6.6	16.2	17.9	0.93	Fine
5	30	23	14	19	50	71	0.0	7.8	0.0	8.2	16.7	17.8	0.84	Fine
6	28	22	9	17	36	69	16.0	6.6	8.1	3.2	10.0	10.2	0.61	Fine, Cloud. Rain
7	25	18	13	17	72	91	6.5	6.4	7.3	2.4	9.3	9.5	0.51	Cloud, Shower
8	28	17	18	18	75	70	22.5	1.8	16.3	1.8	9.6	9.9	0.69	o/n rain cloud
9	29	22	17	18	65	73	0.0	6.0	3.5	3.5	12.9	13.5	0.71	Cloud
10	26	22	18	19	67	75	0.0	5.4	7.8	8.5	15.5	16.6	0.32	Cloud, Fine
11	28	21	19	18	71	73	0.5	6.0	5.6	7.9	18.3	20.8	1.03	Lt Cloud, Fine
12	29	19	20	20	74	93	0.0	6.4	8.5	9.6	17.5	19.4	0.91	Lt Cloud, Fine
13	29	21	21	22	73	89	0.0	5.8	11.1	10.4	20.1	23.3	1.12	Fine
14	29	20	22	21	78	87	0.0	6.2	12.5	10.4	20.9	24.1	1.15	Fine
15	29	21	22	20	77	83	0.0	5.4	12.2	8.5	15.7	17.7	0.69	Fine
16	29	19	20	20	70	86	1.5	5.0	12.8	10.4	20.2	22.2	1.08	Fine, o/n shwr
17	28	18	19	21	71	90	0.0	5.8	12.6	10.8	19.3	22.0	1.08	Fine
18	29	19	21	21	78	90	0.0	4.8	14.4	4.6	13.5	14.0	0.72	Fine, Cloud
19	30	20	21	22	76	83	0.0	3.2	12.6	9.4	18.4	21.1	1.04	Fine, Lt Cloud
20	29	23	23	22	88	85	1.0	5.6	17.1	8.5	16.0	17.5	0.81	Fine, Shower
21	30	22	18	20	67	80	4.5	5.4	11.8	7.5	16.3	17.8	0.56	Fine, Shower
22	29	21	19	21	68	79	0.0	4.4	10.2	8.0	15.3	17.2	0.69	Fine
23	30	22	18	20	64	80	0.0	6.0	7.0	7.1	13.6	15.1	0.64	fine
24	28	20	17	18	65	73	0.0	5.6	7.3	9.9	18.4	21.2	1.05	Fine
25	28	17	18	19	66	85	0.0	6.6	8.1	9.1	16.1	18.5	0.90	Fine
26	30	16	20	16	78	72	0.0	4.6	13.8	10.2	19.9	22.9	1.02	Fine
27	28	15	8	17	36	74	0.0	5.8	7.9	10.8	18.9	22.4	1.07	Fine
28	26	14	9	12	43	69	0.0	6.0	8.2	10.9	19.8	23.3	1.18	Fine
29	27	14	11	15	55	73	0.0	8.0	6.8	10.0	18.6	21.7	1.07	Fine
30	28	16	18	18	79	75	0.0	4.4	5.2	4.8	12.6	13.6	0.63	Fine
31	27	18	18	19	73	81	0.0	4.4	7.6	2.0	9.7	9.9	0.51	Cloud
Avg.	28.5	19.4	17.7	18.9	68	79		5.5	9.7	7.7	16.1	18.0	0.85	
Total							75.5	170.0	299.2	239.0	499.9	557.2	26.20	

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.

11,958 13,328 Total Langleys
386 430 Average Langleys



Allunga Exposure Laboratory

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June 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Dew Point		Relative Humidity %		Rain	Evap.	Wet	Sun	Global Radiation (MJ/m ²)			Remarks	
	Max	Min	9am	9pm	9am	9pm	mm	mm	Time	Shine	Horiz	19°N	Horiz		
1	30	22	16	17	70	62	0.0	6.6	6.6	9.3	18.8	20.1	0.85	Fine	
2	29	17	16	18	62	70	0.0	7.4	0.0	9.4	13.3	15.3	0.63	Fine, Cloud	
3	29	21	18	18	65	69	0.0	6.8	1.4	7.3	12.9	14.3	0.61	Fine, Cloud,o/n Shwr	
4	30	19	16	16	60	66	3.5	6.4	1.2	9.6	14.9	17.2	0.89	Fine	
5	28	20	16	15	62	66	0.0	7.0	0.5	6.3	14.0	15.3	0.63	Fine, Lt Cloud	
6	26	16	16	17	64	95	1.0	6.8	15.3	1.6	11.3	11.6	0.51	Cloud, Shower	
7	27	16	17	18	71	76	2.5	2.2	14.9	1.3	13.2	14.4	0.62	Cloud, Shower	
8	28	18	19	19	72	74	2.5	4.2	9.3	2.7	11.6	12.0	0.58	Cloud, Shower	
9	29	20	21	20	83	88	2.0	4.4	3.3	1.6	10.2	10.4	0.55	Cloud, Rain	
10	25	21	18	16	77	81	6.5	4.0	5.4	0.0	5.8	5.8	0.26	Overcast, Shower	
11	26	18	15	13	69	64	3.5	2.4	7.2	6.5	17.2	18.9	0.84	Fine, Lt Cloud	
12	27	13	14	16	65	74	0.0	4.4	5.9	10.7	20.0	23.5	1.04	Fine	
13	24	14	16	18	75	93	0.0	5.8	4.5	0.4	8.6	8.7	0.44	Overcast	
14	23	18	18	18	89	92	7.0	2.4	22.4	0.0	7.0	7.2	0.45	Overcast, Showers	
15	26	15	17	15	81	73	3.5	0.0	14.2	7.2	17.6	19.7	0.85	Fine	
16	26	13	16	16	81	87	0.0	6.8	14.2	10.7	19.8	23.3	0.93	Fine	
17	26	13	17	16	79	83	0.0	5.4	13.7	10.5	20.4	24.0	0.93	Fine	
18	28	13	18	18	86	84	0.0	5.8	11.9	10.6	18.6	21.9	0.93	Fine	
19	26	14	15	17	73	87	0.0	4.8	12.5	10.1	17.4	20.4	0.92	Fine	
20	26	13	15	16	70	85	0.0	5.0	13.6	10.6	19.7	23.1	1.02	Fine	
21	28	15	16	14	81	87	0.0	5.4	14.0	10.3	19.9	23.3	1.05	Fine	
22	26	13	18	17	78	88	0.0	4.2	13.1	10.4	17.7	20.7	0.91	Fine	
23	27	17	18	19	76	88	0.0	4.0	14.5	10.0	19.1	22.3	0.95	Fine	
24	28	15	20	19	87	91	0.0	3.6	14.1	10.6	18.8	22.3	0.99	Fine	
25	28	15	18	20	81	91	0.0	4.4	13.4	10.0	19.2	22.5	1.04	Fine	
26	28	15	21	20	93	96	0.0	4.0	14.6	8.5	16.6	19.1	0.83	Fine, Lt Cloud	
27	31	17	16	17	62	82	0.0	3.8	12.9	10.1	17.7	20.7	0.95	Fine	
28	28	14	6	13	44	66	0.0	7.6	0.0	10.9	19.8	23.4	1.01	Fine	
29	25	11	13	14	64	72	0.0	7.8	5.8	10.6	19.4	22.8	0.96	Fine	
30	27	13	15	16	73	79	0.0	6.0	10.1	10.3	19.9	23.2	0.99	Fine	
	Temperature C°		Humidity		Rain	Evap.	Radiation								
	Max	Min	Dew	Point	am	pm	mm	mm	Wet Hrs	Sun Hrs	Horiz	19° N	UV-R		
Avg.	27.2	16.0	16.5	16.9	73	80		5.0	9.7	7.6	16.0	18.3	0.81		
Total							32.0	149.4	290.5	228.1	480.5	547.6	24.16		

Per Month

11,494 13,098 Total Langleys
383 437 Average Langleys

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.



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July 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain	Evap.	Wet	Sun	Global Radiation (MJ/m ²)			Remarks			
	Ambient	Dew Point	9am	9pm	mm	mm	Time	Shine	Horiz	19°N	Horiz				
	Max	Min	9am	9pm	9am	9pm	mm	mm	Hours	Hours	Horiz	19°N	Horiz		
1	22	13	3	5	45	60	0.0	8.4	1.0	10.7	21.7	24.1	1.10	Fine	
2	22	8	3	7	38	55	0.0	5.2	0.0	9.9	19.5	22.0	0.98	Fine	
3	26	10	11	18	59	84	0.0	5.6	2.2	8.0	15.6	17.2	0.72	Cloud, Fine	
4	25	18	18	19	73	93	0.0	4.0	2.1	3.7	8.6	8.8	0.44	Cloud, Fine	
5	27	19	18	20	72	87	0.0	2.4	4.9	7.0	16.1	17.5	0.73	Fine, Lt Cloud	
6	27	19	19	19	76	92	0.0	4.0	2.3	8.0	16.1	17.7	0.76	Fine, Lt Cloud	
7	26	16	19	19	83	90	0.0	4.0	15.0	10.1	21.3	23.3	1.04	Fine	
8	27	14	17	16	75	82	0.0	4.8	15.1	9.4	19.3	21.5	0.95	Fine	
9	27	14	15	18	65	84	0.0	5.0	13.3	10.8	20.7	22.8	0.99	Fine	
10	27	15	14	15	69	69	0.0	4.0	12.0	3.1	10.6	11.0	0.54	Cloud, Fine	
11	19	17	4	13	45	88	0.0	6.0	7.2	0.5	4.5	4.5	0.18	Cloud, Rian	
12	23	13	13	17	78	88	58.0	0.6	23.4	2.0	12.5	12.7	0.57	Rain, Cloud	
13	26	16	15	18	71	89	3.5	1.8	14.6	10.6	20.6	23.1	0.97	Mist, Fine	
14	25	14	18	17	83	89	0.0	3.6	14.7	10.3	20.0	22.2	0.91	Fine	
15	26	12	18	17	91	89	0.0	3.6	15.4	10.1	20.8	23.0	0.95	Fine	
16	26	16	18	19	80	91	0.0	4.0	15.0	10.4	20.9	23.2	1.02	Fine	
17	26	18	17	17	67	75	0.0	6.6	14.6	10.8	20.7	23.0	0.99	Mist, Fine	
18	26	20	19	20	75	92	0.0	5.8	2.7	3.1	8.4	8.6	0.63	Fine, Cld, Storm	
19	26	20	20	21	80	91	16.5	2.2	21.0	2.0	10.6	10.8	0.48	Lt Cloud	
20	28	20	21	21	77	89	1.5	3.0	13.6	6.4	14.4	15.7	0.83	Fine, Lt Cloud	
21	28	21	22	21	82	93	0.0	4.2	12.6	9.2	20.2	22.0	0.94	Fine	
22	29	18	20	20	79	87	0.0	4.0	16.9	9.3	17.8	19.0	0.70	Fine, Lt Cloud	
23	28	21	18	18	67	73	0.0	4.0	13.1	5.2	11.4	12.0	0.61	Fine, Cld, Storm	
24	27	18	16	16	85	69	0.0	5.8	5.2	3.5	9.6	9.8	0.49	Fine, Cld, Storm	
25	26	19	16	18	67	78	0.0	4.2	1.6	0.6	11.4	11.5	0.46	Fine, Cld, Storm	
26	27	16	18	20	75	88	0.0	7.4	10.6	10.0	20.3	22.8	0.94	Fine	
27	28	17	20	20	75	91	0.0	4.0	15.9	10.3	20.9	22.7	0.90	Fine	
28	28	18	20	20	75	90	0.0	3.6	14.0	10.7	19.3	21.0	0.92	Fine	
29	29	20	11	8	52	40	0.0	4.0	11.3	10.5	21.4	23.2	1.02	Fine	
30	24	17	0	3	35	38	0.0	9.0	0.0	7.1	15.6	16.4	0.75	High cld, Fine	
31	24	13	-1	0	34	44	0.0	8.8	0.0	11.1	23.4	25.4	1.10	Fine	
	Temperature C°		Humidity		Rain	Evap.	Radiation								
	Max	Min	Dew	Point	am	pm	mm	mm	Wet Hrs	Sun Hrs	Horiz	19° N	UV-R		
Avge.	26.0	16.5	14.8	16.1	69	80		4.6	10.0	7.6	16.6	18.0	0.79		
Total							79.5	143.6	311.3	234.4	514.2	558.5	24.61		

Per Month

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m²

(International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.

12,300 **13,359** **Total Langleys**
397 **431** **Average Langleys**



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August 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain mm	Evap. mm	Wet Time Hours	Sun Shine Hours	Global Radiation (MJ/m ²)			Remarks			
	Ambient Max	Ambient Min	Dew Point 9am	Dew Point 9pm					Humidity 9am	Humidity 9pm	Horiz		19°N	Horiz	
1	24	15	12	13	48	70	0.0	8.0	2.5	10.3	20.9	23.0	1.08	Fine	
2	23	17	12	14	60	67	4.0	7.6	0.0	0.3	9.0	9.0	0.43	Cloud, Rain	
3	24	13	12	13	65	71	0.0	7.6	5.6	7.3	21.3	22.1	1.04	Fine	
4	24	11	11	10	62	63	0.0	5.2	7.9	10.8	21.0	23.0	0.96	Fine	
5	23	10	12	12	63	65	0.0	9.6	8.8	11.2	21.9	25.0	1.12	Fine	
6	25	11	13	16	66	84	0.0	6.2	9.4	10.9	20.2	22.9	0.96	Fine	
7	25	14	17	16	78	83	0.0	4.6	13.2	9.7	18.4	20.6	0.94	Fog, Fine	
8	27	12	17	17	87	87	0.0	5.6	14.3	9.6	20.7	23.1	1.02	Fog, Fine	
9	26	12	3	10	34	63	0.0	6.0	10.6	11.1	22.1	25.0	1.12	Fine	
10	23	8	10	4	64	45	0.0	8.0	0.0	11.4	22.8	25.9	1.15	Fine	
11	25	8	7	11	43	59	0.0	8.0	0.0	5.1	18.6	19.6	0.90	Fine	
12	26	17	12	12	54	64	0.0	6.8	0.0	10.7	21.5	24.1	1.12	Fine	
13	25	11	9	15	51	76	0.0	8.6	7.6	9.5	20.3	22.4	0.98	Fine	
14	27	10	11	12	56	63	0.0	8.8	12.0	10.5	21.1	23.5	1.03	Fine	
15	27	10	10	4	56	36	0.0	8.2	5.0	10.7	22.4	24.9	1.10	Fine	
16	26	13	12	15	57	72	0.0	9.0	2.6	11.1	21.1	23.6	1.02	Fine	
17	26	18	14	13	61	66	0.0	8.0	0.0	9.8	17.2	18.9	0.84	Fine	
18	25	11	11	15	55	78	0.0	6.8	4.4	11.2	22.8	25.4	1.12	Fine	
19	26	11	13	16	63	77	0.0	7.2	8.1	10.4	22.4	24.8	1.08	Fine	
20	26	18	15	14	68	75	0.0	10.0	0.0	10.5	23.1	25.5	1.14	Fine	
21	27	12	12	16	60	81	0.0	9.6	6.5	11.0	22.0	24.4	1.10	Fine	
22	26	14	17	17	76	81	0.0	5.2	13.5	8.4	18.1	19.5	0.92	Fine	
23	26	19	17	17	74	80	0.0	6.2	2.3	5.2	17.7	18.5	0.86	Fine	
24	26	18	15	14	66	62	0.0	7.0	5.5	10.4	20.2	22.1	0.94	Fine	
25	27	18	15	12	62	57	0.0	8.0	0.0	9.7	21.2	23.0	1.06	Fine	
26	27	14	12	13	61	59	0.0	8.0	0.0	10.0	21.8	23.7	1.07	Fine	
27	28	16	13	15	56	67	0.0	10.4	0.0	9.6	19.4	21.0	0.97	Fine	
28	27	17	14	16	68	73	0.0	8.2	5.7	7.1	14.4	15.3	0.72	Fine	
29	26	15	14	14	62	69	0.0	9.8	6.5	11.1	23.1	25.2	1.20	Fine	
30	26	14	13	16	58	73	0.0	8.8	9.2	10.7	22.1	24.0	1.08	Fine	
31	26	15	13	16	55	75	0.0	9.6	7.6	11.0	23.1	25.1	1.15	Fine	
	Temperature C°		Humidity		Rain	Evap.	Radiation								
	Max	Min	Dew	Point	am	pm	mm	mm	Wet Hrs	Sun Hrs	Horiz	19° N	UV-R		
Avge.	25.6	13.6	12.5	13.5	61	69		7.8	5.4	9.6	20.4	22.4	1.01		
Total							4.0	218.2	168.8	296.3	631.9	694.1	31.22		

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.

15,115 16,603 Total Langleys
488 536 Average Langleys



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September 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Dew Point		Relative Humidity %		Rain	Evap.	Wet	Sun	Global Radiation (MJ/m ²)			Remarks	
	Ambient Max	Ambient Min	9am	9pm	9am	9pm	mm	mm	Time Hours	Shine Hours	Horiz	19°N	Horiz		
1	26	17	18	19	76	88	0.0	7.0	13.4	11.0	21.3	23.1	1.05	Fine	
2	26	15	19	19	79	87	0.0	5.0	14.3	10.5	20.3	21.9	1.02	Fine	
3	27	21	20	19	77	82	0.0	4.8	12.9	8.9	21.1	22.4	1.06	Fine	
4	28	19	18	19	73	85	0.0	7.6	9.0	9.6	22.7	24.2	1.12	Fine	
5	28	21	20	21	77	84	0.0	5.2	8.6	9.2	20.3	21.5	1.05	Fine	
6	31	18	5	17	25	77	0.0	5.6	8.6	11.0	24.0	25.7	1.20	Fine	
7	23	16	2	12	30	65	0.0	9.4	12.7	10.9	24.8	26.6	1.26	Fine	
8	24	14	13	15	57	73	0.0	7.4	5.1	10.7	19.8	21.2	1.04	Fine	
9	26	18	16	17	64	73	0.0	7.4	11.4	10.8	21.9	23.4	1.16	Fine	
10	27	19	16	15	62	69	0.0	6.8	5.1	10.9	22.9	24.4	1.11	Fine	
11	27	15	17	17	67	74	0.0	6.4	11.9	11.0	23.0	24.5	1.15	Fine	
12	27	17	16	17	58	73	0.0	7.0	7.2	11.1	24.1	25.6	1.24	Fine	
13	27	18	16	16	63	69	0.0	7.4	10.2	11.0	18.6	19.8	0.88	Fine	
14	27	18	14	17	58	74	0.0	9.0	5.7	7.8	14.7	15.3	0.81	Fine, Lt Cloud	
15	26	16	16	18	66	82	0.0	7.0	11.2	4.2	12.2	12.5	0.65	Cloud, Fine	
16	27	17	18	17	68	71	0.0	3.6	13.8	9.0	19.8	20.7	1.03	Fine	
17	26	16	17	18	66	82	0.0	8.0	8.8	11.2	23.8	25.1	1.23	Fine	
18	27	18	19	20	69	82	0.0	6.8	13.3	9.9	20.0	20.9	1.07	Fine	
19	28	21	19	19	66	78	0.0	7.2	9.3	0.0	23.8	23.8	1.12	Fine	
20	27	21	18	19	65	79	0.0	7.6	12.1	10.8	24.0	25.1	1.23	Fog, Fine	
21	29	21	19	20	69	82	0.0	7.6	11.5	11.1	22.0	23.0	1.19	Fine	
22	28	16	19	19	68	81	0.0	7.0	13.2	0.0	25.7	25.7	1.25	Fine	
23	28	22	18	19	65	78	0.0	6.8	12.7	11.3	23.7	24.7	1.11	Fine	
24	29	22	19	20	65	78	0.0	7.6	5.8	8.8	20.9	21.5	0.91	Fine	
25	30	22	21	22	74	90	0.0	6.6	5.0	7.7	20.0	20.5	0.95	Fine	
26	31	21	1	17	19	70	0.0	7.2	7.2	11.3	26.4	27.3	1.35	Fine	
27	29	15	17	14	62	61	0.0	9.6	10.0	10.6	27.9	28.8	1.36	Fine	
28	28	14	12	15	45	61	0.0	9.4	5.7	11.5	25.9	26.8	1.37	Fine	
29	28	14	13	14	50	57	0.0	8.8	1.4	10.8	25.7	26.4	1.25	Fine	
30	27	20	17	16	61	66	0.0	11.4	7.2	11.0	24.3	25.0	1.27	Fine	
	Temperature C°				Humidity		Rain	Evap.	Radiation						
	Max	Min	Dew	Point	am	pm	mm	mm	Wet Hrs	Sun Hrs	Horiz	19° N	UV-R		
Avg.	27.4	18.1	15.8	17.6	61	76		7.3	9.5	9.5	22.2	23.2	1.12		
Total							0.0	218.2	284.3	283.6	665.6	697.4	33.49		

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

15,921 16,682 Total Langleys
531 556 Average Langleys

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.



Allunga Exposure Laboratory

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October 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain mm	Evap. mm	Wet Time Hours	Sun Shine Hours	Global Radiation (MJ/m ²)			Remarks			
	Ambient Max	Ambient Min	Dew Point 9am	Dew Point 9pm					Humidity 9am	Humidity 9pm	Horiz		19°N	Horiz	
1	29	22	21	20	74	84	0.0	8.0	7.2	6.6	20.4	20.2	1.05	Fine	
2	29	21	19	20	64	83	0.0	4.8	12.8	10.5	24.6	25.0	1.26	Fine	
3	29	21	19	20	62	79	0.0	7.4	12.0	10.8	22.7	23.0	1.19	Fine	
4	30	22	20	22	65	87	0.0	7.8	1.4	9.1	22.6	22.9	1.12	Fine	
5	30	24	22	23	77	88	0.0	7.0	1.8	7.3	18.0	17.8	0.92	Fine, Lt Cloud	
6	31	23	22	20	75	78	0.0	6.8	0.8	8.3	21.5	21.6	1.04	Fine	
7	30	23	20	21	67	83	0.0	6.4	3.8	9.9	24.1	24.1	1.20	Fine	
8	33	23	4	16	26	61	0.0	9.2	0.0	9.4	24.6	24.7	1.22	Fine, Dust haze	
9	30	13	14	12	49	60	0.0	9.2	2.7	10.7	25.9	25.7	1.25	Fine, Dust haze	
10	28	16	18	17	60	64	0.0	11.4	3.0	10.8	26.2	26.0	1.31	Fine	
11	27	23	16	15	56	61	0.0	10.8	0.0	10.4	25.1	25.2	1.27	Fine	
12	28	15	16	15	54	64	0.0	9.4	4.1	11.0	25.2	25.0	1.30	Fine	
13	28	22	15	16	49	64	0.0	10.0	0.0	10.9	25.5	25.5	1.27	Fine	
14	29	19	16	17	54	65	0.0	9.2	3.6	10.2	26.8	26.8	1.33	Fine	
15	28	23	17	16	63	63	0.0	7.6	0.0	4.1	17.0	16.5	0.88	Fine, Cloud	
16	28	20	17	16	62	63	0.0	10.2	11.9	11.2	22.3	22.3	1.24	Fine	
17	29	21	18	18	64	70	0.0	9.8	0.5	11.5	24.8	24.7	1.30	Fine	
18	28	21	18	17	59	72	0.0	10.2	4.6	11.8	25.8	25.8	1.32	Fine	
19	32	18	19	18	62	74	0.0	8.0	0.0	12.1	28.1	28.0	1.36	Fine	
20	29	19	18	18	58	75	0.0	8.0	0.9	12.0	24.4	24.3	1.22	Fine	
21	31	20	17	19	60	75	0.0	10.6	11.7	12.1	26.7	26.5	1.35	Fine	
22	29	22	19	19	63	71	0.0	8.8	9.8	12.0	23.1	22.9	1.28	Fine	
23	29	24	19	19	56	71	0.0	11.0	0.0	9.5	19.7	19.5	1.04	Fine	
24	29	22	20	20	64	77	0.0	9.2	6.5	7.5	18.1	17.5	0.91	Fine, Lt Cloud	
25	30	22	19	17	63	66	0.0	8.4	11.2	7.5	21.9	21.7	1.10	Smoke Haze, Fine	
26	29	22	17	17	54	67	0.0	14.4	0.0	11.8	23.7	23.4	1.30	Fine	
27	29	21	16	19	53	69	0.0	12.0	2.8	8.8	22.8	22.5	1.15	Fine	
28	29	21	20	20	76	76	5.5	7.8	12.2	8.0	20.8	20.6	1.04	Fone, Shower	
29	31	23	21	24	68	93	0.0	7.8	6.4	8.0	19.5	19.3	0.96	Fine, Lt Cloud	
30	30	23	17	17	51	67	0.0	10.8	11.1	12.0	26.3	25.8	1.33	Fine	
31	30	22	17	17	57	64	0.0	12.0	0.7	11.1	22.6	22.1	1.15	Fine	
	Temperature C°		Humidity		Rain	Evap.	Radiation								
	Max	Min	Dew	Point	am	pm	mm	mm	Wet Hrs	Sun Hrs	Horiz	19° N	UV-R		
Avg.	29.4	21.0	17.8	18.2	60	72		9.2	4.6	9.9	23.3	23.1	1.18		
Total							5.5	284.0	143.5	306.9	720.8	716.9	36.66		

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

17,242 17,148 Total Langleys
556 553 Average Langleys

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.



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November 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Dew Point		Relative Humidity %		Rain	Evap.	Wet Time	Sun Shine	Global Radiation (MJ/m ²)			Remarks
	Max	Min	9am	9pm	9am	9pm	mm	mm	Hours	Hours	Horiz	19°N	Horiz	
1	31	23	17	18	56	66	0.0	11.0	2.6	11.8	24.6	24.0	1.20	Fine
2	29	22	15	17	48	65	0.0	10.8	4.6	11.6	26.2	25.6	1.25	Fine
3	29	21	16	18	53	70	0.0	11.4	2.6	9.7	18.2	17.9	0.97	Fine
4	29	21	17	19	55	73	0.0	9.8	10.4	9.9	23.3	22.7	1.12	Fine
5	28	22	20	18	76	65	0.0	9.6	5.7	6.3	18.3	18.1	1.00	Fine, Smoke Haze
6	30	22	17	19	53	71	0.0	7.6	0.2	11.3	24.6	23.9	1.23	Fine
7	32	19	17	21	48	77	0.0	8.6	7.1	12.3	27.7	26.8	1.36	Fine
8	32	23	20	21	62	77	0.0	8.3	10.1	12.1	26.7	25.9	1.33	Fine
9	32	23	20	22	60	83	0.0	8.8	7.8	11.4	26.4	25.5	1.28	Fine
10	31	24	21	23	69	84	0.0	8.0	8.6	12.0	24.7	23.8	1.26	Fine
11	35	23	10	23	27	83	0.0	9.4	6.6	12.2	27.8	26.8	1.37	Fine
12	33	24	22	24	70	85	0.0	10.2	11.9	11.1	25.6	24.8	1.26	Fine
13	31	25	23	23	70	73	0.0	9.0	10.4	10.1	25.3	24.4	1.21	Fine
14	32	25	22	24	72	84	0.0	9.4	0.0	8.4	20.2	19.7	1.02	Fine, Lt Cloud
15	32	26	22	23	70	80	0.0	8.0	0.0	10.3	22.1	21.3	1.05	Fine
16	32	25	22	22	67	77	0.0	7.4	1.1	8.8	22.1	21.5	1.08	Fine, Lt Cloud
17	31	25	18	22	55	77	0.0	10.4	0.0	11.7	26.7	25.6	1.30	Fine, O/N Shower
18	32	23	24	21	76	69	14.5	10.0	7.7	8.5	21.5	20.9	1.07	Fine
19	34	25	21	24	58	85	0.0	6.2	2.9	11.2	25.8	24.7	1.27	Fine
20	31	25	24	23	71	78	0.0	7.8	7.3	8.0	23.9	23.2	1.24	Fine, O/N Shower
21	32	25	22	23	67	79	3.5	7.0	13.9	9.0	21.8	21.1	1.13	Fine
22	32	25	23	23	71	80	0.0	8.8	0.0	9.1	22.8	22.0	1.13	Fine
23	30	20	18	21	62	75	0.0	7.2	7.6	11.6	26.0	24.8	1.22	Fine
24	30	24	20	20	64	70	0.0	9.2	7.1	12.4	25.8	24.5	1.28	Fine
25	31	23	20	20	61	73	0.0	9.6	7.7	12.5	27.5	26.1	1.31	Fine
26	31	23	18	20	51	75	0.0	9.0	4.6	12.3	27.8	26.3	1.36	Fine
27	32	20	20	19	60	73	0.0	9.2	7.7	12.8	27.8	26.3	1.36	Fine
28	30	20	20	21	62	81	0.0	8.0	5.8	12.6	28.0	26.5	1.35	Fine
29	30	22	19	20	62	74	0.0	8.4	10.3	12.5	26.4	24.9	1.33	Fine
30	31	21	20	22	62	78	0.0	8.0	8.8	12.2	25.9	24.5	1.29	Fine

Avg.	Temperature C°		Humidity		Rain	Evap.	Radiation						
	Max	Min	Dew	Point	mm	mm	Wet Hrs	Sun Hrs	Horiz	19° N	UV-R		
	31.2	23.0	19.6	21.1	61	76	8.9	6.0	10.9	24.7	23.8	1.22	
Total							18.0	266.1	181.1	325.7	741.5	714.1	36.63

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.

17,737 **17,081** **Total Langleys**
591 **569** **Average Langleys**



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December 2012 Daily Weather Record: Townsville

Date	Temperature (°C)		Relative Humidity %		Rain mm	Evap. mm	Wet Time Hours	Sun Shine Hours	Global Radiation (MJ/m ²)			Remarks		
	Ambient Max	Ambient Min	Dew Point 9am	Dew Point 9pm					Humidity 9am	Humidity 9pm	Horiz		19°N	Horiz
1	30	23	15	18	43	61	0.0	11.2	0.0	12.1	27.4	26.0	1.48	Fine
2	31	22	17	20	52	69	0.0	12.6	4.5	11.9	27.3	25.9	1.44	Fine
3	29	23	18	18	58	65	0.0	10.0	7.8	12.3	25.3	23.9	1.38	Fine
4	30	23	20	20	65	83	0.0	10.6	5.0	12.1	25.2	23.8	1.36	Fine
5	31	24	22	23	73	81	0.0	7.8	11.8	12.4	25.8	24.3	1.42	Fine, O/N Shower
6	31	25	23	23	73	81	2.0	9.0	11.0	10.7	23.7	22.5	1.27	Fine
7	30	25	21	20	67	70	0.0	9.0	3.4	11.9	24.9	23.5	1.29	Fine
8	30	24	21	21	65	72	0.0	10.2	6.5	11.2	24.2	22.9	1.15	Fine
9	30	26	22	21	66	71	1.5	9.0	1.7	8.7	22.4	21.4	1.20	Shower, Fine
10	31	25	21	22	79	75	3.0	11.0	4.7	10.2	21.5	20.4	1.17	Shower, Fine
11	29	25	23	20	94	73	2.5	9.8	14.8	3.0	17.3	17.0	0.95	Shower, Cloud
12	30	23	19	20	64	67	17.5	6.4	12.9	8.9	21.4	20.4	1.15	Rain, Fine
13	30	22	19	20	59	71	0.0	8.8	0.6	11.3	21.6	20.4	1.17	Fine, O/N Shower
14	29	22	22	19	86	71	8.5	9.8	9.3	1.8	15.7	15.6	0.86	Cloud
15	29	20	19	18	61	66	0.0	5.8	13.8	12.8	24.0	22.5	1.29	Fine
16	31	21	18	20	55	69	0.0	8.0	4.8	12.2	26.5	24.9	1.41	Fine
17	30	21	19	20	61	67	0.0	9.2	4.5	9.1	21.1	20.1	1.15	Fine
18	30	25	21	21	66	74	0.0	9.4	7.9	4.7	14.4	14.1	0.78	Fine, Cloud
19	30	23	19	16	60	55	1.0	8.0	6.0	12.0	23.9	22.5	1.30	Fine
20	30	21	19	22	58	84	0.0	11.2	1.8	11.2	25.5	24.0	1.41	Fine, O/N Rain
21	30	23	22	23	81	79	5.5	8.2	11.9	10.9	26.4	24.9	1.45	Fine
22	31	25	23	23	68	80	0.0	9.0	4.3	12.2	26.5	24.0	1.42	Fine
23	33	26	23	25	68	94	0.0	10.2	4.1	9.9	22.1	21.0	1.21	Fine, O/N Rain
24	34	25	25	25	75	85	7.0	8.2	12.6	12.0	25.8	24.3	1.42	Fine
25	34	25	26	26	73	87	0.0	11.0	10.6	12.7	27.3	25.6	1.49	Fine
26	34	27	25	26	72	84	0.0	10.2	4.1	11.8	24.6	23.2	1.33	Fine
27	36	25	24	26	62	85	0.0	10.6	9.7	6.5	23.1	22.4	1.25	Fine, Cloud, Shower
28	36	26	14	22	35	67	0.5	6.4	5.6	4.2	16.5	16.2	0.89	Fine, Cloud, Shower
29	32	27	13	24	34	81	0.0	5.8	5.5	0.3	14.0	14.0	0.77	Overcast, Rain
30	32	25	24	24	78	77	15.5	4.4	11.1	8.0	19.4	18.6	1.05	Fine, O/N Rain
31	33	27	22	23	64	75	3.5	9.6	3.3	7.9	17.7	17.0	0.96	Cloud, Rain, Fine

Avg.	Temperature C°		Humidity		Rain mm	Evap. mm	Wet Hrs	Sun Hrs	Radiation				
	Max	Min	Dew	Point					am	pm	Horiz	19° N	UV-R
	31.2	24.0	20.6	21.6	65.0	74.8	9.0	7.0	9.6	22.7	21.5	1.22	
Total							68.0	280.4	215.6	296.9	702.5	667.3	37.87

For Langleys divide MJ/m² by 0.0418 UV-R = UV-A + UV-B (290-385 nm)

UV data recorded by Australian Radiation Protection & Nuclear Safety Agency

* Sunshine hours are calculated the total time direct solar irradiance exceeds 120 W/m² (International Meteorological Organisation)

Wet Time hours: Duration each day exposed surfaces are wet. Condensation is primary source of moisture.

16,804 15,962 Total Langleys
542 515 Average Langleys