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APPENDIX A

Typical Data and Results

Table A.1 Typical Data and Results for Testing on the Radiometer Size

Date April 30, 77

Time 10.40 a.m - 14.00 p.m

Weather Condition 6/8 cloud, moderate wind

Insolation 420 cal cm⁻² day⁻¹

Testing No.	Testing Variable	Unit	Kind of Metal	Thick-ness of Disk (mm.)	Dia. of Disk (cm.)	Kind of Color
1	Radiometer Size	5	Brass	0.3	12	PYLOX
		6	"	"	"	"
		7	"	"	"	"

Temp. Local Time, Hr	Unit 5 °C	Unit 6 °C	Unit 7 °C
10.40	31.0	31.5	32.0
10.50	35.0	36.0	37.0
11.00	67.2	68.0	67.5
11.10	71.0	71.5	71.0
11.20	77.0	78.0	77.5
11.30	57.0	56.0	56.8

Table A.1 (continued)

Temp. Local Time, Hr	Unit 5 °C	Unit 6 °C	Unit 7 °C
11.40	76.0	76.2	77.0
11.50	68.7	70.0	69.0
12.00	64.2	64.0	65.0
12.10	77.5	78.3	78.1
12.20	79.8	81.0	80.5
12.30	72.0	73.0	72.0
12.40	85.0	84.5	84.0
12.50	86.0	87.0	87.0
13.00	71.0	72.0	71.0
13.10	63.2	63.0	63.0
13.20	80.5	82.0	82.0
13.30	86.0	86.8	86.5
13.40	85.0	86.5	85.0
13.50	82.0	83.0	83.0
14.00	83.0	83.5	83.0

Table A.2 Typical Data for Calibration

Date August 13, 77
 Time 8.00 a.m - 16.00 p.m
 Insolation $465 \text{ cal cm}^{-2} \text{ day}^{-1}$

Local Time, Hr	T °C	T _a °C	T-T _a °C	S ₀ mm	Weather Condition
8.00	29.0	26.8	2.2	1.05	4/8 thin cloud
8.10	51.0	28.0	23.0	1.13	
8.20	56.0	28.0	28.0	1.19	wind speed 8 km/hr
8.30	60.0	28.2	31.8	1.25	
8.40	63.0	29.0	34.0	1.33	
8.50	66.0	28.8	37.2	1.38	
9.00	68.5	29.0	39.5	1.45	wind speed 5 km/hr
9.10	71.0	29.2	41.8	1.50	
9.20	73.5	29.5	44.0	1.55	
9.30	75.5	29.2	46.3	1.61	clear sky
9.40	77.6	29.5	48.1	1.65	
9.50	79.2	30.0	49.2	1.67	
10.00	81.9	30.2	51.7	1.72	wind speed 6.5 km/hr
10.10	83.0	30.5	52.5	1.75	
10.20	84.5	30.5	54.0	1.77	
10.30	86.0	30.8	55.2	1.82	

Local Time, Hr	T °C	T _a °C	T-T _a °C	S mm	Weather Condition
10.40	87.2	31.0	56.2	1.84	
10.50	88.0	31.0	57.0	1.85	
11.00	89.5	31.0	58.5	1.87	wind speed 7 km/hr
11.10	90.0	31.0	59.0	1.89	
11.20	91.0	31.0	60.0	1.92	
11.30	91.5	31.8	59.7	1.92	
11.40	93.0	32.0	61.0	1.93	
11.50	93.8	32.0	61.8	1.93	
12.00	94.0	32.0	62.0	1.95	1/8 cloud
12.10	93.0	32.0	61.0	1.93	wind speed 8 km/hr
12.20	94.0	32.2	61.8	1.95	
12.30	94.5	32.2	62.3	1.95	
12.40	95.0	32.5	62.5	1.95	
12.50	83.0	32.5	50.5	1.35	
13.00	86.0	33.0	53.0	1.85	3/8 cloud wind speed 9.5 km/hr
13.10	87.8	33.0	54.8	1.65	
13.20	85.0	33.5	51.5	1.80	
13.30	71.5	33.0	38.5	0.90	
13.40	65.0	33.0	32.0	0.75	
13.50	86.0	33.0	53.0	1.85	
14.00	94.8	33.0	61.8	1.90	4/8 cloud

Local Time Hr	T °C	T _a °C	T-T _a °C	S mm	Weather condition
14.10	69.0	33.0	36.0	0.67	wind speed 10 km/hr
14.20	74.0	33.0	41.0	1.10	
14.30	80.0	33.0	47.0	1.60	
14.40	62.0	33.0	29.0	1.07	
14.50	81.0	34.0	47.0	1.50	
15.00	83.2	34.6	48.6	1.58	4/8 cloud wind speed
15.10	78.0	34.0	44.0	1.27	
15.20	67.0	34.0	34.0	1.80	5 km/hr
15.30	78.0	34.0	44.0	1.35	
15.40	73.5	34.0	39.5	1.15	
15.50	74.5	34.0	40.5	1.25	
16.00	73.0	34.0	39.0	1.20	

NOTE

T - disk temperature

T_a - ambient temperatureS - solar radiation reading from the standard
radiometer in mm.

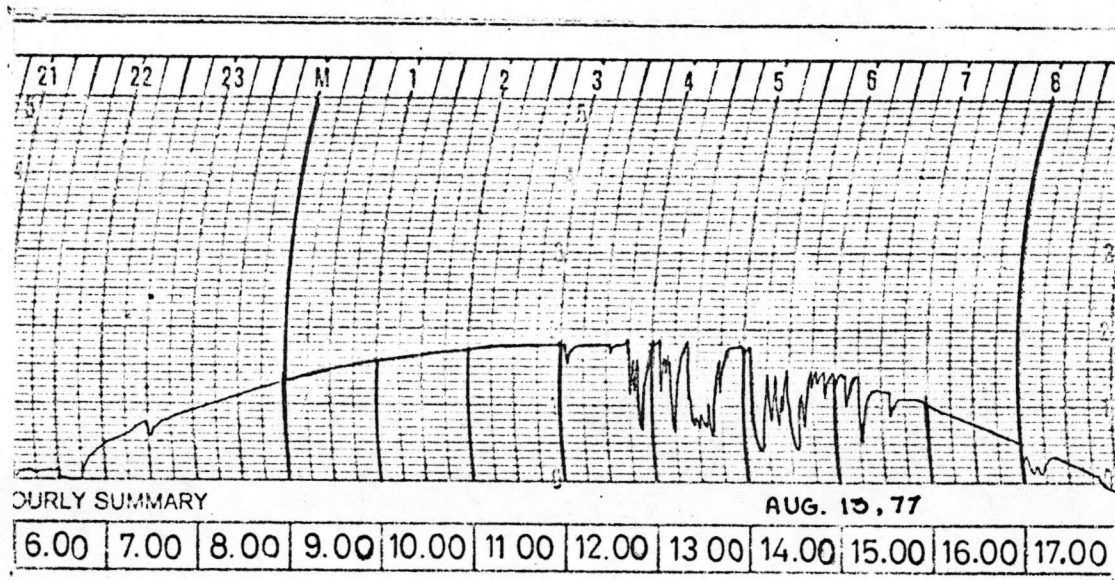


FIGURE A.1 THE RECORDED GRAPH FROM THE STANDARD PYRANOMETER

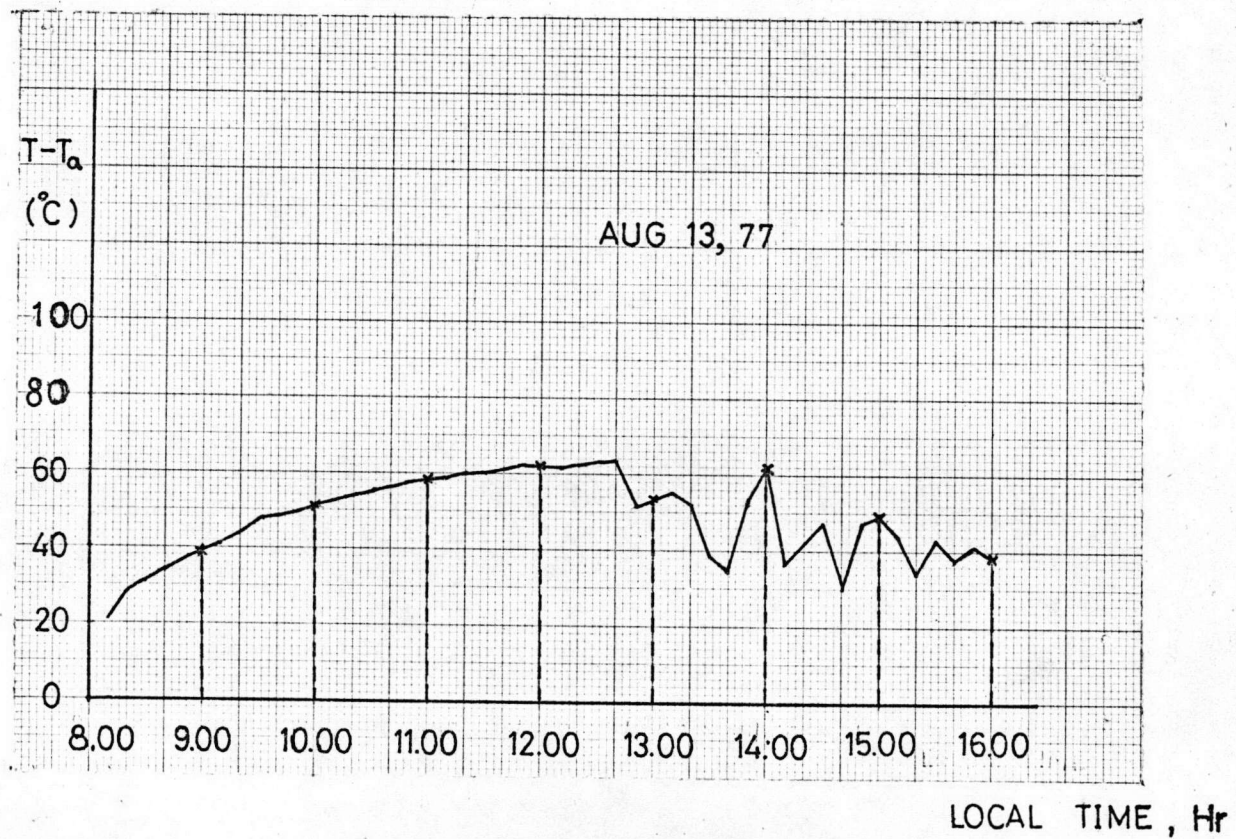


FIGURE A-2 PLOT OF $T - T_a$ VS. LOCAL TIME

APPENDIX B

Sample of Calculations

Determination of the Conversion Constant for Hour Reading (K)
 Referring to Table A.2, Typical Data on August 13, 77, the
 conversion constant for hour reading (K) was determined as
 follows.

The areas under curves of Figures A.1 and A.2 were found
 by planimeter.

Let k = conversion constant from the standard
 instrument

$$= 26.274 \text{ cal cm}^{-2} \text{ hr}^{-1} / \text{cm}^2$$

T = the area under curve from Figure A.1

G = the area under curve from Figure A.2

K = the conversion constant for hour reading

$$\text{From } K = \frac{G}{T} \times 26.274 \text{ cal cm}^{-4} \text{ hr}^{-1}$$

The result of calibration is shown in the Table B.1

During 9.00 - 10.00 a.m

$$T = 3.4 \text{ cm}^2$$

$$G = 2.1 \text{ cm}^2$$

$$K = \frac{2.1}{3.4} \times 26.274 = 15.76 \text{ cal cm}^{-4} \text{ hr}^{-1}$$

Table B.1 The Value of K on August 13, 77

Local Time	G_2 (cm^2)	T_2 (cm^2)	$\text{cal cm}^{-4} \text{ hr}^{-1} \text{ K}^{-1}$
9.00-10.00	2.1	3.4	15.76
10.00-11.00	2.1	4.1	13.92
11.00-12.00	2.3	4.6	13.66
12.00-13.00	2.6	4.5	15.23
13.00-14.00	1.6	3.2	13.39
14.00-15.00	1.6	3.1	13.92
15.00-16.00	1.5	3.0	13.39

VITA

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