Dry Season			***Dry Season***			***Dry Season***		
a. Nov, Dec	0.55, 0.56	**0.56**	**a.** Nov, Dec, Jan	0.54, 0.55,0.53	**0.54**	**a.** Nov, Dec	0.55, 0.56	**0.56**
b. Jan, Feb	0.54, 0.50	**0.52**	**b.** Feb, Mar, Oct	0.49, 0.49, 0.47	**0.48**	**b**. Jan	0.54	**0.54**
c. Mar, Oct	0.49, 0.48	**0.49**				**c.** Feb, Mar, Oct	0.49,0.49, 0.47	**0.48**
Rainy Season			***Rainy Season***			***Rainy Season***		
a. April, May, June	0.49, 0.49, 0.47	**0.47**	**a.** April, May	0.49, 0.47	**0.48**	**a.** April, May,	0.48, 0.48	**0.48**
b. July, Aug	0.39, 0.35	**0.37**	**b.** Jun, Aug, Sept	0.40, 0.41,0.41	**0.41**	**b.** Jun, Sept	0.44, 0.40	**0.42**
c. Sept	0.40	**0.40**	**c.** July	0.39	**0.39**	**c**. July, Aug	0.38, 0.35	**0.37**

Table 6 shows average monthly values of bright sunshine hours for the study locations. In the geopolitical zone, a mean total of 62.22 hrs of monthly bright sunshine is estimated. Months of the dry and rainy seasons contribute 59.13 % and 40.87 %, respectively of the mean monthly total. The monthly total hours of bright sunshine in the zone varies from 55.75 hrs (Abeokuta) – 69.89 hrs (Oshogbo). The average monthly values of hours of bright sunshine range from 2.15 to 7.54 hrs for the study locations. In all the study location, August recorded the least value of solar radiation. This indicates that August is worst month of harvest of bright hours of sunshine. Hence, yearly, August is likely to be cloudier therefore resulting in poor performance of solar collector during this month.

Table 6 Average monthly values of bright sunshine hours

Years/ Months	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	Monthly Total
ABEOKUTA	5.00	5.35	5.53	5.55	5.90	4.30	3.03	2.15	3.06	4.15	5.73	6.00	55.75
ADO-EKITI	6.17	6.00	6.20	5.99	5.40	4.68	3.09	2.68	3.30	5.23	6.59	6.62	61.95
AKURE	6.52	5.86	6.30	6.37	5.30	4.24	2.74	2.65	3.50	4.83	6.37	6.40	61.08
IBADAN	5.82	6.05	6.09	5.60	6.37	5.11	3.44	2.70	3.10	5.63	6.80	6.84	63.55
IKEJA	6.13	6.92	6.05	5.91	5.80	3.46	2.43	3.06	3.36	5.28	6.27	6.38	61.05
OSHOGBO	6.81	6.90	7.14	6.27	6.70	5.73	3.64	2.55	3.44	5.83	7.34	7.54	69.89
MEAN	6.08	6.18	6.22	5.95	5.91	4.59	3.06	2.63	3.29	5.16	6.52	6.63	62.22
MAX	6.81	6.92	7.14	6.37	6.70	5.73	3.64	3.06	3.50	5.83	7.34	7.54	69.89
MIN	5.00	5.35	5.53	5.55	5.30	3.46	2.43	2.15	3.06	4.15	5.73	6.00	55.75

3.4 ANGSTROM-PAGE EQUATION

Angstrom-Page model equation based on extraterrestrial radiation on a horizontal surface is give as (Duffie and Beckman, 2013)

$$\bar{K}_T = a + b\frac{\bar{n}}{\bar{N}} \qquad (5)$$

Where $\bar{n}$ is hours of bright sunshine, $\bar{N}$ is daily theoretical sunshine in hours and a *and* b are local constants which are dependent on latitude and other meteorological parameters.

For a given month, the theoretical sunshine hour is determined from (Duffie and Beckman, 2013)

$$\bar{N} = \frac{2}{15}cos^{-1}(-tan\emptyset\ tan\delta) \quad (6)$$

Where $\emptyset$ is latitude of study location.

The sum of regression coefficients is

$$t = a + b \quad (7)$$

Equ. 7 represent transmissivity of the atmosphere of global radiation under perfectly clear conditions. a and b represents transmissivity of fraction of global radiation under overcast sky condition and sensitivity of normalized global radiation to normalized sunshine duration, respectively. The values of a, b, t and coefficient of determination (R) are presented in Table 7 for each study location.

Table 7 Values of a, b, t and R for the study locations

	a	b	t	R
ABEOKUTA	0.257	0.551	0.808	0.882
ADO-EKITI	0.284	0.457	0.741	0.908
AKURE	0.295	0.437	0.732	0.870
IBADAN	0.247	0.505	0.752	0.938
IKEJA	0.305	0.383	0.688	0.858

OSHOGBO	0.256	0.431	0.687	0.927
ABEOKUTA	0.257	0.551	0.808	0.882
MEAN	0.272	0.474	0.745	0.895

Coefficient of determination is observed to be high for each study location. This indicates that a low variation between $\bar{K}_T$ and $\bar{n}/\bar{N}$ exist. Thus, it reveals that a strong linear relationship between these metrological parameters in the Angstrom-Page equation for the study locations. The values of a and b in Angstrong-Page equation for the entire zone is estimated at 0.272 and 0.474, respectively. These set of parameters in Table 7 can be used to estimate global solar radiation for the geo-political zone and/or other locations close to the state capitals with similar meteorological conditions where sunshine measurement is available.

4.0 Conclusion

With the aid of global solar radiation, clearness index and sunshine hour, sky condition of South – West Geopolitical zone has been characterized. The worst month for harvest of solar radiation in the zone is August as it recorded the lowest level of clearness index and hours of bright sunshine. The city of Ikeja is considered the worst location for harvest of solar radiation in the geopolitical zone. Coefficients for the Angstrom-Page equation is estimated for the cities and the associated coefficient of determination exhibited low variation for each study location. Hence, they are recommended for use in close locality to each of the study location with comparable meteorological conditions.

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