

**Global Solar Radiation on a Horizontal Surface**  
**Hourly Integrated and Daily Totals**  
**Watt-Hours per Square Meter**  
**Bluefield State College - October 1999**

Field: GHI

Hour Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily
1	0	0	0	0	0	0	23	105 ?	385 ?	580 ?	688	779	795	747	628	461	261	66	0	0	0	0	0	0	5517
2	0	0	0	0	0	0	20	177	377	558	692	769	788	738	557	415	243	53	0	0	0	0	0	0	5387
3	0	0	0	0	0	0	21	127 ?	351	537	632	656	777	708	542	432	219	37	0	0	0	0	0	0	5040
4	0	0	0	0	0	0	3	21	73	172	244	296	274	443	296	241	34	15	0	0	0	0	0	0	2112
5	0	0	0	0	0	0	5	70	196	169	308	358	413	398	359	454	244	52	0	0	0	0	0	0	3024
6	0	0	0	0	0	0	17	159 ?	258 ?	520 ?	643	766	778	720	604	435	234	49	0	0	0	0	0	0	5182
7	0	0	0	0	0	0	16	191 ?	357 ?	540	683	755	761	700	582	417	219	45	0	0	0	0	0	0	5265
8	0	0	0	0	0	0	21	140	354	533	659	765	748	691	569	404	198	25	0	0	0	0	0	0	5109
9	0	0	0	0	0	0	6	49	145	130	230	155	167	103	95	53	19	3	0	0	0	0	0	0	1157
10	0	0	0	0	0	0	3	42	94	176	249	176	146	112	109	102	41	17	0	0	0	0	0	0	1267
11	0	0	0	0	0	0	2	32	80	85	335	448	502	428	322	298	133	27	0	0	0	0	0	0	2692
12	0	0	0	0	0	0	8	133	332	507	641	716	722	661	540	379	188	29	0	0	0	0	0	0	4856
13	0	0	0	0	0	0	7	131	318	510	428	333	105	93	416	135	57	20	0	0	0	0	0	0	2553
14	0	0	0	0	0	0	5	82	182	231	509	730	741	681	556	390	194	28	0	0	0	0	0	0	4328
15	0	0	0	0	0	0	8	128	319	489	621	695	703	644	527	370	179	23	0	0	0	0	0	0	4707
16	0	0	0	0	0	0	5	133	329	500	629	702	707	648	528	365	171	21	0	0	0	0	0	0	4738
17	0	0	0	0	0	0	2	22	110	150	289	647	688	630	509	382	173	22	0	0	0	0	0	0	3624
18	0	0	0	0	0	0	2	30	89	273	460	637	625	647	523	359	160	18	0	0	0	0	0	0	3823
19	0	0	0	0	0	0	2	64	164	321	237	179	165	53	29	11	10	7	0	0	0	0	0	0	1242
20	0	0	0	0	0	0	1	14	28	36	35	71	65	47	93	121	94	23	0	0	0	0	0	0	626
21	0	0	0	0	0	0	4	121 ?	293 ?	484 ?	616	706	698	631	510	347	153	16	0	0	0	0	0	0	4579
22	0	0	0	0	0	0	4	116	299	455	564	663	500	284	363	85	126	17	0	0	0	0	0	0	3474
23	0	0	0	0	0	0	0	10	57	101	141	199 ?	132	184	173	118	75	6	0	0	0	0	0	0	1197
24	0	0	0	0	0	0	1	17	121	207	400	206	255	226	162	58	30	4	0	0	0	0	0	0	1687
25	0	0	0	0	0	0	2	57 ?	293 ?	472	593	670	677	617	496	335	145	12	0	0	0	0	0	0	4368
26	0	0	0	0	0	0	2	108	306 ?	503 ?	592	672	669	606	488	326	133	7	0	0	0	0	0	0	4412
27	0	0	0	0	0	0	2	93	274	442	582	655	666	609	486	322	133	9 ?	0	0	0	0	0	0	4274
28	0	0	0	0	0	0	1	92	271	434	566	636	640	588	467	305	118	6 ?	0 ?	0	0	0	0	0	4124
29	0	0	0	0	0	0	3	75	251	431	545	626	614	566	456	278	118	6	0	0	0	0	0	0	3967
30	0	0	0	0	0	0	1	84	263	428	553	625	629	568	442	259	109	5	0	0	0	0	0	0	3966
31	0	0	0	0	0	0	2	77	234	416	456	464	485	384	204	278	101	4	0	0	0	0	0	0	3105
Avg	0	0	0	0	0	0	6	87	232	367	478	540	537	489	407	288	139	22	0	0	0	0	0	0	3594
S D	0	0	0	0	0	0	7	49	106	167	180	222	240	229	173	132	70	16	0	0	0	0	0	0	1441
S/A	0	0	0	0	0	0	1.06	0.57	0.46	0.46	0.38	0.41	0.45	0.47	0.42	0.46	0.5	0.75	4.52	0	0	0	0	0	0.4
Min	0	0	0	0	0	0	0	10	28	36	35	71	65	47	29	11	10	3	0	0	0	0	0	0	626
Max	0	0	0	0	0	0	23	191	385	580	692	779	795	747	628	461	261	66	0	0	0	0	0	0	5517

Daylight Data Recovery: 0% missing; 3% exceed the 15% QC threshold -- 4195 total daylight 5-minute measurements.

Note: Fractional values that do not appear in the hour columns are included in the calculation for daily values.

Data and Flag	Hour Column	Day Column
<value>*	20% < Missing < 100%	10% < Missing < 100%
<value>?	20% < Fail QC < 100%	10% < Fail QC < 100%
<blank>*	100% Missing	100% Missing
<blank>?	100% Fail QC	100% Fail QC

Station: BS  
Latitude: 37.27° N  
Longitude: 81.24° W  
Elevation: 803 Meters AMSL  
Time Zone: -5

Instrument: PSP  
Calibration Constant: 9.02 uV/Wm-2  
Serial Number: 25821F3  
Calibration Date: 5/21/98

**Direct Normal Solar Radiation**  
**Hourly Integrated and Daily Totals**  
**Watt-Hours per Square Meter**  
**Bluefield State College - October 1999**

Field: DNI

Hour Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily
1	0	0	0	0	0	0	68	390 ?	841 ?	952 ?	969	988	991	984	950	891	764	386	0	0	0	0	0	0	9174
2	0	0	0	0	0	0	145	667	837	936	959	974	981	935	723	690	629	203	0	0	0	0	0	0	8680
3	0	0	0	0	0	0	107	545 ?	776	858	799	686	910	859	581	658	480	111	0	0	0	0	0	0	7370
4	0	0	0	0	0	0	0	0	1	2	3	7	24	177	34	128	7	0	0	0	0	0	0	0	383
5	0	0	0	0	0	0	0	0	38	23	70	45	62	98	252	656	640	256	0	0	0	0	0	0	2140
6	0	0	0	0	0	0	31	397 ?	711 ?	864 ?	810	951	962	952	921	853	708	288	0	0	0	0	0	0	8449
7	0	0	0	0	0	0	41	491 ?	821 ?	916	942	960	956	927	888	814	647	252	0	0	0	0	0	0	8653
8	0	0	0	0	0	0	0	345	717	812	767	896	882	880	830	755	530	85	0	0	0	0	0	0	7500
9	0	0	0	0	0	0	0	0	4	1	4	0	1	1	1	0	0	0	0	0	0	0	0	0	11
10	0	0	0	0	0	0	0	1	1	3	4	1	1	0	0	0	0	0	0	0	0	0	0	0	13
11	0	0	0	0	0	0	0	0	1	0	146	135	188	147	166	254	119	28	0	0	0	0	0	0	1184
12	0	0	0	0	0	0	13	437	722	834	887	905	893	876	830	754	592	167	0	0	0	0	0	0	7910
13	0	0	0	0	0	0	33	476	683	666	324	79	0	0	364	63	4	3	0	0	0	0	0	0	2695
14	0	0	0	0	0	0	0	42	30	3	441	984	999	987	950	875	734	242	0	0	0	0	0	0	6287
15	0	0	0	0	0	0	28	465	692	800	854	879	882	874	856	800	639	179	0	0	0	0	0	0	7948
16	0	0	0	0	0	0	16	553	781	867	905	929	937	924	878	802	631	168	0	0	0	0	0	0	8391
17	0	0	0	0	0	0	0	0	1	1	8	710	931	917	867	665	652	160	0	0	0	0	0	0	4912
18	0	0	0	0	0	0	0	0	0	170	404	651	714	910	891	816	611	158	0	0	0	0	0	0	5325
19	0	0	0	0	0	0	0	32	29	192	2	1	1	0	0	0	0	0	0	0	0	0	0	0	257
20	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	4	28	0	0	0	0	0	0	34
21	0	0	0	0	0	0	6	245 ?	719 ?	898 ?	934	953	956	932	893	808	601	138	0	0	0	0	0	0	8083
22	0	0	0	0	0	0	11	536	747	770	761	814	344	6	308	71	374	112	0	0	0	0	0	0	4853
23	0	0	0	0	0	0	0	0	0	5	7	35 ?	1	3	2	1	8	0	0	0	0	0	0	0	61
24	0	0	0	0	0	0	0	0	36	8	115	2	2	3	0	0	0	0	0	0	0	0	0	0	165
25	0	0	0	0	0	0	0	201 ?	817 ?	936	975	1007	1009	994	951	880	705	151	0	0	0	0	0	0	8628
26	0	0	0	0	0	0	0	425	755	864	955	991	975	943	908	816	564	52	0	0	0	0	0	0	8246
27	0	0	0	0	0	0	0	423	752	863	926	960	980	976	932	845	644	110	0	0	0	0	0	0	8410
28	0	0	0	0	0	0	0	450	766	873	926	944	942	936	888	797	573	68	0	0	0	0	0	0	8162
29	0	0	0	0	0	0	0	186	562	839	825	893	839	800	862	619	394	28	0	0	0	0	0	0	6846
30	0	0	0	0	0	0	0	448	786	891	930	942	941	914	835	631	474	53	0	0	0	0	0	0	7844
31	0	0	0	0	0	0	0	262	504	601	307	302	446	245	12	401	273	38	0	0	0	0	0	0	3392
Avg	0	0	0	0	0	0	16	259	456	531	547	601	605	587	567	527	419	112	0	0	0	0	0	0	5226
S/D	0	0	0	0	0	0	33	222	359	403	396	416	423	426	390	344	278	100	0	0	0	0	0	0	3407
S/A	0	0	0	0	0	0	2.06	0.86	0.79	0.76	0.72	0.69	0.7	0.73	0.69	0.65	0.66	0.9	5.48	0	0	0	0	0	0.65
Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Max	0	0	0	0	0	0	145	667	841	952	975	1007	1009	994	951	891	764	386	0	0	0	0	0	0	9174

Daylight Data Recovery: 0% missing; 2% exceed the 15% QC threshold -- 4195 total daylight 5-minute measurements.

Note: Fractional values that do not appear in the hour columns are included in the calculation for daily values.

Data and Flag	Hour Column	Day Column
<value>*	20% < Missing < 100%	10% < Missing < 100%
<value>?	20% < Fail QC < 100%	10% < Fail QC < 100%
<blank>*	100% Missing	100% Missing
<blank>?	100% Fail QC	100% Fail QC

Station: BS  
Latitude: 37.27° N  
Longitude: 81.24° W  
Elevation: 803 Meters AMSL  
Time Zone: -5

Instrument: NIP  
Calibration Constant: 8.48 uV/Wm-2  
Serial Number: 17664E6  
Calibration Date: 5/21/98

**Diffuse Solar Radiation on a Horizontal Surface (Shadow Band PSP)**  
**Hourly Integrated and Daily Totals**  
**Watt-Hours per Square Meter**  
**Bluefield State College - October 1999**

Field: DHI

Hour Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily
1	0	0	0	0	0	0	10	36	48	53	57	57	59	59	55	47	36	15	0	0	0	0	0	0	531
2	0	0	0	0	0	0	7	37	49	50	57	61	64	87	117	92	61	26	0	0	0	0	0	0	709
3	0	0	0	0	0	0	10	40 ?	65	76	106	153	108	109	185	130	83	20	0	0	0	0	0	0	1084
4	0	0	0	0	0	0	2	19	67	158	223	268	236	305	269	181	29	14	0	0	0	0	0	0	1771
5	0	0	0	0	0	0	4	63	168	147	248	302	351	315	206	157	67	20	0	0	0	0	0	0	2049
6	0	0	0	0	0	0	10	50 ?	71 ?	85	114	89	86	81	74	63	44	16	0	0	0	0	0	0	784
7	0	0	0	0	0	0	8	39 ?	56 ?	63	78	80	82	82	75	65	50	18	0	0	0	0	0	0	697
8	0	0	0	0	0	0	19	62	85	108	166	140	121	108	93	82	59	14	0	0	0	0	0	0	1057
9	0	0	0	0	0	0	6	44	132	118	211	147	155	93	86	48	17	3	0	0	0	0	0	0	1061
10	0	0	0	0	0	0	3	38	85	161	232	162	133	102	100	94	37	16	0	0	0	0	0	0	1163
11	0	0	0	0	0	0	2	29	72	78	223	333	343	317	214	183	96	24	0	0	0	0	0	0	1914
12	0	0	0	0	0	0	6	47	69	82	89	98	104	96	88	71	48	13	0	0	0	0	0	0	812
13	0	0	0	0	0	0	5	45	76	170	229	269	97	86	212	95	52	18	0	0	0	0	0	0	1355
14	0	0	0	0	0	0	4	67	168	210	209	65	59	54	48	42	29	7	0	0	0	0	0	0	964
15	0	0	0	0	0	0	6	44	76	89	99	103	103	91	73	56	38	9	0	0	0	0	0	0	787
16	0	0	0	0	0	0	4	36	58	71	82	81	76	70	66	55	36	8	0	0	0	0	0	0	643
17	0	0	0	0	0	0	2	20	102	139	265	155	64	58	54	121	34	10	0	0	0	0	0	0	1025
18	0	0	0	0	0	0	2	28	82	184	208	200	139	83	63	51	35	6	0	0	0	0	0	0	1080
19	0	0	0	0	0	0	2	58	148	205	219	165	152	48	27	10	9	6	0	0	0	0	0	0	1050
20	0	0	0	0	0	0	0	12	25	33	32	66	60	43	86	111	87	21	0	0	0	0	0	0	577
21	0	0	0	0	0	0	3	38 ?	62	63 ?	68	89	73	66	57	48	33	6	0	0	0	0	0	0	606
22	0	0	0	0	0	0	3	30	51	81	109	130	245	265	194	57	54	9	0	0	0	0	0	0	1229
23	0	0	0	0	0	0	0	9	52	93	129	170 ?	122	169	162	109	69	6	0	0	0	0	0	0	1090
24	0	0	0	0	0	0	1	16	103	194	311	190	234	213	151	53	27	4	0	0	0	0	0	0	1496
25	0	0	0	0	0	0	2	30 ?	53 ?	48	49	47	47	44	41	33	23	3	0	0	0	0	0	0	419
26	0	0	0	0	0	0	2	36	115	88	58	62	64	66	57	49	33	4	0	0	0	0	0	0	633
27	0	0	0	0	0	0	2	29	47	59	67	66	61	55	47	39	24	2	0	0	0	0	0	0	499
28	0	0	0	0	0	0	1	26	43	51	56	61	61	59	51	40	22	2 ?	0	0	0	0	0	0	474
29	0	0	0	0	0	0	2	36	54	63	88	84	95	115	57	68	53	5	0	0	0	0	0	0	720
30	0	0	0	0	0	0	1	22	39	46	50	59	59	59	59	60	35	3	0	0	0	0	0	0	491
31	0	0	0	0	0	0	1	37	85	152	271	259	212	235	188	151	59	3	0	0	0	0	0	0	1653
Avg	0	0	0	0	0	0	4	36	78	104	142	136	125	117	105	79	45	11	0	0	0	0	0	0	981
S/D	0	0	0	0	0	0	4	14	36	52	82	79	81	83	64	43	20	7	0	0	0	0	0	0	431
S/A	0	0	0	0	0	0	0.91	0.39	0.46	0.5	0.58	0.58	0.65	0.71	0.61	0.55	0.46	0.67	5.48	0	0	0	0	0	0.44
Min	0	0	0	0	0	0	0	9	25	33	32	47	47	43	27	10	9	2	0	0	0	0	0	0	419
Max	0	0	0	0	0	0	19	67	168	210	311	333	351	317	269	183	96	26	0	0	0	0	0	0	2049

Daylight Data Recovery: 0% missing; 1% exceed the 15% QC threshold -- 4195 total daylight 5-minute measurements.

Note: Fractional values that do not appear in the hour columns are included in the calculation for daily values.

Data and Flag	Hour Column	Day Column
<value>*	20% < Missing < 100%	10% < Missing < 100%
<value>?	20% < Fail QC < 100%	10% < Fail QC < 100%
<blank>*	100% Missing	100% Missing
<blank>?	100% Fail QC	100% Fail QC

Station: BS  
Latitude: 37.27° N  
Longitude: 81.24° W  
Elevation: 803 Meters AMSL  
Time Zone: -5

Instrument: PSP  
Calibration Constant: 7.01 uV/Wm-2  
Serial Number: 17860F3  
Calibration Date: 5/21/98