

**Global Solar Radiation on a Horizontal Surface**  
**Hourly Integrated and Daily Totals**  
**Watt-Hours per Square Meter**  
**Bluefield State College - September 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	77	275	482	665	817	909	930	884	776	606	408	203	21	0	0	0	0	0	7054
2	0	0	0	0	0	0	61	?	497	?	658	803	889	916	879	775	607	412	206	21	0	0	0	0	6724
3	0	0	0	0	0	0	56	315	?	454	659	806	895	913	871	769	608	404	192	17	0	0	0	0	6960
4	0	0	0	0	0	0	19	81	?	247	643	791	645	895	612	596	469	361	144	23	0	0	0	0	5528
5	0	0	0	0	0	0	2	14	?	33	53	63	38	80	101	63	50	44	13	3	0	0	0	0	557
6	0	0	0	0	0	0	6	32	?	81	131	181	257	315	171	229	247	196	53	16	0	0	0	0	1916
7	0	0	0	0	0	0	38	111	?	220	134	512	771	868	812	611	394	328	154	11	0	0	0	0	4962
8	0	0	0	0	0	0	49	122	?	481	?	596	771	862	890	830	716	534	334	173	8	0	0	0	6367
9	0	0	0	0	0	0	49	229	?	224	362	378	410	644	720	572	386	154	50	9	0	0	0	0	4187
10	0	0	0	0	0	0	63	182	?	405	?	639	791	865	887	839	717	542	354	160	7	0	0	0	6451
11	0	0	0	0	0	0	49	?	?	497	?	650	754	816	873	763	626	414	244	79	8	0	0	0	5772
12	0	0	0	0	0	0	64	215	?	382	480	701	866	872	827	724	562	319	126	9	0	0	0	0	6148
13	0	0	0	0	0	0	46	217	?	364	584	635	619	619	679	507	251	166	48	1	0	0	0	0	4736
14	0	0	0	0	0	0	13	109	?	136	213	155	764	411	381	543	340	238	146	16	0	0	0	0	3465
15	0	0	0	0	0	0	14	118	?	239	277	363	474	346	201	255	176	105	32	2	0	0	0	0	2603
16	0	0	0	0	0	0	10	87	?	300	610	741	774	642	437	277	283	279	131	5	0	0	0	0	4575
17	0	0	0	0	0	0	46	191	?	382	498	777	814	871	821	704	539	339	126	1	0	0	0	0	6111
18	0	0	0	0	0	0	42	204	?	431	409	695	635	596	699	450	308	244	81	7	0	0	0	0	4802
19	0	0	0	0	0	0	36	185	?	378	570	598	321	475	634	584	420	260	112	3	0	0	0	0	4576
20	0	0	0	0	0	0	23	169	?	355	531	576	278	189	399	400	308	91	18	0	0	0	0	0	3338
21	0	0	0	0	0	0	3	73	?	23	33	78	60	56	101	101	163	109	30	2	0	0	0	0	831
22	0	0	0	0	0	0	25	193	?	446	451	750	843	851	804	687	519	318	109	1	0	0	0	0	5998
23	0	0	0	0	0	0	33	96	?	?	595	738	817	833	781	675	508	310	102	1	?	0	0	0	5489
24	0	0	0	0	0	0	32	205	?	414	540	749	718	808	775	659	492	289	93	2	0	0	0	0	5775
25	0	0	0	0	0	0	30	192	?	395	580	719	797	809	757	641	476	280	78	0	?	0	0	0	5751
26	0	0	0	0	0	0	28	188	?	386	564	701	803	753	703	626	460	280	87	1	0	0	0	0	5580
27	0	0	0	0	0	0	2	19	?	34	85	105	135	118	224	162	185	40	17	1	0	0	0	0	1126
28	0	0	0	0	0	0	5	49	?	78	106	148	172	419	367	606	195	166	36	1	0	0	0	0	2348
29	0	0	0	0	0	0	10	49	?	325	430	711	352	75	49	179	45	48	20	0	0	0	0	0	2294
30	0	0	0	0	0	0	10	98	?	240	484	587	738	707	709	601	461	271	71	0	0	0	0	0	4977
Avg	0	0	0	0	0	0	31	143	?	308	441	573	611	622	594	528	385	246	96	7	0	0	0	0	4567
S D	0	0	0	0	0	0	21	77	?	148	206	252	276	292	268	212	161	109	57	7	0	0	0	0	1858
S/A	0	0	0	0	0	2.8	0.67	0.54	?	0.48	0.47	0.44	0.45	0.47	0.45	0.4	0.42	0.44	0.6	1.07	0	0	0	0	0.41
Min	0	0	0	0	0	0	2	14	?	23	33	63	38	56	49	63	45	40	13	0	0	0	0	0	557
Max	0	0	0	0	0	0	77	315	?	497	665	817	909	930	884	776	608	412	206	23	0	0	0	0	7054

Daylight Data Recovery: 0% missing; 3% exceed the 15% QC threshold -- 4487 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 - September 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	425	790	905	952	981	999	996	985	962	919	839	674	90	0	0	0	0	0	10516
2	0	0	0	0	0	0	363	?	861	?	920	947	960	972	975	914	836	685	85	0	0	0	0	0	9474
3	0	0	0	0	0	0	379	818	?	876	934	961	975	973	974	917	825	612	59	0	0	0	0	0	10259
4	0	0	0	0	0	0	28	99	221	836	908	186	773	295	531	422	463	131	0	0	0	0	0	0	4894
5	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
6	0	0	0	0	0	0	0	0	1	1	2	6	6	1	7	13	42	2	1	0	0	0	0	0	81
7	0	0	0	0	0	0	14	13	26	1	225	576	813	779	616	416	522	399	25	0	0	0	0	0	4425
8	0	0	0	0	0	0	119	347	?	845	?	909	924	937	940	915	840	621	470	477	28	0	0	0	8373
9	0	0	0	0	0	0	119	353	128	85	23	9	124	450	350	117	5	0	0	0	0	0	0	0	1763
10	0	0	0	0	0	0	277	647	?	858	?	935	971	983	981	962	888	785	717	574	24	0	0	0	9601
11	0	0	0	0	0	0	341	?	945	?	964	663	734	854	695	494	287	181	2	0	0	0	0	0	6161
12	0	0	0	0	0	0	176	524	507	257	639	965	977	978	961	911	655	218	11	0	0	0	0	0	7777
13	0	0	0	0	0	0	230	542	378	721	324	301	243	411	207	60	9	0	0	0	0	0	0	0	3427
14	0	0	0	0	0	0	0	1	1	4	2	395	116	58	273	96	97	90	0	0	0	0	0	0	1133
15	0	0	0	0	0	0	0	5	36	6	17	60	3	1	4	1	0	0	0	0	0	0	0	0	133
16	0	0	0	0	0	0	0	0	356	818	874	779	442	192	55	152	408	474	0	0	0	0	0	0	4550
17	0	0	0	0	0	0	177	363	?	449	463	785	722	956	966	943	890	796	554	0	0	0	0	0	8066
18	0	0	0	0	0	0	252	678	?	743	326	616	311	212	456	190	132	232	138	0	0	0	0	0	4287
19	0	0	0	0	0	0	104	395	553	555	313	75	258	358	452	340	346	193	0	0	0	0	0	0	3941
20	0	0	0	0	0	0	24	240	489	569	390	56	2	81	73	58	0	0	0	0	0	0	0	0	1982
21	0	0	0	0	0	0	0	7	0	0	1	0	0	1	0	2	6	0	0	0	0	0	0	0	17
22	0	0	0	0	0	0	118	582	582	389	855	977	984	984	953	906	802	513	0	0	0	0	0	0	8645
23	0	0	0	0	0	0	186	562	?	?	928	970	982	984	966	952	905	805	512	0	0	0	0	0	8754
24	0	0	0	0	0	0	180	670	782	727	843	658	880	926	905	865	721	426	0	0	0	0	0	0	8583
25	0	0	0	0	0	0	167	656	815	891	931	952	950	931	894	835	713	393	0	0	0	0	0	0	9127
26	0	0	0	0	0	0	149	617	764	837	879	915	776	736	787	701	663	302	0	0	0	0	0	0	8126
27	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	2	0	0	0	0	0	0	0	0	9
28	0	0	0	0	0	0	0	0	1	0	0	1	25	64	588	44	207	0	0	0	0	0	0	0	932
29	0	0	0	0	0	0	0	0	101	225	424	11	0	0	2	0	0	0	0	0	0	0	0	0	764
30	0	0	0	0	0	0	0	4	77	442	496	720	720	825	832	875	783	410	0	0	0	0	0	0	6183
Avg	0	0	0	0	0	0	128	318	424	490	532	508	532	522	440	405	259	11	0	0	0	0	0	0	5066
S D	0	0	0	0	0	0	131	294	350	376	382	404	417	400	381	379	329	243	24	0	0	0	0	0	3623
S/A	0	0	0	0	0	3.02	1.02	0.92	0.83	0.77	0.72	0.8	0.78	0.75	0.73	0.86	0.81	0.94	2.24	0	0	0	0	0	0.72
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	2
Max	0	0	0	0	0	0	425	818	945	964	981	999	996	985	962	919	839	685	90	0	0	0	0	0	10516

Daylight Data Recovery: 0% missing; 3% exceed the 15% QC threshold -- 4487 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 - September 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	29	47	51	55	63	66	68	67	63	55	50	38	10	0	0	0	0	0	664
2	0	0	0	0	0	0	26	55 ?	61	70	78	83	81	75	71	63	56	42	11	0	0	0	0	0	771
3	0	0	0	0	0	0	25	48 ?	50	62	73	77	77	71	69	66	56	45	10	0	0	0	0	0	730
4	0	0	0	0	0	0	17	51	119	102	98	467	225	340	200	208	159	106	21	0	0	0	0	0	2113
5	0	0	0	0	0	0	2	12	29	47	56	34	71	89	55	44	39	12	3	0	0	0	0	0	490
6	0	0	0	0	0	0	5	28	71	116	158	229	281	152	207	221	164	48	14	0	0	0	0	0	1694
7	0	0	0	0	0	0	35	96	199	118	323	281	172	171	154	145	119	66	9	0	0	0	0	0	1888
8	0	0	0	0	0	0	29	61 ?	66	62	80	86	92	101	134	167	143	69	5	0	0	0	0	0	1097
9	0	0	0	0	0	0	34	138	163	309	342	357	507	340	319	319	136	44	9	0	0	0	0	0	3016
10	0	0	0	0	0	0	23	49 ?	51	60	71	76	80	87	90	89	67	38	4	0	0	0	0	0	786
11	0	0	0	0	0	0	20	42	43	57	252	217	162	205	268	243	158	69	7	0	0	0	0	0	1744
12	0	0	0	0	0	0	41	64	146	287	198	97	76	68	60	54	51	89	8	0	0	0	0	0	1240
13	0	0	0	0	0	0	24	77	186	146	386	371	410	358	360	204	149	43	1	0	0	0	0	0	2715
14	0	0	0	0	0	0	11	96	122	192	137	439	299	321	347	278	199	131	15	0	0	0	0	0	2586
15	0	0	0	0	0	0	13	102	219	247	342	407	307	181	226	157	94	28	2	0	0	0	0	0	2327
16	0	0	0	0	0	0	8	78	119	113	107	156	281	285	233	198	135	46	4	0	0	0	0	0	1761
17	0	0	0	0	0	0	19	125 ?	166	207	205	234	110	86	74	64	49	27	2	0	0	0	0	0	1367
18	0	0	0	0	0	0	17	44	117	196	245	379	419	341	307	233	162	55	6	0	0	0	0	0	2523
19	0	0	0	0	0	0	26	88	141	251	373	245	255	352	278	237	147	84	3	0	0	0	0	0	2478
20	0	0	0	0	0	0	21	107	152	202	299	220	169	326	337	276	81	16	0	0	0	0	0	0	2206
21	0	0	0	0	0	0	3	65	22	29	70	54	50	90	90	146	97	27	1	0	0	0	0	0	744
22	0	0	0	0	0	0	11	53	198	226	148	89	81	74	69	58	46	25	1	0	0	0	0	0	1080
23	0	0	0	0	0	0	13	42 ?	51	61	65	65	66	67	60	53	42	21	0	0	0	0	0	0	607
24	0	0	0	0	0	0	14	49	89	114	162	199	119	93	80	61	51	26	1	0	0	0	0	0	1058
25	0	0	0	0	0	0	13	42	59	72	78	80	79	78	74	63	48	19	0	0	0	0	0	0	705
26	0	0	0	0	0	0	13	47	74	90	99	116	150	166	123	116	68	39	1	0	0	0	0	0	1103
27	0	0	0	0	0	0	2	17	30	76	94	122	110	206	145	165	36	16	1	0	0	0	0	0	1021
28	0	0	0	0	0	0	5	46	71	96	136	156	370	305	252	164	84	32	1	0	0	0	0	0	1719
29	0	0	0	0	0	0	9	45	265	279	412	316	68	45	161	40	43	18	0	0	0	0	0	0	1702
30	0	0	0	0	0	0	9	88	199	228	245	201	164	116	92	52	38	17	0	0	0	0	0	0	1449
Avg	0	0	0	0	0	0	17	63	111	139	180	197	180	175	167	141	92	44	5	0	0	0	0	0	1513
S.D	0	0	0	0	0	0	10	30	65	82	112	126	124	110	100	83	49	28	5	0	0	0	0	0	714
S/A	0	0	0	0	0	3.27	0.59	0.47	0.59	0.59	0.62	0.64	0.69	0.63	0.6	0.59	0.53	0.63	1.04	0	0	0	0	0	0.47
Min	0	0	0	0	0	0	2	12	22	29	56	34	50	45	55	40	36	12	0	0	0	0	0	0	490
Max	0	0	0	0	0	0	41	138	265	309	412	467	507	358	360	319	199	131	21	0	0	0	0	0	3016

Daylight Data Recovery: 0% missing; 1% exceed the 15% QC threshold -- 4487 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