

Night Highlights – Dec.2010 through Dec.2011 by Dr. Bob Doyle, Frostburg State Planetarium
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MOON – Earth's companion both orbits Earth and rotates in **27.32** E. days so one side of moon always faces Earth (while other side is turned away from us). Moon's cycle of lighted shapes (phases) lasts **29.53** E. days, as the phases also depend on direction of sun (appears to move 30 degrees eastward each month along zodiac). The moon is seen about **13** days growing in the evening from a slender crescent () to **Full**, followed by an equal time shrinking (mainly seen in the a.m. sky) and then 4 days hidden in sun's glare.

Key Moon Phases (D) moon ½ full in evening (best for crater & mountain viewing) & (O) full moon (see all lava plains) (**Dec.'10, 12 – D, 20 – O (lunar eclipse* after midnight)**) // (**Jan.'11, 12 – D, 19 - O**), (**Feb.'11, 11 – D, 18 – O**) // (**Mar. 10 – D, 19 – O**) // (**Apr, 12 – D, 17 – O**), // (**May 10 – D, 17 – O**), (**Jun.'11, 8 – D, 15 - O**) // (**Jul., 8 – D, 15 – O**) // (**Aug., 6 – D, 13 – O**) // (**Sep., 4 – D, 12 – O (Harvest)**), (**Oct.'11, 3 – D, 11 – O (Hunters')**) // (**Nov., 2 – D, 10 – O**) // (**Dec., 2 – D, 9 – O**) (D = ½ full, O = full)
*Note: Total Lunar Eclipse from **12:40 a.m. to 1:54 a.m.** on December 21st, 2010 (Moon in Earth's shadow)

THE 5 BRIGHT PLANETS (Mercury, Venus, Mars, Jupiter & Saturn): Uranus, Neptune are much dimmer. When high above horizon, planets appear as points of light that shine steadily. Venus & Jupiter outshine all night stars, Saturn lesser brightness, Mars' brightness varies and Mercury's light flickers.

Below planet visibility descriptions for period from December '10 to December '11 (change each year)

Mercury – low in SW dusk in early Dec.'10 // low in SE dawn in early Jan.'11.// low in WNW dusk late March // low in WNW dusk in early July // low in E dawn in early Sept. // low in WSW dusk in mid-Nov.'11. (Mercury seen for about 2 weeks at a time due to its rapid motion about sun, taking only 88 days to orbit sun.)
Venus – brilliant point of light in winter '11 Southeastern dawn, much lower in Spring '11 dawns (on far side of orbit), unobservable during summer '11', slowly emerges in Southwestern dawn in Fall '11, great in Dec.'11
Mars – lost in sun's glare in winter '11 & most of spring '11 (on far side of orbit), creeps into view at dawn in summer '11, seen low in late evening eastern sky in December (Hard to see Mars in 2011, 2012 is better)
Jupiter – seen in SW dusk in winter '11, lost in sun's glare in spring '11, well seen in morning sky in summer '11, seen in late evening sky in early fall '11, in late fall '11, dominates eastern evening sky
Saturn – seen in winter '11 morning sky, above and to the right of brilliant Venus, seen low in the East in late evenings in early spring, late spring at its best for telescopic viewing of rings in southern evening sky, drops lower into SW in summer, disappearing in sun's glare in late summer/early fall, in eastern dawn for holidays

Best Evening Stars & Groups this Winter: **ORION** has 3 star belt with * **Betelgeuse** above and * **Rigel** below, Orion's belt points left to ***Sirius**, belt points right to ***Aldebaran**, golden * **Capella** high in sky. (* = star)

Best Evening Stars & Groups in Spring: **BIG DIPPER** upside down high in North, Dipper's handle arcs to golden * **Arcturus**, golden * **Capella** high in NW, **LEO's** sickle high in South with * **Regulus**

Best Evening Stars & Groups in Summer: **BIG DIPPER** in NW with handle on top, golden * **Arcturus** in West, white-blue * **Vega** in East, **SCORPIUS** forms starry "J" in South with pink * **Antares** on top

Best Evening Stars & Groups in Fall: **CASSIOPEIA** zig-zag in NE, **GREAT SQUARE** in SE, * **Fomalhaut** low in South, **SUMMER TRIANGLE** in West with * **Vega** lower right, * **Capella** low in the NE

Frostburg State Planetarium Free Shows – Tawes 302: 4 & 7 p.m. **Sundays**, Show change monthly

Dec'10 5th,12th,19th: "**Christmas, Hanukkah & Kwanzaa**" **Jan'11:** 9th, 16th, 23th, 30th: "**Creation Accounts**"

Feb.'11: 6th, 13th, 20th, 27th: "**End of Everything**", **Mar. '11** 6th, 20st, 27th: "**How Ancients Used Sky**"

Apr.'11: 3rd, 10th, 17th "**Our Sun's Neighbor Stars**", **May '11** 1st, 8th, 15th: "**Planets About Other Stars**"

Sept.'11 11th, 18th, 25th: "**Moons' Curiosities**", **Oct.'11** 2nd, 9th, 16th, 23th, 30th: "**Planets' Peculiarities**"

Nov. '11 6th, 13th & 20th: "**Stars' Mysteries**" **Dec. '11** 4th, 11th, 18th: "**Solstice Festivities and Holydays**"

Call (301) 687-7799 to request a bookmark & small map. Also ADA at (301) 687-4102 for accommodations.

Sun Events for Bedford, Cumberland, Hancock, Keyser, Meyersdale, Oakland, Romney every 10 days

Starts 12/1 – Daylight time starts 2nd Sunday in March*, Standard time begins 1st Sunday in November**

(Unlike the moon events, the times of sunrise and sunset at given towns change little from year to year)

Date	<u>Bedford</u>		<u>Cumberland</u>		<u>Hancock</u>		<u>Keyser</u>		<u>Meyersdale</u>		<u>Oakland</u>		<u>Romney</u>		Date
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	
12/01	7:17	4:49	7:17	4:51	7:15	4:49	7:17	4:53	7:18	4:52	7:19	4:55	7:14	4:50	12/01
12/11	7:26	4:49	7:26	4:51	7:24	4:48	7:27	4:52	7:27	4:52	7:28	4:54	7:23	4:50	12/11
12/21	7:32	4:52	7:32	4:54	7:30	4:52	7:34	4:55	7:34	4:55	7:34	4:57	7:29	4:53	12/21
01/01	7:36	4:59	7:36	5:01	7:34	4:59	7:36	5:03	7:38	5:02	7:38	5:05	7:33	5:00	1/01
01/11	7:35	5:09	7:35	5:11	7:33	5:08	7:36	5:12	7:37	5:11	7:37	5:14	7:33	5:10	1/11
01/21	7:31	5:20	7:31	5:22	7:29	5:19	7:32	5:23	7:33	5:22	7:33	5:25	7:29	5:20	1/21
02/01	7:23	5:33	7:23	5:35	7:21	5:32	7:23	5:36	7:25	5:35	7:25	5:38	7:20	5:33	2/01
02/11	7:12	5:45	7:13	5:47	7:10	5:44	7:13	5:48	7:14	5:47	7:15	5:49	7:10	5:45	2/11
02/21	6:59	5:57	7:00	5:58	6:58	5:56	7:01	5:59	7:01	5:59	7:02	6:01	6:58	5:56	2/21
03/01	6:48	6:06	6:49	6:07	6:46	6:05	6:49	6:08	6:50	6:08	6:51	6:10	6:46	6:05	3/01
03/11 *	7:32	7:16	7:33	7:18	7:31	7:15	7:34	7:18	7:34	7:19	7:36	7:20	7:34	7:18	3/11
03/21	7:17	7:25	7:18	7:28	7:18	7:26	7:19	7:29	7:19	7:29	7:21	7:30	7:16	7:26	3/21
04/01	6:59	7:38	7:00	7:39	6:57	7:37	7:01	7:40	7:01	7:40	7:02	7:41	6:58	7:37	4/01
04/11	6:43	7:48	6:44	7:49	6:42	7:47	6:45	7:49	6:45	7:50	6:47	7:51	6:42	7:46	4/11
04/21	6:28	7:58	6:29	7:59	6:27	7:57	6:31	7:59	6:30	7:59	6:32	8:00	6:28	7:56	4/21
05/01	6:14	8:07	6:16	8:08	6:14	8:06	6:17	8:08	6:17	8:09	6:19	8:10	6:15	8:05	5/01
05/11	6:03	8:17	6:05	8:18	6:02	8:15	6:06	8:18	6:06	8:19	6:08	8:20	6:04	8:15	5/11
05/21	5:54	8:27	5:56	8:27	5:54	8:25	5:57	8:27	5:57	8:28	5:59	8:29	5:55	8:24	5/21
06/01	5:47	8:36	5:50	8:36	5:47	8:34	5:51	8:36	5:50	8:37	5:53	8:38	5:48	8:33	6/01
06/11	5:45	8:42	5:47	8:42	5:44	8:40	5:48	8:42	5:47	8:44	5:50	8:44	5:46	8:39	6/11
06/21	5:45	8:46	5:47	8:46	5:45	8:44	5:44	8:46	5:48	8:48	5:51	8:48	5:46	8:43	6/21
Date	<u>Bedford</u>		<u>Cumberland</u>		<u>Hancock</u>		<u>Keyser</u>		<u>Meyersdale</u>		<u>Oakland</u>		<u>Romney</u>		Date
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	
07/01	5:49	8:47	5:51	8:47	5:48	8:45	5:42	8:47	5:51	8:48	5:54	8:49	5:50	8:44	7/01
07/11	5:45	8:44	5:57	8:44	5:54	8:42	5:48	8:45	5:57	8:46	6:00	8:46	5:56	8:41	7/11
07/21	6:02	8:39	6:04	8:39	6:02	8:37	6:06	8:39	6:05	8:40	6:08	8:41	6:03	8:36	7/21
08/01	6:12	8:29	6:14	8:29	6:12	8:27	6:15	8:30	6:15	8:31	6:17	8:31	6:13	8:27	8/01
08/11	6:21	8:18	6:23	8:18	6:21	8:16	6:24	8:18	6:24	8:19	6:26	8:20	6:22	8:15	8/11
08/21	6:31	8:04	6:33	8:05	6:30	8:02	6:34	8:05	6:33	8:06	6:36	8:07	6:31	8:02	8/21
09/01	6:41	7:46	6:43	7:47	6:41	7:44	6:44	7:47	6:44	7:48	6:46	7:49	6:41	7:44	9/01
09/11	6:51	7:30	6:52	7:31	6:50	7:28	6:53	7:31	6:53	7:32	6:55	7:33	6:50	7:28	9/11
09/21	7:00	7:13	7:01	7:14	6:59	7:12	7:02	7:15	7:02	7:15	7:04	7:17	6:59	7:12	9/21
10/01	7:10	6:57	7:11	6:58	7:09	6:56	7:12	6:59	7:12	6:59	7:13	7:01	7:09	6:56	10/01
10/11	7:20	6:41	7:21	6:42	7:19	6:40	7:21	6:43	7:22	6:43	7:23	6:45	7:19	6:40	10/11
10/21	7:31	6:26	7:31	6:28	7:29	6:25	7:32	6:29	7:32	6:29	7:33	6:31	7:29	6:26	10/21
11/01	7:43	6:12	7:43	6:14	7:41	6:11	7:44	6:15	7:45	6:14	7:45	6:17	7:41	6:12	11/01
11/11**	6:54	5:01	6:55	5:03	6:52	5:01	6:55	5:04	6:56	5:04	6:57	5:06	6:52	5:02	**11/11
11/21	7:06	4:54	7:06	4:56	7:04	4:53	7:06	4:57	7:07	4:56	7:08	4:59	7:03	4:54	11/21
12/01	7:16	4:49	7:16	4:51	7:14	4:49	7:17	4:53	7:18	4:52	7:18	4:55	7:14	4:50	12/01
12/11	7:26	4:49	7:26	4:51	7:23	4:48	7:26	4:52	7:27	4:51	7:27	4:54	7:23	4:50	12/11
12/21	7:32	4:52	7:32	4:54	7:30	4:52	7:32	4:55	7:34	4:55	7:34	4:57	7:29	4:53	12/21
01/01	7:36	4:59	7:36	5:01	7:34	4:59	7:36	5:03	7:37	5:02	7:38	5:05	7:33	5:00	1/01