

**Night Highlights** – Dec.2009 through Dec.2010 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 **12** days growing in the evening from a thin crescent ( ) to **Full**, followed by an equal time shrinking (mainly seen in the a.m. sky) and then 4-5 days hidden in sun's glare.

**Evening Dates** when moon 1<sup>st</sup> seen in p.m. twilight ( ) and when evening moon ½ full ( **D** ) (best to see craters) (Note: these dates about 11 days earlier from one year to next as 12 lunar phase cycles = 354 days)  
**Dec.'09**, 18 - ), 23 - **D** \\ **Jan.'10**, 17 - ), 22 - **D** \\ **Feb.** 16 - ), 21 - **D** \\ **Mar.** 18 - ), 23 - **D** \\ **Apr.** 16 - ), 21 - **D** \\ **May** 15 - ), 20 - **D** \\ **Jun.** 13 - ), 18 - **D** \\ **Jul.** 13 - ), 18 - **D** \\ **Aug.** 11 - ), 16 - **D** \\ **Sep.** 9 - ), 14 - **D** \\ **Oct.** 9 - ), 14 - **D** \\ **Nov.** 8 - ), 13 - **D** \\ **Dec.** 9 - ), 14 - **D** \\

**Note:** Total Lunar Eclipse from 1 a.m. to 5 a.m. on December 21, 2010. (Moon moves through our shadow)

**THE 5 BRIGHT PLANETS (Mercury, Venus, Mars, Jupiter & Saturn):** Uranus, Neptune & Pluto 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 '09 to December '10 (change each year)

**Mercury** – seen low in SW dusk from Dec.10-27<sup>th</sup> in '09 // seen low in SW dawn 2<sup>nd</sup> half of Jan.// seen low in WNW dusk April 1-10<sup>th</sup> // seen low in E dawn late May // seen low in SW dusk 2<sup>nd</sup> half of July // seen low in E dawn in 2<sup>nd</sup> half of Sept. // seen low in SW dusk in last week of November and 1<sup>st</sup> week of December.

**Venus** – emerges from sun's glare in late Febr. in WSW dawn, slowly creeping higher till June, then begins to drop lower during rest of summer, lost in sun's glare in October, creeps into eastern dawn in November

**Mars** – creeps into view in East in late evenings in Jan., only planet with noticeable tint (yellowish), in February higher in early evening but fading, high in South in March, continuing to fade, appears near star Regulus (of Leo) in early June, getting lower as summer passes, near Saturn on August 1<sup>st</sup>, near Venus in early September, lost in sun's glare in October and November, emerging low in the eastern dawn in Dec.

**Jupiter** – seen in SW dusk in Dec.'09 & Jan.'10, hidden in sun's glare in Febr. & March, creeps upward out of eastern dawn in April, becoming prominent as summer approaches, in August, Jupiter rises in late evening eastern sky, becoming an all evening sight in September, more prominent in October, seen well rest of year

**Saturn** – rising earlier each month, seen on late January evenings in East, closest in March and seen all through the night, seen in evenings all through the spring and up to late summer, lost in sun's glare in Sept. and Oct., seen again in the eastern dawn in November and December.

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.'09** 6<sup>th</sup>, 13<sup>th</sup>, 20<sup>th</sup>: “**Seasonal Holidays**” **Jan.'10:** 10<sup>th</sup>, 17<sup>th</sup>, 24<sup>th</sup> & 31<sup>st</sup> – “**Our Glorious Atmosphere**”  
**Feb.'10:** 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>st</sup>, 28<sup>th</sup>: “**Quick Intro to Universe**”, **Mar. '10** 7<sup>th</sup>, 21<sup>st</sup>, 28<sup>th</sup>: “**Quick Intro to Stars**”  
**Apr.'10** 11<sup>th</sup>, 18<sup>th</sup>, 25<sup>th</sup>: “**Quick Intro to Planets**”, **May '10** 2<sup>nd</sup>, 9<sup>th</sup>, 16<sup>th</sup>: “**Are There Other Universes?**”  
**Sept.'10** 12<sup>th</sup>, 19<sup>th</sup>, 26<sup>th</sup>: “**Calendars: Old & Modern**” **Oct.'10** 3<sup>rd</sup>, 10<sup>th</sup>, 17<sup>th</sup>, 24<sup>th</sup>, 31<sup>st</sup>: “**Time Keeping**”  
**Nov. '10** 7<sup>th</sup>, 14<sup>th</sup> & 21<sup>st</sup>: “**Relativity & Time**” **Dec. '10** 5<sup>th</sup>, 12<sup>th</sup>, 19<sup>th</sup>: “**Christmas, Hanukah & Kwanzaa**”

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 2<sup>nd</sup> Sunday in March\*, Standard time begins 1st Sunday in November\*\*  
 (Unlike the moon events, the times of sunrise and sunset at given town change little from year to year)

	<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	Date
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
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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
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