

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>Julian Date at 02:00 SAST = 2,455,196.5 + day of month</p> <h2>January</h2> <p><b>Mercury</b> is in Sagittarius the entire month. <b>Venus</b> starts the month in Sagittarius crossing into Capricornus on the 19th. <b>Mars</b> is in Leo, crossing into Cancer on January 10. <b>Jupiter</b> is in Capricornus until the 6th when it moves into Aquarius. <b>Saturn</b> is in Virgo. <b>Uranus</b> is in Aquarius until January 16 when it crosses into Pisces. <b>Neptune</b> is in Capricornus.</p>					<p><b>01</b> dawn: ☿ ♄ dusk: ♃ ♁ perigee (23<sup>h</sup>) ♃ southernmost for 2010 (-13.7°) ♃ Io occults Europa (20<sup>h</sup>26<sup>m</sup>)</p>	<p><b>02</b> dawn: ☿ ♄ dusk: ♃</p> <p>Isaac Asimov's birthday (1920).</p>
<p><b>03</b> dawn: ☿ ♄ dusk: ♃</p> <p>♁ perihelion (02<sup>h</sup>)</p> <p>Spirit rover lands on Mars, in 2004.</p>	<p><b>04</b> dawn: ☿ ♄ dusk: ♃</p> <p>♀ inferior conjunction Regulus 3.7°N of ♄ (04<sup>h</sup>)</p>	<p><b>05</b> dawn: ☿ ♄ dusk: ♃</p> <p>♀ 3.4°N of ♀ (13<sup>h</sup>)</p>	<p><b>06</b> dawn: ☿ ♄ dusk: ♃</p>	<p><b>07</b> dawn: ☿ ♄ dusk: ♃</p> <p>♁ Last Quarter (12:39)</p>	<p><b>08</b> dawn: ☿ ♄ dusk: ♃</p> <p>Spica 3.2°N of ♄ (01<sup>h</sup>)</p> <p>Stephen Hawking's birthday (1942).</p>	<p><b>09</b> dawn: ☿ ♄ dusk: ♃</p>
<p><b>10</b> dawn: ☿ ♄ dusk: ♃</p>	<p><b>11</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♀ superior conjunction ♄ occults Antares (15<sup>h</sup>) visible in NE USA, E Canada, S Greenland.</p>	<p><b>12</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♄ furthest south (-25.7°)</p>	<p><b>13</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♀ 4.5°N of ♄ (18<sup>h</sup>)</p>	<p><b>14</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♃ stationary (21<sup>h</sup>) Huygens probe lands on Saturn's moon Titan, in 2005.</p>	<p><b>15</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♄ New Moon (09:11) ☉ annular solar eclipse ♀ stationary (18<sup>h</sup>) ♀ 1.4°S of ♄ (11<sup>h</sup>)</p>	<p><b>16</b> dawn: ♀ ☿ ♄ dusk: ♃</p>
<p><b>17</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♄ apogee (03<sup>h</sup>) ♄ 3.3°S of ♄ (22<sup>h</sup>)</p>	<p><b>18</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♃ 4.2°S of ♄ (08<sup>h</sup>)</p>	<p><b>19</b> dawn: ♀ ☿ ♄ dusk: ♃</p>	<p><b>20</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♃ 5.4°S of ♄ (08<sup>h</sup>)</p>	<p><b>21</b> dawn: ♀ ☿ ♄ dusk: ♃</p>	<p><b>22</b> dawn: ♀ ☿ ♄ dusk: ♃</p>	<p><b>23</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♄ First Quarter (12:53)</p>
<p><b>24</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♀ aphelion</p> <p>Opportunity rover lands on Mars, in 2004.</p>	<p><b>25</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>gamma Normid meteor shower starts (max Mar 13)</p>	<p><b>26</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♄ furthest north (+25.7°)</p>	<p><b>27</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♀ greatest (25°) western elongation (07<sup>h</sup>) ♃ nearest to ♁ (21<sup>h</sup>)</p>	<p><b>28</b> dawn: ♀ ☿ ♄ dusk: ♃</p> <p>♃ brightest (V = -1.28) largest (14.1") and nearest Earth (0.66AU) alpha Centaurid meteor shower starts</p>	<p><b>29</b> dawn: ♀ ☿ ♄ dusk: ☿ ♄</p> <p>♃ opposition (22<sup>h</sup>)</p>	<p><b>30</b> dawn: ♀ ♄ dusk: ☿ ♄</p> <p>♄ Full Moon (08:18) ♄ perigee (11<sup>h</sup>)</p>
<p><b>31</b> dawn: ♀ ♄ dusk: ☿ ♄</p> <p>Regulus 3.7°N of ♄ (15<sup>h</sup>)</p>	<p>The <b>annular solar eclipse</b> on January 15 will be visible in most of equatorial Africa, the southern tip of India, northern Sri Lanka, the south-eastern part of Bangladesh, Myanmar, and south-east China. From south Africa, all the major centres (with the exception of Cape Town) will be able to observe a very small partial eclipse, best seen around 09:20. <b>This is the only eclipse visible from southern Africa in 2010.</b></p>		<p>The <b>lunar occultation of Antares</b> on January 11 takes place in daylight over southern Africa. By sunrise, the star-moon pair are still over 4° apart.</p>	<p><b>Constellations prominent during January</b></p> <p><b>Culminate at 21:00:</b> Caelum, Eridanus, Horologium, Perseus, Reticulum &amp; Taurus.</p> <p><b>Midnight culmination:</b> Auriga, Canis Major, Canis Minor, Gemini, Lynx, Monoceros, Puppis &amp; Volans.</p> <p><b>Culminate at 03:00:</b> Antlia, Chamaeleon, Hydra, Leo, Leo Minor, Sextans, Ursa Major &amp; Vela.</p>		<p><b>Astronomical symbols</b></p> <p>☉ Sun      ☿ Mars ♀ Mercury    ♃ Jupiter ♀ Venus      ♄ Saturn ♁ Earth      ♂ Uranus ♄ Moon      ♆ Neptune</p>

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<p>Julian Date at 02:00 SAST = 2,455,227.5 + day of month</p> <h2>February</h2> <p><b>Mercury</b> starts the month in Sagittarius, crosses over into Capricornus on the 11th and into Aquarius on the last day of the month. <b>Venus</b> is in Capricornus until the 9th; the remainder of the month it is Aquarius. <b>Mars</b> is in Cancer. <b>Jupiter</b> is in Aquarius. On the 28th, Jupiter has the smallest angular diameter this year (33 arcseconds) and it furthest from the Earth (5.98 AU). <b>Saturn</b> is in Virgo, <b>Uranus</b> is in Pisces, and <b>Neptune</b> is in Capricornus this month. The <b>lunar occultation of Antares</b> on February 07 takes place while the Moon is below the southern African horizon. By moonrise, the star-moon pair are already over 3° apart.</p>			<p><b>Meteor showers active during February</b></p> <p>The <b>alpha Centaurid meteor shower</b> is active from January 28 to February 21 with maximum activity around February 07.</p> <p>The <b>gamma Normid meteor shower</b> is active from February 25 to March 22 with maximum activity around March 13.</p>			
<p>01 dawn: ♀♄ dusk: ♂♃</p>	<p>02 dawn: ♀♄ dusk: ♂♃</p>	<p>03 dawn: ♀♄ dusk: ♂♃</p> <p>H.E. Wood's birthday (1881)</p>	<p>04 dawn: ♀♄ dusk: ♂♃</p> <p>Spica 3.2°N of ♄ (08<sup>h</sup>)</p>	<p>05 dawn: ♀♄ dusk: ♂♃</p>	<p>06 dawn: ♀♄ dusk: ♂♃</p> <p>☾ Last Quarter (01:48)</p>	
<p>07 dawn: ♀♄ dusk: ♂♃</p> <p>☾ occults Antares (21<sup>h</sup>) visible in Aleutian Islands, SW Alaska &amp; Bering Sea.</p>	<p>08 dawn: ♀♄ dusk: ♂♃</p> <p>♀ 1.0°S of ♃ (07<sup>h</sup>) ☾ furthest south (-25.7°)</p>	<p>09 dawn: ♀♄ dusk: ♂♃</p>	<p>10 dawn: ♀♄ dusk: ♂♃</p>	<p>11 dawn: ♀♄ dusk: ♂♃</p>	<p>12 dawn: ♀♄ dusk: ♂♃</p> <p>♀ 2.2°S of ♄ (06<sup>h</sup>)</p>	<p>13 dawn: ♀♄ dusk: ♂♃</p> <p>☾ apogee (04<sup>h</sup>) ♀ aphelion J.L.E. Dreyer's birthday (1852).</p>
<p>14 dawn: ♀♄ dusk: ♂♃</p> <p>☾ New Moon (04:51) ♃ 3.4°S of ♄ (06<sup>h</sup>) ♀ 5.0°S of ♄ (22<sup>h</sup>)</p>	<p>15 dawn: ♀♄ dusk: ♂♃</p> <p>♃ conjunction (01<sup>h</sup>) ♃ 4.6°S of ♄ (03<sup>h</sup>)</p>	<p>16 dawn: ♀♄ dusk: ♂♃</p> <p>♁ 5.4°S of ♄ (16<sup>h</sup>)</p>	<p>17 dawn: ♀♄ dusk: ♂♃</p> <p>♀ 0.5°S of ♃ (04<sup>h</sup>)</p>	<p>18 dawn: ♀♄ dusk: ♂♃</p> <p>Vesta at opposition (mag 6.2)</p>	<p>19 dawn: ♀♄ dusk: ♂♃</p>	<p>20 dawn: ♀♄ dusk: ♂♃</p>
<p>21 dawn: ♀♄ dusk: ♂♃</p>	<p>22 dawn: ♀♄ dusk: ♂♃</p> <p>☾ First Quarter (02:42) Comet 81P/Wild at perihelion (17<sup>h</sup>)</p>	<p>23 dawn: ♀♄ dusk: ♀♂</p> <p>☾ furthest north (25.6°) Supernova SN 1987A in the LMC explodes.</p>	<p>24 dawn: ♀♄ dusk: ♀♂</p>	<p>25 dawn: ♀♄ dusk: ♀♂</p>	<p>26 dawn: ♀♄ dusk: ♀♂</p> <p>♂ 5.2°N of ♄ (05<sup>h</sup>)</p>	<p>27 dawn: ♀♄ dusk: ♀♂</p> <p>☾ perigee (23<sup>h</sup>) ♀ 1.7°S of ♃ (15<sup>h</sup>)</p>
<p>28 dawn: ♀♄ dusk: ♀♂</p> <p>☾ Full Moon (18:38) ♃ conjunction (13<sup>h</sup>) Regulus 3.8°N ♄ (02<sup>h</sup>)</p>	<p><b>Dwarf planets during 2010</b></p> <p><b>Ceres</b> starts the year in northern Scorpius. It is stationary on April 29 (mag 8.2, western Sagittarius). At opposition on June 18 (1.8 AU away, mag 7.2) it is in western Sagittarius. It is stationary on August 09 (mag 8.3, eastern Ophiuchus). The dwarf planet is always brighter than mag 9.3 so is an easy binocular target. <b>Pluto</b> is mag 14.1 in Sagittarius (about 32 AU away), <b>Makemake</b> is mag 16.8 in Coma (~51 AU), <b>Haumea</b> is mag 17.4 in Bootes (~51 AU) and <b>Eris</b> is mag 18.8 in Cetus (~97 AU).</p>			<p><b>Constellations prominent during February</b></p> <p><b>Culminate at 21:00:</b> Auriga, Canis Major, Columba, Dorado, Gemini, Lepus, LMC, Mensa, Monoceros, Orion &amp; Pictor.</p> <p><b>Midnight:</b> Cancer, Carina, Hydra, Pyxis &amp; Vela.</p> <p><b>Culminate at 03:00:</b> Coma Berenices, Corvus, Crater, Crux &amp; Musca.</p>		<p><b>Astronomical symbols</b></p> <p>☉ Sun      ♂ Mars ♀ Mercury    ♃ Jupiter ♀ Venus      ♄ Saturn ♁ Earth      ♁ Uranus ☾ Moon      ♃ Neptune</p>

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Julian Date at 02:00 SAST = 2,455,255.5 + day of month <b>March</b> Mercury starts the month in Aquarius and crosses over into Pisces on the 16th. Venus spends the first three days in Aquarius, and is in Pisces from the 4th to the 13th. It is in Cetus on the 14th and 15th before returning to Pisces until the 30th. On the last day of March it is in Aries. Mars is in Cancer, Jupiter is in Aquarius, Saturn is in Virgo, and Uranus is in Pisces the entire month. Neptune is in Capricornus until March 23, crossing over into Aquarius.				<b>Comets in March</b> Comet 81P/Wild is at its brightest in March (around 9th mag) and is located in Virgo.		
<b>Meteor showers active during March</b> The gamma Normid meteor shower is active from February 25 to March 22 with maximum around Mar 13.	<b>01</b> dawn: ♀ ☿ dusk: ♀ ♂	<b>02</b> dawn: ♀ ☿ dusk: ♀ ♂	<b>03</b> dawn: ♀ ☿ dusk: ♀ ♂ Spica 3.0°N of ♄ (18 <sup>h</sup> )	<b>04</b> dawn: ♀ ☿ dusk: ♀ ♂ ♀ 0.6°S of ♂ (06 <sup>h</sup> ) George Gamow's birthday (1904).	<b>05</b> dawn: ☿ ♂ dusk: ♀ ♂	<b>06</b> dawn: ☿ ♂ dusk: ♀ ♂ Joseph Fraunhofer's birthday (1787).
<b>07</b> dawn: ☿ ♂ dusk: ♀ ♂ ♄ Last Quarter (17:42) Antares 1.3°S ♄ (04 <sup>h</sup> ) ♄ furthest south (-25.6°) John Herschel's birthday (1792).	<b>08</b> dawn: ☿ ♂ dusk: ♀ ♂ ♀ 1.1°S of ♃ (03 <sup>h</sup> )	<b>09</b> dawn: ☿ ♂ dusk: ♀ ♂	<b>10</b> dawn: ☿ ♂ dusk: ♀ ♂ Anniversary of the discovery of the rings of Uranus (1977, Cape Town).	<b>11</b> dawn: ☿ ♂ dusk: ♀ ♂ ♂ stationary (11 <sup>h</sup> )	<b>12</b> dawn: ☿ ♂ dusk: ♀ ♂ ♄ apogee (12 <sup>h</sup> )	<b>13</b> dawn: ☿ ♂ dusk: ♀ ♂ ♃ 3.6°S of ♄ (14 <sup>h</sup> )
<b>14</b> dawn: ♃ ☿ dusk: ♀ ♂ ♀ superior conjunction ♃ 5.0°S of ♄ (23 <sup>h</sup> ) Albert Einstein's birthday (1879).	<b>15</b> dawn: ♃ ☿ dusk: ♀ ♂ ♄ New Moon (23:01) ♀ 0.6°S of ♂ (23 <sup>h</sup> )	<b>16</b> dawn: ♃ ☿ dusk: ♀ ♂ ♂ 5.4°S of ♄ (01 <sup>h</sup> ) Caroline Herschel's birthday (1750).	<b>17</b> dawn: ♃ ☿ dusk: ♀ ♂ ♂ conjunction (09 <sup>h</sup> ) ♃ dimmest (mag -2.0) Makemake nearest Earth (51.28 AU)	<b>18</b> dawn: ♃ ☿ dusk: ♀ ♂	<b>19</b> dawn: ♃ ☿ dusk: ♀ ♂	<b>20</b> dawn: ♃ ☿ dusk: ♀ ♂ ⊕ equinox (19:32)
<b>21</b> dawn: ♃ ☿ dusk: ♀ ♂	<b>22</b> dawn: ♃ ☿ dusk: ♀ ♂ ☿ ☿ opposition (03 <sup>h</sup> ) ♄ furthest north (+25.4°)	<b>23</b> dawn: ♃ ☿ dusk: ♀ ♂ ☿ ♄ First Quarter (13:00)	<b>24</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿ Walter Baade's birthday (1893).	<b>25</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿ ♂ 4.4°N of ♄ (14 <sup>h</sup> )	<b>26</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿	<b>27</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿ Regulus 3.9°N of ♄ (12 <sup>h</sup> )
<b>28</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿ ♄ perigee (06 <sup>h</sup> )	<b>29</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿ ♀ perihelion	<b>30</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿ ♄ Full Moon (04:25) ♂ aphelion	<b>31</b> dawn: ♃ ☿ dusk: ♀ ♀ ♂ ☿ Spica 2.9°N of ♄ (04 <sup>h</sup> )	<b>Constellations prominent during March</b> Culminate at 21:00: Cancer, Canis Minor, Lynx, Puppis, Pyxis & Volans. Midnight culmination: Antlia, Chamaeleon, Crater, Leo, Leo Minor, Sextans & Ursa Major. Culminate at 03:00: Boötes, Canes Venatici, Centaurus & Virgo.		<b>Astronomical symbols</b> ☉ Sun      ♂ Mars ♀ Mercury    ♃ Jupiter ♀ Venus      ☿ Saturn ⊕ Earth      ♂ Uranus ☾ Moon      ♃ Neptune

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Julian Date at 02:00 SAST = 2,455,286.5 + day of month <b>April</b> <b>Mercury</b> starts the month in Pisces and crosses over into Aries on the 3rd. <b>Venus</b> is in Aries from the 1st to the 20th, crossing over into Taurus until month-end. <b>Mars</b> is in Cancer. Jupiter is in Aquarius. <b>Saturn</b> is in Virgo. <b>Uranus</b> is in Pisces and <b>Neptune</b> is in Aquarius the entire month.			<b>Constellations prominent during April</b> <b>Culminate at 21:00:</b> Antlia, Carina, Chamaeleon, Hydra, Leo, Leo Minor, Sextans, Ursa Major & Vela. <b>Midnight culmination:</b> Canes Venatici, Centaurus, Coma Berenices, Corvus, Crux, Musca & Virgo. <b>Culminate at 03:00:</b> Apus, Circinus, Corona Borealis, Libra, Lupus, Norma, Scorpius, Serpens & Triangulum Australe.				
<b>Meteor showers active during April</b> The <b>eta Aquariid meteor shower</b> is active from April 19 to May 28 with maximum around May 06. The <b>Lyrid meteor shower</b> is active from April 16 to April 25 with maximum around April 22. The <b>pi Puppide meteor shower</b> is active from April 15 to April 28 with maximum around April 23.			<b>Voyager space craft update</b> During 2010, <b>Voyager I</b> is located in Ophiuchus, 112.8 AU from the Earth at the beginning of the year, and 116.4 AU away by end-December. <b>Voyager II</b> is in Telescopium, 91.8AU away at the start of the year, increasing to 95.0 AU by year-end.		<b>01</b> dawn: ♃ dusk: ♀♀♂♃	<b>02</b> dawn: ♃ dusk: ♀♀♂♃	<b>03</b> dawn: ♃ dusk: ♀♀♂♃  Antares 1.5°S of ♄ (13 <sup>h</sup> )
<b>04</b> dawn: ♃ dusk: ♀♀♂♃  ♄ furthest south (-25.3°) ♃ 3.0° from ♀ (08 <sup>h</sup> )	<b>05</b> dawn: ♃ dusk: ♀♀♂♃	<b>06</b> dawn: ♃ dusk: ♀♀♂♃  ♄ <b>Last Quarter</b> (11:37)  J. C. (Jack) Bennett's birthday (1914).	<b>07</b> dawn: ♃ dusk: ♀♀♂♃  Pluto stationary (03 <sup>h</sup> )  Adriaan Jan Wesselink's birthday (1909).	<b>08</b> dawn: ♃ dusk: ♀♀♂♃  Haumea closest to Earth (50.13 AU)	<b>09</b> dawn: ♃ dusk: ♀♀♂♃  ♄ apogee (06 <sup>h</sup> ) ♀ greatest (19°) elongation east (01 <sup>h</sup> ) ♃ 3.8°S of ♄ (23 <sup>h</sup> )	<b>10</b> dawn: ♃ dusk: ♀♀♂♃	
<b>11</b> dawn: ♃ dusk: ♀♀♂♃  ♃ 5.5°S of ♄ (19 <sup>h</sup> ) Arrival of the Venus Express at Venus, in 2006.	<b>12</b> dawn: ♃ dusk: ♀♀♂♃  ♂ 5.4°S of ♄ (11 <sup>h</sup> ) Eris furthest from Earth (97.64 AU)	<b>13</b> dawn: ♃ dusk: ♀♀♂♃	<b>14</b> dawn: ♃ dusk: ♀♀♂♃  ♄ <b>New Moon</b> (14:29)	<b>15</b> dawn: ♃ dusk: ♀♀♂♃  ♀ 1.5°S of ♄ (23 <sup>h</sup> ) pi Puppide meteor shower starts (max Apr 23)	<b>16</b> dawn: ♃ dusk: ♀♀♂♃  ♀ 4.0°S of ♄ (12 <sup>h</sup> ) Lyrid meteor shower starts (max April 22) Leonardo DaVinci's birthday (1452).	<b>17</b> dawn: ♃ dusk: ♀♀♂♃	
<b>18</b> dawn: ♃ dusk: ♀♀♂♃  ♀ stationary (12 <sup>h</sup> ) ♄ furthest north (25.2°)	<b>19</b> dawn: ♃ dusk: ♀♀♂♃  eta Aquariid meteor shower starts (max May 06) Lacaille arrives in Cape Town (1751)	<b>20</b> dawn: ♃ dusk: ♀♀♂♃	<b>21</b> dawn: ♃ dusk: ♀♂♃  ♄ <b>First Quarter</b> (20:20)	<b>22</b> dawn: ♃ dusk: ♀♂♃  ♂ 4.4°N of ♄ (09 <sup>h</sup> )	<b>23</b> dawn: ♃ dusk: ♀♂♃  Regulus 4.1°N of ♄ (20 <sup>h</sup> )	<b>24</b> dawn: ♃ dusk: ♀♂♃  ♄ perigee (22 <sup>h</sup> )	
<b>25</b> dawn: ♃ dusk: ♀♂♃	<b>26</b> dawn: ♃ dusk: ♀♂♃	<b>27</b> dawn: ♃ dusk: ♀♂♃  Spica 2.9°N of ♄ (14 <sup>h</sup> )	<b>28</b> dawn: ♃ dusk: ♀♂♃  ♄ <b>Full Moon</b> (14:18) ♀ inferior conjunction	<b>29</b> dawn: ♃ dusk: ♀♂♃	<b>30</b> dawn: ♃ dusk: ♀♂♃  Antares 1.7°S of ♄ (22 <sup>h</sup> )	<b>Astronomical symbols</b> ☉ Sun      ♂ Mars ♀ Mercury   ♃ Jupiter ♀ Venus     ♃ Saturn ⊕ Earth     ♂ Uranus ☾ Moon     ♃ Neptune	

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Julian Date at 02:00 SAST = 2,455,316.5 + day of month <b>May</b> <b>Mercury</b> starts May in Aries, moves into Pisces on the 10th and then into Cetus on the 15th before returning to Aries on the 23rd. <b>Venus</b> is in Taurus until the 20th, and then in Gemini until month-end. <b>Mars</b> is in Cancer until May 13 when it crosses into Leo. <b>Jupiter</b> is in Aquarius until May 04 when it moves into Pisces. <b>Saturn</b> is in Virgo, <b>Uranus</b> in Pisces, and <b>Neptune</b> in Aquarius the entire month.			<b>Ceres occultation</b> The almost-Full Moon will occult the <b>dwarf planet Ceres</b> (mag 7.5) just after midnight on the morning of May 30. The Moon will be in Sagittarius.		<b>01</b> dawn: ☽☾ dusk: ♀♂♃ ☾ furthest south (-25.1°) First sighting of SN 1006, the brightest supernova on record.	
<b>02</b> dawn: ☽☾ dusk: ♀♂♃	<b>03</b> dawn: ☽☾ dusk: ♀♂♃	<b>04</b> dawn: ☽☾ dusk: ♀♂♃ Pallas at opposition (mag 8.7)	<b>05</b> dawn: ☽☾ dusk: ♀♂♃	<b>06</b> dawn: ☽☾ dusk: ♀♂♃ ☾ <b>Last Quarter</b> (06:15) Willem de Sitter's birthday (1872).	<b>07</b> dawn: ☽☾ dusk: ♀♂♃ ☾ apogee (01 <sup>h</sup> ) ♃ 4.0°S of ☾ (08 <sup>h</sup> )	<b>08</b> dawn: ♀☽☾ dusk: ♀♂♃
<b>09</b> dawn: ♀☽☾ dusk: ♀♂♃ ☽ 5.9°S of ☾ (14 <sup>h</sup> ) ♂ 5.6°S of ☾ (22 <sup>h</sup> )	<b>10</b> dawn: ♀☽☾ dusk: ♀♂♃ Cecilia Payne-Gaposchkin's birthday (1900).	<b>11</b> dawn: ♀☽☾ dusk: ♀♂♃ ♀ stationary (02 <sup>h</sup> ) Richard Feynman's birthday (1918).	<b>12</b> dawn: ♀☽☾ dusk: ♀♂♃ ♀ aphelion	<b>13</b> dawn: ♀☽☾ dusk: ♀♂♃	<b>14</b> dawn: ♀☽☾ dusk: ♀♂♃ ☾ <b>New Moon</b> (03:04)	<b>15</b> dawn: ♀☽☾ dusk: ♀♂♃
<b>16</b> dawn: ♀☽☾ dusk: ♀♂♃ ♀ perihelion ☾ occults ♀ (12 <sup>h</sup> ) ☾ furthest north (25.1°)	<b>17</b> dawn: ♀☽☾ dusk: ♀♂♃	<b>18</b> dawn: ♀☽☾ dusk: ♀♂♃ Earliest astrophotograph taken of the Moon, by (Sir) David Gill, in 1869.	<b>19</b> dawn: ♀☽☾ dusk: ♀♂♃	<b>20</b> dawn: ♀☽☾ dusk: ♀♂♃ ☾ perigee (11 <sup>h</sup> ) ♂ 4.8°N of ☾ (10 <sup>h</sup> )	<b>21</b> dawn: ♀☽☾ dusk: ♀♂♃ ☾ <b>First Quarter</b> (01:43) Regulus 4.2°N ☾ (01 <sup>h</sup> )	<b>22</b> dawn: ♀☽☾ dusk: ♀♂♃
<b>23</b> dawn: ♀☽☾ dusk: ♀♂♃	<b>24</b> dawn: ♀☽☾ dusk: ♀♂♃ Spica 3.0°N of ☾ (21 <sup>h</sup> )	<b>25</b> dawn: ♀☽☾ dusk: ♀♂♃	<b>26</b> dawn: ♀☽☾ dusk: ♀♂♃ ♀ greatest (25°) western elongation (04 <sup>h</sup> )	<b>27</b> dawn: ♀☽☾ dusk: ♀♂♃	<b>28</b> dawn: ♀☽☾ dusk: ♀♂♃ ☾ <b>Full Moon</b> (01:07) Antares 1.8°S of ☾ (07 <sup>h</sup> )	<b>29</b> dawn: ♀☽☾ dusk: ♀♂♃ ☾ furthest south (-25.0°)
<b>30</b> dawn: ♀☽☾ dusk: ♀♂♃ ☾ occults Ceres (00 <sup>h</sup> ) visible in Southern Africa, Madagascar, Indian Ocean, SE Asia & Indonesia.	<b>31</b> dawn: ♀☽☾ dusk: ♀♂♃ ♃ stationary (18 <sup>h</sup> ) European Space Agency established (1975).	<b>Venus occultation</b> The occultation of <b>Venus</b> by the <b>crescent Moon</b> on May 16 will not be seen in southern Africa. After sunset the pair will be 2.5° apart low in the north-west.	<b>Meteor showers active during July</b> The <b>eta Aquariid meteor shower</b> is active from April 19 - May 28 with maximum activity around May 06.	<b>Constellations prominent during May</b> <b>Culminate at 21:00:</b> Coma Berenices, Corvus, Crater, Crux & Musca. <b>Midnight culmination:</b> Boötes, Circinus, Libra, Lupus & Serpens. <b>Culminate at 03:00:</b> Ara, Corona Australis, Hercules, Lyra, Ophiuchus, Scutum & Serpens.	<b>Astronomical symbols</b> ☉ Sun      ♂ Mars ♀ Mercury    ☽ Jupiter ♀ Venus      ♃ Saturn ⊕ Earth      ♂ Uranus ☾ Moon      ♃ Neptune	



# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Julian Date at 02:00 SAST = 2,455,347.5 + day of month <b>June</b> <b>Mercury</b> starts the month in Aries, crossing into Taurus on the 6th and Gemini on the 26th. <b>Venus</b> starts the month in Gemini; on the 13th it crosses over into Cancer, and into Leo on the last day of the month. <b>Mars</b> is in Leo, <b>Jupiter</b> and <b>Uranus</b> in Pisces, <b>Saturn</b> in Virgo, and <b>Neptune</b> in Aquarius the entire month. The <b>partial lunar eclipse</b> on June 26 will be visible from parts of the Americas, the Pacific Ocean, Antarctica, eastern Asia and Australasia. The eclipse begins at 10:55, maximum is at 13:38, and ends at 16:21. By the time the Moon rises in southern Africa, the eclipse is over.						
<b>Galilean Moons during 2010</b> During the year, 554 events involving Jupiter's four largest moons are visible from southern Africa. The rarest events involve Callisto. A single occultation of Callisto is visible (on Dec 16) and a single transit (on Nov 20). There will be 46 shadow transits by Io, 21 by Europa, 12 by Ganymede, and 5 by Callisto.		<b>01</b> dawn: ♀♃ dusk: ♀♂♃ ♃ stationary (04 <sup>h</sup> )	<b>02</b> dawn: ♀♃ dusk: ♀♂♃	<b>03</b> dawn: ♀♃ dusk: ♀♂♃ ♁ apogee (19 <sup>h</sup> ) ♃ 4.2°S of ♁ (16 <sup>h</sup> )	<b>04</b> dawn: ♀♃ dusk: ♀♂♃	<b>05</b> dawn: ♀♃ dusk: ♀♂♃ ♁ <b>Last Quarter</b> (00:13)
<b>06</b> dawn: ♀♃ dusk: ♀♂♃ ♂ 5.8°S of ♁ (08 <sup>h</sup> )	<b>07</b> dawn: ♀♃ dusk: ♀♂♃ ♂ 0.8°N of Regulus (06 <sup>h</sup> )	<b>08</b> dawn: ♀♃ dusk: ♀♂♃ ♃ 0.4°S of ♂ (14 <sup>h</sup> ) ♀ 4.7°S of Pollux (19 <sup>h</sup> )	<b>09</b> dawn: ♀♃ dusk: ♀♂♃	<b>10</b> dawn: ♀♃ dusk: ♀♂♃	<b>11</b> dawn: ♀♃ dusk: ♀♂♃ ♀ 5.2°S of ♁ (02 <sup>h</sup> )	<b>12</b> dawn: ♀♃ dusk: ♀♂♃ ♁ <b>New Moon</b> (13:15) ♁ furthest north (25.0°)
<b>13</b> dawn: ♀♃ dusk: ♀♂♃	<b>14</b> dawn: ♀♃ dusk: ♀♂♃	<b>15</b> dawn: ♀♃ dusk: ♀♂♃ ♁ perigee (17 <sup>h</sup> ) ♀ 3.7°N of ♁ (07 <sup>h</sup> ) ♀ 4.5°N Aldebaran (19 <sup>h</sup> )	<b>16</b> dawn: ♀♃ dusk: ♀♂♃	<b>17</b> dawn: ♀♃ dusk: ♀♂♃ Regulus 4.3°N ♁ (07 <sup>h</sup> ) ♂ 5.3°N of ♁ (16 <sup>h</sup> )	<b>18</b> dawn: ♀♃ dusk: ♀♂♃ Ceres at opposition	<b>19</b> dawn: ♀♃ dusk: ♀♂♃ ♁ <b>First Quarter</b> (06:29) Andrew David Thackeray's birthday (1910).
<b>20</b> dawn: ♀♃ dusk: ♀♂♃	<b>21</b> dawn: ♀♃ dusk: ♀♂♃ ⊕ solstice (13:28) Spica 3.1°N of ♁ (03 <sup>h</sup> )	<b>22</b> dawn: ♃ dusk: ♀♂♃ Royal Greenwich Observatory established, in 1675.	<b>23</b> dawn: ♃ dusk: ♀♂♃	<b>24</b> dawn: ♃ dusk: ♀♂♃ Antares 1.8°S of ♁ (14 <sup>h</sup> )	<b>25</b> dawn: ♃ dusk: ♀♂♃ Pluto opposition (21 <sup>h</sup> ) ♀ perihelion ♁ occults Ceres (21 <sup>h</sup> ) ♁ furthest south (-25.0°)	<b>26</b> dawn: ♃ dusk: ♀♂♃ ♁ <b>Full Moon</b> (13:30) ♁ Eclipse (partial) Charles Messier's birthday (1730).
<b>27</b> dawn: ♃ dusk: ♀♂♃	<b>28</b> dawn: ♃ dusk: ♀♂♃ ♀ superior conjunction	<b>29</b> dawn: ♃ dusk: ♀♂♃	<b>30</b> dawn: ♃ dusk: ♀♂♃ Cassini-Huygens arrives at Saturn, in 2004.	<b>Constellations prominent during June</b> <b>Culminate at 21:00:</b> Boötes, Canes Venatici, Centaurus & Virgo. <b>Midnight culmination:</b> Apus, Ara, Corona Borealis, Hercules, Norma, Ophiuchus, Scorpius & Triangulum Australe. <b>Culminate at 03:00:</b> Aquila, Cygnus, Pavo, Sagitta, Sagittarius, Telescopium & Vulpecula.		<b>Astronomical symbols</b> ☉ Sun      ♂ Mars ♀ Mercury    ♃ Jupiter ♀ Venus      ♃ Saturn ⊕ Earth      ♂ Uranus ♁ Moon      ♃ Neptune

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
<p>Julian Date at 02:00 SAST = 2,455,377.5 + day of month</p> <h2>July</h2> <p><b>Mercury</b> starts the month in Gemini, crossing into Cancer on the 9th and Leo on the 20th. <b>Venus</b> is in Leo the entire month. <b>Mars</b> is in Leo until July 20 when it moves into Virgo. <b>Jupiter</b> and <b>Uranus</b> are in Pisces, <b>Saturn</b> in Virgo, and <b>Neptune</b> in Aquarius this month. The <b>total solar eclipse</b> on July 11 will be visible from the Cook Islands, French Polynesia, and the southern tip of south America.</p> <p><b>Meteor showers active during July</b>                      The <b>Piscis Austrinid meteor shower</b> is active from Jul 15 - Aug 10 with max around July 28.                      The <b>Southern delta Aquariid meteor shower</b> is active from Jul 12 - Aug 19 with maximum around July 28.</p>		<p><b>Constellations prominent during July</b></p> <p><b>Culminate at 21:00:</b> Apus, Circinus, Corona Borealis, Libra, Lupus, Norma, Ophiuchus, Scorpius, Serpens &amp; Triangulum Australe.</p> <p><b>Midnight culmination:</b> Aquila, Corona Australis, Lyra, Pavo, Sagitta, Sagittarius, Scutum, Serpens &amp; Telescopium.</p> <p><b>Culminate at 03:00:</b> Aquarius, Capricornus, Delphinus, Equuleus, Grus, Indus, Lacerta, Microscopium, Octans, Pegasus &amp; Piscis Austrinus.</p> <p><b>Comets during July</b>  <b>Comet 10P/Tempel</b> is brightest this month.</p>				<p><b>Astronomical symbols</b></p> <ul style="list-style-type: none"> <li>☉ Sun</li> <li>♁ Mercury</li> <li>♀ Venus</li> <li>♁ Earth</li> <li>☾ Moon</li> <li>♂ Mars</li> <li>♃ Jupiter</li> <li>♄ Saturn</li> <li>♅ Uranus</li> <li>♆ Neptune</li> </ul>	
<p><b>04</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♂ ♃</p> <p>☾ <b>Last Quarter</b> (16:35)                      Comet 10P/Tempel at perihelion (22<sup>h</sup>)</p>	<p><b>05</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♂ ♃</p>	<p><b>06</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>♁ aphelion (13<sup>h</sup>)                      ♂ stationary (03<sup>h</sup>)                      ♁ 4.9°S of Pollux (10<sup>h</sup>)</p>	<p><b>07</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p>	<p><b>08</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ apogee (12<sup>h</sup>)                      ♁ 4.3°S of ☾ (00<sup>h</sup>)</p>	<p><b>09</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ furthest north (25.0°)</p>	<p><b>03</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♂ ♃</p> <p>♅ 5.9°S of ☾ (16<sup>h</sup>)</p>	
<p><b>11</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ <b>New Moon</b> (21:40)                      ☉ eclipse (total)</p>	<p><b>12</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>Southern delta Aquariid meteor shower starts (max July 28)</p>	<p><b>13</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ perigee (13<sup>h</sup>)                      ♁ 3.9°N of ☾ (00<sup>h</sup>)</p>	<p><b>14</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>Regulus 4.3°N of ☾ (15<sup>h</sup>)                      ♀ 5.4°N of ☾ (23<sup>h</sup>)</p>	<p><b>15</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>Piscis Austrinid meteor shower starts (max Jul 28)</p>	<p><b>16</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>♂ 5.6°N of ☾ (02<sup>h</sup>)</p>	<p><b>17</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>Georges Lemaitre's birthday (1894).</p>	
<p><b>18</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ <b>First Quarter</b> (12:11)                      Spica 3.1°N of ☾ (09<sup>h</sup>)</p>	<p><b>19</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p>	<p><b>20</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p>	<p><b>21</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>Antares 1.8°S of ☾ (20<sup>h</sup>)</p>	<p><b>22</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ furthest south (-25.0°)</p>	<p><b>23</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p>	<p><b>24</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>♃ stationary (06<sup>h</sup>)</p>	
<p><b>25</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p>	<p><b>26</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ <b>Full Moon</b> (03:37)</p>	<p><b>27</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>♀ 0.3°S Regulus (23<sup>h</sup>)</p>	<p><b>28</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>♁ 4.2°S of ☾ (05<sup>h</sup>)</p>	<p><b>29</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>☾ apogee (01<sup>h</sup>)</p>	<p><b>30</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>♅ 5.9°S of ☾ (23<sup>h</sup>)</p>	<p><b>31</b> dawn: ♃ ♁ ♄ dusk: ♁ ♀ ♀ ♂ ♃</p> <p>♂ 1.8°S of ♃ (10<sup>h</sup>)</p>	

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Julian Date at 02:00 SAST = 2,455,408.5 + day of month <b>August</b> Mercury starts the month in Leo, spends two days in Sextans from the 6th before returning to Leo for the rest of the month. Venus is in Leo the first day of the month before crossing into Virgo Mars is in Virgo. Jupiter and Uranus are in Pisces and Saturn in Virgo, this month. Neptune is in Aquarius until August 14, after which it moves into Capricornus.			<b>Meteor showers active during August</b> The <b>Piscis Austrinid meteor shower</b> is active from July 15 - August 10 with maximum around July 28. The <b>Southern delta Aquariid meteor shower</b> is active from Jul 12 - Aug 19 with maximum activity around July 28.			
<b>01</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♂ conjunction with ♄ Helen Sawyer Hogg's birthday (1905).	<b>02</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>03</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ☾ <b>Last Quarter</b> (06:59)	<b>04</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>05</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>06</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ☾ furthest north (24.9°) Comet 2P/Encke at perihelion (12 <sup>h</sup> )	<b>07</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♀ greatest (27°) eastern elongation (03 <sup>h</sup> )
<b>08</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♀ aphelion ♀ 2.7S of ♄ (19 <sup>h</sup> )	<b>09</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>10</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ☾ <b>New Moon</b> (05:08) ☾ perigee (20 <sup>h</sup> ) ♀ conjunction with ♄	<b>11</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ Regulus 4.3°N ☾ (00 <sup>h</sup> )	<b>12</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♀ 2.1°N of ☾ (01 <sup>h</sup> )	<b>13</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♀ 4.1°N of ☾ (11 <sup>h</sup> ) ♂ 5.4°N of ☾ (15 <sup>h</sup> )	<b>14</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ Spica 3.0°N of ☾ (16 <sup>h</sup> )
<b>15</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>16</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ☾ <b>First Quarter</b> (20:14)	<b>17</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>18</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ Antares 1.9°S of ☾ (01 <sup>h</sup> ) ☾ furthest south (-24.9°)	<b>19</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ John Flamsteed's birthday (1646).	<b>20</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♀ stationary (06 <sup>h</sup> ) ♀ greatest (46°) elongation east (06 <sup>h</sup> ) ♄ opposition (12 <sup>h</sup> , V=7.8) ♀ 2.0°S of ♂ (21 <sup>h</sup> )	<b>21</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄
<b>22</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>23</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♀ conjunction with ♂	<b>24</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ☾ <b>Full Moon</b> (19:05) ♄ 4.2°S of ☾ (10 <sup>h</sup> )	<b>25</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ☾ apogee (08 <sup>h</sup> )	<b>26</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄	<b>27</b> dawn: ☽ dusk: ♀ ♀ ♂ ♄ ♂ 5.8°S of ☾ (04 <sup>h</sup> )	<b>28</b> dawn: ☽ dusk: ♀ ♂ ♄
<b>29</b> dawn: ☽ dusk: ♀ ♂ ♄ northernmost for 2010 (+0.96°)	<b>30</b> dawn: ☽ dusk: ♀ ♂ ♄	<b>31</b> dawn: ☽ dusk: ♀ ♂ ♄	<b>Comets during August</b> Comet 2P/Encke is a fading binocular object visible from mid-August through September.	<b>Constellations prominent during August</b> <b>Culminate at 21:00:</b> Ara, Corona Australis, Hercules, Lyra, Sagittarius, Scutum & Serpens. <b>Midnight culmination:</b> Capricornus, Cygnus, Delphinus, Equuleus, Indus, Microscopium & Vulpecula. <b>Culminate at 03:00:</b> Andromeda, Phoenix, Pisces, Sculptor, SMC & Tucana.		<b>Astronomical symbols</b> ☉ Sun      ♂ Mars ♀ Mercury      ☽ Jupiter ♀ Venus      ♄ Saturn ⊕ Earth      ♂ Uranus ☾ Moon      ♃ Neptune



# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>Julian Date at 02:00 SAST = 2,455,439.5 + day of month</p> <h2>September</h2> <p><b>Mercury</b> starts the month in Sextans, crosses back into Leo on the 8th and then into Virgo on the 30th. <b>Venus</b> is in Virgo until the 24th, and in Libra until month-end. <b>Mars</b> is in Virgo until the 27th when it moves into Libra. <b>Jupiter</b> is in Pisces this month; on the 21st it has the largest apparent diameter (50 arcseconds) this year and is 3.95AU from Earth. <b>Saturn</b> is in Virgo, <b>Uranus</b> in Pisces, and <b>Neptune</b> in Capricornus this month. The <b>lunar occultation of Venus</b> on the 11th will be visible from eastern Brazil, south Atlantic Ocean, SW Africa and the southern Indian Ocean. Shortly after sunset the pair will be prominent in the western sky, with Venus less than 2° below the slender crescent Moon at dusk.</p>			<p><b>Constellations prominent during September</b></p> <p><b>Culminate at 21:00:</b> Aquila, Cygnus, Pavo, Sagitta, Telescopium &amp; Vulpecula.</p> <p><b>Midnight culmination:</b> Aquarius, Grus, Lacerta, Octans, Pegasus, Piscis Austrinus &amp; Tucana.</p> <p><b>Culminate at 03:00:</b> Aries, Cetus, Fornax, Hydrus &amp; Triangulum.</p>			
<p>Sep 23: South African Astronomical Observatory established (1970), with the amalgamation of the Cape, Radcliffe and Republic Observatories.</p>			<p><b>01</b> dawn: ☾ dusk: ♀♂♄</p> <p>☾ <b>Last Quarter</b> (19:22) ♀ 1.0°S of Spica (08<sup>h</sup>)</p>	<p><b>02</b> dawn: ☾ dusk: ♀♂♄</p> <p>☾ furthest north (24.8°)</p> <p>First comet fly-by, of Giacobini-Zinner, in 1985.</p>	<p><b>03</b> dawn: ☾ dusk: ♀♂♄</p> <p>♀ inferior conjunction</p>	<p><b>04</b> dawn: ☾ dusk: ♀♂♄</p>
<p><b>05</b> dawn: ☾ dusk: ♀♂♄</p> <p>♂ 2.1°N of Spica (22<sup>h</sup>)</p>	<p><b>06</b> dawn: ☾ dusk: ♀♂♄</p> <p>♀ aphelion</p>	<p><b>07</b> dawn: ☾ dusk: ♀♂♄</p> <p>Regulus 4.3°N of ☾ (11<sup>h</sup>) ♀ 1.5°N of ☾ (23<sup>h</sup>)</p>	<p><b>08</b> dawn: ☾ dusk: ♀♂♄</p> <p>☾ <b>New Moon</b> (12:30) ☾ perigee (06<sup>h</sup>)</p> <p>First observation of Halley's Comet from ZA (1682), by Simon van der Stel.</p>	<p><b>09</b> dawn: ☾ dusk: ♀♂♄</p>	<p><b>10</b> dawn: ☾ dusk: ♀♂♄</p>	<p><b>11</b> dawn: ♀☾ dusk: ♀♂♄</p> <p>☾ occults ♀ (15<sup>h</sup>) Spica 2.8°N of ☾ (01<sup>h</sup>) ♂ 4.7°N of ☾ (07<sup>h</sup>)</p>
<p><b>12</b> dawn: ♀☾ dusk: ♀♂♄</p> <p>♀ stationary (05<sup>h</sup>)</p>	<p><b>13</b> dawn: ♀☾ dusk: ♀♂♄</p>	<p><b>14</b> dawn: ♀☾ dusk: ♀♂♄</p> <p>Pluto stationary (03<sup>h</sup>) Antares 2.1°S of ☾ (08<sup>h</sup>) John Dobson's birthday (1915).</p>	<p><b>15</b> dawn: ♀☾ dusk: ♀♂♄</p> <p>☾ <b>First Quarter</b> (07:50) ☾ furthest south (-24.7°) ♂ dimmest (mag +1.52)</p>	<p><b>16</b> dawn: ♀☾ dusk: ♀♂♄</p>	<p><b>17</b> dawn: ♀☾ dusk: ♀♂♄</p>	<p><b>18</b> dawn: ♀☾ dusk: ♀♂♄</p>
<p><b>19</b> dawn: ♀☾ dusk: ♀♂♄</p> <p>♀ greatest (18°) elongation west (19<sup>h</sup>) ☾ 0.8S of ♂ (03<sup>h</sup>) Makemake furthest from Earth (53.06 AU)</p>	<p><b>20</b> dawn: ♀☾ dusk: ♀♂♄</p> <p>♄ 4.2°S of ☾ (15<sup>h</sup>) ☾ maximum brightness (mag -2.94)</p>	<p><b>21</b> dawn: ♀☾ dusk: ♀♂♄</p> <p>☾ apogee (10<sup>h</sup>) ☾ opposition (14<sup>h</sup>) ♁ opposition (19<sup>h</sup>, V=5.7) ♀ perihelion</p>	<p><b>22</b> dawn: ♀ dusk: ♀♂♄</p>	<p><b>23</b> dawn: ♀ dusk: ♀♂♄</p> <p>☾ <b>Full Moon</b> (11:17) ♁ equinox (05:09) ♀ greatest illuminated extent (22<sup>h</sup>) ♁ 5.7°S of ☾ (07<sup>h</sup>)</p>	<p><b>24</b> dawn: ♀ dusk: ♀♂♄</p>	<p><b>25</b> dawn: ♀ dusk: ♀♂♄</p>
<p><b>26</b> dawn: ♀ dusk: ♀♂♄</p>	<p><b>27</b> dawn: ♀ dusk: ♀♂♄</p>	<p><b>28</b> dawn: ♀ dusk: ♀♂♄</p>	<p><b>29</b> dawn: ♀ dusk: ♀♂♄</p> <p>☾ furthest north (24.6°) ♀ conjunction with ♂</p>	<p><b>30</b> dawn: ♀ dusk: ♀♂♄</p>	<p><b>Comets in September</b></p> <p><b>103P/Hartley</b> is a binocular object visible in Cygnus this month. <b>2P/Encke</b> is a fading binocular object visible from mid-August through September.</p>	<p><b>Astronomical symbols</b></p> <p>☉ Sun      ♂ Mars ♀ Mercury      ☾ Jupiter ♀ Venus      ♄ Saturn ♁ Earth      ♂ Uranus ☾ Moon      ♃ Neptune</p>

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Julian Date at 02:00 SAST = 2,455,469.5 + day of month <b>October</b> Mercury starts the month in Virgo, crossing into Libra on the 26th. Venus is in Libra until the 20th before returning to Virgo for the remainder of the month. Mars is in Libra, crossing to Scorpius on the 28th. Jupiter is in Pisces until the 15th when it moves into Aquarius. Saturn is in Virgo, Uranus in Pisces and Neptune in Capricornus this month.					<b>01</b> dawn: ♀ dusk: ♀♂♃ ☾ Last Quarter (05:52) ♃ conjunction (03 <sup>h</sup> )	<b>02</b> dawn: ♀ dusk: ♀♂♃ Orionid meteor shower starts (max Oct 21)
<b>03</b> dawn: ♀ dusk: ♀♂♃	<b>04</b> dawn: ♀ dusk: ♀♂♃ Regulus 4.5°N ☾ (21 <sup>h</sup> )	<b>05</b> dawn: ♀ dusk: ♀♂♃	<b>06</b> dawn: ♀ dusk: ♀♂♃ ☾ perigee (16 <sup>h</sup> )	<b>07</b> dawn: ♀ dusk: ♀♂♃ Astron. Twl ☾ New Moon (20:44) ♀ stationary (21 <sup>h</sup> )	<b>08</b> dawn: ♀ dusk: ♀♂♃ Spica 2.7°N of ☾ (12 <sup>h</sup> ) ♀ 0.5°S of ♃ (13 <sup>h</sup> ) Ejnar Hertzsprung's birthday (1873).	<b>09</b> dawn: ♀ dusk: ♀♂♃ ♀ 3.2°S of ☾ (19 <sup>h</sup> ) Haumea furthest from Earth (51.87 AU)
<b>10</b> dawn: ♀♂♃ dusk: ♀♂♃ ♂ 3.5°N of ☾ (02 <sup>h</sup> )	<b>11</b> dawn: ♀♂♃ dusk: ♀♂♃ Antares 2.3°S of ☾ (17 <sup>h</sup> )	<b>12</b> dawn: ♀♂♃ dusk: ♀♂♃ ☾ furthest south (-24.5°)	<b>13</b> dawn: ♀♂♃ dusk: ♀♂♃	<b>14</b> dawn: ♀♂♃ dusk: ♀♂♃ ☾ First Quarter (23:27)	<b>15</b> dawn: ♀♂♃ dusk: ♀♂♃ Eris closest to Earth (95.67 AU)	<b>16</b> dawn: ♀♂♃ dusk: ♀♂♃
<b>17</b> dawn: ♀♂♃ dusk: ♀♂♃ ♀ superior conjunction ♀ 2.9°N of Spica (09 <sup>h</sup> ) ♄ 4.4°S of ☾ (20 <sup>h</sup> )	<b>18</b> dawn: ♀♂♃ dusk: ♀♂♃ ☾ apogee (20 <sup>h</sup> )	<b>19</b> dawn: ♃ dusk: ♀♂♃ Subrahmanyan Chandrasekhar's birthday (1910).	<b>20</b> dawn: ♃ dusk: ♀♂♃ ♂ 5.7°S of ☾ (12 <sup>h</sup> ) Comet 103P/Hartley 0.121AU from Earth	<b>21</b> dawn: ♃ dusk: ♀♂♃	<b>22</b> dawn: ♃ dusk: ♀♂♃	<b>23</b> dawn: ♃ dusk: ♀♂♃ ☾ Full Moon (03:37) Karl Jansky's birthday (1905).
<b>24</b> dawn: ♃ dusk: ♀♂♃ Mars Odyssey orbiter arrives at Mars, in 2001.	<b>25</b> dawn: ♃ dusk: ♂♃	<b>26</b> dawn: ♃ dusk: ♂♃	<b>27</b> dawn: ♃ dusk: ♂♃ ☾ furthest north (24.4°)	<b>28</b> dawn: ♃ dusk: ♂♃ Comet 103P/Hartley at perihelion (07 <sup>h</sup> )	<b>29</b> dawn: ♃ dusk: ♂♃ ♀ inferior conjunction	<b>30</b> dawn: ♃ dusk: ♂♃ ☾ Last Quarter (14:46)
<b>31</b> dawn: ♃ dusk: ♂♃	<b>October anniversaries</b> 09: Kepler's Star (SN 1604) seen, the last supernova observed in our own galaxy. 20: First permanent astronomical observatory in the southern hemisphere established, the Royal Observatory at the Cape of Good Hope, in 1820. Official opening ceremony on October 29.		<b>Meteor showers active during October</b> The Orionid meteor shower is active from October 02 - November 07 with maximum activity around October 21.	<b>Constellations prominent during October</b> Culminate at 21:00: Aquarius, Capricornus, Delphinus, Equuleus, Grus, Indus, Lacerta, Microscopium, Octans, Pegasus & Piscis Austrinus. Midnight culmination: Andromeda, Cetus, Phoenix, Pisces, Sculptor & SMC. Culminate at 03:00: Caelum, Eridanus, Horologium, Perseus, Reticulum & Taurus.	<b>Astronomical symbols</b> ☉ Sun    ♂ Mars ♀ Mercury    ♃ Jupiter ♀ Venus    ♃ Saturn ⊕ Earth    ♂ Uranus ☾ Moon    ♄ Neptune	

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<p>Julian Date at 02:00 SAST = 2,455,500.5 + day of month</p> <h2>November</h2> <p><b>Mercury</b> starts the month in Libra, crossing into Scorpius on the 9th and then on to Ophiuchus on the 15th until the 19th, when it is in Scorpius for a day. From the 20th it is in Ophiuchus before crossing into Sagittarius on the 28th. <b>Venus</b> is in Virgo the entire month. <b>Mars</b> is in Scorpius until the 9th when it moves into Ophiuchus. <b>Jupiter</b> is in Aquarius, <b>Saturn</b> in Virgo, <b>Uranus</b> in Pisces, and <b>Neptune</b> in Capricornus this month.</p>			<p><b>Meteor showers active during November</b></p> <p>The <b>Leonid meteor shower</b> is active from November 10 to November 23 with maximum around November 17.</p> <p>The <b>December Phoenicid meteor shower</b> is active from Nov 28 - Dec 09 with maximum around December 06.</p> <p>The <b>Orionid meteor shower</b> is active from October 02 to November 07 with maximum around October 21.</p>			
<p><b>01</b> dawn: ☾ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>Regulus 4.7°N of ♎ (05<sup>h</sup>)</p>	<p><b>02</b> dawn: ☾ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ occults Juno (02<sup>h</sup>) visible in most of Russia, N China, Mongolia, Japan &amp; the Marshall Islands.</p>	<p><b>03</b> dawn: ☾ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ perigee (19<sup>h</sup>)</p>	<p><b>04</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♀ aphelion Spica 2.7°N of ♎ (22<sup>h</sup>) ♃ moons in compact grouping (23<sup>h</sup>)</p>	<p><b>05</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♀ 0.1°N of ♎ (10<sup>h</sup>)</p> <p>Fred Whipple's birthday (1906).</p>	<p><b>06</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ <b>New Moon</b> (06:52)</p>	
<p><b>07</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♊ stationary (10<sup>h</sup>) ♂ 1.7°N of ♎ (23<sup>h</sup>) ♀ 1.7°N of ♎ (05<sup>h</sup>)</p>	<p><b>08</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>Antares 2.4°S ♎ (03<sup>h</sup>) ♎ furthest south (-24.3°) Edmund Halley's birthday (1656).</p>	<p><b>09</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>Carl Sagan's birthday (1934).</p>	<p><b>10</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>Leonid meteor shower starts (max Nov 17) R.T.A. Innes' birthday (1861).</p>	<p><b>11</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♂ 3.9°N of Antares (01<sup>h</sup>)</p>	<p><b>12</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♃ three moons make tight grouping until Jupiter sets.</p>	<p><b>13</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ <b>First Quarter</b> (18:39) James Clerk Maxwell's birthday (1831).</p>
<p><b>14</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♊ 4.6°S of ♎ (04<sup>h</sup>)</p>	<p><b>15</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ apogee (13<sup>h</sup>) ♀ 2.5°N of Antares (19<sup>h</sup>)</p>	<p><b>16</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♀ stationary (18<sup>h</sup>) ♁ 5.9°S of ♎ (18<sup>h</sup>)</p>	<p><b>17</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p>	<p><b>18</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p>	<p><b>19</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♃ stationary (08<sup>h</sup>)</p>	<p><b>20</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♀ 1.7°S of ♂ (21<sup>h</sup>) Edwin Hubble's birthday (1889).</p>
<p><b>21</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ <b>Full Moon</b> (19:27) ♀ conjunction with ♂</p>	<p><b>22</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p>	<p><b>23</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ furthest north (24.3°)</p>	<p><b>24</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p>	<p><b>25</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p>	<p><b>26</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p>	<p><b>27</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p>
<p><b>28</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ <b>Last Quarter</b> (22:36) Regulus 4.8°N ♎ (11<sup>h</sup>)</p>	<p><b>29</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>December Phoenicid meteor shower starts (max Dec 06)</p>	<p><b>30</b> dawn: ♀ ☽ ♃ ♃ dusk: ♀ ♂ ♃ ♃</p> <p>♎ perigee (20<sup>h</sup>) ♎ occults Juno (01<sup>h</sup>) visible in S India, Sri Lanka, W Indonesia, S &amp; W Australia &amp; New Zealand.</p>	<p><b>Constellations prominent during November</b></p> <p><b>Culminate at 21:00:</b> Andromeda, Phoenix, Pisces, Sculptor, SMC &amp; Tucana. <b>Midnight culmination:</b> Aries, Fornax, Horologium, Hydrus, Perseus, Reticulum &amp; Triangulum. <b>Culminate at 03:00:</b> Auriga, Canis Major, Columba, Dorado, Gemini, Lepus, LMC, Mensa, Monoceros, Orion &amp; Pictor.</p>			<p><b>Astronomical symbols</b></p> <p>☉ Sun      ♂ Mars ♀ Mercury    ♃ Jupiter ♀ Venus      ☿ Saturn ♁ Earth      ♃ Uranus ♎ Moon      ♆ Neptune</p>

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday							
<p>Julian Date at 02:00 SAST = 2,455,530.5 + day of month</p> <h2>December</h2> <p><b>Mercury</b> starts the month in Sagittarius before crossing into Ophiuchus on the 22nd. <b>Venus</b> starts the month in Virgo then crosses into Libra on the 13th until year-end. <b>Mars</b> is in Ophiuchus crossing into Sagittarius on the 4th. <b>Jupiter</b> is in Aquarius until the 18th, and in Pisces until year-end. <b>Saturn</b> is in Virgo, <b>Uranus</b> in Pisces and <b>Neptune</b> is in Capricornus this month.</p>			<p><b>Constellations prominent during December</b></p> <p><b>Culminate at 21:00:</b> Aries, Cetus, Fornax, Hydrus &amp; Triangulum.</p> <p><b>Midnight culmination:</b> Caelum, Columba, Dorado, Eridanus, Lepus, LMC, Mensa, Orion, Pictor &amp; Taurus.</p> <p><b>Culminate at 03:00:</b> Cancer, Canis Minor, Carina, Lynx, Puppis, Pyxis &amp; Volans.</p>		<p>The chart shows the moon's position from 01 to 31 December. It includes markers for astronomical twilight (Astron. Twil.), moon sets, and moon rises. A shaded area labeled 'DEEPTIME' is shown between approximately 09 and 17 December. The y-axis represents time from 21:00 to 04:00.</p>								
<p>The total lunar eclipse on <b>December 21</b> will be visible from Europe, western Africa, the Americas, the Pacific Ocean, eastern Australia, the Philippines, and eastern and northern Asia.</p>		<p><b>Meteor showers active during December</b></p> <p>The <b>December Phoenicid meteor shower</b> is active from Nov 28 - Dec 09 with maximum around December 06.</p> <p>The <b>Geminid meteor shower</b> is active from Dec 07 to Dec 17 with maximum around December 14.</p> <p>The <b>Puppilid/Velid meteor shower</b> is active from Dec 01 to Dec 15 with maximum around December 07.</p>		<p><b>01</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ greatest (21°) elongation east (18<sup>h</sup>)</p> <p>Puppilid meteor shower starts (max Dec 07)</p>		<p><b>02</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>Spica 2.8°N of ♄ (06<sup>h</sup>)</p>		<p><b>03</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p>		<p><b>04</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ greatest illuminated extent (12<sup>h</sup>)</p>			
<p><b>05</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♄ <b>New Moon</b> (19:36)</p> <p>Antares 2.5°S ♄ (13<sup>h</sup>)</p>		<p><b>06</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♁ stationary (12<sup>h</sup>)</p> <p>♄ furthest south (-24.3°)</p> <p>♂ 0.5°S of ♄ (23<sup>h</sup>)</p>		<p><b>07</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ 1.7°S of ♄ (10<sup>h</sup>)</p> <p>Geminid meteor shower starts (max Dec 14)</p>		<p><b>08</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p>		<p><b>09</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p>		<p><b>10</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ stationary (12<sup>h</sup>)</p>		<p><b>11</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♃ 4.7°S of ♄ (13<sup>h</sup>)</p>	
<p><b>12</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♃ moons in compact grouping (22<sup>h</sup>)</p>		<p><b>13</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♄ <b>First Quarter</b> (15:59)</p> <p>♄ apogee (10<sup>h</sup>)</p> <p>♀ 4.5°S of Pluto (18<sup>h</sup>)</p>		<p><b>14</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ 1.0°N of ♂ (01<sup>h</sup>)</p> <p>♁ 6.0°S of ♄ (02<sup>h</sup>)</p> <p>♂ 5.4S of Pluto (06<sup>h</sup>)</p> <p>Tycho Brahe born (1546)</p>		<p><b>15</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p>		<p><b>16</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>E. E. Barnard's birthday (1857).</p>		<p><b>17</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>First recorded comet observation from South Africa, by Jan van Riebeeck, in 1652.</p>		<p><b>18</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ perihelion</p>	
<p><b>19</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p>		<p><b>20</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ inferior conjunction</p> <p>♄ furthest north (24.2°)</p>		<p><b>21</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♄ <b>Full Moon</b> (10:13)</p> <p>♄ eclipse (total)</p>		<p><b>22</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♁ solstice (01:38)</p>		<p><b>23</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p>		<p><b>24</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♃ moons in compact grouping (20<sup>h</sup>)</p>		<p><b>25</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♄ perigee (15<sup>h</sup>)</p> <p>Regulus 4.8°N ♄ (17<sup>h</sup>)</p>	
<p><b>26</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p>		<p><b>27</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>Pluto conjunction (03<sup>h</sup>)</p> <p>♀ perihelion</p> <p>Johannes Kepler's birthday (1571).</p>		<p><b>28</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♄ <b>Last Quarter</b> (06:18)</p> <p>Sir Arthur Eddington's birthday (1882).</p>		<p><b>29</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>Spica 2.8°N of ♄ (12<sup>h</sup>)</p>		<p><b>30</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♀ stationary (10<sup>h</sup>)</p>		<p><b>31</b> dawn: ♀ ☿ ♃ ♄ dusk: ♀ ☿ ♃ ♄</p> <p>♂ smallest (3.9")</p>		<p><b>Astronomical symbols</b></p> <p>☉ Sun      ♂ Mars</p> <p>♀ Mercury   ♃ Jupiter</p> <p>♀ Venus     ♄ Saturn</p> <p>♁ Earth     ♁ Uranus</p> <p>♄ Moon     ♃ Neptune</p>	

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

## Eclipses and transits of the major moons of Jupiter visible in southern Africa

### January

03 20:30 Europa occn. begins  
06 21:25 Io occn. begins  
06 21:49 Callisto shadow transit starts  
07 21:05 Io transit ends  
07 21:56 Io shadow transit ends  
12 20:28 Europa transit ends  
14 20:49 Io transit begins  
14 21:34 Io shadow transit starts  
15 21:00 Io reapp. from eclipse  
19 20:25 Europa transit begins  
23 20:18 Callisto shadow transit ends  
24 20:52 Ganymede shadow transit ends

### March

14 06:02 Europa transit begins  
23 06:00 Io shadow transit ends  
23 06:23 Io transit ends  
30 05:27 Europa is eclipsed  
30 05:31 Ganymede shadow transit starts  
30 05:37 Io shadow transit starts  
30 06:08 Io transit begins  
31 05:41 Io reapp. after occn.

### April

08 04:55 Io transit ends  
08 05:38 Europa shadow transit ends  
10 05:40 Ganymede reapp. after occn.  
15 04:40 Io transit begins  
15 05:23 Europa shadow transit starts  
15 06:10 Io shadow transit ends  
22 05:48 Io shadow transit starts  
22 06:40 Io transit begins  
23 06:15 Io reapp. after occn.  
30 04:58 Io is eclipsed

### May

01 04:26 Io shadow transit ends  
01 05:03 Europa is eclipsed  
01 05:25 Io transit ends  
03 04:53 Europa transit ends

04 05:57 Callisto shadow transit starts  
05 04:58 Ganymede shadow transit ends  
05 05:54 Ganymede transit begins  
08 04:04 Io shadow transit starts  
08 05:09 Io transit begins  
08 06:20 Io shadow transit ends  
09 04:44 Io reapp. after occn.  
10 04:51 Europa transit begins  
10 05:26 Europa shadow transit ends  
12 05:37 Ganymede shadow transit starts  
15 05:58 Io shadow transit starts  
16 03:15 Io is eclipsed  
16 06:43 Io reapp. after occn.  
17 03:51 Io transit ends  
18 05:12 Europa shadow transit starts  
19 04:42 Europa reapp. after occn.  
21 03:28 Callisto shadow transit ends  
23 02:53 Ganymede reapp. from eclipse  
23 04:38 Ganymede occn. begins  
23 05:10 Io is eclipsed  
24 03:35 Io transit begins  
24 04:36 Io shadow transit ends  
24 05:49 Io transit ends  
30 03:32 Ganymede is eclipsed  
30 06:53 Ganymede reapp. from eclipse  
30 07:04 Io is eclipsed  
31 04:15 Io shadow transit starts  
31 05:32 Io transit begins  
31 06:29 Io shadow transit ends

### June

01 05:08 Io reapp. after occn.  
02 04:39 Europa is eclipsed  
04 02:27 Europa transit begins  
04 02:34 Europa shadow transit ends  
04 05:13 Europa transit ends  
07 06:08 Io shadow transit starts  
08 03:27 Io is eclipsed  
08 07:04 Io reapp. after occn.  
09 01:57 Io transit begins  
09 02:52 Io shadow transit ends  
09 04:11 Io transit ends  
10 03:16 Ganymede transit begins  
10 06:21 Ganymede transit ends  
11 02:22 Europa shadow transit starts  
11 05:08 Europa transit begins

11 05:11 Europa shadow transit ends  
13 02:04 Europa reapp. after occn.  
15 04:02 Callisto is eclipsed  
15 05:21 Io is eclipsed  
15 07:02 Callisto reapp. from eclipse  
16 02:31 Io shadow transit starts  
16 03:52 Io transit begins  
16 04:45 Io shadow transit ends  
16 06:06 Io transit ends  
17 01:41 Ganymede shadow transit starts  
17 03:28 Io reapp. after occn.  
17 04:58 Ganymede shadow transit ends  
18 04:58 Europa shadow transit starts  
20 04:41 Europa reapp. after occn.  
23 04:24 Io shadow transit starts  
23 05:47 Io transit begins  
23 06:39 Io shadow transit ends  
24 01:43 Io is eclipsed  
24 05:23 Io reapp. after occn.  
24 05:41 Ganymede shadow transit starts  
25 01:07 Io shadow transit ends  
25 02:29 Io transit ends  
27 01:42 Europa is eclipsed  
28 01:20 Ganymede occn. begins  
28 04:21 Ganymede reapp. after occn.  
29 02:25 Europa transit ends  
30 06:18 Io shadow transit starts

### July

01 03:37 Io is eclipsed  
02 00:47 Io shadow transit starts  
02 01:07 Callisto reapp. from eclipse  
02 02:09 Io transit begins  
02 03:01 Io shadow transit ends  
02 04:22 Io transit ends  
03 01:44 Io reapp. after occn.  
04 04:18 Europa is eclipsed  
05 02:52 Ganymede reapp. from eclipse  
04 05:17 Ganymede occn. begins  
06 02:15 Europa transit begins  
06 02:17 Europa shadow transit ends  
06 04:57 Europa transit ends  
08 05:31 Io is eclipsed  
09 02:40 Io shadow transit starts  
09 04:01 Io transit begins  
09 04:55 Io shadow transit ends

09 06:14 Io transit ends  
10 00:00 Io is eclipsed  
10 03:36 Io reapp. after occn.  
11 00:42 Io transit ends  
11 06:53 Europa is eclipsed  
12 03:37 Ganymede is eclipsed  
12 06:53 Ganymede reapp. from eclipse  
13 02:05 Europa shadow transit starts  
13 04:46 Europa transit begins  
13 04:52 Europa shadow transit ends  
15 01:36 Europa reapp. after occn.  
16 02:02 Ganymede transit ends  
16 04:34 Io shadow transit starts  
16 05:52 Io transit begins  
16 06:49 Io shadow transit ends  
17 01:54 Io is eclipsed  
17 05:27 Io reapp. after occn.  
18 00:20 Io transit begins  
18 01:17 Io shadow transit ends  
18 02:33 Io transit ends  
18 23:54 Io reapp. after occn.  
20 04:41 Europa shadow transit starts  
22 04:05 Europa reapp. after occn.  
23 00:57 Ganymede shadow transit ends  
23 02:56 Ganymede transit begins  
23 05:47 Ganymede transit ends  
23 06:28 Io shadow transit starts  
23 23:10 Europa transit ends  
24 03:48 Io is eclipsed  
25 00:57 Io shadow transit starts  
25 02:10 Io transit begins  
25 03:11 Io shadow transit ends  
25 04:23 Io transit ends  
26 01:44 Io reapp. after occn.  
26 22:50 Io transit ends  
27 01:36 Callisto shadow transit starts  
27 03:55 Callisto shadow transit ends  
29 01:23 Europa is eclipsed  
29 06:31 Europa reapp. after occn.  
30 01:45 Ganymede shadow transit starts  
30 04:57 Ganymede shadow transit ends  
30 06:37 Ganymede transit begins  
30 22:53 Europa transit begins  
30 23:21 Europa shadow transit ends  
31 01:34 Europa transit ends  
31 05:42 Io is eclipsed



# Southern Sky Almanack 2010

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## August

01 02:50 Io shadow transit starts  
01 03:58 Io transit begins  
01 05:05 Io shadow transit ends  
01 06:12 Io transit ends  
02 00:10 Io is eclipsed  
02 03:32 Io reapp. after occn.  
02 22:25 Io transit begins  
02 23:08 Ganymede reapp. after occn.  
02 23:34 Io shadow transit ends  
03 00:39 Io transit ends  
05 03:59 Europa is eclipsed  
06 05:46 Ganymede shadow transit starts  
06 23:10 Europa shadow transit starts  
07 01:16 Europa transit begins  
07 01:56 Europa shadow transit ends  
07 03:57 Europa transit ends  
08 04:44 Io shadow transit starts  
08 05:46 Io transit begins  
08 22:06 Europa reapp. after occn.  
09 02:04 Io is eclipsed  
09 05:19 Io reapp. after occn.  
09 22:51 Ganymede reapp. from eclipse  
09 23:13 Io shadow transit starts  
09 23:50 Ganymede occn. begins  
10 00:13 Io transit begins  
10 01:28 Io shadow transit ends  
10 02:26 Io transit ends  
10 02:40 Ganymede reapp. after occn.  
10 23:46 Io reapp. after occn.  
12 06:36 Europa is eclipsed  
12 22:00 Callisto shadow transit ends  
14 01:45 Europa shadow transit starts  
14 03:36 Europa transit begins  
14 04:32 Europa shadow transit ends  
14 06:17 Europa transit ends  
15 06:39 Io shadow transit starts  
16 00:27 Europa reapp. after occn.  
16 03:58 Io is eclipsed  
16 23:41 Ganymede is eclipsed  
17 01:07 Io shadow transit starts  
17 01:59 Io transit begins  
17 02:52 Ganymede reapp. from eclipse  
17 03:20 Ganymede occn. begins  
17 03:23 Io shadow transit ends  
17 04:13 Io transit ends

17 06:08 Ganymede reapp. after occn.  
17 22:27 Io is eclipsed  
18 01:32 Io reapp. after occn.  
18 21:51 Io shadow transit ends  
18 22:39 Io transit ends  
21 04:20 Europa shadow transit starts  
21 05:14 Callisto is eclipsed  
21 05:55 Europa transit begins  
22 22:31 Europa is eclipsed  
23 02:47 Europa reapp. after occn.  
23 05:53 Io is eclipsed  
24 03:02 Io shadow transit starts  
24 03:42 Ganymede is eclipsed  
24 03:45 Io transit begins  
24 05:17 Io shadow transit ends  
24 05:59 Io transit ends  
24 21:44 Europa transit ends  
25 00:21 Io is eclipsed  
25 03:17 Io reapp. after occn.  
25 21:30 Io shadow transit starts  
25 22:11 Io transit begins  
25 23:46 Io shadow transit ends  
26 00:25 Io transit ends  
26 21:43 Io reapp. after occn.  
27 20:31 Ganymede transit begins  
27 20:57 Ganymede shadow transit ends  
27 23:18 Ganymede transit ends  
30 01:08 Europa is eclipsed  
30 05:04 Europa reapp. after occn.  
31 04:56 Io shadow transit starts  
31 05:30 Io transit begins  
31 20:13 Europa shadow transit starts  
31 21:19 Europa transit begins  
31 22:59 Europa shadow transit ends

## September

01 00:00 Europa transit ends  
01 02:15 Io is eclipsed  
01 05:01 Io reapp. after occn.  
01 23:25 Io shadow transit starts  
01 23:56 Io transit begins  
02 01:40 Io shadow transit ends  
02 02:10 Io transit ends  
02 20:44 Io is eclipsed  
02 23:27 Io reapp. after occn.  
03 20:09 Io shadow transit ends

03 20:36 Io transit ends  
03 21:50 Ganymede shadow transit starts  
03 23:50 Ganymede transit begins  
04 00:58 Ganymede shadow transit ends  
04 02:38 Ganymede transit ends  
06 03:46 Europa is eclipsed  
06 23:36 Callisto is eclipsed  
07 01:19 Callisto reapp. from eclipse  
07 22:49 Europa shadow transit starts  
07 23:33 Europa transit begins  
08 01:35 Europa shadow transit ends  
08 02:14 Europa transit ends  
08 04:10 Io is eclipsed  
09 01:19 Io shadow transit starts  
09 01:40 Io transit begins  
09 03:35 Io shadow transit ends  
09 03:54 Io transit ends  
09 20:28 Europa reapp. after occn.  
09 22:38 Io is eclipsed  
10 01:11 Io reapp. after occn.  
10 19:48 Io shadow transit starts  
10 20:06 Io transit begins  
10 22:04 Io shadow transit ends  
10 22:20 Io transit ends  
11 01:52 Ganymede shadow transit starts  
11 03:08 Ganymede transit begins  
11 04:59 Ganymede shadow transit ends  
11 05:56 Ganymede transit ends  
11 19:37 Io reapp. after occn.  
14 19:27 Ganymede reapp. after occn.  
15 01:24 Europa shadow transit starts  
15 01:46 Europa transit begins  
15 04:10 Europa shadow transit ends  
15 04:28 Europa transit ends  
15 06:04 Io is eclipsed  
16 03:14 Io shadow transit starts  
16 03:24 Io transit begins  
16 05:30 Io shadow transit ends  
16 05:38 Io transit ends  
16 19:42 Europa is eclipsed  
16 22:43 Europa reapp. after occn.  
17 00:33 Io is eclipsed  
17 02:54 Io reapp. after occn.  
17 21:43 Io shadow transit starts  
17 21:49 Io transit begins  
17 23:59 Io shadow transit ends

18 00:04 Io transit ends  
18 05:54 Ganymede shadow transit starts  
18 21:20 Io reapp. after occn.  
21 19:47 Ganymede is eclipsed  
21 22:53 Ganymede reapp. from eclipse  
22 03:59 Europa transit begins  
22 03:59 Europa shadow transit starts  
23 05:07 Io transit begins  
23 05:09 Io shadow transit starts  
23 19:19 Callisto reapp. from eclipse  
23 22:14 Europa occn. begins  
24 01:08 Europa reapp. from eclipse  
24 02:24 Io occn. begins  
24 04:42 Io reapp. from eclipse  
24 23:33 Io transit begins  
24 23:38 Io shadow transit starts  
25 01:48 Io transit ends  
25 01:54 Io shadow transit ends  
25 19:48 Europa transit ends  
25 20:02 Europa shadow transit ends  
25 20:50 Io occn. begins  
25 23:11 Io reapp. from eclipse  
26 20:13 Io transit ends  
26 20:22 Io shadow transit ends  
28 23:06 Ganymede occn. begins  
29 02:53 Ganymede reapp. from eclipse

## October

01 00:29 Europa occn. begins  
01 03:46 Europa reapp. from eclipse  
01 04:07 Io occn. begins  
02 01:17 Io transit begins  
02 01:33 Io shadow transit starts  
02 03:32 Io transit ends  
02 03:36 Callisto shadow transit starts  
02 03:49 Io shadow transit ends  
02 03:53 Callisto shadow transit ends  
02 19:19 Europa transit begins  
02 19:53 Europa shadow transit starts  
02 22:01 Europa transit ends  
02 22:33 Io occn. begins  
02 22:38 Europa shadow transit ends  
03 01:06 Io reapp. from eclipse  
03 19:43 Io transit begins  
03 20:02 Io shadow transit starts  
03 21:58 Io transit ends

# Southern Sky Almanack 2010

The premiere astronomical events, from a southern hemisphere perspective, listed for each day of the year

03 22:18 Io shadow transit ends  
 04 19:34 Io reapp. from eclipse  
 06 02:23 Ganymede occn. begins  
 08 02:45 Europa occn. begins  
 09 03:02 Io transit begins  
 09 03:29 Io shadow transit starts  
 09 05:16 Io transit ends  
 09 21:02 Ganymede shadow transit ends  
 09 21:33 Europa transit begins  
 09 22:28 Europa shadow transit starts  
 10 00:16 Europa transit ends  
 10 00:18 Io occn. begins  
 10 01:13 Europa shadow transit ends  
 10 03:00 Io reapp. from eclipse  
 10 21:28 Io transit begins  
 10 21:58 Io shadow transit starts  
 10 23:43 Io transit ends  
 11 00:13 Io shadow transit ends  
 11 19:44 Europa reapp. from eclipse  
 11 21:29 Io reapp. from eclipse  
 15 05:02 Europa occn. begins  
 16 04:47 Io transit begins  
 16 19:29 Ganymede transit begins  
 16 22:02 Ganymede shadow transit starts  
 16 22:26 Ganymede transit ends  
 16 23:49 Europa transit begins  
 17 01:04 Ganymede shadow transit ends  
 17 01:04 Europa shadow transit starts  
 17 02:02 Io occn. begins  
 17 02:32 Europa transit ends  
 17 03:48 Europa shadow transit ends  
 17 04:55 Io reapp. from eclipse  
 17 23:14 Io transit begins  
 17 23:53 Io shadow transit starts  
 18 01:28 Io transit ends  
 18 02:08 Io shadow transit ends  
 18 20:29 Io occn. begins  
 18 22:22 Europa reapp. from eclipse  
 18 23:24 Io reapp. from eclipse  
 19 19:55 Io transit ends  
 19 20:37 Io shadow transit ends  
 23 22:52 Ganymede transit begins  
 24 01:51 Ganymede transit ends  
 24 02:05 Ganymede shadow transit starts  
 24 02:06 Europa transit begins  
 24 03:40 Europa shadow transit starts

24 03:48 Io occn. begins  
 25 01:00 Io transit begins  
 25 01:49 Io shadow transit starts  
 25 03:15 Io transit ends  
 25 04:04 Io shadow transit ends  
 25 20:32 Europa occn. begins  
 25 22:15 Io occn. begins  
 26 01:01 Europa reapp. from eclipse  
 26 01:19 Io reapp. from eclipse  
 26 20:18 Io shadow transit starts  
 26 21:42 Io transit ends  
 26 22:33 Io shadow transit ends  
 27 19:41 Europa shadow transit ends  
 27 19:48 Io reapp. from eclipse  
 31 02:20 Ganymede transit begins

**November**

01 02:48 Io transit begins  
 01 03:45 Io shadow transit starts  
 01 22:54 Europa occn. begins  
 02 00:02 Io occn. begins  
 02 03:14 Io reapp. from eclipse  
 02 03:39 Europa reapp. from eclipse  
 02 21:15 Io transit begins  
 02 22:14 Io shadow transit starts  
 02 23:30 Io transit ends  
 03 00:28 Io shadow transit ends  
 03 19:59 Ganymede is eclipsed  
 03 20:19 Europa transit ends  
 03 21:43 Io reapp. from eclipse  
 03 22:16 Europa shadow transit ends  
 03 22:58 Ganymede reapp. from eclipse  
 09 01:18 Europa occn. begins  
 09 01:50 Io occn. begins  
 09 23:04 Io transit begins  
 10 00:10 Io shadow transit starts  
 10 01:19 Io transit ends  
 10 02:24 Io shadow transit ends  
 10 19:59 Europa transit begins  
 10 20:18 Io occn. begins  
 10 22:09 Europa shadow transit starts  
 10 22:34 Ganymede reapp. after occn.  
 10 22:42 Europa transit ends  
 10 23:38 Io reapp. from eclipse  
 11 00:01 Ganymede is eclipsed  
 11 00:52 Europa shadow transit ends

11 02:59 Ganymede reapp. from eclipse  
 11 19:46 Io transit ends  
 11 20:53 Io shadow transit ends  
 17 00:55 Io transit begins  
 17 02:06 Io shadow transit starts  
 17 22:07 Io occn. begins  
 17 22:24 Europa transit begins  
 17 23:09 Ganymede occn. begins  
 18 00:46 Europa shadow transit starts  
 18 01:08 Europa transit ends  
 18 01:33 Io reapp. from eclipse  
 18 02:15 Ganymede reapp. after occn.  
 18 20:35 Io shadow transit starts  
 18 21:37 Io transit ends  
 18 22:49 Io shadow transit ends  
 19 20:02 Io reapp. from eclipse  
 19 22:16 Europa reapp. from eclipse  
 20 22:23 Callisto transit begins  
 20 23:16 Callisto transit ends  
 21 21:12 Ganymede shadow transit ends  
 24 23:59 Io occn. begins  
 25 00:52 Europa transit begins  
 25 21:15 Io transit begins  
 25 22:31 Io shadow transit starts  
 25 23:29 Io transit ends  
 26 00:45 Io shadow transit ends  
 26 21:57 Io reapp. from eclipse  
 27 00:55 Europa reapp. from eclipse  
 28 20:05 Ganymede transit ends  
 28 22:20 Ganymede shadow transit starts  
 29 01:13 Ganymede shadow transit ends

**December**

02 01:51 Io occn. begins  
 02 23:08 Io transit begins  
 03 00:27 Io shadow transit starts  
 03 01:22 Io transit ends  
 03 20:19 Io occn. begins  
 03 22:04 Europa occn. begins  
 03 23:53 Io reapp. from eclipse  
 04 21:09 Io shadow transit ends  
 05 20:53 Ganymede transit begins  
 05 21:57 Europa shadow transit ends  
 05 23:59 Ganymede transit ends  
 10 01:02 Io transit begins  
 10 22:13 Io occn. begins

11 00:41 Europa occn. begins  
 11 20:52 Io shadow transit starts  
 11 21:46 Io transit ends  
 11 23:05 Io shadow transit ends  
 12 20:17 Io reapp. from eclipse  
 12 21:52 Europa shadow transit starts  
 12 21:56 Europa transit ends  
 13 00:33 Europa shadow transit ends  
 13 00:50 Ganymede transit begins  
 16 00:23 Callisto occn. begins  
 16 20:15 Ganymede is eclipsed  
 16 23:07 Ganymede reapp. from eclipse  
 18 00:08 Io occn. begins  
 18 21:27 Io transit begins  
 18 22:48 Io shadow transit starts  
 18 23:42 Io transit ends  
 19 21:48 Europa transit begins  
 19 22:12 Io reapp. from eclipse  
 20 00:29 Europa shadow transit starts  
 20 00:32 Europa transit ends  
 21 22:10 Europa reapp. from eclipse  
 23 21:52 Ganymede reapp. after occn.  
 24 00:17 Ganymede is eclipsed  
 25 23:24 Io transit begins  
 26 20:34 Io occn. begins  
 27 00:08 Io reapp. from eclipse  
 27 21:26 Io shadow transit ends  
 30 22:51 Ganymede occn. begins

Body	Diameter	Orb. period
Jupiter . . . .	142 984 km	4 331 d
Io . . . . .	3 643 km	1 d 18h
Europa . . . . .	3 138 km	3 d 13h
Ganymede . . . .	5 269 km	7 d 4h
Callisto . . . . .	4 821 km	16 d 17h
Earth . . . . .	12 742 km	365 d 6h
Moon . . . . .	3 476 km	27 d 7h