

MOON PHASES FOR 2010, at OAN-Venezuela

Times and dates are given in local time, zone = 4 hr West.
They are generally better than +/- 2 minutes.

The end of the previous year and the beginning of the next
are included for continuity.

NEW	1ST	FULL	LAST
Dec 16 7 33	Dec 24 13 07	Dec 31 14 44	Jan 07 6 12
Jan 15 2 43	Jan 23 6 24	Jan 30 1 49	Feb 05 19 21
Feb 13 22 23	Feb 21 20 13	Feb 28 12 09	Mar 07 11 14
Mar 15 16 33	Mar 23 6 30	Mar 29 21 56	Apr 06 5 09
Apr 14 8 01	Apr 21 13 50	Apr 28 7 49	May 05 23 46
May 13 20 36	May 20 19 14	May 27 18 38	Jun 04 17 44
Jun 12 6 46	Jun 19 0 01	Jun 26 7 01	Jul 04 10 07
Jul 11 15 11	Jul 18 5 42	Jul 25 21 08	Aug 03 0 31
Aug 09 22 39	Aug 16 13 45	Aug 24 12 36	Sep 01 12 54
Sep 08 6 00	Sep 15 1 20	Sep 23 4 49	Sep 30 23 23
Oct 07 14 15	Oct 14 16 57	Oct 22 21 08	Oct 30 8 17

Nov 06 0 22 Nov 13 12 08 Nov 21 12 59 Nov 28 16 08

Dec 05 13 07 Dec 13 9 29 Dec 21 3 45 Dec 27 23 50

Jan 04 4 35 Jan 12 7 03 Jan 19 16 53 Jan 26 8 29

***** 2010 JANUARY *****

Calendar for OAN-Venezuela, west longitude (h.m.s) = 4 43 32, latitude (d.m) = 8 47.2

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in CCS time (4 hr W), for 3600 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) JDmid LMSTmidn ----- Sun: ----- LST twilight: ----- Moon: -----
(2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Fri Jan 01/Sat Jan 02 5198.7 6 33 18 18 14 19 21 5 14 6 20 1 53 11 48 19 07 97 8 14.4 19 09
Sat Jan 02/Sun Jan 03 5199.7 6 37 15 18 15 19 21 5 14 6 21 1 58 11 52 20 09 91 9 14.3 13 53

Sun Jan 03/Mon Jan 04 5200.7 6 41 11 18 15 19 22 5 15 6 21 2 02 11 57 21 08 83 10 10.4 7 52
Mon Jan 04/Tue Jan 05 5201.7 6 45 08 18 16 19 22 5 15 6 22 2 07 12 01 22 03 74 11 03.6 1 35
Tue Jan 05/Wed Jan 06 5202.7 6 49 04 18 16 19 23 5 16 6 22 2 11 12 06 22 55 63 11 54.9 - 4 35
Wed Jan 06/Thu Jan 07 5203.7 6 53 01 18 17 19 23 5 16 6 22 2 16 12 10 23 47 52 12 45.4 -10 20
Thu Jan 07/Fri Jan 08 5204.7 6 56 57 18 18 19 24 5 16 6 23 2 20 12 14 0 39 41 13 36.1 -15 24
Fri Jan 08/Sat Jan 09 5205.7 7 00 54 18 18 19 24 5 17 6 23 2 24 12 19 1 31 31 14 27.6 -19 36
Sat Jan 09/Sun Jan 10 5206.7 7 04 51 18 19 19 25 5 17 6 23 2 29 12 23 2 24 22 15 20.1 -22 46

Sun Jan 10/Mon Jan 11 5207.7 7 08 47 18 19 19 25 5 18 6 24 2 33 12 27 3 17 15 16 13.6 -24 47
Mon Jan 11/Tue Jan 12 5208.7 7 12 44 18 20 19 25 5 18 6 24 2 37 12 32 4 10 8 17 07.3 -25 34

Tue Jan 12/Wed Jan 13 5209.7 7 16 40 18 20 19 26 5 18 6 24 2 42 12 36 5 01 4 18 00.4 -25 08
 Wed Jan 13/Thu Jan 14 5210.7 7 20 37 18 20 19 26 5 19 6 24 2 46 12 40 5 50 17 10 1 18 52.1 -23 33
 Thu Jan 14/Fri Jan 15 5211.7 7 24 33 18 21 19 27 5 19 6 25 2 51 12 44 6 35 18 00 0 19 41.8 -20 56
 Fri Jan 15/Sat Jan 16 5212.7 7 28 30 18 21 19 27 5 19 6 25 2 55 12 49 7 17 18 48 1 20 29.2 -17 29
 Sat Jan 16/Sun Jan 17 5213.7 7 32 26 18 22 19 27 5 20 6 25 2 59 12 53 19 35 3 21 14.6 -13 21

 Sun Jan 17/Mon Jan 18 5214.7 7 36 23 18 22 19 28 5 20 6 25 3 03 12 57 20 20 7 21 58.3 - 8 45
 Mon Jan 18/Tue Jan 19 5215.7 7 40 20 18 23 19 28 5 20 6 25 3 08 13 01 21 03 13 22 41.1 - 3 48
 Tue Jan 19/Wed Jan 20 5216.7 7 44 16 18 23 19 29 5 20 6 26 3 12 13 05 21 47 19 23 23.7 1 19
 Wed Jan 20/Thu Jan 21 5217.7 7 48 13 18 24 19 29 5 21 6 26 3 16 13 10 22 31 28 0 07.0 6 28
 Thu Jan 21/Fri Jan 22 5218.7 7 52 09 18 24 19 29 5 21 6 26 3 21 13 14 23 17 37 0 52.0 11 29
 Fri Jan 22/Sat Jan 23 5219.7 7 56 06 18 24 19 30 5 21 6 26 3 25 13 18 0 06 46 1 39.8 16 10
 Sat Jan 23/Sun Jan 24 5220.7 8 00 02 18 25 19 30 5 21 6 26 3 29 13 22 0 58 57 2 31.3 20 17

 Sun Jan 24/Mon Jan 25 5221.7 8 03 59 18 25 19 30 5 21 6 26 3 33 13 26 1 55 67 3 27.2 23 30
 Mon Jan 25/Tue Jan 26 5222.7 8 07 55 18 26 19 30 5 22 6 26 3 38 13 30 2 55 77 4 27.6 25 29
 Tue Jan 26/Wed Jan 27 5223.7 8 11 52 18 26 19 31 5 22 6 26 3 42 13 34 3 57 86 5 31.6 25 54
 Wed Jan 27/Thu Jan 28 5224.7 8 15 49 18 26 19 31 5 22 6 26 3 46 13 38 4 59 93 6 37.2 24 29
 Thu Jan 28/Fri Jan 29 5225.7 8 19 45 18 27 19 31 5 22 6 26 3 50 13 43 16 43 5 58 98 7 42.2 21 17
 Fri Jan 29/Sat Jan 30 5226.7 8 23 42 18 27 19 31 5 22 6 26 3 54 13 47 17 47 6 53 100 8 44.7 16 32
 Sat Jan 30/Sun Jan 31 5227.7 8 27 38 18 27 19 32 5 22 6 26 3 59 13 51 18 49 99 9 44.1 10 41

 Sun Jan 31/Mon Feb 01 5228.7 8 31 35 18 28 19 32 5 22 6 26 4 03 13 55 19 47 94 10 40.5 4 15

***** 2010 FEBRUARY *****

Calendar for OAN-Venezuela, west longitude (h.m.s) = 4 43 32, latitude (d.m) = 8 47.2

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Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Sat Feb 27/Sun Feb 28 5255.7 10 18 02 18 32 19 35 5 18 6 20 5 52 15 37 17 27 6 18 100 10 12.0 7 24

Sun Feb 28/Mon Mar 01 5256.7 10 21 58 18 32 19 35 5 17 6 19 5 56 15 40 18 25 7 07 99 11 08.0 0 50

***** 2010 MARCH *****

Calendar for OAN-Venezuela, west longitude (h.m.s) = 4 43 32, latitude (d.m) = 8 47.2

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Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) JDmid LMSTmidn ----- Sun: ----- LST twilight: ----- Moon: -----
(2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Mon Mar 01/Tue Mar 02 5257.7 10 25 55 18 32 19 35 5 17 6 19 6 00 15 44 19 21 96 12 02.9 -5 42

Tue Mar 02/Wed Mar 03 5258.7 10 29 51 18 32 19 34 5 17 6 18 6 04 15 47 20 17 91 12 57.6 -11 45

Wed Mar 03/Thu Mar 04 5259.7 10 33 48 18 33 19 34 5 16 6 18 6 08 15 51 21 13 83 13 52.6 -16 57

Thu Mar 04/Fri Mar 05 5260.7 10 37 45 18 33 19 34 5 16 6 18 6 11 15 54 22 08 74 14 48.3 -21 04

Fri Mar 05/Sat Mar 06 5261.7 10 41 41 18 33 19 34 5 15 6 17 6 15 15 58 23 04 64 15 44.4 -23 54

Sat Mar 06/Sun Mar 07 5262.7 10 45 38 18 33 19 34 5 15 6 17 6 19 16 01 23 59 54 16 40.3 -25 23

Sun Mar 07/Mon Mar 08 5263.7 10 49 34 18 33 19 34 5 14 6 16 6 23 16 05 0 52 44 17 35.3 -25 34

Mon Mar 08/Tue Mar 09 5264.7 10 53 31 18 33 19 34 5 14 6 16 6 27 16 08 1 43 35 18 28.5 -24 30

Tue Mar 09/Wed Mar 10 5265.7 10 57 27 18 33 19 34 5 13 6 15 6 31 16 12 2 30 26 19 19.5 -22 22

Wed Mar 10/Thu Mar 11 5266.7 11 01 24 18 32 19 34 5 13 6 15 6 35 16 15 3 14 18 20 08.0 -19 19

Thu Mar 11/Fri Mar 12 5267.7 11 05 20 18 32 19 34 5 12 6 14 6 39 16 19 3 56 12 20 54.4 -15 32

Fri Mar 12/Sat Mar 13 5268.7 11 09 17 18 32 19 34 5 12 6 14 6 43 16 22 4 35 6 21 38.9 -11 10

Sat Mar 13/Sun Mar 14 5269.7 11 13 14 18 32 19 34 5 11 6 13 6 47 16 26 5 13 16 59 3 22 22.2 -6 24

Sun Mar 14/Mon Mar 15 5270.7 11 17 10 18 32 19 34 5 11 6 13 6 51 16 29 5 50 17 43 1 23 05.1 -1 22

Mon Mar 15/Tue Mar 16 5271.7 11 21 07 18 32 19 34 5 10 6 12 6 54 16 32 6 28 18 27 0 23 48.2 3 44

Tue Mar 16/Wed Mar 17 5272.7 11 25 03 18 32 19 34 5 10 6 12 6 58 16 36 7 07 19 13 2 0 32.4 8 46
 Wed Mar 17/Thu Mar 18 5273.7 11 29 00 18 32 19 34 5 09 6 11 7 02 16 39 20 00 5 1 18.4 13 32
 Thu Mar 18/Fri Mar 19 5274.7 11 32 56 18 32 19 34 5 09 6 11 7 06 16 43 20 49 10 2 07.0 17 47
 Fri Mar 19/Sat Mar 20 5275.7 11 36 53 18 32 19 34 5 08 6 10 7 10 16 46 21 42 17 2 58.7 21 19
 Sat Mar 20/Sun Mar 21 5276.7 11 40 49 18 32 19 34 5 08 6 09 7 14 16 49 22 37 26 3 53.6 23 51

Sun Mar 21/Mon Mar 22 5277.7 11 44 46 18 32 19 34 5 07 6 09 7 18 16 53 23 35 35 4 51.5 25 07
 Mon Mar 22/Tue Mar 23 5278.7 11 48 43 18 32 19 34 5 07 6 08 7 22 16 56 0 33 46 5 51.3 24 57
 Tue Mar 23/Wed Mar 24 5279.7 11 52 39 18 32 19 34 5 06 6 08 7 26 17 00 1 30 57 6 51.8 23 14
 Wed Mar 24/Thu Mar 25 5280.7 11 56 36 18 32 19 34 5 05 6 07 7 30 17 03 2 24 68 7 51.6 20 00
 Thu Mar 25/Fri Mar 26 5281.7 12 00 32 18 32 19 34 5 05 6 07 7 33 17 06 3 16 79 8 49.9 15 28
 Fri Mar 26/Sat Mar 27 5282.7 12 04 29 18 32 19 34 5 04 6 06 7 37 17 10 4 06 88 9 46.5 9 54
 Sat Mar 27/Sun Mar 28 5283.7 12 08 25 18 32 19 34 5 04 6 06 7 41 17 13 4 54 94 10 41.8 3 40

Sun Mar 28/Mon Mar 29 5284.7 12 12 22 18 32 19 34 5 03 6 05 7 45 17 16 17 04 5 41 99 11 36.4 - 2 48
 Mon Mar 29/Tue Mar 30 5285.7 12 16 18 18 32 19 34 5 03 6 05 7 49 17 20 17 59 6 29 100 12 31.2 - 9 03
 Tue Mar 30/Wed Mar 31 5286.7 12 20 15 18 32 19 34 5 02 6 04 7 53 17 23 18 56 98 13 26.7 -14 43
 Wed Mar 31/Thu Apr 01 5287.7 12 24 12 18 32 19 34 5 01 6 03 7 57 17 26 19 52 94 14 23.5 -19 24

***** 2010 APRIL *****

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Date (eve/morn) JDmid LMSTmidn ----- Sun: ----- LST twilight: ----- Moon: -----
 (2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Thu Apr 01/Fri Apr 02 5288.7 12 28 08 18 31 19 34 5 01 6 03 8 01 17 30 20 50 87 15 21.1 -22 52
 Fri Apr 02/Sat Apr 03 5289.7 12 32 05 18 31 19 34 5 00 6 02 8 05 17 33 21 47 79 16 19.1 -24 56

Sat Apr 03/Sun Apr 04 5290.7 12 36 01 18 31 19 34 5 00 6 02 8 09 17 36 22 42 70 17 16.3 -25 35

Sun Apr 04/Mon Apr 05 5291.7 12 39 58 18 31 19 34 4 59 6 01 8 13 17 40 23 35 61 18 11.6 -24 54

Mon Apr 05/Tue Apr 06 5292.7 12 43 54 18 31 19 34 4 58 6 01 8 17 17 43 0 24 51 19 04.5 -23 02

Tue Apr 06/Wed Apr 07 5293.7 12 47 51 18 31 19 34 4 58 6 00 8 21 17 46 1 10 42 19 54.4 -20 12

Wed Apr 07/Thu Apr 08 5294.7 12 51 47 18 31 19 34 4 57 6 00 8 25 17 50 1 53 33 20 41.8 -16 35

Thu Apr 08/Fri Apr 09 5295.7 12 55 44 18 31 19 34 4 57 5 59 8 29 17 53 2 33 24 21 27.0 -12 23

Fri Apr 09/Sat Apr 10 5296.7 12 59 41 18 31 19 34 4 56 5 59 8 33 17 57 3 11 17 22 10.8 -7 43

Sat Apr 10/Sun Apr 11 5297.7 13 03 37 18 31 19 34 4 55 5 58 8 37 18 00 3 48 10 22 53.8 -2 47

Sun Apr 11/Mon Apr 12 5298.7 13 07 34 18 31 19 34 4 55 5 58 8 41 18 03 4 26 5 23 37.1 2 18

Mon Apr 12/Tue Apr 13 5299.7 13 11 30 18 31 19 34 4 54 5 57 8 45 18 07 5 05 17 08 2 0 21.2 7 21

Tue Apr 13/Wed Apr 14 5300.7 13 15 27 18 31 19 34 4 54 5 57 8 49 18 10 5 46 17 55 0 1 07.2 12 11

Wed Apr 14/Thu Apr 15 5301.7 13 19 23 18 31 19 34 4 53 5 56 8 53 18 13 6 30 18 45 1 1 55.7 16 35

Thu Apr 15/Fri Apr 16 5302.7 13 23 20 18 31 19 34 4 53 5 56 8 57 18 17 19 37 3 2 47.2 20 18

Fri Apr 16/Sat Apr 17 5303.7 13 27 16 18 31 19 34 4 52 5 55 9 01 18 20 20 32 7 3 41.8 23 03

Sat Apr 17/Sun Apr 18 5304.7 13 31 13 18 31 19 34 4 51 5 55 9 05 18 23 21 30 14 4 39.2 24 34

Sun Apr 18/Mon Apr 19 5305.7 13 35 10 18 31 19 34 4 51 5 54 9 09 18 27 22 28 22 5 38.4 24 42

Mon Apr 19/Tue Apr 20 5306.7 13 39 06 18 31 19 35 4 50 5 54 9 13 18 30 23 25 32 6 38.0 23 19

Tue Apr 20/Wed Apr 21 5307.7 13 43 03 18 31 19 35 4 50 5 53 9 17 18 34 0 19 43 7 36.6 20 30

Wed Apr 21/Thu Apr 22 5308.7 13 46 59 18 31 19 35 4 49 5 53 9 21 18 37 1 11 54 8 33.6 16 25

Thu Apr 22/Fri Apr 23 5309.7 13 50 56 18 31 19 35 4 49 5 53 9 25 18 40 2 00 65 9 28.7 11 20

Fri Apr 23/Sat Apr 24 5310.7 13 54 52 18 31 19 35 4 48 5 52 9 29 18 44 2 46 76 10 22.3 5 32

Sat Apr 24/Sun Apr 25 5311.7 13 58 49 18 31 19 35 4 48 5 52 9 33 18 47 3 32 85 11 15.2 -0 37

Sun Apr 25/Mon Apr 26 5312.7 14 02 45 18 31 19 35 4 47 5 51 9 37 18 51 4 19 93 12 08.4 -6 47

Mon Apr 26/Tue Apr 27 5313.7 14 06 42 18 31 19 36 4 47 5 51 9 42 18 54 5 07 97 13 02.5 -12 34

Tue Apr 27/Wed Apr 28 5314.7 14 10 39 18 31 19 36 4 46 5 51 9 46 18 58 17 37 5 57 100 13 58.2 -17 36

Wed Apr 28/Thu Apr 29 5315.7 14 14 35 18 32 19 36 4 46 5 50 9 50 19 01 18 34 6 49 99 14 55.7 -21 34

Thu Apr 29/Fri Apr 30 5316.7 14 18 32 18 32 19 36 4 45 5 50 9 54 19 05 19 31 96 15 54.3 -24 14

Fri Apr 30/Sat May 01 5317.7 14 22 28 18 32 19 36 4 45 5 50 9 58 19 08 20 28 91 16 53.0 -25 27

***** 2010 MAY *****

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 (2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Sat May 01/Sun May 02	5318.7	14 26 25	18 32	19 37	4 44	5 49	10 02	19 12	21 24	.....	85	17 50.4	-25 15
Sun May 02/Mon May 03	5319.7	14 30 21	18 32	19 37	4 44	5 49	10 06	19 15	22 15	.....	77	18 45.5	-23 45
Mon May 03/Tue May 04	5320.7	14 34 18	18 32	19 37	4 44	5 49	10 11	19 19	23 03	.....	68	19 37.5	-21 10
Tue May 04/Wed May 05	5321.7	14 38 14	18 32	19 37	4 43	5 48	10 15	19 22	23 48	.....	59	20 26.5	-17 44
Wed May 05/Thu May 06	5322.7	14 42 11	18 32	19 37	4 43	5 48	10 19	19 26	0 29	.....	49	21 12.9	-13 39
Thu May 06/Fri May 07	5323.7	14 46 08	18 32	19 38	4 42	5 48	10 23	19 29	1 07	.....	40	21 57.3	-9 06
Fri May 07/Sat May 08	5324.7	14 50 04	18 33	19 38	4 42	5 47	10 27	19 33	1 45	.....	31	22 40.6	-4 15
Sat May 08/Sun May 09	5325.7	14 54 01	18 33	19 38	4 42	5 47	10 32	19 36	2 22	.....	22	23 23.8	0 47
Sun May 09/Mon May 10	5326.7	14 57 57	18 33	19 38	4 41	5 47	10 36	19 40	3 01	.....	15	0 07.6	5 50
Mon May 10/Tue May 11	5327.7	15 01 54	18 33	19 39	4 41	5 47	10 40	19 44	3 41	.....	9	0 53.1	10 43
Tue May 11/Wed May 12	5328.7	15 05 50	18 33	19 39	4 41	5 46	10 44	19 47	4 24	.....	4	1 41.1	15 16
Wed May 12/Thu May 13	5329.7	15 09 47	18 33	19 39	4 40	5 46	10 48	19 51	5 12	17 28	1	2 32.2	19 11
Thu May 13/Fri May 14	5330.7	15 13 43	18 34	19 40	4 40	5 46	10 53	19 54	6 03	18 23	0	3 26.7	22 13
Fri May 14/Sat May 15	5331.7	15 17 40	18 34	19 40	4 40	5 46	10 57	19 58	7 00	19 21	2	4 24.3	24 05
Sat May 15/Sun May 16	5332.7	15 21 37	18 34	19 40	4 39	5 46	11 01	20 02	.....	20 20	5	5 24.0	24 32
Sun May 16/Mon May 17	5333.7	15 25 33	18 34	19 41	4 39	5 46	11 05	20 05	.....	21 19	11	6 24.3	23 28
Mon May 17/Tue May 18	5334.7	15 29 30	18 34	19 41	4 39	5 45	11 10	20 09	.....	22 15	19	7 23.6	20 55

Tue May 18/Wed May 19 5335.7 15 33 26 18 35 19 41 4 39 5 45 11 14 20 13 23 08 29 8 20.9 17 05
 Wed May 19/Thu May 20 5336.7 15 37 23 18 35 19 41 4 38 5 45 11 18 20 17 23 58 40 9 15.9 12 14
 Thu May 20/Fri May 21 5337.7 15 41 19 18 35 19 42 4 38 5 45 11 22 20 20 0 44 52 10 08.9 6 42
 Fri May 21/Sat May 22 5338.7 15 45 16 18 35 19 42 4 38 5 45 11 27 20 24 1 30 63 11 00.7 0 46
 Sat May 22/Sun May 23 5339.7 15 49 12 18 35 19 42 4 38 5 45 11 31 20 28 2 14 74 11 52.2 -5 13

Sun May 23/Mon May 24 5340.7 15 53 09 18 36 19 43 4 38 5 45 11 35 20 32 3 00 83 12 44.4 -10 57
 Mon May 24/Tue May 25 5341.7 15 57 06 18 36 19 43 4 38 5 45 11 40 20 35 3 48 91 13 38.1 -16 06
 Tue May 25/Wed May 26 5342.7 16 01 02 18 36 19 43 4 37 5 45 11 44 20 39 4 39 96 14 33.8 -20 21
 Wed May 26/Thu May 27 5343.7 16 04 59 18 36 19 44 4 37 5 45 11 48 20 43 17 19 5 32 99 15 31.3 -23 27
 Thu May 27/Fri May 28 5344.7 16 08 55 18 37 19 44 4 37 5 45 11 52 20 47 18 16 6 27 100 16 29.8 -25 11
 Fri May 28/Sat May 29 5345.7 16 12 52 18 37 19 44 4 37 5 45 11 57 20 51 19 12 98 17 28.0 -25 29
 Sat May 29/Sun May 30 5346.7 16 16 48 18 37 19 45 4 37 5 45 12 01 20 55 20 05 95 18 24.5 -24 26

Sun May 30/Mon May 31 5347.7 16 20 45 18 37 19 45 4 37 5 45 12 05 20 59 20 55 89 19 18.4 -22 11
 Mon May 31/Tue Jun 01 5348.7 16 24 41 18 38 19 46 4 37 5 45 12 10 21 02 21 41 82 20 09.2 -18 58

***** 2010 JUNE *****

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 (2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Tue Jun 01/Wed Jun 02 5349.7 16 28 38 18 38 19 46 4 37 5 45 12 14 21 06 22 24 74 20 57.0 -15 02
 Wed Jun 02/Thu Jun 03 5350.7 16 32 35 18 38 19 46 4 37 5 45 12 18 21 10 23 04 66 21 42.4 -10 34
 Thu Jun 03/Fri Jun 04 5351.7 16 36 31 18 38 19 47 4 37 5 45 12 22 21 14 23 42 56 22 26.3 -5 46
 Fri Jun 04/Sat Jun 05 5352.7 16 40 28 18 39 19 47 4 37 5 45 12 27 21 18 0 19 47 23 09.4 -0 47

Sat Jun 05/Sun Jun 06 5353.7 16 44 24 18 39 19 47 4 37 5 45 12 31 21 22 0 56 37 23 52.9 4 15

Sun Jun 06/Mon Jun 07 5354.7 16 48 21 18 39 19 48 4 37 5 45 12 35 21 26 1 35 28 0 37.5 9 11
Mon Jun 07/Tue Jun 08 5355.7 16 52 17 18 40 19 48 4 37 5 45 12 39 21 30 2 17 20 1 24.4 13 49
Tue Jun 08/Wed Jun 09 5356.7 16 56 14 18 40 19 48 4 37 5 46 12 44 21 34 3 02 12 2 14.2 17 57
Wed Jun 09/Thu Jun 10 5357.7 17 00 10 18 40 19 48 4 37 5 46 12 48 21 38 3 52 6 3 07.6 21 18
Thu Jun 10/Fri Jun 11 5358.7 17 04 07 18 40 19 49 4 37 5 46 12 52 21 42 4 47 17 07 2 4 04.7 23 34
Fri Jun 11/Sat Jun 12 5359.7 17 08 04 18 41 19 49 4 37 5 46 12 56 21 46 5 46 18 07 0 5 04.6 24 29
Sat Jun 12/Sun Jun 13 5360.7 17 12 00 18 41 19 49 4 38 5 46 13 01 21 50 6 48 19 07 1 6 05.9 23 51

Sun Jun 13/Mon Jun 14 5361.7 17 15 57 18 41 19 50 4 38 5 46 13 05 21 54 20 06 4 7 06.9 21 40
Mon Jun 14/Tue Jun 15 5362.7 17 19 53 18 41 19 50 4 38 5 47 13 09 21 59 21 02 9 8 06.0 18 04
Tue Jun 15/Wed Jun 16 5363.7 17 23 50 18 42 19 50 4 38 5 47 13 13 22 03 21 54 17 9 02.5 13 22
Wed Jun 16/Thu Jun 17 5364.7 17 27 46 18 42 19 50 4 38 5 47 13 18 22 07 22 42 27 9 56.5 7 53
Thu Jun 17/Fri Jun 18 5365.7 17 31 43 18 42 19 51 4 38 5 47 13 22 22 11 23 28 38 10 48.7 2 00
Fri Jun 18/Sat Jun 19 5366.7 17 35 39 18 42 19 51 4 39 5 47 13 26 22 15 0 13 49 11 39.9 - 3 58
Sat Jun 19/Sun Jun 20 5367.7 17 39 36 18 43 19 51 4 39 5 47 13 30 22 19 0 59 61 12 31.3 - 9 42

Sun Jun 20/Mon Jun 21 5368.7 17 43 33 18 43 19 51 4 39 5 48 13 34 22 23 1 45 71 13 23.6 -14 55
Mon Jun 21/Tue Jun 22 5369.7 17 47 29 18 43 19 52 4 39 5 48 13 38 22 27 2 34 81 14 17.6 -19 19
Tue Jun 22/Wed Jun 23 5370.7 17 51 26 18 43 19 52 4 39 5 48 13 43 22 32 3 25 88 15 13.4 -22 41
Wed Jun 23/Thu Jun 24 5371.7 17 55 22 18 43 19 52 4 40 5 48 13 47 22 36 4 18 94 16 10.6 -24 48
Thu Jun 24/Fri Jun 25 5372.7 17 59 19 18 44 19 52 4 40 5 49 13 51 22 40 17 03 5 13 98 17 08.2 -25 33
Fri Jun 25/Sat Jun 26 5373.7 18 03 15 18 44 19 52 4 40 5 49 13 55 22 44 17 57 6 07 100 18 04.9 -24 56
Sat Jun 26/Sun Jun 27 5374.7 18 07 12 18 44 19 53 4 40 5 49 13 59 22 48 18 48 6 59 99 18 59.7 -23 04

Sun Jun 27/Mon Jun 28 5375.7 18 11 08 18 44 19 53 4 41 5 49 14 03 22 53 19 36 97 19 51.7 -20 09
Mon Jun 28/Tue Jun 29 5376.7 18 15 05 18 44 19 53 4 41 5 50 14 07 22 57 20 20 93 20 40.8 -16 24
Tue Jun 29/Wed Jun 30 5377.7 18 19 02 18 44 19 53 4 41 5 50 14 11 23 01 21 01 87 21 27.3 -12 03
Wed Jun 30/Thu Jul 01 5378.7 18 22 58 18 45 19 53 4 42 5 50 14 15 23 05 21 39 80 22 11.9 - 7 19

***** 2010 JULY *****

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Thu Jul 01/Fri Jul 02	5379.7	18 26 55	18 45	19 53	4 42	5 50	14 19	23 10	22 16	72	22 55.3 - 2 20
Fri Jul 02/Sat Jul 03	5380.7	18 30 51	18 45	19 53	4 42	5 51	14 23	23 14	22 53	.....	63	23 38.5 2 42
Sat Jul 03/Sun Jul 04	5381.7	18 34 48	18 45	19 53	4 42	5 51	14 27	23 18	23 31	.....	53	0 22.5 7 39
Sun Jul 04/Mon Jul 05	5382.7	18 38 44	18 45	19 53	4 43	5 51	14 31	23 22	0 10	.....	44	1 08.0 12 22
Mon Jul 05/Tue Jul 06	5383.7	18 42 41	18 45	19 53	4 43	5 51	14 35	23 27	0 53	.....	34	1 56.2 16 39
Tue Jul 06/Wed Jul 07	5384.7	18 46 37	18 45	19 53	4 43	5 52	14 39	23 31	1 40	.....	25	2 47.7 20 15
Wed Jul 07/Thu Jul 08	5385.7	18 50 34	18 45	19 53	4 44	5 52	14 43	23 35	2 32	.....	16	3 42.9 22 56
Thu Jul 08/Fri Jul 09	5386.7	18 54 31	18 45	19 53	4 44	5 52	14 47	23 39	3 29	.....	9	4 41.6 24 22
Fri Jul 09/Sat Jul 10	5387.7	18 58 27	18 45	19 53	4 44	5 52	14 51	23 44	4 30	.....	4	5 42.7 24 20
Sat Jul 10/Sun Jul 11	5388.7	19 02 24	18 45	19 53	4 45	5 53	14 55	23 48	5 33	17 50	1	6 44.5 22 42
Sun Jul 11/Mon Jul 12	5389.7	19 06 20	18 45	19 53	4 45	5 53	14 59	23 52	6 36	18 48	0	7 45.4 19 32
Mon Jul 12/Tue Jul 13	5390.7	19 10 17	18 46	19 53	4 45	5 53	15 03	23 56	.....	19 43	3	8 44.1 15 04
Tue Jul 13/Wed Jul 14	5391.7	19 14 13	18 46	19 53	4 46	5 53	15 07	0 01	.....	20 35	8	9 40.2 9 40
Wed Jul 14/Thu Jul 15	5392.7	19 18 10	18 45	19 53	4 46	5 53	15 11	0 05	.....	21 24	16	10 34.2 3 43
Thu Jul 15/Fri Jul 16	5393.7	19 22 06	18 45	19 53	4 46	5 54	15 14	0 09	.....	22 10	25	11 26.7 - 2 22
Fri Jul 16/Sat Jul 17	5394.7	19 26 03	18 45	19 53	4 47	5 54	15 18	0 13	.....	22 57	36	12 18.7 - 8 16
Sat Jul 17/Sun Jul 18	5395.7	19 30 00	18 45	19 53	4 47	5 54	15 22	0 18	.....	23 43	47	13 11.1 -13 40
Sun Jul 18/Mon Jul 19	5396.7	19 33 56	18 45	19 53	4 47	5 54	15 26	0 22	.....	0 32	58	14 04.5 -18 17
Mon Jul 19/Tue Jul 20	5397.7	19 37 53	18 45	19 52	4 47	5 55	15 30	0 26	.....	1 22	68	14 59.4 -21 53

Tue Jul 20/Wed Jul 21 5398.7 19 41 49 18 45 19 52 4 48 5 55 15 33 0 30 2 14 78 15 55.5 -24 17
 Wed Jul 21/Thu Jul 22 5399.7 19 45 46 18 45 19 52 4 48 5 55 15 37 0 35 3 08 86 16 52.3 -25 24
 Thu Jul 22/Fri Jul 23 5400.7 19 49 42 18 45 19 52 4 48 5 55 15 41 0 39 4 01 92 17 48.5 -25 10
 Fri Jul 23/Sat Jul 24 5401.7 19 53 39 18 45 19 52 4 49 5 55 15 44 0 43 4 54 97 18 43.2 -23 41
 Sat Jul 24/Sun Jul 25 5402.7 19 57 35 18 45 19 51 4 49 5 56 15 48 0 47 17 32 5 45 99 19 35.7 -21 06

Sun Jul 25/Mon Jul 26 5403.7 20 01 32 18 44 19 51 4 49 5 56 15 52 0 52 18 17 6 33 100 20 25.5 -17 36
 Mon Jul 26/Tue Jul 27 5404.7 20 05 29 18 44 19 51 4 50 5 56 15 56 0 56 18 59 99 21 12.8 -13 25
 Tue Jul 27/Wed Jul 28 5405.7 20 09 25 18 44 19 50 4 50 5 56 15 59 1 00 19 38 96 21 58.1 -8 46
 Wed Jul 28/Thu Jul 29 5406.7 20 13 22 18 44 19 50 4 50 5 56 16 03 1 04 20 16 91 22 42.0 -3 50
 Thu Jul 29/Fri Jul 30 5407.7 20 17 18 18 44 19 50 4 50 5 56 16 06 1 08 20 52 85 23 25.4 1 13
 Fri Jul 30/Sat Jul 31 5408.7 20 21 15 18 43 19 49 4 51 5 56 16 10 1 13 21 29 77 0 09.0 6 12
 Sat Jul 31/Sun Aug 01 5409.7 20 25 11 18 43 19 49 4 51 5 57 16 14 1 17 22 08 69 0 53.8 10 59

***** 2010 AUGUST *****

Calendar for OAN-Venezuela, west longitude (h.m.s) = 4 43 32, latitude (d.m) = 8 47.2

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in CCS time (4 hr W), for 3600 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) JDmid LMSTmidn ----- Sun: ----- LST twilight: ----- Moon: -----
 (2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Sun Aug 01/Mon Aug 02 5410.7 20 29 08 18 43 19 49 4 51 5 57 16 17 1 21 22 48 59 1 40.6 15 23
 Mon Aug 02/Tue Aug 03 5411.7 20 33 04 18 43 19 48 4 51 5 57 16 21 1 25 23 32 49 2 30.3 19 11
 Tue Aug 03/Wed Aug 04 5412.7 20 37 01 18 42 19 48 4 51 5 57 16 24 1 29 0 20 39 3 23.2 22 10
 Wed Aug 04/Thu Aug 05 5413.7 20 40 58 18 42 19 48 4 52 5 57 16 28 1 33 1 14 29 4 19.6 24 03
 Thu Aug 05/Fri Aug 06 5414.7 20 44 54 18 42 19 47 4 52 5 57 16 31 1 38 2 11 20 5 18.9 24 36
 Fri Aug 06/Sat Aug 07 5415.7 20 48 51 18 42 19 47 4 52 5 57 16 35 1 42 3 13 12 6 19.8 23 38

Sat Aug 07/Sun Aug 08 5416.7 20 52 47 18 41 19 46 4 52 5 57 16 38 1 46 4 15 5 7 20.9 21 06

Sun Aug 08/Mon Aug 09 5417.7 20 56 44 18 41 19 46 4 52 5 57 16 42 1 50 5 18 17 28 1 8 20.7 17 09

Mon Aug 09/Tue Aug 10 5418.7 21 00 40 18 41 19 45 4 53 5 57 16 45 1 54 6 18 18 21 0 9 18.6 12 02

Tue Aug 10/Wed Aug 11 5419.7 21 04 37 18 40 19 45 4 53 5 58 16 49 1 58 19 12 2 10 14.4 6 10

Wed Aug 11/Thu Aug 12 5420.7 21 08 33 18 40 19 44 4 53 5 58 16 52 2 02 20 02 6 11 08.7 -0 03

Thu Aug 12/Fri Aug 13 5421.7 21 12 30 18 39 19 44 4 53 5 58 16 56 2 06 20 50 13 12 02.2 -6 12

Fri Aug 13/Sat Aug 14 5422.7 21 16 27 18 39 19 43 4 53 5 58 16 59 2 11 21 38 22 12 55.8 -11 54

Sat Aug 14/Sun Aug 15 5423.7 21 20 23 18 39 19 43 4 53 5 58 17 03 2 15 22 27 32 13 50.1 -16 51

Sun Aug 15/Mon Aug 16 5424.7 21 24 20 18 38 19 42 4 54 5 58 17 06 2 19 23 18 43 14 45.3 -20 48

Mon Aug 16/Tue Aug 17 5425.7 21 28 16 18 38 19 42 4 54 5 58 17 09 2 23 0 10 54 15 41.5 -23 33

Tue Aug 17/Wed Aug 18 5426.7 21 32 13 18 37 19 41 4 54 5 58 17 13 2 27 1 04 64 16 38.1 -24 59

Wed Aug 18/Thu Aug 19 5427.7 21 36 09 18 37 19 41 4 54 5 58 17 16 2 31 1 58 74 17 34.2 -25 07

Thu Aug 19/Fri Aug 20 5428.7 21 40 06 18 36 19 40 4 54 5 58 17 20 2 35 2 50 82 18 28.8 -23 58

Fri Aug 20/Sat Aug 21 5429.7 21 44 02 18 36 19 40 4 54 5 58 17 23 2 39 3 41 89 19 21.4 -21 42

Sat Aug 21/Sun Aug 22 5430.7 21 47 59 18 35 19 39 4 54 5 58 17 26 2 43 4 30 94 20 11.5 -18 29

Sun Aug 22/Mon Aug 23 5431.7 21 51 56 18 35 19 38 4 54 5 58 17 30 2 47 16 58 5 17 98 20 59.2 -14 32

Mon Aug 23/Tue Aug 24 5432.7 21 55 52 18 34 19 38 4 54 5 58 17 33 2 51 17 38 6 02 100 21 44.9 -10 02

Tue Aug 24/Wed Aug 25 5433.7 21 59 49 18 34 19 37 4 54 5 58 17 36 2 55 18 16 6 45 100 22 29.3 -5 11

Wed Aug 25/Thu Aug 26 5434.7 22 03 45 18 33 19 37 4 54 5 58 17 40 2 59 18 53 98 23 13.0 -0 10

Thu Aug 26/Fri Aug 27 5435.7 22 07 42 18 33 19 36 4 54 5 57 17 43 3 03 19 30 94 23 56.7 4 52

Fri Aug 27/Sat Aug 28 5436.7 22 11 38 18 32 19 35 4 54 5 57 17 46 3 07 20 08 89 0 41.3 9 43

Sat Aug 28/Sun Aug 29 5437.7 22 15 35 18 32 19 35 4 54 5 57 17 50 3 11 20 47 82 1 27.5 14 13

Sun Aug 29/Mon Aug 30 5438.7 22 19 31 18 31 19 34 4 54 5 57 17 53 3 15 21 29 74 2 16.1 18 11

Mon Aug 30/Tue Aug 31 5439.7 22 23 28 18 31 19 34 4 54 5 57 17 56 3 19 22 15 65 3 07.5 21 23

Tue Aug 31/Wed Sep 01 5440.7 22 27 25 18 30 19 33 4 54 5 57 18 00 3 23 23 05 55 4 01.9 23 35

***** 2010 SEPTEMBER *****

Tue Sep 21/Wed Sep 22 5461.7 23 50 12 18 18 19 20 4 53 5 55 19 09 4 44 16 53 5 27 98 23 00.3 - 1 27
 Wed Sep 22/Thu Sep 23 5462.7 23 54 09 18 17 19 19 4 53 5 55 19 12 4 48 17 31 6 11 100 23 44.2 3 35
 Thu Sep 23/Fri Sep 24 5463.7 23 58 05 18 17 19 18 4 53 5 55 19 16 4 52 18 08 6 56 99 0 28.8 8 29
 Fri Sep 24/Sat Sep 25 5464.7 0 02 02 18 16 19 18 4 53 5 55 19 19 4 56 18 47 97 1 15.0 13 07
 Sat Sep 25/Sun Sep 26 5465.7 0 05 58 18 16 19 17 4 53 5 55 19 22 5 00 19 29 92 2 03.3 17 14

Sun Sep 26/Mon Sep 27 5466.7 0 09 55 18 15 19 17 4 53 5 54 19 26 5 03 20 13 86 2 54.2 20 38
 Mon Sep 27/Tue Sep 28 5467.7 0 13 52 18 14 19 16 4 53 5 54 19 29 5 07 21 02 79 3 47.9 23 05
 Tue Sep 28/Wed Sep 29 5468.7 0 17 48 18 14 19 15 4 53 5 54 19 33 5 11 21 54 70 4 43.9 24 23
 Wed Sep 29/Thu Sep 30 5469.7 0 21 45 18 13 19 15 4 52 5 54 19 36 5 15 22 49 60 5 41.6 24 21
 Thu Sep 30/Fri Oct 01 5470.7 0 25 41 18 13 19 14 4 52 5 54 19 39 5 19 23 47 49 6 39.9 22 56

***** 2010 OCTOBER *****

Calendar for OAN-Venezuela, west longitude (h.m.s) = 4 43 32, latitude (d.m) = 8 47.2

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in CCS time (4 hr W), for 3600 m above surroundings, in standard time all year.

Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) JDmid LMSTmidn ----- Sun: ----- LST twilight: ----- Moon: -----
 (2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Fri Oct 01/Sat Oct 02 5471.7 0 29 38 18 12 19 14 4 52 5 54 19 43 5 23 0 45 38 7 37.8 20 09
 Sat Oct 02/Sun Oct 03 5472.7 0 33 34 18 12 19 13 4 52 5 54 19 46 5 27 1 44 27 8 34.5 16 08

Sun Oct 03/Mon Oct 04 5473.7 0 37 31 18 11 19 13 4 52 5 54 19 49 5 30 2 41 18 9 30.0 11 07
 Mon Oct 04/Tue Oct 05 5474.7 0 41 27 18 10 19 12 4 52 5 54 19 53 5 34 3 38 10 10 24.4 5 22
 Tue Oct 05/Wed Oct 06 5475.7 0 45 24 18 10 19 12 4 52 5 54 19 56 5 38 4 35 4 11 18.4 - 0 43
 Wed Oct 06/Thu Oct 07 5476.7 0 49 21 18 09 19 11 4 52 5 54 20 00 5 42 5 33 17 12 1 12 12.7 - 6 47
 Thu Oct 07/Fri Oct 08 5477.7 0 53 17 18 09 19 11 4 52 5 54 20 03 5 46 6 31 18 02 0 13 07.9 - 12 26
 Fri Oct 08/Sat Oct 09 5478.7 0 57 14 18 08 19 10 4 52 5 54 20 07 5 50 18 54 3 14 04.6 - 17 17

Sat Oct 09/Sun Oct 10 5479.7 1 01 10 18 08 19 10 4 52 5 53 20 10 5 53 19 48 8 15 02.7 -21 00
 Sun Oct 10/Mon Oct 11 5480.7 1 05 07 18 07 19 09 4 51 5 53 20 14 5 57 20 44 15 16 01.4 -23 24
 Mon Oct 11/Tue Oct 12 5481.7 1 09 03 18 07 19 09 4 51 5 53 20 17 6 01 21 41 23 16 59.8 -24 22
 Tue Oct 12/Wed Oct 13 5482.7 1 13 00 18 06 19 08 4 51 5 53 20 21 6 05 22 37 32 17 56.6 -23 58
 Wed Oct 13/Thu Oct 14 5483.7 1 16 56 18 06 19 08 4 51 5 53 20 24 6 09 23 31 42 18 51.1 -22 20
 Thu Oct 14/Fri Oct 15 5484.7 1 20 53 18 06 19 08 4 51 5 53 20 28 6 13 0 22 52 19 42.7 -19 40
 Fri Oct 15/Sat Oct 16 5485.7 1 24 50 18 05 19 07 4 51 5 53 20 31 6 17 1 10 62 20 31.5 -16 11
 Sat Oct 16/Sun Oct 17 5486.7 1 28 46 18 05 19 07 4 51 5 53 20 35 6 21 1 56 71 21 17.9 -12 05

 Sun Oct 17/Mon Oct 18 5487.7 1 32 43 18 04 19 07 4 51 5 53 20 38 6 25 2 41 79 22 02.7 - 7 32
 Mon Oct 18/Tue Oct 19 5488.7 1 36 39 18 04 19 06 4 51 5 53 20 42 6 28 3 24 86 22 46.5 - 2 42
 Tue Oct 19/Wed Oct 20 5489.7 1 40 36 18 03 19 06 4 51 5 54 20 46 6 32 4 08 92 23 30.3 2 16
 Wed Oct 20/Thu Oct 21 5490.7 1 44 32 18 03 19 06 4 51 5 54 20 49 6 36 4 53 96 0 14.8 7 12
 Thu Oct 21/Fri Oct 22 5491.7 1 48 29 18 03 19 05 4 51 5 54 20 53 6 40 16 46 5 39 99 1 00.8 11 54
 Fri Oct 22/Sat Oct 23 5492.7 1 52 25 18 02 19 05 4 51 5 54 20 57 6 44 17 27 6 27 100 1 49.0 16 11
 Sat Oct 23/Sun Oct 24 5493.7 1 56 22 18 02 19 05 4 51 5 54 21 00 6 48 18 11 7 19 99 2 39.9 19 49

 Sun Oct 24/Mon Oct 25 5494.7 2 00 19 18 02 19 04 4 51 5 54 21 04 6 52 18 59 95 3 33.6 22 32
 Mon Oct 25/Tue Oct 26 5495.7 2 04 15 18 01 19 04 4 51 5 54 21 08 6 56 19 50 90 4 29.8 24 08
 Tue Oct 26/Wed Oct 27 5496.7 2 08 12 18 01 19 04 4 51 5 54 21 11 7 00 20 45 83 5 27.7 24 25
 Wed Oct 27/Thu Oct 28 5497.7 2 12 08 18 01 19 04 4 51 5 54 21 15 7 04 21 42 74 6 26.0 23 19
 Thu Oct 28/Fri Oct 29 5498.7 2 16 05 18 00 19 03 4 51 5 54 21 19 7 08 22 39 64 7 23.6 20 52
 Fri Oct 29/Sat Oct 30 5499.7 2 20 01 18 00 19 03 4 51 5 54 21 22 7 12 23 36 53 8 19.7 17 12
 Sat Oct 30/Sun Oct 31 5500.7 2 23 58 18 00 19 03 4 51 5 55 21 26 7 16 0 32 42 9 14.2 12 33

 Sun Oct 31/Mon Nov 01 5501.7 2 27 54 18 00 19 03 4 51 5 55 21 30 7 20 1 27 31 10 07.4 7 10

***** 2010 NOVEMBER *****

Calendar for OAN-Venezuela, west longitude (h.m.s) = 4 43 32, latitude (d.m) = 8 47.2

Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given in CCS time (4 hr W), for 3600 m above surroundings, in standard time all year. Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) (2010 at start)	JDmid (-2450000)	LMSTmidn set	twi.end	twi.beg	Sun: rise	LST twilight: eve	morn	rise	set	%illum	RA	Dec
Mon Nov 01/Tue Nov 02	5502.7	2 31 51	17 59	19 03	4 51	5 55	21 34	7 24	2 22	.....	21 10 59.9	1 22
Tue Nov 02/Wed Nov 03	5503.7	2 35 48	17 59	19 03	4 52	5 55	21 38	7 28	3 17	.....	12 11 52.7	- 4 33
Wed Nov 03/Thu Nov 04	5504.7	2 39 44	17 59	19 03	4 52	5 55	21 42	7 32	4 14	.....	6 12 46.4	-10 14
Thu Nov 04/Fri Nov 05	5505.7	2 43 41	17 59	19 03	4 52	5 56	21 45	7 36	5 12	16 39	2 13 41.8	-15 18
Fri Nov 05/Sat Nov 06	5506.7	2 47 37	17 59	19 02	4 52	5 56	21 49	7 40	6 11	17 32	0 14 39.1	-19 27
Sat Nov 06/Sun Nov 07	5507.7	2 51 34	17 59	19 02	4 52	5 56	21 53	7 44	7 11	18 28	1 15 37.9	-22 21
Sun Nov 07/Mon Nov 08	5508.7	2 55 30	17 58	19 02	4 52	5 56	21 57	7 48	.....	19 25	5 16 37.1	-23 52
Mon Nov 08/Tue Nov 09	5509.7	2 59 27	17 58	19 02	4 52	5 56	22 01	7 53	.....	20 22	10 17 35.5	-23 57
Tue Nov 09/Wed Nov 10	5510.7	3 03 23	17 58	19 02	4 53	5 57	22 05	7 57	.....	21 19	18 18 31.7	-22 42
Wed Nov 10/Thu Nov 11	5511.7	3 07 20	17 58	19 02	4 53	5 57	22 09	8 01	.....	22 12	26 19 25.0	-20 20
Thu Nov 11/Fri Nov 12	5512.7	3 11 17	17 58	19 02	4 53	5 57	22 13	8 05	.....	23 03	35 20 15.2	-17 04
Fri Nov 12/Sat Nov 13	5513.7	3 15 13	17 58	19 02	4 53	5 58	22 17	8 09	.....	23 50	44 21 02.6	-13 08
Sat Nov 13/Sun Nov 14	5514.7	3 19 10	17 58	19 03	4 53	5 58	22 21	8 13	.....	0 36	54 21 47.8	- 8 44
Sun Nov 14/Mon Nov 15	5515.7	3 23 06	17 58	19 03	4 54	5 58	22 25	8 17	.....	1 19	63 22 31.7	- 4 01
Mon Nov 15/Tue Nov 16	5516.7	3 27 03	17 58	19 03	4 54	5 59	22 29	8 22	.....	2 03	72 23 15.1	0 52
Tue Nov 16/Wed Nov 17	5517.7	3 30 59	17 58	19 03	4 54	5 59	22 33	8 26	.....	2 47	80 23 59.0	5 45
Wed Nov 17/Thu Nov 18	5518.7	3 34 56	17 58	19 03	4 54	5 59	22 37	8 30	.....	3 33	87 0 44.2	10 30
Thu Nov 18/Fri Nov 19	5519.7	3 38 52	17 58	19 03	4 55	6 00	22 41	8 34	.....	4 20	93 1 31.6	14 55
Fri Nov 19/Sat Nov 20	5520.7	3 42 49	17 58	19 03	4 55	6 00	22 45	8 38	.....	5 11	97 2 21.9	18 47
Sat Nov 20/Sun Nov 21	5521.7	3 46 46	17 58	19 03	4 55	6 00	22 49	8 43	16 53	6 04	100 3 15.4	21 50
Sun Nov 21/Mon Nov 22	5522.7	3 50 42	17 58	19 04	4 55	6 01	22 54	8 47	17 44	7 00	100 4 11.9	23 48
Mon Nov 22/Tue Nov 23	5523.7	3 54 39	17 59	19 04	4 56	6 01	22 58	8 51	18 39	.....	98 5 10.6	24 28

Tue Nov 23/Wed Nov 24 5524.7 3 58 35 17 59 19 04 4 56 6 02 23 02 8 55 19 36 93 6 10.2 23 43
 Wed Nov 24/Thu Nov 25 5525.7 4 02 32 17 59 19 04 4 56 6 02 23 06 9 00 20 34 86 7 09.3 21 32
 Thu Nov 25/Fri Nov 26 5526.7 4 06 28 17 59 19 05 4 57 6 02 23 10 9 04 21 32 78 8 06.6 18 05
 Fri Nov 26/Sat Nov 27 5527.7 4 10 25 17 59 19 05 4 57 6 03 23 15 9 08 22 28 68 9 01.8 13 36
 Sat Nov 27/Sun Nov 28 5528.7 4 14 21 17 59 19 05 4 57 6 03 23 19 9 13 23 23 57 9 55.0 8 23

 Sun Nov 28/Mon Nov 29 5529.7 4 18 18 18 00 19 06 4 58 6 04 23 23 9 17 0 16 45 10 47.0 2 43
 Mon Nov 29/Tue Nov 30 5530.7 4 22 15 18 00 19 06 4 58 6 04 23 27 9 21 1 10 34 11 38.5 - 3 04
 Tue Nov 30/Wed Dec 01 5531.7 4 26 11 18 00 19 06 4 59 6 05 23 32 9 26 2 04 24 12 30.7 - 8 41

***** 2010 DECEMBER *****

Calendar for OAN-Venezuela, west longitude (h.m.s) = 4 43 32, latitude (d.m) = 8 47.2
 Note that each line lists events of one night, spanning two calendar dates. Rise/set times are given
 in CCS time (4 hr W), for 3600 m above surroundings, in standard time all year.
 Moon coords. and illum. are for local midnight, even if moon is down. Program: John Thorstensen, Dartmouth College.

Date (eve/morn) JDmid LMSTmidn ----- Sun: ----- LST twilight: ----- Moon: -----
 (2010 at start) (-2450000) set twi.end twi.beg rise eve morn rise set %illum RA Dec

Wed Dec 01/Thu Dec 02 5532.7 4 30 08 18 00 19 07 4 59 6 05 23 36 9 30 2 59 15 13 24.1 -13 49
 Thu Dec 02/Fri Dec 03 5533.7 4 34 04 18 01 19 07 4 59 6 06 23 40 9 34 3 56 8 14 19.5 -18 09
 Fri Dec 03/Sat Dec 04 5534.7 4 38 01 18 01 19 07 5 00 6 06 23 44 9 39 4 55 3 15 16.8 -21 25
 Sat Dec 04/Sun Dec 05 5535.7 4 41 57 18 01 19 08 5 00 6 07 23 49 9 43 5 54 17 10 0 16 15.3 -23 24

 Sun Dec 05/Mon Dec 06 5536.7 4 45 54 18 02 19 08 5 01 6 07 23 53 9 47 6 52 18 07 0 17 13.8 -23 58
 Mon Dec 06/Tue Dec 07 5537.7 4 49 50 18 02 19 08 5 01 6 08 23 57 9 52 19 04 2 18 11.1 -23 11
 Tue Dec 07/Wed Dec 08 5538.7 4 53 47 18 02 19 09 5 02 6 08 0 02 9 56 20 00 6 19 05.8 -21 10
 Wed Dec 08/Thu Dec 09 5539.7 4 57 44 18 03 19 09 5 02 6 09 0 06 10 01 20 52 12 19 57.5 -18 10
 Thu Dec 09/Fri Dec 10 5540.7 5 01 40 18 03 19 10 5 03 6 09 0 11 10 05 21 42 19 20 46.2 -14 24
 Fri Dec 10/Sat Dec 11 5541.7 5 05 37 18 04 19 10 5 03 6 10 0 15 10 09 22 29 27 21 32.3 -10 07

Sat Dec 11/Sun Dec 12 5542.7 5 09 33 18 04 19 11 5 04 6 10 0 19 10 14 23 13 36 22 16.6 - 5 30

Sun Dec 12/Mon Dec 13 5543.7 5 13 30 18 04 19 11 5 04 6 11 0 24 10 18 23 57 46 22 59.8 - 0 41

Mon Dec 13/Tue Dec 14 5544.7 5 17 26 18 05 19 11 5 04 6 11 0 28 10 23 0 41 55 23 43.0 4 09

Tue Dec 14/Wed Dec 15 5545.7 5 21 23 18 05 19 12 5 05 6 12 0 33 10 27 1 25 64 0 27.1 8 54

Wed Dec 15/Thu Dec 16 5546.7 5 25 19 18 06 19 12 5 05 6 12 0 37 10 32 2 11 73 1 13.0 13 23

Thu Dec 16/Fri Dec 17 5547.7 5 29 16 18 06 19 13 5 06 6 13 0 41 10 36 3 00 82 2 01.6 17 26

Fri Dec 17/Sat Dec 18 5548.7 5 33 13 18 07 19 13 5 06 6 13 0 46 10 41 3 52 89 2 53.4 20 48

Sat Dec 18/Sun Dec 19 5549.7 5 37 09 18 07 19 14 5 07 6 14 0 50 10 45 4 47 94 3 48.8 23 12

Sun Dec 19/Mon Dec 20 5550.7 5 41 06 18 08 19 14 5 07 6 14 0 55 10 49 5 44 98 4 47.4 24 24

Mon Dec 20/Tue Dec 21 5551.7 5 45 02 18 08 19 15 5 08 6 15 0 59 10 54 17 24 6 42 100 5 47.9 24 11

Tue Dec 21/Wed Dec 22 5552.7 5 48 59 18 09 19 15 5 08 6 15 1 04 10 58 18 23 99 6 48.8 22 26

Wed Dec 22/Thu Dec 23 5553.7 5 52 55 18 09 19 16 5 09 6 16 1 08 11 03 19 23 96 7 48.5 19 17

Thu Dec 23/Fri Dec 24 5554.7 5 56 52 18 10 19 16 5 09 6 16 1 12 11 07 20 21 90 8 46.1 14 56

Fri Dec 24/Sat Dec 25 5555.7 6 00 48 18 10 19 17 5 10 6 17 1 17 11 12 21 18 81 9 41.4 9 44

Sat Dec 25/Sun Dec 26 5556.7 6 04 45 18 11 19 17 5 10 6 17 1 21 11 16 22 13 71 10 34.8 4 01

Sun Dec 26/Mon Dec 27 5557.7 6 08 42 18 11 19 18 5 11 6 18 1 26 11 20 23 06 60 11 27.0 - 1 51

Mon Dec 27/Tue Dec 28 5558.7 6 12 38 18 12 19 18 5 11 6 18 1 30 11 25 24 00 49 12 19.1 - 7 32

Tue Dec 28/Wed Dec 29 5559.7 6 16 35 18 12 19 19 5 12 6 19 1 35 11 29 0 54 38 13 11.8 - 12 46

Wed Dec 29/Thu Dec 30 5560.7 6 20 31 18 13 19 19 5 12 6 19 1 39 11 34 1 49 27 14 06.0 - 17 15

Thu Dec 30/Fri Dec 31 5561.7 6 24 28 18 13 19 20 5 13 6 19 1 44 11 38 2 46 18 15 01.7 - 20 44

Fri Dec 31/Sat Jan 01 5562.7 6 28 24 18 14 19 20 5 13 6 20 1 48 11 43 3 44 11 15 58.8 - 23 01