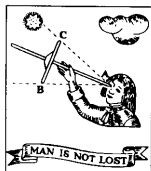


# ASTRONOMICAL INFORMATION SHEET No. 103



Prepared by

HM Nautical Almanac Office

**THE UNITED KINGDOM HYDROGRAPHIC OFFICE**

Admiralty Way, Taunton, Somerset, TA1 2DN



© Crown Copyright 2011

All rights reserved. No part of this information may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of the UK Hydrographic Office.

## Earliest Visibility of the New Crescent Moon, 2011 — 2015

This note gives the local date, local mean time and place of the earliest sighting of the new crescent moon between 2011 January and 2015 December, using a telescope.

The earliest time of sighting new crescent moon occurs when the Moon is vertically above the Sun at sunset, so that their azimuths are equal. The calculations have been made at this optimum situation at sunset when  $q$  is equal to  $-0.232$ . The quantity  $q$  is defined in NAO Technical Note No. 69, *A Method for Predicting First Visibility of the New Crescent Moon* by B.D. Yallop, 1998, April. From the list of 295 observations of first sighting discussed in the Technical Note, this value of  $q$  corresponds to the lowest limit for which the new crescent moon has been observed even with a telescope. The curve where  $q = -0.232$  on the surface of the Earth has a parabolic shape. The place of earliest sighting does not coincide with the most easterly place on this curve. The reason for this is that the sunset lines are tangent to the curve, at the place of earliest sighting, which leaves the most easterly point still in daylight except in the rare situation where the declination of the Sun is zero. The best time for the actual sighting will be during twilight, probably when the depression of the Sun is around 4 to 5 degrees, and  $q$  will be around  $-0.216$ .

The table gives the local date, the week day and the local mean time (LMT) of sunset for the earliest sighting, the interval of time from sunset to moonset in minutes (lag time), the longitude and latitude of the best place and the age of the Moon since new. The next column headed "Time Unseen", gives the minimum time that the Moon remains invisible to the unaided eye, i.e. the time in days between the last sighting of the old moon and the first sighting of the new moon from the most favourable places on the Earth. The last column gives a rough indication of the geographical location of the place. The months of Ramadhan are shaded.

### Earliest Date, Time and Place of First Sighting

Local Date	Week Day	LMT of Sunset	Time to Moonset	Longitude	Latitude	Moon Age	Time Unseen	Place
		h m	m	° /	° /	h m	d	
<b>2011</b>								
Jan. 4	Tuesday	17 39	35	W 126 29	N 17 18	17 02	1.43	Eastern North Pacific Ocean
Feb. 3	Thursday	17 15	45	W 022 08	N 42 42	16 13	1.39	North east of Azores
Mar. 5	Saturday	17 39	60	E 084 17	N 58 00	15 16	1.29	Tomsk Oblast, Russia
Apr. 3	Sunday	18 41	57	W 175 30	N 54 37	15 51	1.30	Bering Sea
May 3	Tuesday	18 47	42	W 078 43	N 34 55	17 11	1.39	North Carolina, USA
June 2	Thursday	18 16	34	E 058 57	N 08 44	17 17	1.43	East of Somalia
July 1	Friday	17 36	36	W 104 57	S 18 01	15 42	1.34	Eastern South Pacific Ocean
July 31	Sunday	17 03	45	E 135 44	S 41 28	13 20	1.16	South of South Australia
Aug. 29	Monday	17 09	59	E 035 57	S 56 57	11 41	1.00	Southern Ocean
Sept. 27	Tuesday	18 08	58	W 072 38	S 56 29	11 49	0.97	South of tip of S. America
Oct. 27	Thursday	18 30	42	E 138 30	S 38 26	13 20	1.07	South of South Australia
Nov. 25	Friday	18 09	34	W 039 30	S 11 38	14 37	1.20	Bahia Province, Brazil
Dec. 25	Sunday	17 34	35	E 130 40	N 16 46	14 45	1.24	North east of Philippines
<b>2012</b>								
Jan. 23	Monday	17 04	45	W 069 42	N 41 24	14 04	1.20	East of Massachusetts, USA
Feb. 22	Wednesday	17 17	58	E 069 43	N 56 13	14 03	1.17	Tyumenskaya Oblast, Russia
Mar. 23	Friday	18 19	54	E 176 58	N 53 15	15 54	1.28	Bering Sea
Apr. 21	Saturday	18 36	40	W 103 26	N 33 56	18 12	1.47	New Mexico, USA
May 21	Monday	18 12	34	W 004 42	N 08 09	18 44	1.56	Côte d'Ivoire
June 20	Wednesday	17 33	36	E 140 49	S 17 50	17 08	1.47	North Queensland, Australia
July 19	Thursday	16 57	45	W 031 16	S 40 08	14 38	1.27	South Atlantic Ocean
Aug. 17	Friday	16 55	56	W 179 56	S 54 18	13 01	1.10	South east of New Zealand
Sept. 16	Sunday	17 48	53	E 036 57	S 53 36	13 09	1.08	Southern Ocean
Oct. 15	Monday	18 17	40	W 117 12	S 36 29	14 02	1.14	Eastern South Pacific Ocean
Nov. 14	Wednesday	18 03	33	E 085 31	S 10 53	14 13	1.18	Central Indian Ocean
Dec. 13	Thursday	17 30	35	W 067 38	N 16 13	13 18	1.14	South west of Puerto Rico

*continued*

Local Date	Week Day	LMT of Sunset	Time to Moonset	Longitude	Latitude	Moon Age	Time Unseen	Place
		h m	m	° /	° /	h m	d	
<b>2013</b>								
Jan. 12	Saturday	16 57	44	E 135 29	N 39 25	12 11	1-04	Sea of Japan
Feb. 10	Sunday	17 03	55	W 040 39	N 52 56	12 25	1-03	Western N. Atlantic Ocean
Mar. 12	Tuesday	18 00	49	E 112 19	N 50 08	14 39	1-18	Chita Oblast, Russia
Apr. 10	Wednesday	18 26	38	W 126 11	N 32 01	17 16	1-39	Eastern N. Pacific Ocean
May 10	Friday	18 10	33	W 008 27	N 07 29	18 15	1-52	North east Liberia
June 9	Sunday	17 33	36	E 125 10	S 17 10	17 16	1-48	North west Australia
July 8	Monday	16 56	44	W 087 24	S 37 44	15 31	1-33	Eastern S. Pacific Ocean
Aug. 7	Wednesday	16 50	52	E 063 30	S 49 59	14 45	1-23	West of Kerguelen Islands
Sept. 5	Thursday	17 34	48	W 141 48	S 48 51	15 25	1-26	South Pacific Ocean
Oct. 5	Saturday	18 05	38	E 023 19	S 33 12	15 57	1-31	South Africa
Nov. 3	Sunday	17 58	33	W 150 13	S 09 31	15 09	1-28	Central Pacific Ocean
Dec. 3	Tuesday	17 27	35	E 057 42	N 15 38	13 15	1-14	South of Oman
<b>2014</b>								
Jan. 1	Wednesday	16 55	43	W 088 05	N 36 43	11 33	0-99	South Kentucky, USA
Jan. 31	Friday	16 57	50	E 115 41	N 48 13	11 35	0-96	Eastern Mongolia
Mar. 1	Saturday	17 47	45	W 055 11	N 45 17	13 28	1-08	South of Newfoundland Island
Mar. 31	Monday	18 17	36	E 121 11	N 28 44	15 28	1-26	Zhejiang Province, China
Apr. 29	Tuesday	18 07	32	W 064 50	N 06 01	16 12	1-35	Central Venezuela
May 29	Thursday	17 34	35	E 108 52	S 16 39	15 38	1-34	N.W. of Western Australia
June 27	Friday	16 58	42	W 091 28	S 34 49	14 56	1-27	Eastern S. Pacific Ocean
July 27	Sunday	16 52	48	E 039 03	S 44 40	15 33	1-28	South east of South Africa
Aug. 26	Tuesday	17 27	44	E 149 02	S 42 55	17 18	1-40	East of Tasmania
Sept. 24	Wednesday	17 57	36	W 095 40	S 28 56	18 06	1-49	Eastern S. Pacific Ocean
Oct. 24	Friday	17 54	32	E 046 43	S 07 36	16 50	1-43	North of Madagascar
Nov. 22	Saturday	17 27	34	W 140 34	N 15 04	14 17	1-24	East of Hawaii
Dec. 22	Monday	16 57	41	E 046 53	N 33 23	12 13	1-04	Western Iran
<b>2015</b>								
Jan. 20	Tuesday	16 58	46	W 125 21	N 42 24	12 06	0-99	West of Oregon, USA
Feb. 19	Thursday	17 41	41	E 068 07	N 39 08	13 21	1-08	North west Tajikistan
Mar. 20	Friday	18 11	34	W 085 23	N 24 20	14 17	1-17	Gulf of Mexico
Apr. 19	Sunday	18 06	32	E 134 57	N 03 48	14 09	1-20	South of Palau
May 18	Monday	17 36	34	W 000 27	S 16 28	13 25	1-15	East of St. Helena
June 16	Tuesday	17 03	40	W 154 25	S 31 40	13 16	1-11	Central South Pacific Ocean
July 16	Thursday	16 58	44	E 010 43	S 38 45	14 51	1-20	South west of South Africa
Aug. 15	Saturday	17 26	40	E 136 44	S 36 17	17 26	1-40	South of South Australia
Sept. 13	Sunday	17 53	34	W 115 06	S 24 05	18 52	1-55	North west of Easter Island
Oct. 13	Tuesday	17 53	32	W 003 05	S 05 25	17 59	1-53	North east of Ascension Island
Nov. 12	Thursday	17 29	34	E 121 24	N 14 20	15 36	1-35	North Philippines
Dec. 11	Friday	17 02	39	W 108 44	N 29 23	13 48	1-17	Sonora State, Mexico

The table can be used as a rough guide to tell when the new crescent Moon will first be seen at other places. For places with similar latitudes and west of the location in the table, first sighting should be on the same day. For places in the opposite hemisphere and west of the location in the table, first sighting will probably not occur until the following day. For places east of the location in the table, first sighting will probably not occur until the following day.

This office also supplies times of first visibility for specific places and Muslim prayer times. Please visit our website <http://websurf.hmnao.com> or participate in our MoonWatch project at [www.crescentmoonwatch.org](http://www.crescentmoonwatch.org).