

THE PSYCHOLOGICAL EFFECT ON SIGHTINGS OF
THE NEW MOON*By Ayman Kordi**Physics and Astronomy Department, King Saud University, Riyadh*

I have collected 42 reports of observations of sightings of the new moon of Ramadan during the period 1962–2001. Comparing these with the official civil Islamic calendar (*Umalqura*) I found that thirty-five of these sightings agreed with the civil calendar published by the Justice Department, from which I conclude that there is a strong influence of the *Umalqura* on the observers: prior knowledge of the supposed beginning of Ramadan *via* the civil calendar increases the psychological element in what is a difficult observation, leading to a large number of reports of false observations.

Introduction

The early sighting of the crescent new moon is of considerable importance for Moslems who profess the Islamic faith and use the lunar calendar in which the months begin with the first sighting of the new moon. Many attempts have been made to provide algorithms to predict first visibility. Clearly different sites and observing conditions have a marked effect upon the reliability and utility of these algorithms. Over the years, many different criteria have been developed to predict when the new moon should first be visible¹.

Every year, the Saudi Justice Minister publishes an announcement in the local newspapers encouraging the public to sight the new moon of Ramadan and other holy months and report it to the nearest Governor's Court; many consider this a duty while others volunteer to make the observations. Some of them also try to observe the old moon as it rises in the morning on the last day of the month. The Justice Department requests the public to sight the Moon on the 29th of the lunar month after sunset according to a civil Islamic calendar, called the *Umalqura*. The *Umalqura* considers the beginning of the month to occur only after the new moon has set after sunset. The times of the new-moon settings are *not* mentioned in this official calendar. The calendar is published yearly for civil use, and the public has open access to it. After people report their sighting of the new moon, an announcement, on the radio or television from the Saudi Justice Minister, informs the public that the current month is 29 days and that the holy month will begin the next day; local newspapers report that announcement on the first page. If no one reports a sighting, the Saudi Justice Minister announces that the current month will be 30 days and the beginning of the holy month will be the day after the next.

In this paper I report my findings relating to the influence of the civil calendar on the sighting of the new moon. I have studied more than 40 years of reporting of the beginning of the holy month of Ramadan through the local newspapers.

TABLE I

Name and the geographic location of the sightings

		<i>Name of the Location</i>	<i>Latitude deg.</i>	<i>Longitude deg.</i>
<i>Location 1</i>	Middle of Arabia	Aldawadmee	24·508	44·398
<i>Location 2</i>	Middle of Arabia	Sudayer	25·612	45·615
<i>Location 3</i>	Middle of Arabia	Alhareeq	23·631	46·517
<i>Location 4</i>	Northwest of Arabia	Tabook	28·390	36·565
<i>Location 5</i>	East of Arabia	Aldamam	26·430	50·120

Ramadan records

I have collected the published announcements of the beginning of the holy month Ramadan of the Justice Department from six different local newspapers: *Umalqura*, *Albelad*, *Okaz*, *Almadenah*, *Algazerah*, and *Alriyadh*. However, not all the newspapers give all of the necessary details of the announcement or of the reports of sighting of the Moon, *i.e.*, the number of observers, the place of observation, *etc.* To draw any real inference from sightings made by observers, we need to know the geographic location of these sightings. There are five places from which most of observations have been reported to the Justice Department²; these are listed in Table I. These places are sometimes given in the newspapers; the locations cover Middle, Northwest, and East Saudi Arabia.

However, all of the newspapers agree on the beginning of the month. In the Physics and Astronomy Department library, we have all the official civil calendars since 1381 Hegree year (1951 AD). I inspected these calendars and noted the Hegree year number and the day and the date in the Gregorian calendar of the beginning of Ramadan, the report of sighting of the new moon whether claimed or not, the length of the preceding month as announced by the Justice Department, and the length of the preceding month as given in the official calendar. These data are presented in Table II.

Discussion

The time of sunset and moonset on the day of sighting for the five most-used locations was calculated using well-known sunset and moonset algorithms³ and are shown in Table III.

Looking through Tables II and III and comparing the observations with the official calendars, we found that 35 out of 42 of the sightings agreed with the civil calendar (*Umalqura*). Of those claimed sightings, 24 either occurred when the Moon had set before sunset or were impossible; nonetheless, they agreed with the civil calendar on the beginning of the month of Ramadan. Only three of those sightings were claimed in Syria⁴, for Hegree years 1386, 1398, and 1400, where the age of the new moon at sunset was 10^h·5, 14^h·5, and 9^h·0, respectively. This may represent a new record⁵ for a visual sighting in that country.

Only seven sightings did not agree with *Umalqura*, with four sightings where the month of Shaban was 29 days, two sightings where the month of Shaban was 30 days, and one where the length was 28 days.

We believe the high number of false sightings of the new moon to be due to the influence of the civil Islamic calendar, which generates a psychological 'pres-

TABLE II

Year	Date	Report	Dept.	Cal.	Ref.	New Moon
1381	Mon 05-02-1962	Claim of sighting	29	29	a 1907	Feb 05 3h 10m
1382	Sun 27-01-1963	Claim of sighting	29	29	b 1803	Jan 25 16h 42m
1383	Wed 15-01-1964	Not mentioned	29	29	a 2005	Jan 14 23h 43m
1384	Sun 03-01-1965	Not mentioned	29	29	a 2054	Jan 02 23h 07m
1385	Thu 23-12-1965	Claim of sighting	29	29	b 2094	Dec 23 00h 03m
1386	Tue 13-12-1966	Claim of sighting	29	29	b 2388	Dec 12 06h 13m
1387	Sat 02-12-1967	Claim of sighting	29	29	b 2681	Dec 01 19h 12m
1388	Thu 21-11-1968	Claim of sighting	29	29	a 2248	Nov 20 11h 02m
1389	Mon 10-11-1969	Claim of sighting	29	29	c 1520	Nov 09 01h 11m
1390	Fri 29-10-1970	Claim of sighting	28	30	d 2007	Oct 30 09h 28m
1391	Wed 20-10-1971	Claim of sighting	29	29	d 2299	Oct 19 10h 59m
1392	Sun 08-10-1972	Claim of sighting	29	29	d 2591	Oct 07 11h 08m
1393	Thu 27-09-1973	Claim of sighting	29	29	d 2888	Sep 26 16h 54m
1394	Tue 17-09-1974	Claim of sighting	29	29	a 2542	Sep 16 05h 45m
1395	Sat 05-09-1975	Claim of sighting	29	29	d 3474	Sep 05 22h 19m
1396	Thu 26-08-1976	Claim of sighting	29	29	d 3766	Aug 25 14h 01m
1397	Mon 15-08-1977	Not mentioned	29	29	a 2689	Aug 15 00h 31m
1398	Sat 05-08-1978	Claim of sighting	30	30	e 2234	Aug 04 04h 01m
1399	Wed 25-07-1979	No Claim	30	30	d 4652	Jul 24 04h 41m
1400	Sun 13-07-1980	Claim of sighting	29	29	e 2905	Jul 12 09h 46m
1401	Thu 02-07-1981	Claim of sighting	29	29	f 4874	Jul 01 22h 03m
1402	Tue 22-06-1982	Claim of sighting	29	29	f 5162	Jun 21 14h 52m
1403	Sat 11-06-1983	Claim of sighting	29	30	f 5517	Jun 11 07h 38m
1404	Fri 01-06-1984	Claim of sighting	30	29	f 5822	May 30 19h 48m
1405	Mon 20-05-1985	No Claim	30	29	f 6175	May 20 00h 41m
1406	Fri 09-05-1986	Claim of sighting	29	29	f 6529	May 09 01h 10m
1407	Tue 28-04-1987	Claim of sighting	29	30	f 6883	Apr 28 04h 34m
1408	Sun 17-04-1988	Claim of sighting	29	29	f 7238	Apr 16 15h 00m
1409	Thu 06-04-1989	Claim of sighting	29	30	e 6034	Apr 06 06h 33m
1410	Tue 27-03-1990	Claim of sighting	29	29	e 6389	Mar 26 22h 48m
1411	Sun 17-03-1991	Claim of sighting	29	29	f 8301	Mar 16 11h 10m
1412	Wed 04-03-1992	Claim of sighting	29	30	f 8654	Mar 04 16h 22m
1413	Mon 22-02-1993	Claim of sighting	30	30	e 7452	Feb 21 16h 05m
1414	Fri 11-02-1994	No Claim	30	30	e 7806	Feb 10 17h 30m
1415	Tue 31-01-1995	Claim of sighting	29	29	e 8160	Jan 31 01h 48m
1416	Sun 21-01-1996	Claim of sighting	29	29	e 8515	Jan 20 15h 50m
1417	Fri 10-01-1997	No Claim	30	30	e 8870	Jan 09 07h 26m
1418	Tue 30-12-1997	Claim of sighting	29	29	e 9224	Dec 29 19h 56m
1419	Sat 19-12-1998	Claim of sighting	29	29	e 9578	Dec 19 01h 42m
1420	Thu 09-12-1999	No Claim	30	30	e 9933	Dec 08 01h 32m
1421	Mon 27-11-2000	No Claim	30	30	e10286	Nov 26 02h 11m
1422	Fri 16-11-2001	No Claim	30	30	e10641	Nov 15 09h 40m

Column 1 gives the Hegree year number. Column 2 gives the Gregorian date of the start of Ramadan from the Justice Department announcement based on reports of seeing the new moon (crescent). Column 3 shows the kind of report announced by the Justice Department and published in the newspapers about seeing the new moon or not (where the observers claimed seeing the new moon or not). Column 4 shows the length of the preceding month as announced by the Justice Department, while column 5 shows the length of the preceding month as given in the official calendar (both lengths equal means that the beginning of Ramadan as announced by the Justice Department agrees with the beginning of Ramadan as in the civil Hegree calendar (*Umalqura*)). Column 6 gives the name of the newspaper and its number: the letters a, b, c, d, e, and f denote *Umalqura*, *Albelad*, *Okaz*, *Almadenah*, *Algazerah*, and *Abriyadh* newspapers, respectively. Column 7 gives time of the new moon in UT+3h.

TABLE III

Year	Date of reporting	Aldawadmee		Sudayer		Alhareeq		Tabook		Aldamam	
		Sun	Moon	Sun	Moon	Sun	Moon	Sun	Moon	Sun	Moon
1381	Sun 04-02-1962	17:50	17:19	17:44	17:13	17:43	17:12	18:16	17:46	17:24	16:52
1382	Sat 26-01-1963	17:43	18:42	17:37	18:35	17:36	18:34	18:08	19:09	17:17	18:15
1383	Tue 14-01-1964	17:34	17:14	17:27	17:07	17:27	17:07	17:58	17:38	17:08	16:46
1384	Sat 02-01-1965	17:26	17:05	17:19	16:57	17:20	16:58	17:50	17:28	17:00	16:36
1385	Wed 22-12-1965	17:20	16:56	17:13	16:48	17:13	16:49	17:43	17:18	16:53	16:27
1386	Mon 12-12-1966	17:16	17:27	17:08	17:20	17:09	17:21	17:39	17:50	16:49	16:59
1387	Fri 01-12-1967	17:14	16:54	17:07	16:46	17:07	16:47	17:37	17:17	16:47	16:25
1388	Wed 20-11-1968	17:15	17:11	17:08	17:03	17:08	17:04	17:39	17:34	16:48	16:42
1389	Sun 09-11-1969	17:19	16:45	17:12	16:38	17:11	16:38	17:44	17:10	16:53	16:18
1390	Thu 28-10-1970	17:26	16:09	17:20	16:03	17:18	16:01	17:53	16:38	17:01	15:44
1391	Tue 19-10-1971	17:33	17:22	17:27	17:15	17:25	17:14	18:01	17:48	17:09	16:56
1392	Sat 07-10-1972	17:44	17:32	17:38	17:26	17:36	17:24	18:13	17:60	17:20	17:07
1393	Wed 26-09-1973	17:55	17:35	17:50	17:30	17:46	17:27	18:26	18:05	17:32	17:11
1394	Mon 16-09-1974	18:06	18:07	18:01	18:01	17:57	17:58	18:38	18:37	17:44	17:42
1395	Fri 04-09-1975	18:19	17:04	18:15	17:00	18:10	16:55	18:53	17:40	17:57	16:42
1396	Wed 25-08-1976	18:28	18:16	18:24	18:12	18:19	18:07	19:03	18:51	18:07	17:54
1397	Sun 14-08-1977	18:38	18:09	18:34	18:05	18:28	18:00	19:14	18:46	18:17	17:48
1398	Fri 04-08-1978	18:45	18:54	18:42	18:50	18:35	18:44	19:23	19:30	18:25	18:32
1399	Mon 23-07-1979	18:51	19:02	18:48	18:59	18:41	18:09	19:30	18:57	18:32	17:58
1400	Sat 12-07-1980	18:54	19:02	18:52	18:59	18:44	18:51	19:34	19:41	18:36	18:41
1401	Wed 01-07-1981	18:55	18:37	18:53	18:34	18:45	18:26	19:35	19:17	18:27	18:17
1402	Mon 21-06-1982	18:54	18:57	18:52	18:54	18:44	18:46	19:34	19:38	18:35	18:37
1403	Fri 10-06-1983	18:51	18:09	18:48	18:06	18:40	17:59	19:31	18:50	18:32	17:49
1404	Thu 31-05-1984	18:47	19:40	18:44	19:38	18:37	19:29	19:26	20:22	18:28	19:21
1405	Sat 18-05-1985	18:41	18:24	18:38	18:21	18:30	17:20	19:19	18:08	18:21	17:09
1406	Thu 08-05-1986	18:35	18:17	18:32	18:14	18:25	18:07	19:13	18:56	18:15	17:57
1407	Mon 27-04-1987	18:30	18:02	18:26	17:59	18:20	17:52	19:06	18:40	18:09	17:41
1408	Sat 16-04-1988	18:25	18:30	18:21	18:27	18:16	18:20	19:00	19:08	18:04	18:09
1409	Wed 05-04-1989	18:20	17:42	18:16	17:38	18:11	17:33	18:54	18:17	17:59	17:19
1410	Mon 26-03-1990	18:16	18:00	18:12	17:55	18:08	17:50	18:48	18:34	17:54	17:37
1411	Sat 16-03-1991	18:12	18:24	18:07	18:20	18:04	18:15	18:43	18:58	17:49	18:01
1412	Tue 03-03-1992	18:06	17:15	18:01	17:10	17:58	17:07	18:35	17:46	17:42	16:51
1413	Sun 21-02-1993	18:01	18:02	17:55	17:56	17:53	17:53	18:29	18:32	17:36	17:37
1414	Wed 09-02-1994	17:54	16:57	17:48	16:51	17:46	16:50	18:20	17:25	17:28	16:31
1415	Mon 30-01-1995	17:46	17:25	17:40	17:19	17:39	17:17	18:12	17:53	17:21	16:59
1416	Sat 20-01-1996	17:39	17:44	17:32	17:38	17:32	17:37	18:03	18:12	17:13	17:18
1417	Wed 08-01-1997	17:31	17:17	17:24	16:49	17:24	16:49	17:54	17:22	17:04	16:29
1418	Mon 29-12-1997	17:24	17:22	17:17	17:15	17:17	17:14	17:47	17:47	16:57	16:54
1419	Fri 18-12-1998	17:18	17:06	17:11	17:00	17:11	17:00	17:41	17:32	16:51	16:39
1420	Tue 07-12-1999	17:14	17:05	17:07	16:58	17:08	16:58	17:38	17:31	16:47	16:38
1421	Sat 25-11-2000	17:14	17:03	17:07	16:57	17:07	16:56	17:38	17:30	16:47	16:37
1422	Wed 14-11-2001	17:16	16:51	17:09	16:45	17:09	16:43	17:41	17:19	16:50	16:25

Columns 1 and 2 give the Hegree year number and the date in the Gregorian calendar of the sightings of the new moon of Ramadan. Columns 3 to 12 show the times of sunset and moonset for the five locations listed in Table I.

sure' for a positive observation. The Islamic calendar should be based on sightings of the new moon after sunset and with good observing conditions.

References

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