# Another Lunar Eclipse Challenge

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The last partial lunar eclipse visible in Canberra was that of 2005 October 17, with an umbral magnitude of only 0.06. In the early hours of September 8 this year, there will be another challenging partial lunar eclipse with an umbral magnitude near 0.19.

As I remain interested in the oblateness of the umbra due to the flattening of the Earth's upper atmosphere, this particular eclipse will provide another opportunity to verify its value. At first contact the Moon is near the south pole of the umbra where, due to the geometry of this eclipse, the effect of flattening is greatest. Using my estimate of reciprocal oblateness (or flattening) of 102, first contact (1 C) should occur **108 seconds later** than that predicted by others at 18h 05m 01s, which adopts the traditional geoid value of flattening of 298.26.

Accurate timings of first contact will be an important aspect of this one and a half hour long eclipse.

The time taken for the umbra to skim across the edge of the Moon will be sufficient to obtain crater timings as well as the two primary contacts. To assist in observing these, some of which will be easily recognised, I have provided predictions for about 35 craters, for the immersion and emersion phases of this eclipse and the primary contact times.

## IMMERSIONS

| TIME (UT) | FEATURE | LONG. | LAT. |
|---|---|---|---|
| 18.0503 | FIRST CONTACT | -90.00 | 70.75 |
| 18.0648 | CARPENTER | -50.90 | 69.40 |
| 18.0704 | ANAXIMENES | -44.10 | 72.40 |
| 18.0710 | ANAXIMANDER | -51.30 | 66.90 |
| 18.1008 | ANAXAGORAS | -10.20 | 73.50 |
| 18.1039 | CHALLIS | 9.30 | 79.70 |
| 18.1048 | ANAXAGORAS A | -6.90 | 72.20 |
| 18.1249 | BIRMINGHAM | -10.60 | 64.80 |
| 18.1302 | BARROW | 7.60 | 71.20 |
| 18.1629 | BOUGUER | -35.60 | 52.20 |
| 18.1844 | ARNOLD | 35.80 | 66.70 |
| 18.1849 | ARCHYTAS | 4.90 | 58.70 |
| 18.2023 | BIANCHINI | -34.40 | 48.80 |
| 18.2239 | CLARK C | 2.00 | 52.80 |
| 18.2338 | CLARK D | 11.20 | 53.80 |
| 18.2733 | CONDAMINE | 28.00 | 53.00 |
| 18.2814 | ARISTOTELES | 17.30 | 50.10 |
| 18.2823 | CLARK B | 67.80 | 58.00 |
| 18.3526 | CLARK A | 31.00 | 46.00 |
| 18.3611 | BURG | 28.20 | 45.00 |
| 18.3658 | ATLAS | 44.40 | 46.60 |
| 18.3808 | CASSINI C | 7.70 | 41.60 |
| 18.3917 | ATLAS A | 49.50 | 45.30 |
| 18.4002 | CHEVALLIER | 51.20 | 44.90 |
| 18.4046 | CASSINI A | 4.70 | 40.40 |
| 18.4121 | CASSINI | 4.50 | 40.20 |
| 18.4155 | ALEXANDER | 13.40 | 40.20 |
| 18.4502 | CEPHEUS A | 46.40 | 40.90 |
| 18.4517 | CEPHEUS | 45.80 | 40.70 |
| 18.4543 | CALIPPUS | 10.70 | 38.90 |
| 18.5407 | BERZELIUS | 50.80 | 36.50 |
| 18.5835 | BERNOUILLI | 60.60 | 35.00 |
| 19.0338 | BEROSUS | 69.80 | 33.50 |

## EMERSIONS

| TIME (UT) | FEATURE | LONG. | LAT. |
|---|---|---|---|
| 18.5608 | BIANCHINI | -34.40 | 48.80 |
| 19.0025 | CASSINI | 4.50 | 40.20 |
| 19.0037 | BOUGUER | -35.60 | 52.20 |
| 19.0053 | CALIPPUS | 10.70 | 38.90 |
| 19.0108 | CASSINI A | 4.70 | 40.40 |
| 19.0546 | CASSINI C | 7.70 | 41.60 |
| 19.0623 | ALEXANDER | 13.40 | 40.20 |
| 19.1148 | ANAXIMANDER | -51.30 | 66.90 |
| 19.1353 | CARPENTER | -50.90 | 69.40 |
| 19.1557 | CLARK C | 2.00 | 52.80 |
| 19.1659 | ANAXIMENES | -44.10 | 72.40 |
| 19.1858 | BEROSUS | 69.80 | 33.50 |
| 19.1859 | BIRMINGHAM | -10.60 | 64.80 |
| 19.1920 | BERZELIUS | 50.80 | 36.50 |
| 19.2001 | ARISTOTELES | 17.30 | 50.10 |
| 19.2003 | BERNOUILLI | 60.60 | 35.00 |
| 19.2006 | CLARK D | 11.20 | 53.80 |
| 19.2028 | BURG | 28.20 | 45.00 |
| 19.2041 | ARCHYTAS | 4.90 | 58.70 |
| 19.2227 | CLARK A | 31.00 | 46.00 |
| 19.2250 | ANAXAGORAS | -10.20 | 73.50 |
| 19.2258 | ANAXAGORAS A | -6.90 | 72.20 |
| 19.2323 | CEPHEUS | 45.80 | 40.70 |
| 19.2350 | CEPHEUS A | 46.40 | 40.90 |
| 19.2537 | CONDAMINE | 28.00 | 53.00 |
| 19.2544 | BARROW | 7.60 | 71.20 |
| 19.2704 | CHALLIS | 9.30 | 79.70 |
| 19.2743 | ATLAS | 44.40 | 46.60 |
| 19.2830 | ATLAS A | 49.50 | 45.30 |
| 19.2845 | CHEVALLIER | 51.20 | 44.90 |
| 19.3045 | ARNOLD | 35.80 | 66.70 |
| 19.3559 | CLARK B | 67.80 | 58.00 |
| 19.3723 | FOURTH CONTACT | 90.00 | 57.45 |

EXECUTION 09-21-2003 AT 21:42:36

The position of the Moon from Theodore, Australia will be as follows:

LUNAR ECLIPSE CRATER TIMING SITE DATA FOR 2006 SEPTEMBER 7/8
AT THEODORE, ACT

| CONTACT | ALTITUDE (D.DD) | AZIMUTH (D.DD) |
|---|---|---|
| | | |
| P1 | 43.64 | 297.89 |
| U1 | 28.19 | 282.49 |
| U4 | 9.89 | 269.07 |
| P4 | -6.40 | 257.73 |

Local Moonrise is at 5:10 pm on 7 September and Moonset is at 6:18 am on the 8 th September local time.

As many observers now have good image capture equipment, it would be of interest to me if images of the eclipse and any crater timings obtained, are posted to our email list, or emailed to me at minnah@netspeed.com.au.

I will be attempting a "live" web cast of the first part of this eclipse, my 51st event in lunar eclipse observing. This can be viewed on my web page at:

http://www.netspeed.com.au/minnah/2006/Live.html

I hope we all have clear skies.

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