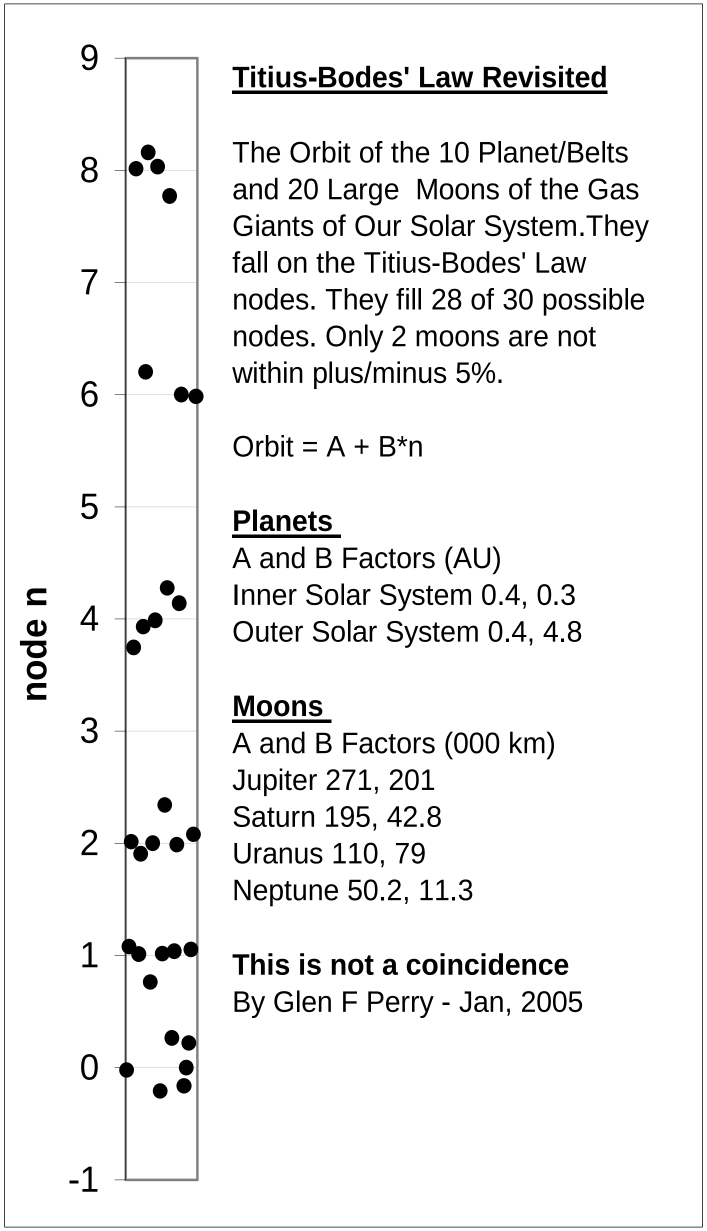

Finding the Lost Chord – by Glen F Perry

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Appendices

Tables and Additional Resource Material

Appendix # 8 - Gravity Measurement of the 40-Minute Pulse

Background

The Potsdam Super-conducting Gravimeter is an integrating sensor measuring gravity variations of various sources in its near and far field. It consists of a sphere (test mass) that is loosely suspended by a very stable magnetic field, realized by a persistent current in super-conducting field coils. The gravity-sensing unit is inside a liquid helium filled dewar with a temperature of 4.2 K controlled to a few μK. The output is adjusted for the known effects of air pressure and tides (4). Mr. Jerrold Thacker (1) had originally analyzed published measurements from the Potsdam gravimeter over the period July to December 1992 to detect repetitive sequences of 160 minutes. He adjusted the Potsdam data for signal gaps, spikes and drop offs, with a limit set for spike detection of 4 nm/sec**2 (the individual spikes can be seen in Chart # H-8). There were about 210,000 individual data points for 5 of the 6 months with a small % of gaps (<5%) that were plotted linearly between the start and the end of the gap. This means that any observed periodicity would be about 5% greater if a complete data set existed. He expressed the results as a difference from a mean, in order to show that there was resonance at the solar pulsation of 160 minutes, as suggested by earlier papers (Kotov and Kuichmy in 1985). (2) (3) Mr. Thacker ultimately identified the main 40-minute pulsation from this work, as it was perfectly in phase over 6 months (and in phase on a daily basis as there are 36 x 40-minute cycles in the Earth's synodic day). I identified a small 160-minute contribution in Mr. Thacker's original graphs (where the 4 x 40 minute pulses rose and fell in amplitude in a regular fashion), but this was overwhelmed by the sharpness and magnitude of the 40-minute pulse.

Premise

It would be tempting to suggest that the theory of pulsation friction described in Chapter II was based on the foreknowledge of Mr. Thacker's 1992 discovery of the 40-minute pulsation. However, the entirety of Chapter II is based upon, and could have been written with, just the knowledge of the rotation rates and the planet/moon orbit synchronicity. Mr. Gough (1983) and Kotov and Kuichmy (1985) apparently saw this rotation rate synchronicity, interpreted as 160-minute resonance, before Mr. Thacker's work. When I went looking for the rotation rate resonance, the graphs showed both 40 and 160-minutes. The facts of Mars (we absolutely know its rotation rate, its similar in size to the Earth, it's a little further away from the solar tidal forces, it has no large moon) implied that its rotation rate of 24 hours, 39 minutes 55 seconds should carry a lot of weight and clearly implied that 40 minutes was the key frequency, at least in our part of the inner solar system. So given this theory and the sensitivity of our measuring devices, then for the rotation rate or the orbit of a planet to be affected as described in Chapter's II and III, there **<u>must be</u>** some measurable pulsating gravitational-like force that can be applied to the planet (or a spec of dust) to cause a momentum change, and it should appear as a repetitive vibration in the gravity field (as gravity is the measure of momentum change and that's what we are looking for). In addition, for a concept such as a phase: lock to exist as described in Chapter II, the force must be able to be perfectly in resonance with itself after one complete revolution of the object (one day). This clearly implies that analyzing the gravity field of the Earth (or any rotating object) and summing the data over 24 hours (or the length of their day) should reveal a constant measurable pulsation at some frequency that rises above the background noise. Under this theory, Mr. Thacker <u>had to</u> discover something, if you believe the evidence of Mars; it had to be a 40-minute cycle. This is one of the better cases of prediction (analyzed retrospectively) that exists in science and it should not be overlooked in the debate over coincidence and TBL.

We don't even really know what questions to ask, but timing and magnitude are always a good place to start with wave analysis. One might hope that the force would be unevenly distributed across the face of the Earth in a systematic way, thus acting on gravity distortions from the oceans/mantles as the Earth passes underneath in a systematic way, thus assisting in developing the concept of pulsation friction proposed in Chapter II. If the various observed phenomena are caused by a common pulsation mechanism, then they might be in resonance in real time, perhaps as adjusted for the speed of light from a location or other such measures. For comparison with other timed events such as the eclipse pulses or the solar pulsation, I re-analyzed the Potsdam data to pinpoint the universal time of the peak of the pulse. <u>It occurred at 0 hours 36 minutes (UT) (plus/minus 30 seconds)</u> throughout July – December 1992 (equivalent to 1 hour 36 minutes local Potsdam standard time). Earlier work in Appendix #5 had roughly synchronized the 5 eclipse events of Paris, China, Zambia, Australia and India to 40-minute intervals beginning at 0 hours 40 minutes (UT) (but with about 10 minutes of uncertainty). Therefore, two different measures could be saying the same thing or at least they do not yet contradict each other. If in resonance, then analyzing any of these phenomena in detail should reveal different aspects of the same force. The gravity series shown by Mr. Thacker contains a lot more information than just the existence of the pulse. In many respects, it is like a sound recording, just at extremely slow speed. The sound it makes (speeded up) is BOOM (8 magnitude), Taaaa (2), Boom (4), taaaa (1) every 40 minutes, rising and falling slightly every 160 minutes. Analyzing it in detail from a timing and magnitude basis should provide additional clues as to the cause.

Analysis

The data is expressed as the absolute difference in nm/sec**2 between the gravity measurement and a baseline (the baseline is the average measurement at one of the forty different minute intervals, thus it is the change from a baseline that is being illustrated). The 40-minute pulse over a period of 180 days involves about 6500 cycles. To see even one minute of drift in the timing of the peak over this period implies a drift of only 0.01 of a second per 40-minute cycle (1 in 240,000). For purposes of this analysis, that represents resonance of the first order.

In order to address the question about timing over the entire 6 month period of 1992 and the possibility of some temporal shift in the 40-minute peak averaged over time (a broadening or movement of the lines that was masked in the overall data), the individual months were looked at; July / August and October / November / December. The 210,000 data points were split into 5 months of about 40,000 data points.

Under the resolution shown in Charts # H-3 to # H-7, the peaks appear to occur roughly at the same time over this 6-month period, plus/minus 30 seconds. If anything, the timing appeared to start at about 20 seconds less than 36 minutes in July/August, shift to 36 minutes at October, and drift back about 10 seconds less than 36 minutes for November/December. The 40-minute pulse was therefore in perfect resonance with the Earth's synodic day, a fact that Mr Thacker had highlighted and for which I have suggested this measuring instrument be known in the future as the Thackerscope (Perry scope was already taken).

A 15 second delay in the timing of the peak would relate to a body being further away by 4.5 MM km (c=300,000 km/sec) when reading the second measurement (distance affects timing, velocity affects frequency), but only if gravity moved at the speed of light, a matter of some contention. For example, this would be 3% of the Earth's average orbit of 150,000,000 km. As the Earth's eccentricity is 1.67%, a drift of about plus/minus 15 seconds should appear in the timing, if the source were the Sun. Perihelion (closest approach) is Jan 3, aphelion is July 4. Thus, during the 6 month experiment, the earth went from velocity = 0, distance = 152.5 MM km in July, to velocity = 140 km/hr, distance = 150 MM km in October and finally Velocity = 0, distance = 147.5 MM km in December. The eccentricity distance fits the magnitude of the temporal drift but is not synchronous with the observed timing drift. The velocity of the eccentricity change is synchronous with the observed pulse timing drift. However, changing velocity would translate into frequency shift (red-shift) and this was not seen in any of the series. So these results just leave a question as to the speed of gravity and the cause of the broadening of the (average) peak timing.

A very interesting effect appeared when comparing the magnitude of the pulse throughout the months. The pulse was about twice as strong during the summer months of July/August than it was in November/December in absolute terms. October was close to the middle in magnitude, shown in Charts # H-2 and H-3. A straightforward concept (with no physical basis) explaining this is that the magnitude depends on the sine of the angle formed between the Earth, Potsdam and the Sun (ecliptic). During the summer, this would be (52-23) about 29 degrees. During the winter, this would be (52+23) 75 degrees. The sine (75) is about two times the sine (29). Therefore, if the magnitude of the deviation were inversely proportional to the sine of the angle between the Earth, Sun and observer, the results would be directionally explained. This idea can be tested by calculating the gravity magnitude in the southern hemisphere or at the poles and by accessing a full year of data.

The second main pulse occurs at 16:00 minutes (UT) with a similar magnitude difference from summer to winter as with the main 36:00 minute pulse, implying that the 16:00 minute pulse could be a function (or a reflection) of the 36:00 minute main pulse. The back beats at 6:00 and 26:00 minutes are broader and less defined and probably delayed by about 1½ minutes from where they should be. The 6:00 minute pulse is stronger than the 26:00 minute pulse. In fact, the effect seems to almost wear off at 26:00 minutes, leading up to the main pulse at 36:00 minutes. There is one other timing observation that occurs on an even further backbeat at about 20 minutes. Each month shows a small bump in the data at this time period, in an otherwise smooth decline in magnitude. Chart # H-4 provides detail on the 20 second backbeat and illustrates the timing of the run-up to the bump with a larger symbol on the graph. As can be seen, the timing of this bump occurs at 21:00 minutes (July), 20:00 minutes (August), 19:00 minutes (October) and 18:00 minutes (November). The timing of this particular backbeat appears to be advancing about 2/3 minute per month as the amplitude of the wave declines. This backbeat is particularly noticeable when comparing November and December in Chart # H-5, which are almost identical except for this beat. Fourier analysis is sure to reveal more detail.

Returning to the unanswered question of the timing of the peak pulse, another comparison can be made, by analyzing the difference in the shape of the spectrums between day and night by month, still using about 500 data-points for each point. If the source of the pulse were the earth vibrating at some fundamental, there should be no difference in magnitude between day and night. If the source is from above, the shielding caused by the Earth might become apparent in any difference. Mr. Thacker's original analysis was duplicated in Chart # H – 11 (with the addition of 2 months of additional data) and shows the magnitude of the pulse reducing significantly just before midnight. Chart # H-20 is a different analysis of this, showing the spectrum by individual month for both day and night. The main 40-minute pulse is similar, but there is no large 20-minute pulse at night, only during the day. There appears to be an Earth shielding effect.

However, this result could also be caused by a balance between day and night (if this is the main causative agent of change), that would only be revealed by a more detailed analysis of the amplitude of the pulse by hour or by pulse, throughout the day. When averaged every 2 hours over 5 months of data, this still yields about 400 data points for each of 480 measurements (12 time zones X 40 minute intervals). The series of charts listed under the heading Charts # H-7 illustrate that the amplitude cycles in a consistent (but unexplained) manner throughout the day, rising from zero at all times at midnight (a complete null point), through a growth as the recorder swings towards daylight, with an absolute peak late in the evening around 20:00. Chart # H-13 isolates the magnitude of each of the 40-minute pulses throughout the day (starting at 0:16 LT), by taking the difference between the magnitude of the peak and the magnitude of the average over that 40 minute period. It confirms that the maximum occurs at 20:16 local time but also shows a strange interference fringe effect of about 120 minutes in width (30 degrees) in 5 morning fringes centered at 120, 240, 360, 500, and 620 min after 0:16. The fringe effect disappears in the afternoon. Chart # H-14 shows the same magnitude variation graph for the 20 minute back-beat (starting at 0:36 LT). Chart # H-15 overlays the 40 minute and 20 minute magnitude variation throughout the day. They are mirror symmetrical (one is high when the other is low), implying a cause other than coincidence. Similar graphs are prepared showing the magnitude change throughout the day of the two 10-minute back-beats (at 0:06 and 0:26 LT) and shown in Charts # H-16 and H-17. These charts also show an (approximate) 120-minute fringe magnitude effect throughout the day. Chart # H-17 shows probably the largest anomalous event throughout the day, the negative gravity pulse at 886 minutes (LT). It is a singular event that happens once a day, and appears only on the 30-minute back-beat cycle. It does not really appear in any other time period except this one. It can be seen in Chart # H-11, and in greater detail in Chart # H-19, and stands out quite clearly.

The morning peaks are shifted by 30 seconds earlier than the afternoon peaks (35:30 vs 36:00 UT) as shown in the second graph of Charts # H-7. These charts in # H-7 should be imagined as with a movie to understand what is going on through the day and are normalized (baseline = 0) to the 36-minute peak pulse time to better illustrate the series of effects. Chart # H-12 isolates the timing of each of the 36 pulses in a day and confirms that the morning pulses are about 30 seconds in advance of the evening pulses. (The actual peak timing was estimated based on the magnitude of the three time intervals around the peak, usually 15, 16 and 17 minutes). Chart # H-9 shows that the average base line gravity measurement changes over the day as well, but in a slightly more predictable fashion, rising from a low at midnight to a peak at about 10:00 AM, then falling back to midnight. The odd sine wave bending seen in the eclipse data is also illustrated in Chart # H-9 as the magnitude is not symmetrical about the day. The (bent) day/night difference in total gravity, combined with a gradual pulse amplitude reduction from July to December, combined with the changing magnitude of the pulse over 24 hours, appears to be responsible for most of the variation seen in the data. All effects could be caused by a changed orientation between the Earth and the Sun and the recorder over time.

The shape of the frequency spectrums show fine structure differences between the months and times of day that likely indicate other effects besides those discussed above, but the important factors are:

a) That the main 40-minute peak is similar between all the months and all the hours of the day (excluding midnight), thus the effect is persistent and in phase with the Earth day and likely the solar pulsation,
b) The change in amplitude is declining from July/August to December, particularly with the main 40-minute pulse,
c) There appears to be some small timing shifts (not frequency shifts) between months that might represent changes in distance or velocity to the emitter,
d) The main pulse at 36 minutes (UT) and first reflection at 16 minutes (UT) appear to be 100% in phase, the back beats at 6 and 26 minutes (UT) are lagged by about 1.5 minutes, and are broader in their profile than the sharpness of the main pulses and might be the amalgam of several different frequencies,
e) All pulses disappear from about 22:56 to 2:16. It is a complete null point implying that the null zone could extend for about 3 1/3 hours around midnight or 50 degrees of the circumference of the planet. This is not symmetrical about the 24:00 time; the pulse dies about 1 hour prior to midnight and doesn’t start up until about 2 ½ hours after midnight. This suggests that the originating source of the pulsations is in a DIRECTION that is constant over the day and year. This could be the Sun, and the Earth shields this at night. Alternatively, this could be the orbital motion of the Earth in its orbit, 90 degrees to the Sun. Both are constant over the day and year. It could be both.
f) There is a rapid growth in the 36-minute (UT) main pulse from midnight till about 4:00 AM, a cycling until about 16:00 PM, then a large growth to about 20:00 PM, with a rapid fall to zero at midnight. This coincides with a shift in the timing of about 30 seconds between the morning pulses and the afternoon pulses. The afternoon pulse is almost twice the magnitude of the morning pulse.

The individual spikes tend to stand out clearly against the background noise and last no longer than one minute (but possibly much less) as Chart # H-8 illustrates. They do not appear to be accumulations of small changes but are instead a sum of sharp spikes occurring closer than chance to the predicted interval. Mr Thacker suggested that the spikes would be even sharper except for his 4 nm/sec**2 cut-off, and that this could affect the relative measurement of magnitude between different times and months. The spikes do not fall on every beat however, many beats are missed entirely, and many spikes fall on other regions. There are many negative spikes as well. There are spikes of many different magnitudes. However, this gives rise to the average pulse as measured over a month of data with many individual observations at each frequency, where the clustering is obvious. This record could represent the output of numerous pulsating objects, all at different frequencies and interfering with each other.

The comparison between different months provide a different alignment between the fundamental beat at 0:36, the backbeat at 0:16 and the two slightly delayed reflections at 0:07:30 and 0:27:30 minutes. August rises from the lowest low to the highest high at the main pulse of 0:36. July is similar, just slightly less in amplitude. They both have a strong backbeat at 0:16. For October, the 1st reflection at 0:07 minutes is stronger then the backbeat at 0:16, while the 2nd reflection is almost flat. The November/December series continues this trend, with a 1st reflection as strong as the backbeat, and no 2nd reflection to speak of. The magnitude of the winter peak at 0:36 minutes is only about ½ the summer peak. The four main pulses at 06 / 16 / 26 / 36 minutes (UT) change in magnitude by 2 / 4 / 1 / 8.

Mr Thacker's main graph, shown in Chart # H-10, integrated the data over a frequency of 160 minutes, and first showed these 40-minute pulses with the 10-minute backbeats, in phase with 160 minutes (exactly over 5 months). In that graph, the peak of each of the 4 x 10 minute pulses within each 40-minute block is not equal. In numbering the blocks 1, 2, 3 and 4, there are several trends. The most prominent is the increase and decrease in the amplitude of each block, but also with a slight difference between the backbeats as to when they peak. Whereas the 0:36 minute beat peaks in block 2/3, the 0:06 minute beat peaks in block 3, the 0.16 minute beat peaks in block 3/4 and the small 0:26 minute beat peaks in block 4. This has the appearance of a small booster beat at the 160-minute interval in block 2, with a reflection of this through a resonating cavity with a fundamental of 40 minutes, declining slightly in magnitude as it recedes from the source, and with the peak removed in time as it recedes. This illustrates the small magnitude of the 160-minute beat relative to the 40-minute beat. The 40-minute resonating cavity self-amplifies this 160-minute beat to it's fundamental at about 5-10 times the magnitude of the 160-minute booster beat, as with a small push on a child's swing timed correctly. This can only be done if they are perfectly in phases, which they appear to be.

Due to its density and the speed of sound through the Earth, Mr Perry had previously hypothesized that the source of the 40-minute pulse might be the Earth itself, as this appeared to be it's fundamental frequency of vibration on a round trip through the core. This theory would imply that the source of the 160-minute pulse is external to the Earth, and the Earth pulses with its own 40-minute fundamental, which is somehow in phase with the 160-minute external pulse. (It is also in phase with the Earth's rotation rate or day). The gravimeters on the Earth's surface would measure only this 40-minute pulsation; it would drown out the 160-minute solar pulsation. This might help explain the back-beats at 20 seconds (the once through pressure pulse through the core and striking about 1/3 of the surface on the opposite side), at 12 seconds (the 4 node pulsation of the Earth at every 90 degrees where the total travel time is 4 times 13 minutes = 52 minutes or 40 plus 12 minutes) and at 32 seconds (the same 4 node reflection, but this time from the 20 minute once through reflection instead of the main 40-minute pulse). This might help explain why the magnitude of the 10-minute reflections is only about ¼ of the main pulses at 40 and 20 minutes. This chaotic resonance on the 10 second reflections might result in the jumble of sound being measured about 23 – 26 seconds after the main pulse, the "20 minute backbeat" shown in Chart # H-4. These are possibly reflections from the other 2/3 of the Earth's surface that took about 26 minutes to go just halfway and back (26 minutes of 2 X 13 minute bounces at 90 degrees). This 4-node resonance could also be responsible for the general 1.5-minute lag between the two main beats (which are in phase) and the two small backbeats (which are not in phase) as well as the 8/2/4/1 magnitude ratio between the pulses.

However, <u>the 40-minute pulses complete disappearance around midnight argues for a different cause of the 40-minute main pulse.</u> That is because any Earth based standing wave caused by an external source should continue through the time period it takes to traverse this null zone. The Earth vibration would not be 100% completely affected by the location of the gravimeter on the Earth relative to the Sun (as some part of the Earth is always pointing at the Sun), although the recorder might have to fall within 60 degrees of the anti-node to see the pulse coming through the Earth from the other side in exactly 20 minutes (travel time of sound through the core).

A better theory is that the 40-minute pulse is an external phenomenon linked to either the Sun or the side of the Earth traveling into the direction of its orbit at 108,000 km/hr (or both). If it were the Sun, the Earth somehow blocks the overhead pulsations from the Sun at midnight and the Earth's rotation somehow affects the magnitude of the force, peaking when rotating away from the Sun in the afternoon, and also peaking when more vertically aligned as in the summer. The 20-minute back-beat could be the travel time of the pulse through the Earth in one direction, thereby detected only for ½ the day when the recorder is on the other side of the Earth from the main pulse. This implies that the main pulse is at right angles to the sun, peaking at 18:00 in the afternoon or in the trailing side of the direction of motion. The <u>motion</u> concept could be quite predictive, as the Earth traverses about 220,000 km of orbit every 2 hours. If the 40-minute pulsating gravitational force were in bands this wide emanating from the Sun, the rise and fall of the magnitude of the various pulses would be explained as the Earth traversed these bands or fringes. The 30-second delay between night (leeward side) and morning (windward side) might also be explained by this concept. This would occur if the resonating body extended about 9,000,000 km on the leeward side of the Earth (30 seconds at c), and it was an interaction at the perimeter of the resonating body that was being detected by the gravimeter on the surface of the Earth. The greater surface area of the resonating body on the leeward side would intersect more of the solar pulsation, and would be relatively stronger than the windward side.

Two possible external sources of the 160-minute pulsation are the Sun and the Io Shout, or perhaps both acting in synchronicity. The Io/Earth distance changes by +150,000 to – 150,000 km over the year, but averages zero, or the distance to the Sun. The Earth/Sun distance is constant. A 160-minute pulse would average being in phase over the year from both Io and the Sun, when observed on the Earth. In the summer of 1992, the Earth/Sun/Jupiter alignment was 90 degrees, such that both the Earth and Sun received the Io Shout at the same time, with the Earth travelling away from Jupiter. In the winter, it was 270 degree, with the Earth travelling towards Jupiter. On Dec 21 and June 21, the Earth/Sun pointed towards opposite nodes of the Milky Way. Whatever is causing the effect, it affects the magnitude based on some geometric alignment related to the seasons, with maximum in the summer and minimum in the winter, but the seasons do not change the frequency by any large amount.

Chart # H-18 shows some of the other frequencies analyzed. They were 32, 37, 43 and 29 minutes, essentially picked at random. The odd numbers are not resonant with 40/160 minutes in any way and were chosen for that reason, while the 32 minute series would be resonant with a 40 minute peak every 5th beat. The most important result is that the 40-minute cycle is about 5 times the magnitude of the other odd number cycles and twice as large as the 32-minute cycle. There is a much better signal to noise ratio with 40 minutes than with the other frequencies, however some results were still apparent when looked at in fine detail and across a few months. In contrast to the 40-minute pulse, the 37-minute cycle appears to illustrate an anti-pulse, where a pulse represents an increase in gravity, and an anti-pulse represents a drop in gravity. There are sharp drops synchronized across July (node at 1 minute), August (2 minutes), October (4 minutes), November (4 minutes) and December (3 minutes). The magnitude reduces from July through November, and then increases in December. The existence of an anti-pulse, similar in design to the pulse would explain why the individual 40-minute pulses are sometimes seen, and sometimes not seen. They are being cancelled by opposite pulses occurring coincidentally. Most other frequencies analyzed, like 29 minutes show just noise at this level of resolution (one minute). The 43-minute frequency shows one of the more interesting features, a pulse three times per cycle (14.33 minutes), with the 2nd one suppressed. The 37-minute frequency shows a 5 beat-cycle (7.4 minutes) with the 2nd and 4th beats suppressed. The 32–minute cycle shows a pulse every 8 minutes. This resonance might be expected if the actual pulse were every 40 minutes however the 8-minute peaks rises to almost ½ the 40-minute peak, suggesting a different path through the resonant cavity.

Finally, Charts # H-21, 22 and 23 are taken from Dr Kotov's data for the solar pulsation and illustrate the most recent estimates of the 160-minute solar pulsation, averaged over the period 1974 – 2003, synchronized to universal time (Kotov, "Solar pulsation 1974 – 2003: the evidence for a fast rotating core", IAU Symposium No 233, 2004). The period has been re-estimated by Dr Kotov to be 159.9655 minutes per cycle. This means that it will drift by 113 minutes per year from a perfect 160-minute resonance or almost ¾ of a cycle per year; therefore it is not in perfect resonance with the 40-minute pulsation. There are other features of these solar pulse magnitude curves that are pertinent. In particular, they illustrate a sine wave bending effect and have a flat magnitude profile over long periods, similar to the eclipse pulses. Also of interest, if the velocity graph is converted to an acceleration (force) graph, there appears to be a spike of acceleration every 40 minutes (approx) as shown in Chart # H-23, supporting the idea that it is the sun that is the source of the 40-minute pulsation.

The similarity to the eclipse pulse can be tested by looking at the absolute universal times of the solar pulse and the eclipse pulse, and seeing if they are synchronized. Table # H-1 at the end shows this comparison. There is a remarkable degree of resonance between these two different events. With 5 eclipses (and 6 events), the actual average deviation is 8.2% compared to an expected 25%. The resonance is very good with the China and Australia eclipses. The probability of this is 0.12%. ((8.2 / 25.0) ^ 6) This analysis carries the same caution with the timing of the eclipse events as was stated in Appendix V.

This raises the question of how much additional information is contained in these gravity series and what might be accomplished through Fourier/wavelet analysis of large blocks of data being generated simultaneously by several metering devices? One will always be accused of seeing things in the data, that's why probability analysis was invented. The 5 months at 1 measurement per minute times 60 minutes times 24 hours times 30 days is 210,000 data points. Certain trends are apparent and defy all the odds. The length and durability of the signal argues against local causes. To date, only a few whole number frequencies have been explored, the computer resources have been minimal, and the resolution is only one minute per sample (many of the spikes might be less than this in duration). This can be improved to a resolution of seconds, but the data will expand by a large amount, ultimately requiring large computers to compute the entire spectrum, and to track it in real time, possibly from numerous stations across the Earth. A complete exploration of this spectrum in real-time should usher in a new wave of gravity measurement, only it won't be gravity as we know it. These charts should convince one that this is a new science, and not just noise. Finding a synchronous series with predictable change across all 6 months or time in the day improves the probability significantly that fundamental forces are at work, and are not just some local effect. The existence of frequencies that are not noise such as 40- minutes and 160-minutes implies that most of the cyclic variation likely has a similar cause.

Conclusion

These gravimeters have been built to measure incredibly small forces. These same detectors routinely observe much larger gravity forces, which occur with regularity, and can probably be explained astronomically, but are filtered out as noise. The correlation to seasons and day/night cycles and the rise and fall of the pulsations will allow these changes to be tied to specific events. The forces appear to be regular, or at least non-random, and ultimately predictable, once a first cause can be established. As any force that can move a gravimeter test mass can also move the Earth or the planets if consistently applied in a specific direction, it would appear that the force measured by the gravimeter could be the main causative agent of Titius-Bodes' Law orbits, the planet rotation rates, possibly the mass and diameter and probably the density and composition of all the large objects in our solar system. If this can be confirmed, we might be able to tell whether a distant star contains Earth like possibilities, just from its fundamental pulsation frequency, composition and size.

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http://ourworld.compuserve.com/homepages/jbstoneking/kotovpg1.htm). html

(3).http://www.creationresearch.org/crsq/articles/26/26_2/sun. "However, the 160 minute cycle is not universally acknowledged. Woodard and Hudson (1983) and van der Raay (1980) have not found it, and Hudson has recently said, "Following its initial apparition . . . the 160 minute oscillation has remained elusive both theoretically and also observationally" (Hudson, 1987). The following papers form the majority who do accept the 160 minute oscillations: Severny *et al*., 1976; Hill *et al*., 1986; Grec *et al*., 1980; Isaak, 1982; Claverie *et al*., 1981; Delache and Scherer, 1983; Scherer and Wilcox, 1983; Ando, 1986."

(4) Potsdam Super-conducting Gravimeter – 1992-1998
reprinted from web-site:
http://www.gfz-potsdam.de/pb1/pg3/grav/slg/slg_index_e.html

The Super-conducting Gravimeter (SG) is an integrating sensor measuring gravity variations of various sources in its near and far field. The Gravity Sensing Unit (GSU) consists of a sphere (test mass) which is loosely suspended by a very stable magnetic field, realised by a persistent current in super-conducting field coils. The GSU is inside a liquid helium filled dewar with a temperature of 4.2 K controlled to a few µK. A negative feedback technique provides an additional force to hold the sphere in zero position. The feedback voltage is a linear function of the measured gravity variation.

The SG has a resolution at the 10^{-11} m/s² (ngal) level and it covers a period range from a few seconds to some years. Its drift rate is a few 10^{-8} m/s² (µgal) per year. The high precision and the low drift of the instrument allows the investigation of the whole tidal and non-tidal frequency band.

The gravimeter integrates gravity changes of the different sources and it cannot separate them. In most cases research is concentrated on **geophysically induced gravity effects** such as Earth Tides, Seismic Normal Modes, Core Gravity Modes, Nearly Diurnal Free Wobble Chandler Wobble etc. To investigate one special effect, all the others have to be separated and removed from the data. One disturbing part consists of accelerations (vibrations) usually considered as **noise** (seismic, industrial and ocean noise), which can be reduced by low-pass or by band-pass filtering (if the particular frequencies are known). Very important in this connection is the hardware damping of the signal according to the transfer function of the gravimeter. Supplementary **instrumental effects** (drift, offsets, instrumental noise) superimpose the gravimeter signal. It is difficult or even impossible to separate geophysically induced parts of the signal from noise, if they have same the frequencies. Another part usually treated as disturbing signal are **environmental effects**. To remove them, they have to be modelled and hence the environmental parameters (e.g. temperature, air pressure, precipitation) must be measured precisely.

Resolution: $0.3 \cdot 10^{-11}$ m/s²

Precision
High pass filter applied
diurnal, semi-diurnal tides, air-pressure coefficient adjusted:
s_0= ±0.8 nm/s²
Low pass filter applied
diurnal, semi-diurnal, long-period tides, air-pressure and polynomial coefficients adjusted:
s_0= ±9.1 nm/s²

Drift: after correction for tides, air pressure and polar motion
54 nm/s² per year

Table H - 1 - Solar Pulsation Timing vs. Eclipse Timing				
Chinese Eclipse - Mar 9, 1997		Pulse Peaks start @ 0:00 UT 1/1/74		
01/01/74 - 09/03/97 (8468 days)		Mar-08	minute	**1370.6**
Minutes/cycle	159.9655	Mar-09	minute	**90.6**
		Mar-09	minute	250.6
# Days since 1/1/74	8468.17366	Actual	Deviation % of 160	
Fractional Day	0.17365625	**1365**	3.5%	
Fractional Minutes	250.065	**95**	2.8%	
Zambian Eclipse - June 21, 2001		Pulse Peaks start @ 0:00 UT 1/1/74		
01/01/74 - 21/06/01 (10003 days)		Jun-21	minute	**1043.9**
Minutes/cycle	159.9655	Jun-21	minute	**883.9**
# Days since 1/1/74	10033.836	Jun-21	minute	723.9
Fractional Day	0.8359875	Actual	Deviation % of 160	
Fractional Minutes	1203.822	**840**	27.4%	
Australian Eclipse - Dec 4, 2002		Pulse Peaks start @ 0:00 UT 1/1/74		
01/01/74 - 04/12/02 (10564 days)		Dec-04	minute	**879.0**
Minutes/cycle	159.9655	Dec-04	minute	**719.0**
# Days since 1/1/74	10564.7215	Dec-04	minute	**559.0**
Fractional Day	0.72149062	Actual	Deviation % of 160	
Fractional Minutes	1038.9465	**560**	0.6%	
Indian Eclipse - Oct 24, 1995		Pulse Peaks start @ 0:00 UT 1/1/74		
01/01/74 - 24/10/95 (7966 days)		Oct-24	minute	**246.0**
Minutes/cycle	159.9655	Oct-24	minute	**86.0**
# Days since 1/1/74	7966.2819	Oct-23	minute	1366.0
Fractional Day	0.2819	Actual	Deviation % of 160	
Fractional Minutes	405.936	**60**		
		80	3.8%	
Paris Eclipse - June 30, 1954		Pulse Peaks start @ 0:00 UT 1/1/74		
01/01/74 - 30/06/54 (-7124 days)		Jun-30	minute	**772.6**
Minutes/cycle	159.9655	Jun-30	minute	**612.7**
# Days since 1/1/74	-7124.4635	Jun-30	minute	452.7
Fractional Day	-0.4634563	Actual	Deviation % of 160	
Fractional Minutes	-667.377	**680**		
		755	11.0%	
Probability	0.12%			
Expected Deviation	25.0%			
Average Actual Deviation	8.2%			

Chart # H-1 – Gravity Deviation - 40 minute interval

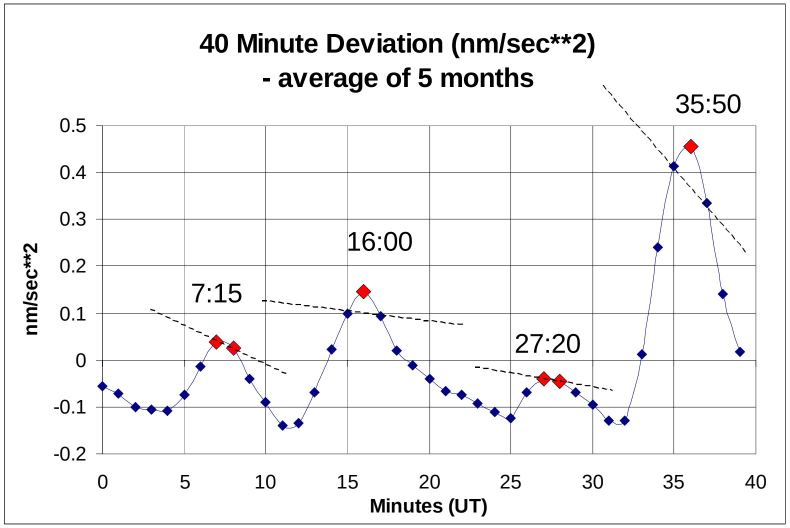


Chart #H-2 – Gravity Deviation by Month

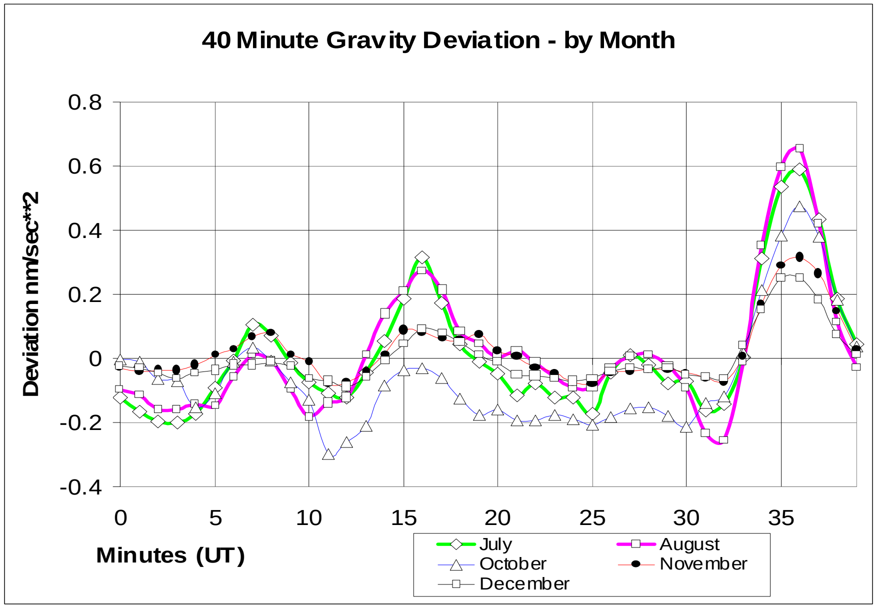


Chart #H-3 –Detail – Main Peak at (UT) 0:36 - By Month

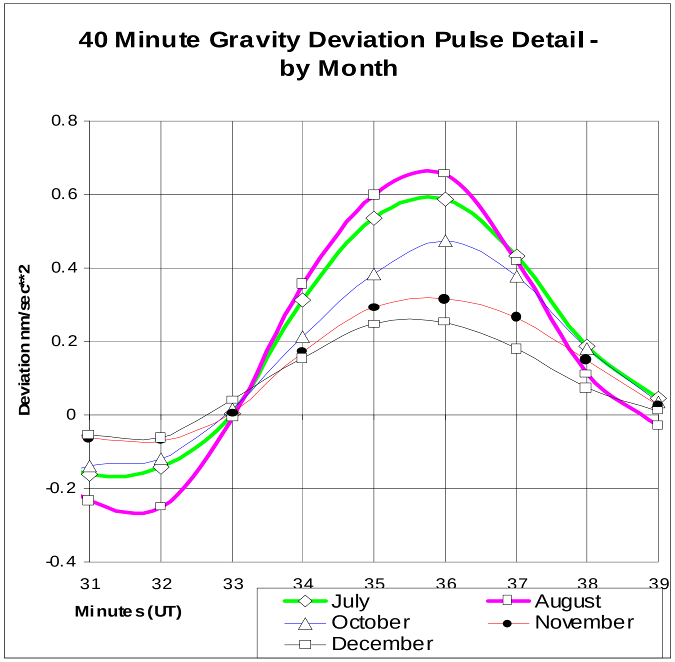


Chart # H-4 – Detail – 20 second back-beat - By Month

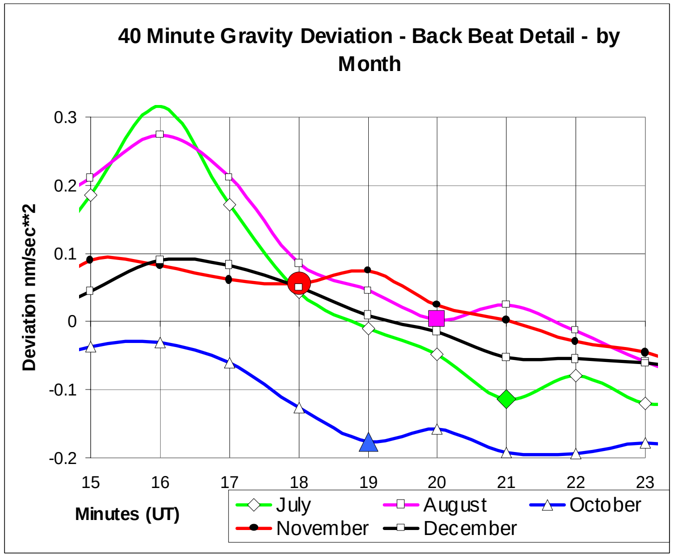


Chart # H-5 – Gravity Deviation November vs. December

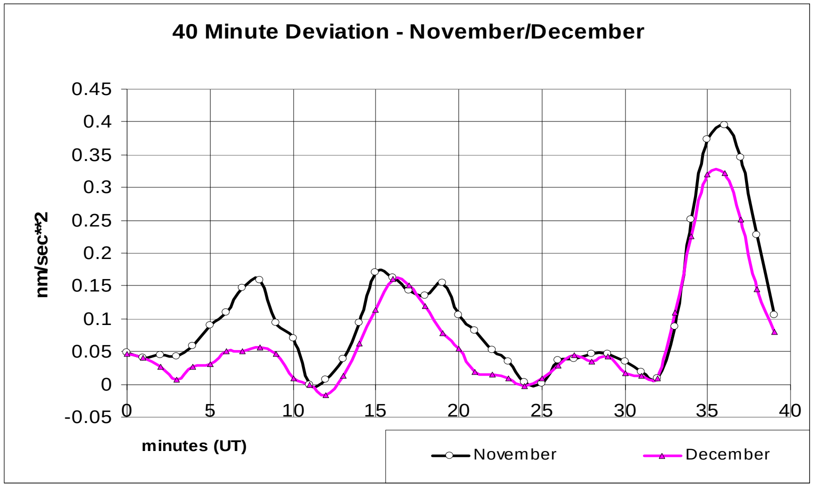
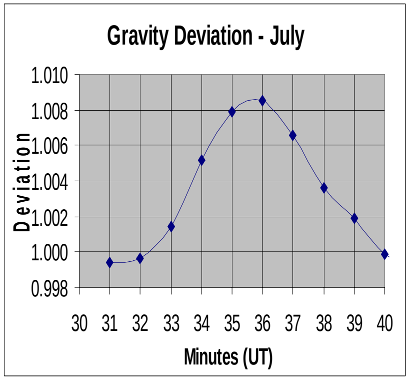
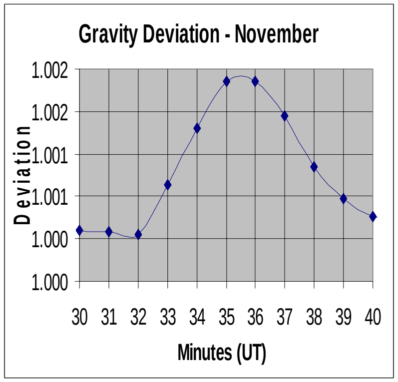
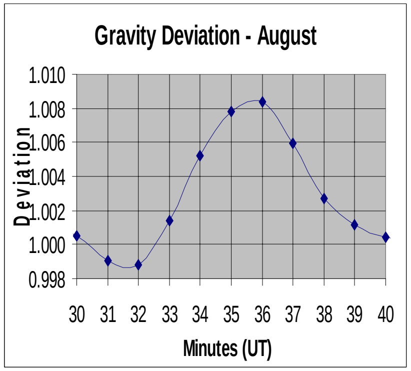
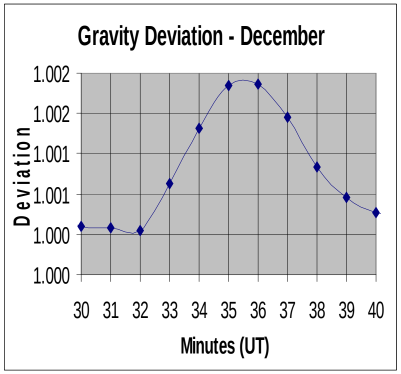


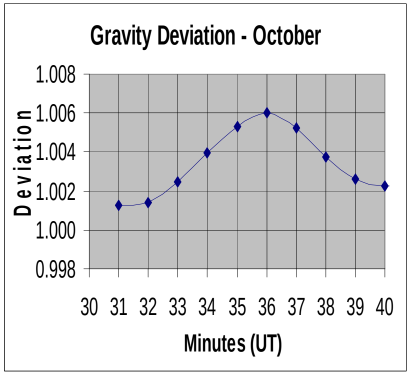
Chart # H-6 – Detail Peak Timing – 40 minutes – by month



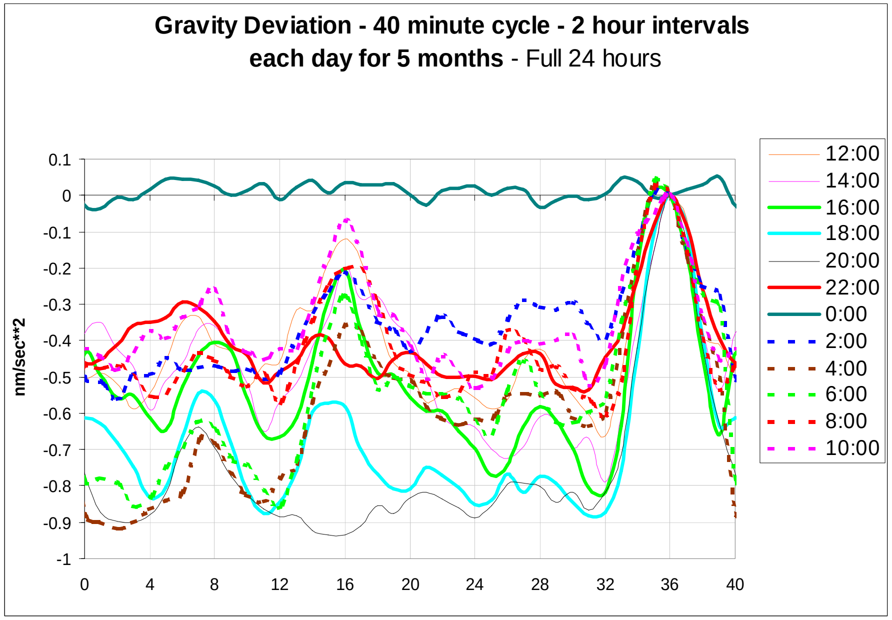


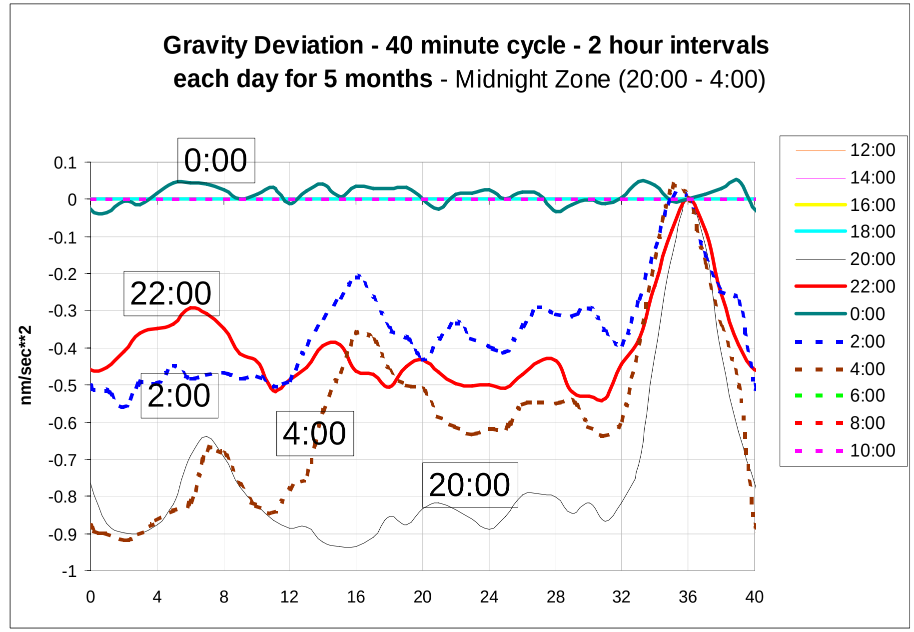


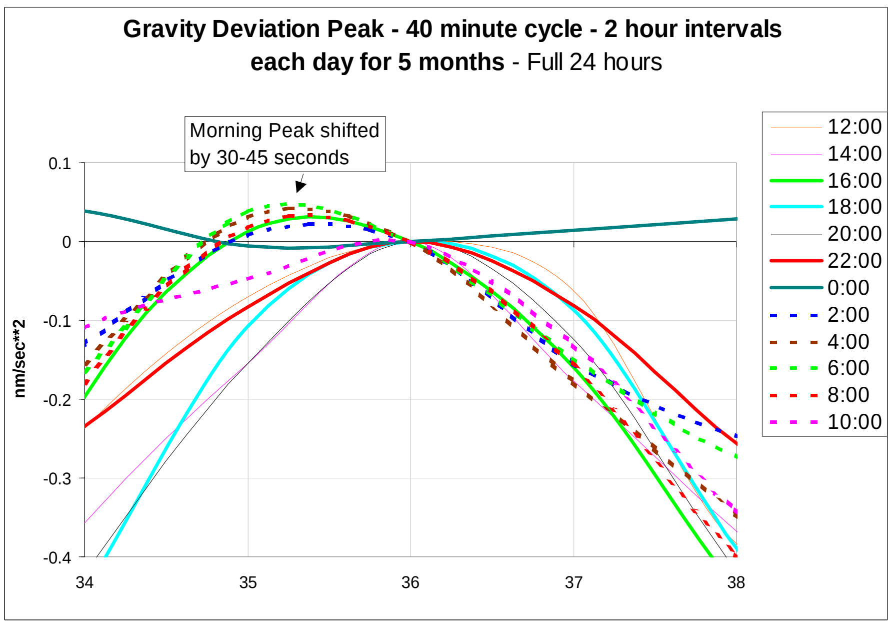


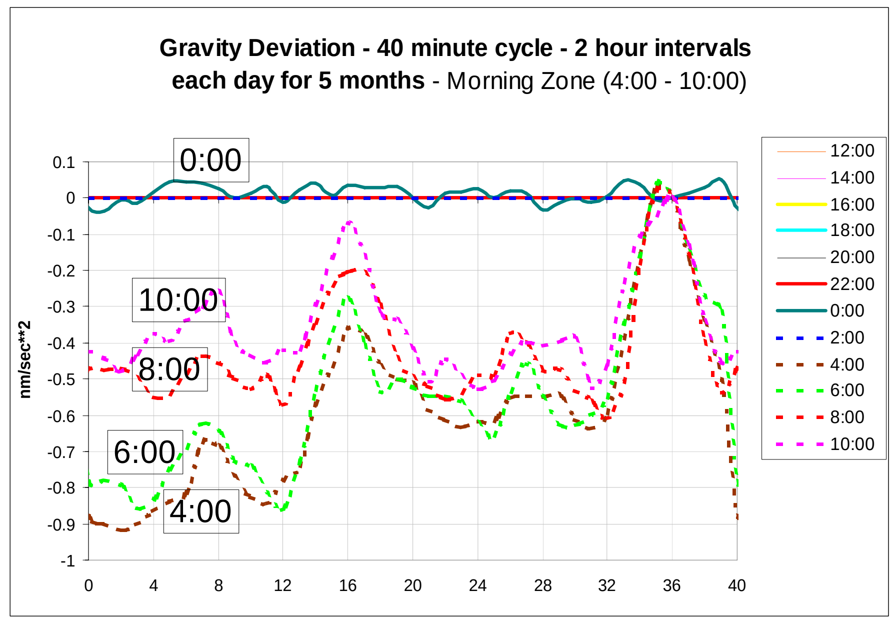


Charts # H-7 – Detail Timing By 2 Hour Intervals (6 charts)









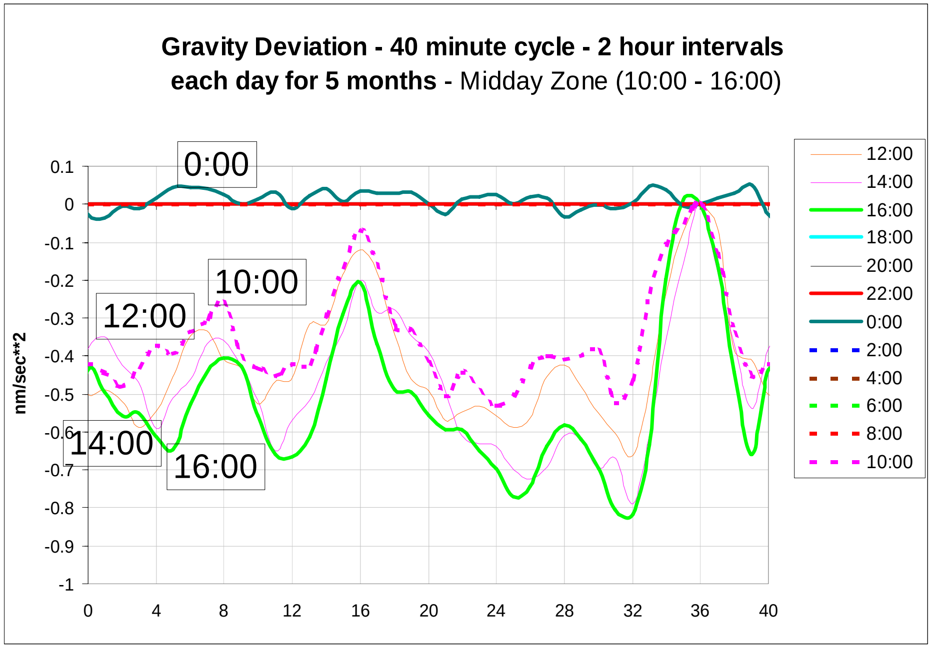
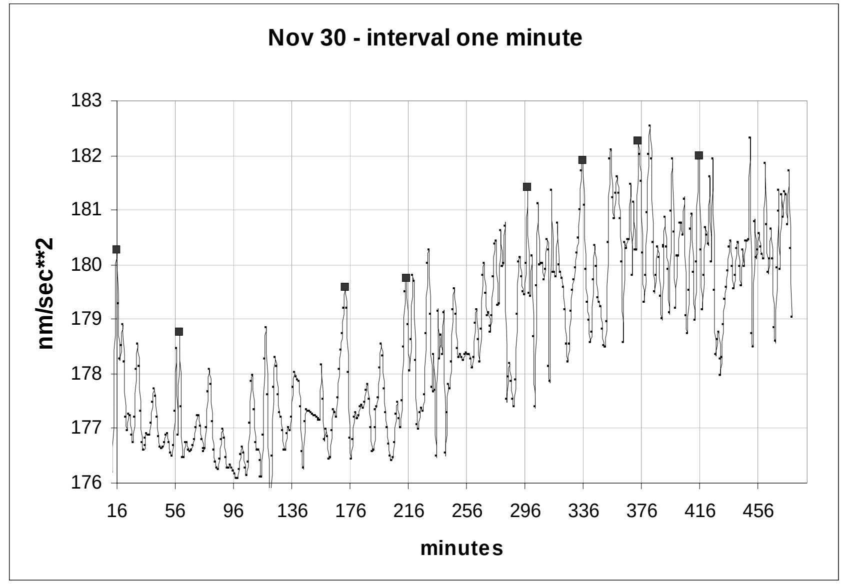


Chart # H-8 Sample Short Interval Gravity Measure



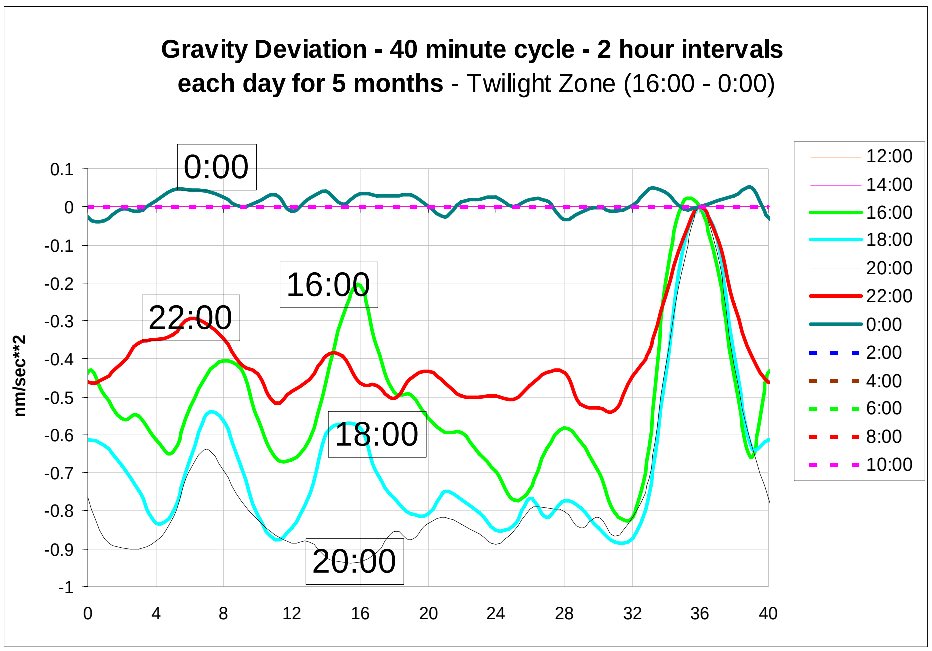


Chart # H-9 Average Gravity - 2 hour intervals

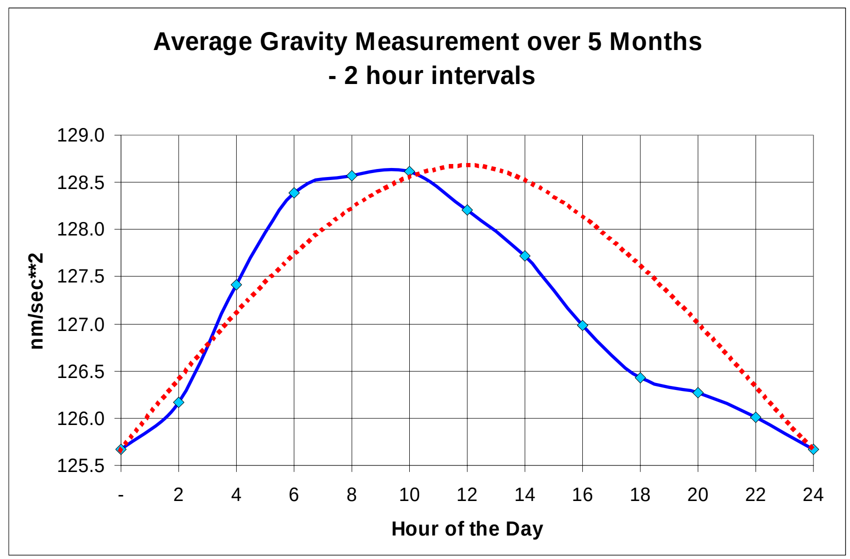


Chart # H-10 Gravity Deviation 160 minutes – J. Thacker (1992)

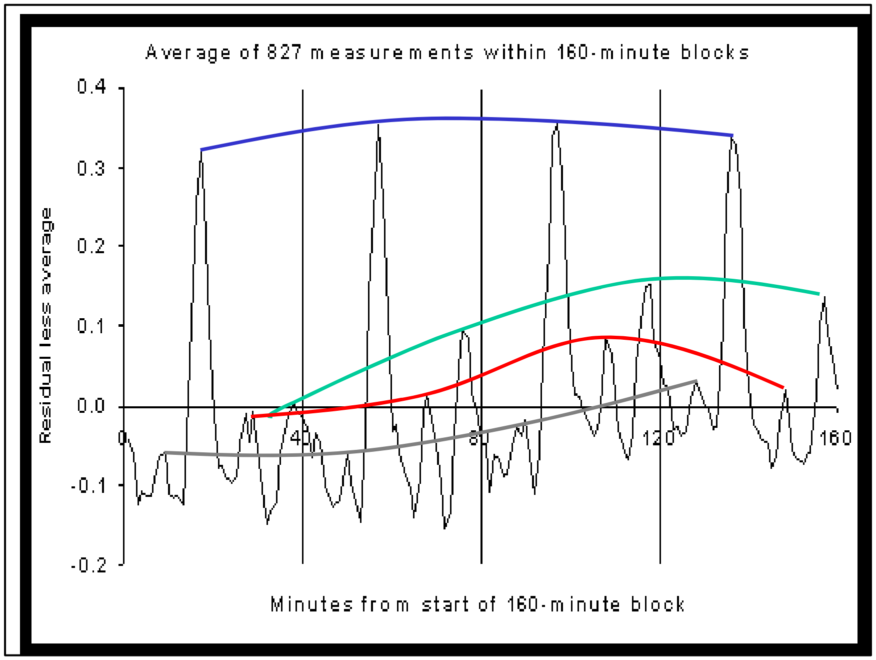


Chart # H-12 – Exact Timing of the Peak 40 MinutePulse

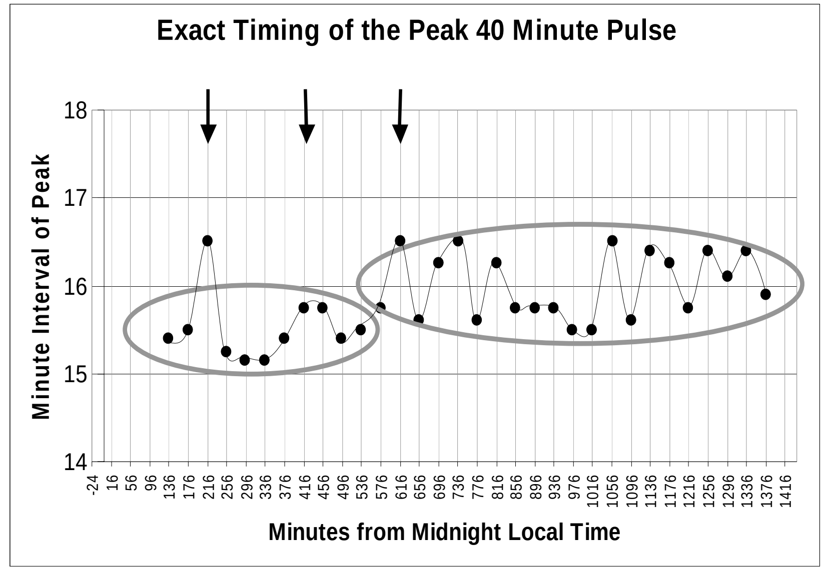


Chart # H-11 – Gravity Deviation by minute over 24 Hours (original 3 months by Thacker, update for 5 months by Perry)

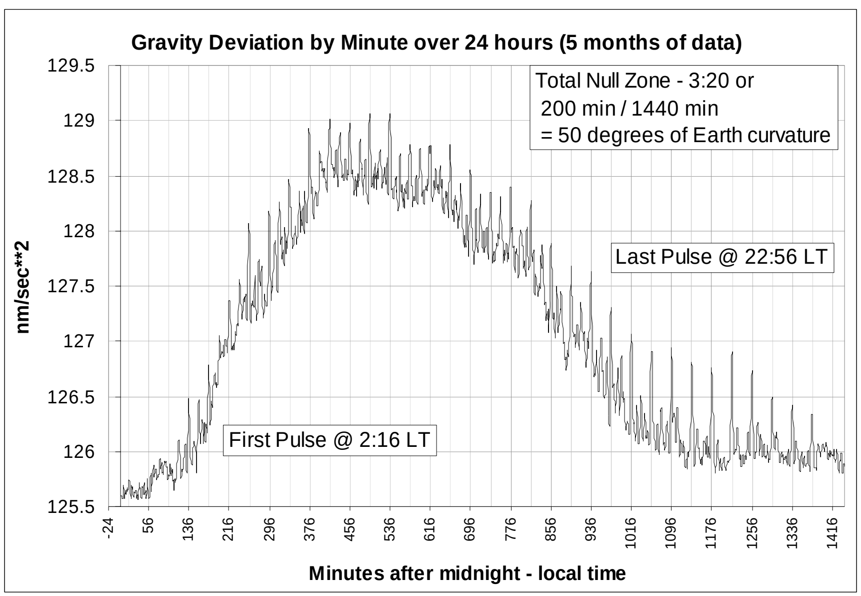


Chart # H-13 – Magnitude of Peak at 16 min. LT (40 Minute)

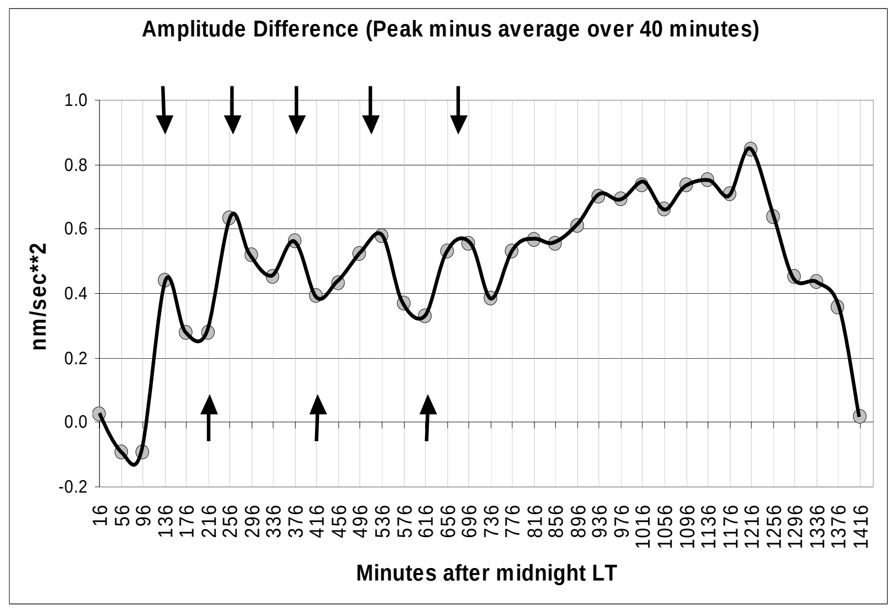


Chart # H-14 – Magnitude of Peak at 36 min LT (20 Minute)

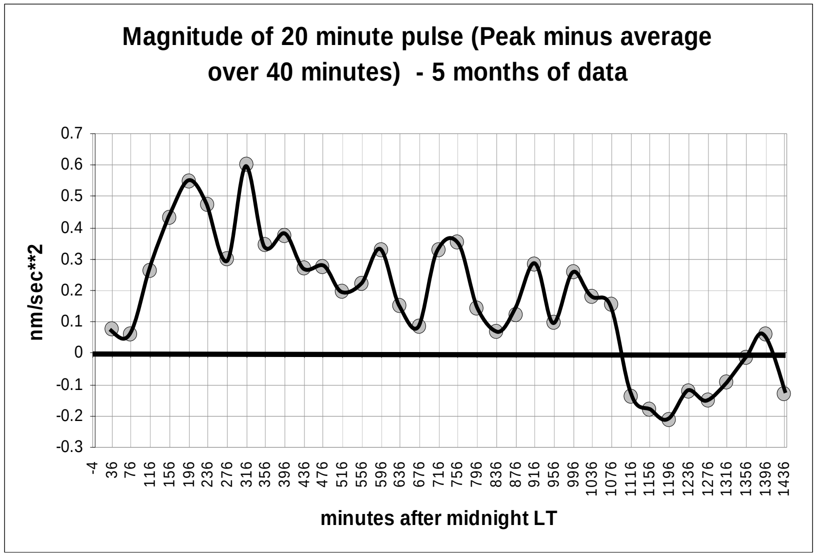


Chart # H-15 – Relative Magnitude – 40 vs 20 Minute Peak
(note the approx 4 x 40 minute intervals between peaks of the 40 minute pulse in the morning, and the offset 20 minute peaks 12 hours later, as if a 160 minute pulse is striking the planet on one side and reverberating on the other side)

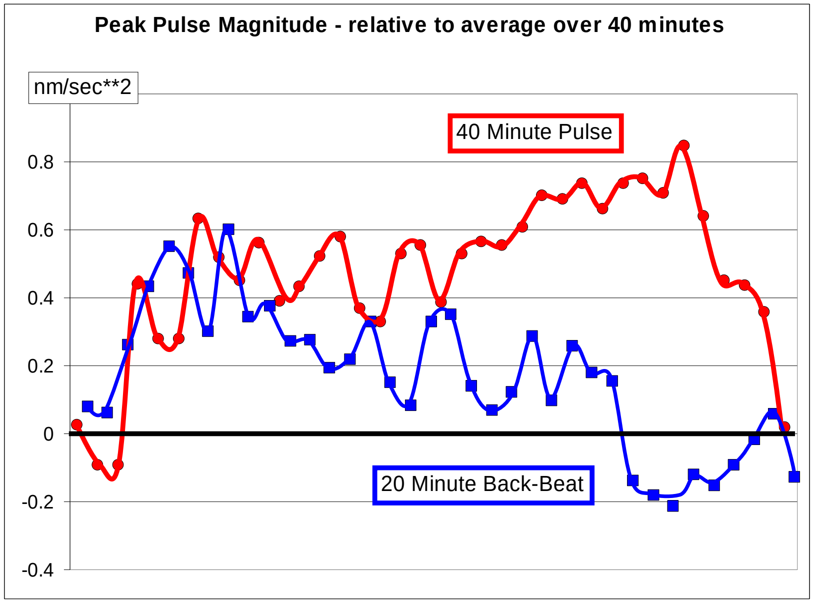


Chart # H-16 – Magnitude of Peak at 26 min LT (1st-10 minute)

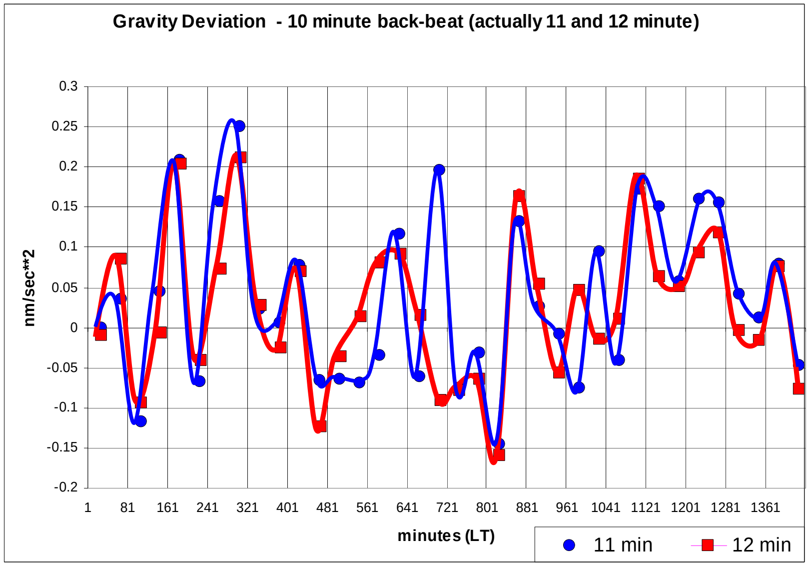
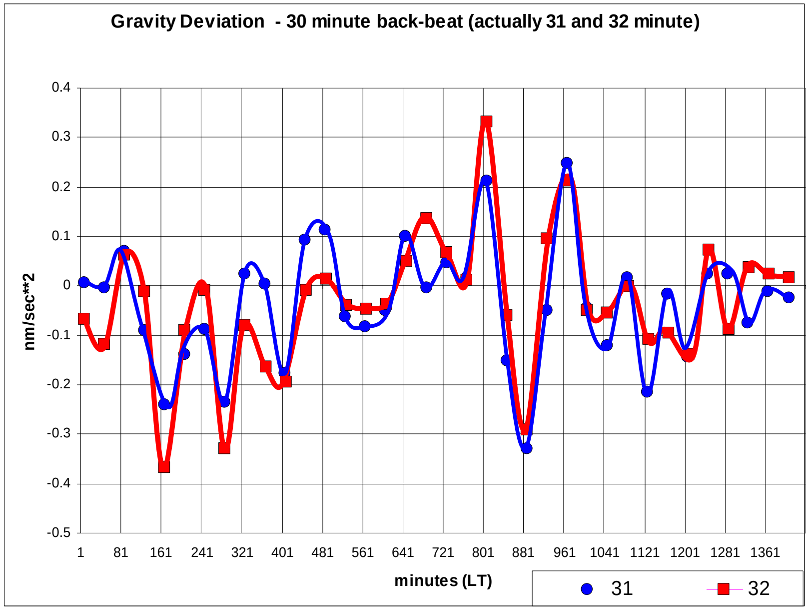
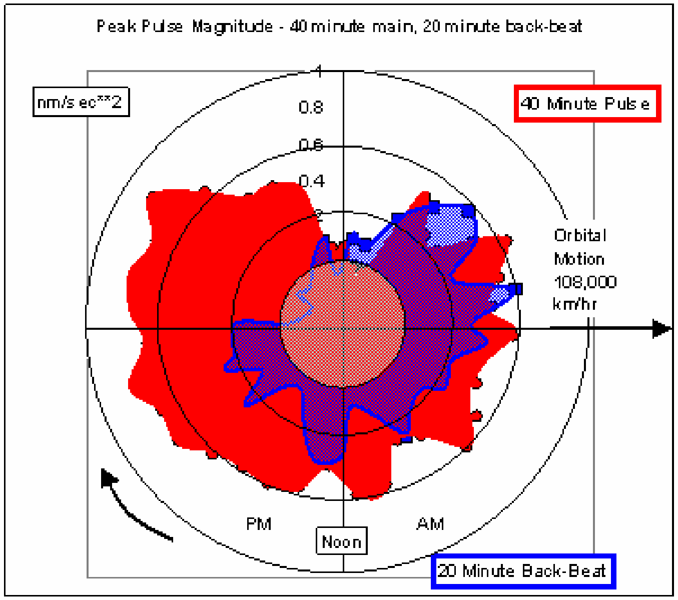
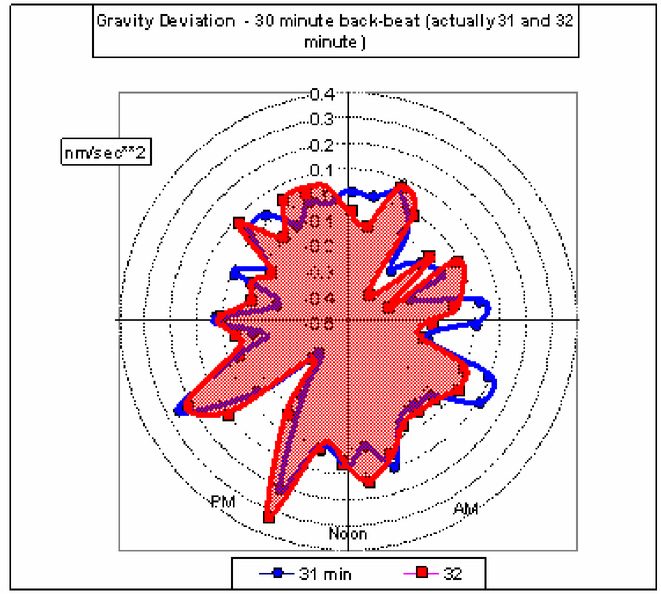


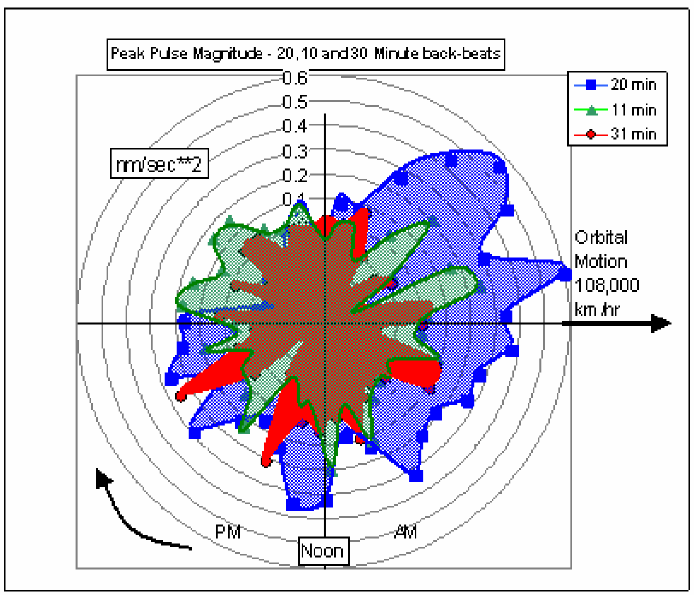
Chart # H-17 – Magnitude of Peak at 06 min LT (2nd-10 minute)



Charts # H-13 to H-17 – (alternative polar view)







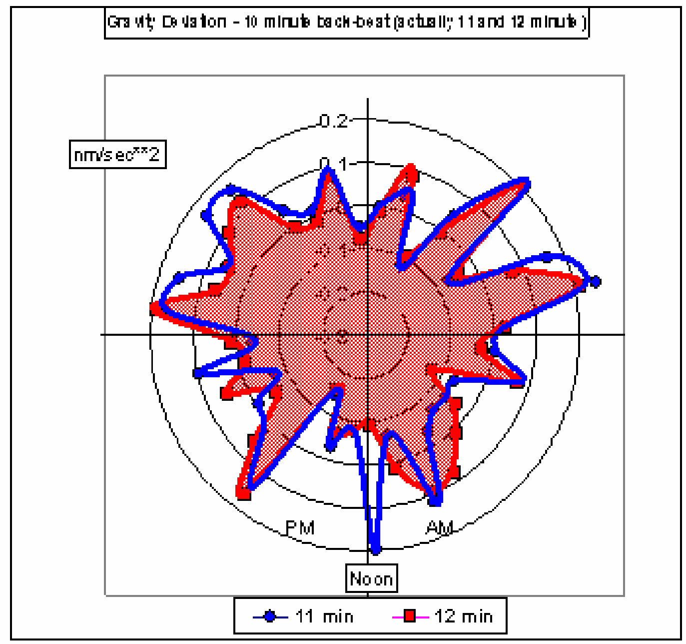


Chart # H-18 – Negative Gravity Peak @ 886 minutes

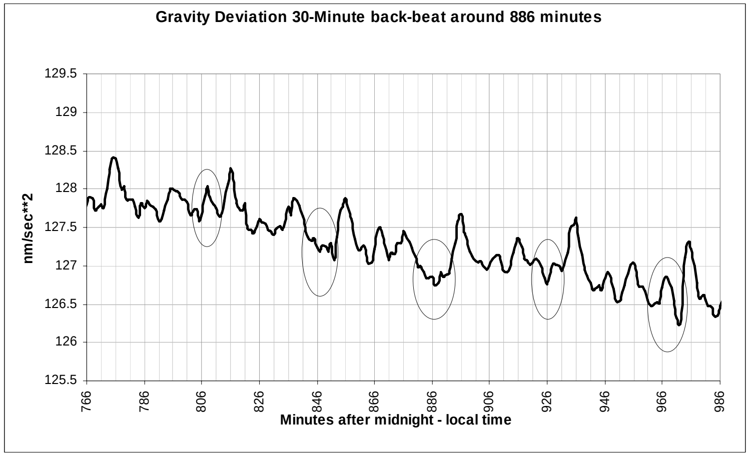
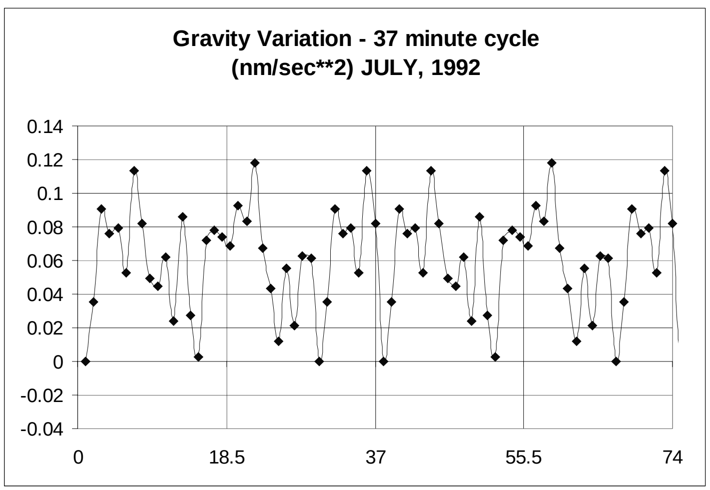
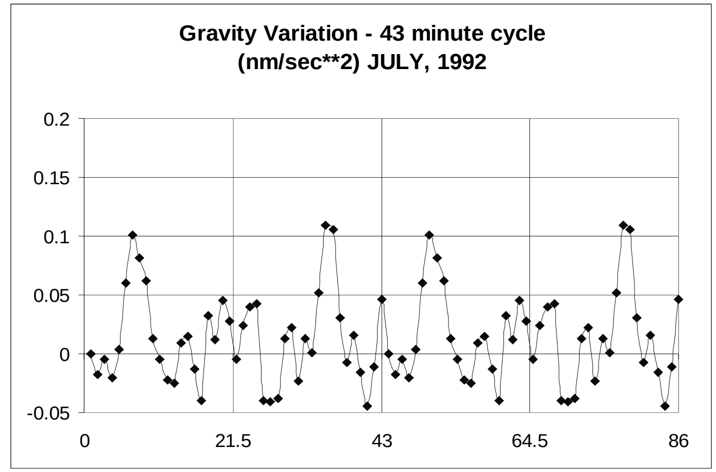


Chart # H-19 – Other Frequencies (37, 32 and 43 minutes) - July





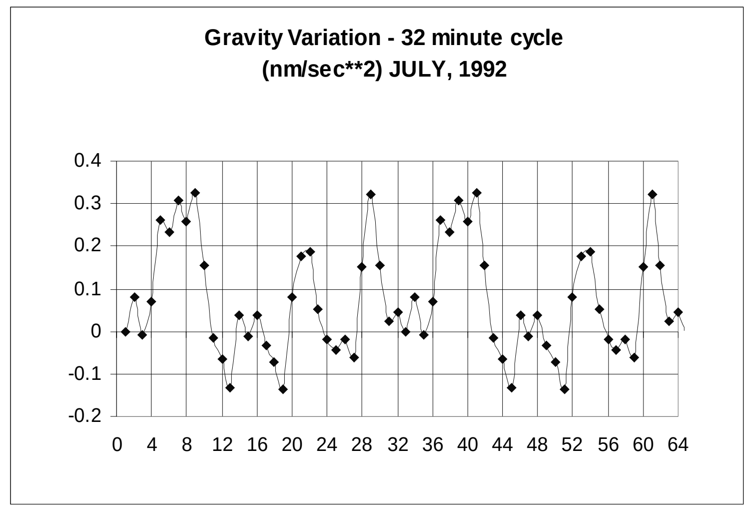
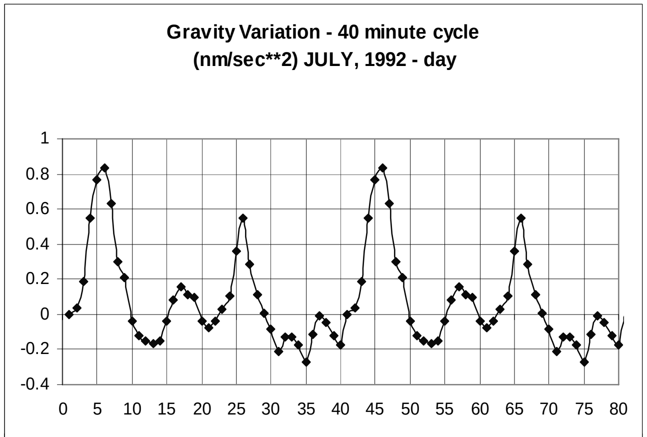
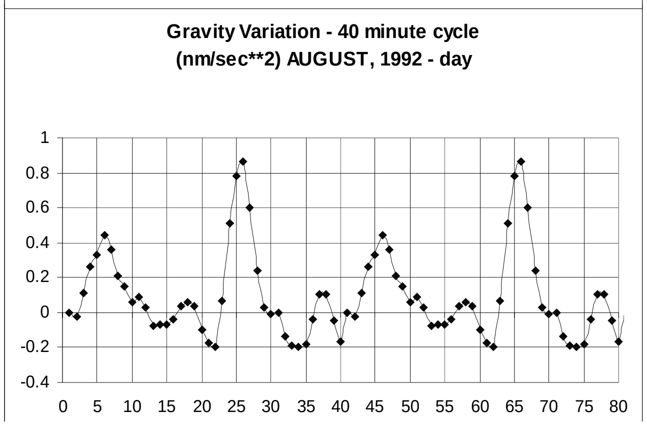
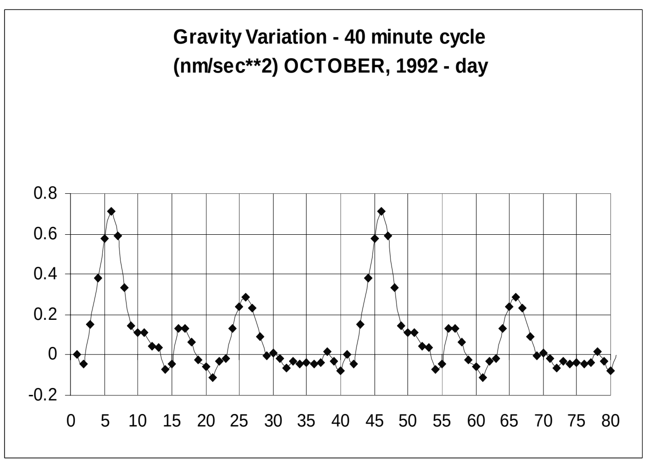
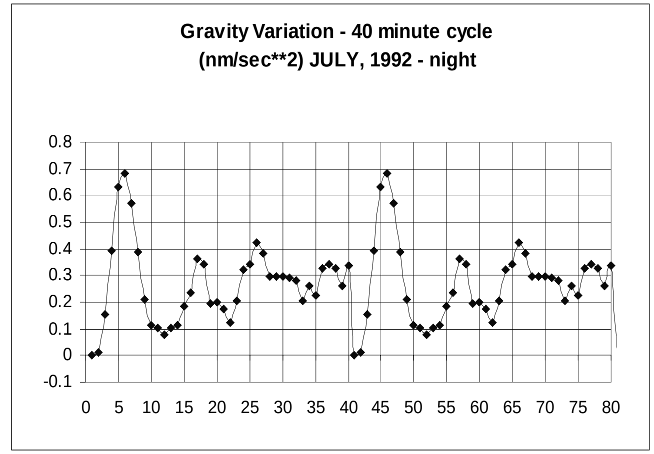


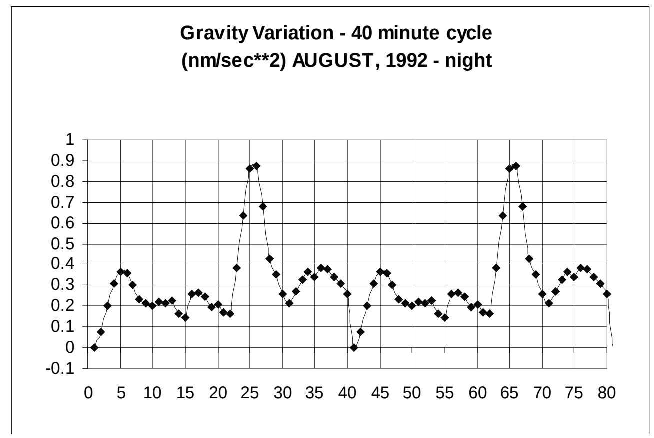
Chart # H – 20 – Comparison Day to Night – 40 minutes
(July and Oct displaced 20 minutes from Aug, Nov, Dec)
(the peak is actually the same time in all 10 graphs)

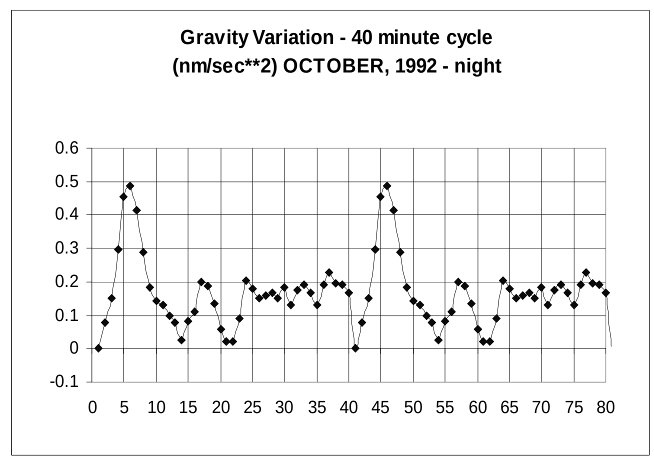


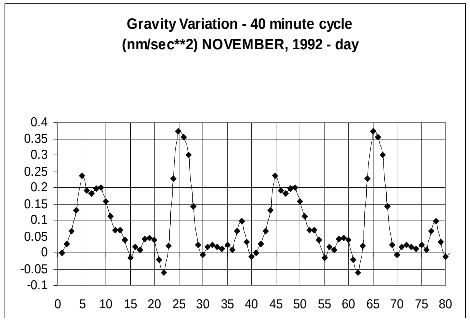


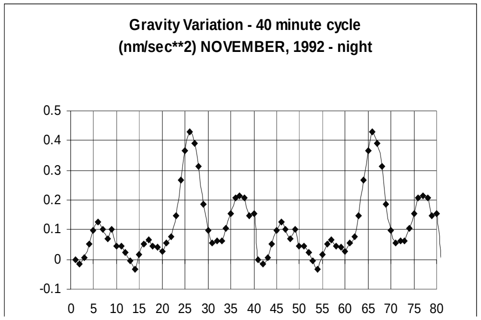


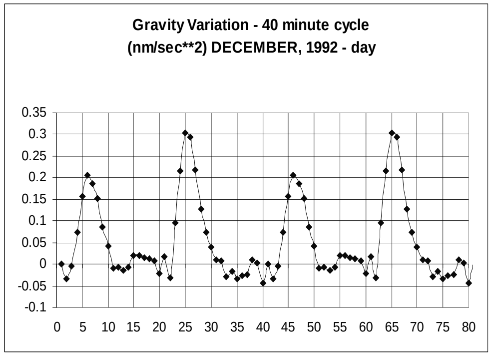


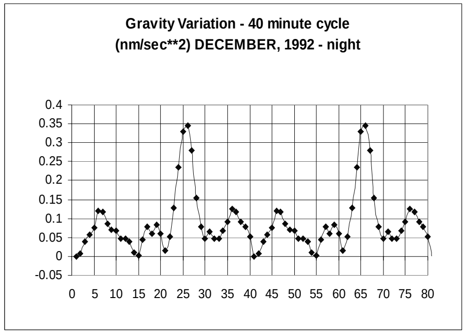





Gravity Variation - 40 minute cycle
(nm/sec**2) NOVEMBER, 1992 - day


Gravity Variation - 40 minute cycle
(nm/sec**2) NOVEMBER, 1992 - night


Gravity Variation - 40 minute cycle
(nm/sec**2) DECEMBER, 1992 - day


Gravity Variation - 40 minute cycle
(nm/sec**2) DECEMBER, 1992 - night

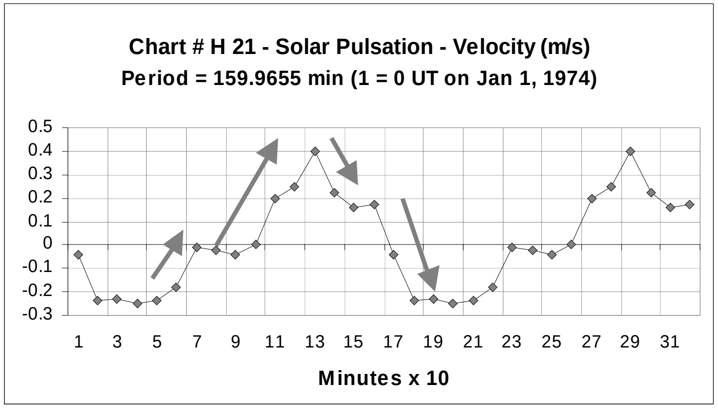


Chart # H 21 - Solar Pulsation - Velocity (m/s)
Period = 159.9655 min (1 = 0 UT on Jan 1, 1974)
Minutes x 10

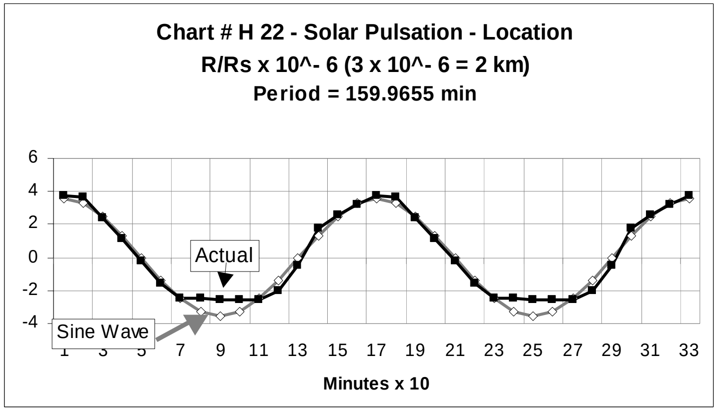


Chart # H 22 - Solar Pulsation - Location
R/Rs x 10^- 6 (3 x 10^- 6 = 2 km)
Period = 159.9655 min
Actual
Sine Wave
Minutes x 10

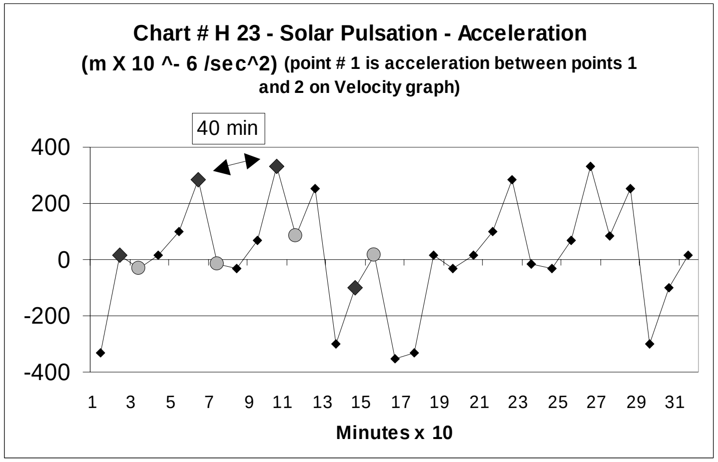
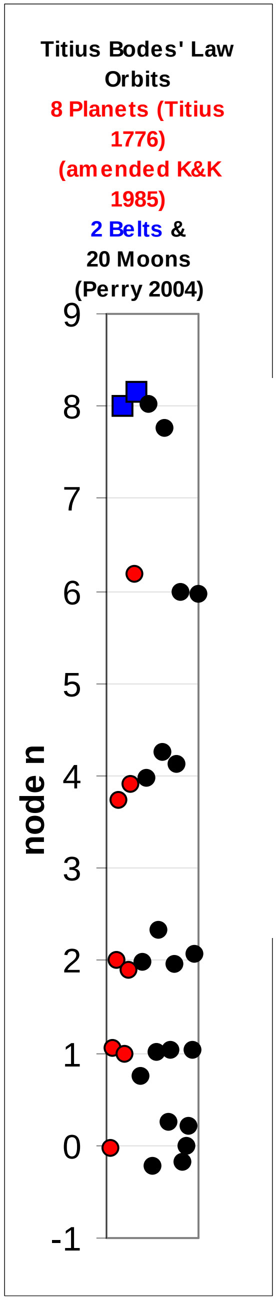


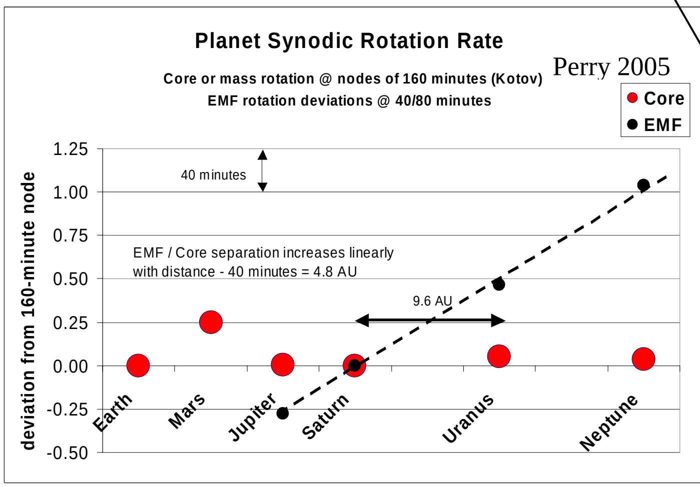
Chart # H 23 - Solar Pulsation - Acceleration
(m X 10 ^- 6 /sec^2) (point # 1 is acceleration between points 1 and 2 on Velocity graph)
40 min
Minutes x 10

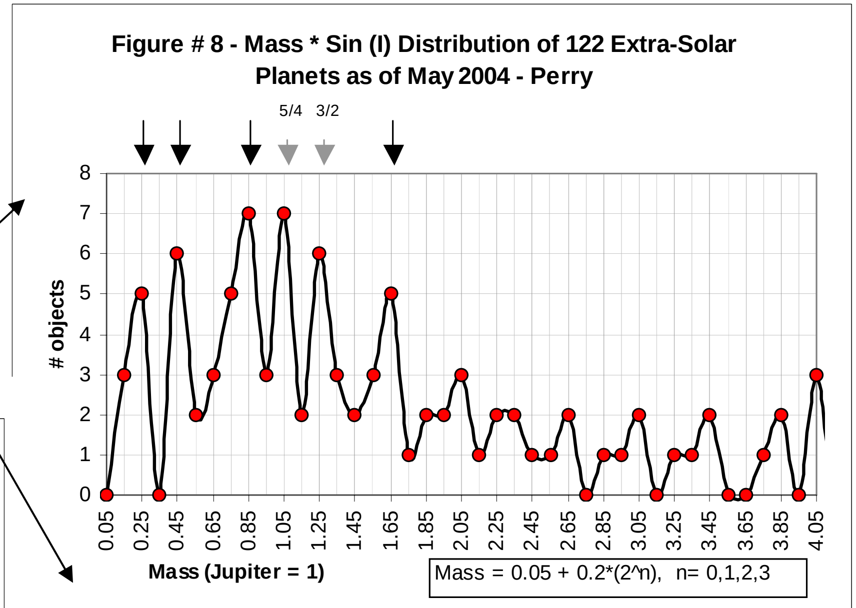
Finding The Lost Chord

by Glen F Perry 2005

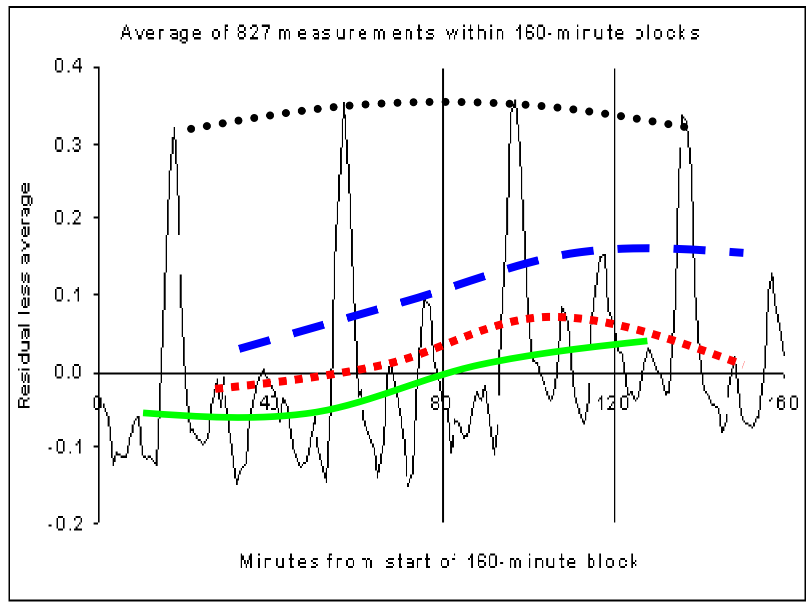


F requency
O rbit
R otation
M ass * sin (i)





40 / 160-minute Gravity Fluctuations - Jerrold Thacker 1992 from Potsdam Superconducting Gravimeter



KK Hypothesis	**Solar Pulsation Seen**
- 160 minute round trip to Saturn at speed = c (Kotov & Kuichmy 1985) – Neptune is 3rd fundamental	P(0)= 160.0101 min. P(1)=159.9655 min. (K&K 1974 to 2006) visible light, IR, magnetic field and solar surface

Coincidence or Resonance?