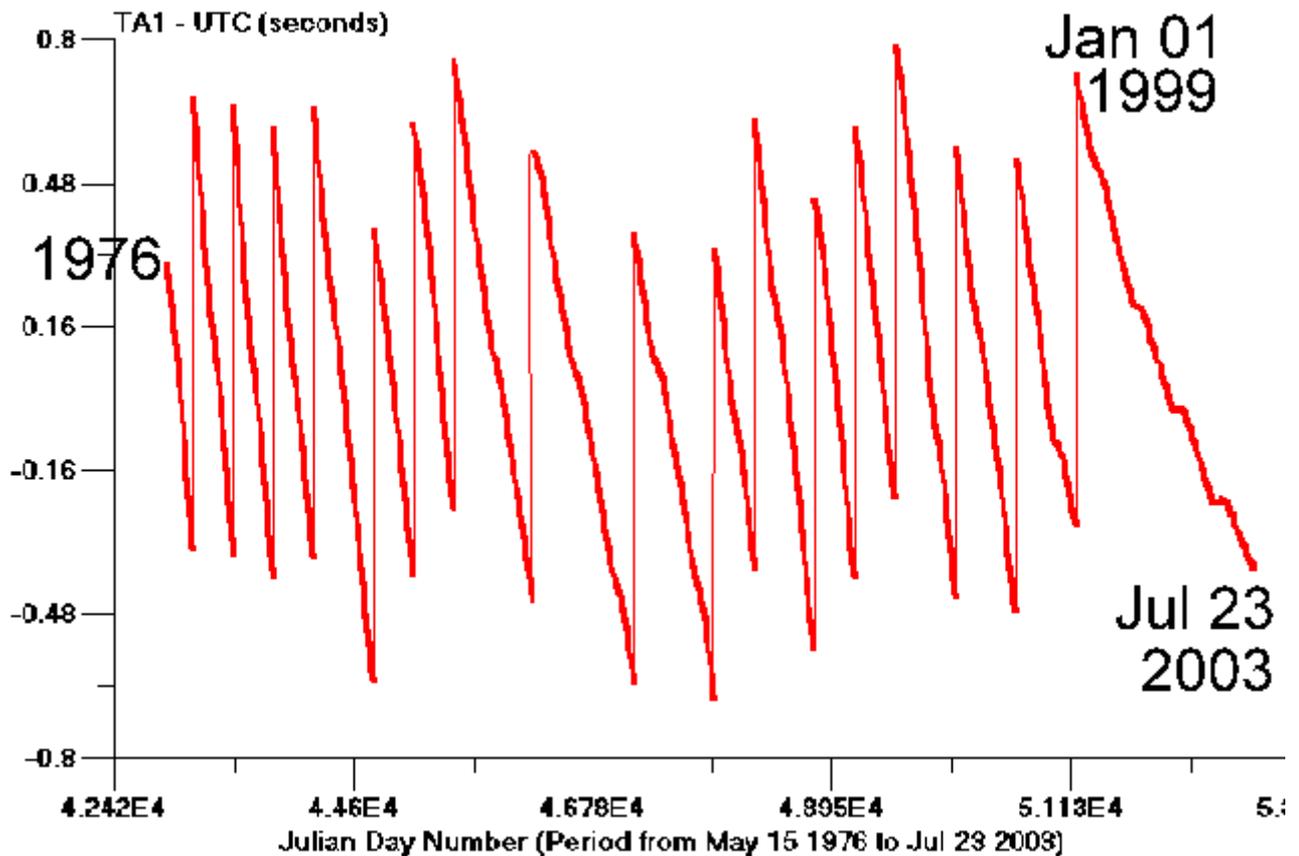


TIME

Clifford E Carnicom

Jul 23 2003

Edited Jul 24 2003



Y Axis is the Difference in Time Between TA1 and UTC

TA1 is based upon atomic time. UTC is based upon the rotational speed of the earth.

X Axis is the Julian Day Number. Data begins on May 15 1976 and ends on Jul 23 2003

Source of Data : U.S. Naval Observatory

Research has been underway for several months to investigate a hypothesis that has been forwarded to me for evaluation. The source of these propositions will remain unidentified at this time. The hypothesis purports the onset of major geophysical changes and life extinction cycles in the foreseeable and upcoming decades. The impact upon the earth and life from such events is extraordinary and beyond the realm of consideration for many people. There is also a claim of a connection between the aerosol operations and the anticipated geophysical events, and this has formed the basis for the research that is being presented herein. Additional hypotheses are under investigation, (e.g., biological and pharmaceutical) but they will not be discussed at this point. No judgement on the veracity of these claims is being made, however, certain leads of investigation are being followed to see if they hold up to scrutiny and logic.

ONE such claim being made is that there exists a connection between the anticipated geophysical changes, the rotational rate of the earth and the aerosol operations. It has been stated that there is an attempt to use the

aerosols to increase the rotational speed of the earth. This increase is viewed as an offsetting mechanism to the geophysical events which it is claimed will occur. At first response, it might appear that such a claim defies the realms of physical possibility, however, honest research does not allow such a presumption without an adequate investigation. It is also to be understood that no claim of benevolence to the general human population accompanies this description of geophysical manipulation.

There is a well known line by Mr. Carl Sagan, to the effect that, "extraordinary claims require extraordinary evidence." Such is the case here. In my examination of this hypothesis, it appears to me that the central issue of examination drives toward the issue of TIME. If one were to claim that the rotational speed of the earth can be artificially affected, then a closer examination of time should reveal whether that claim has any merit. This would be the case regardless of the role, or non-role, of the aerosol operations. The rationale for this investigation is that TIME has historically evolved as an expression of that very same rotational rate of the earth. It is only with the more recent introduction of time based upon atomic standards that the issue of time has become murkier. Time is not so steady as many of us might presume, and there are now many different ways by which it can be measured. This discussion will be confined to three of these standards of time: TA1 (Atomic time), UT (based on the rotational rate of the earth) and UTC (UT adjusted periodically to keep pace with atomic time).

Small differences in time must now be considered to examine the questions which are before us. The geophysical effects of such small changes must also be considered in the future; initial research indicates that small changes in time (i.e., rotation rate) may lead to significant geophysical stress forces and their release. It also appears that our state of knowledge of earth rotational rate changes and geophysical correlations is quite inadequate.

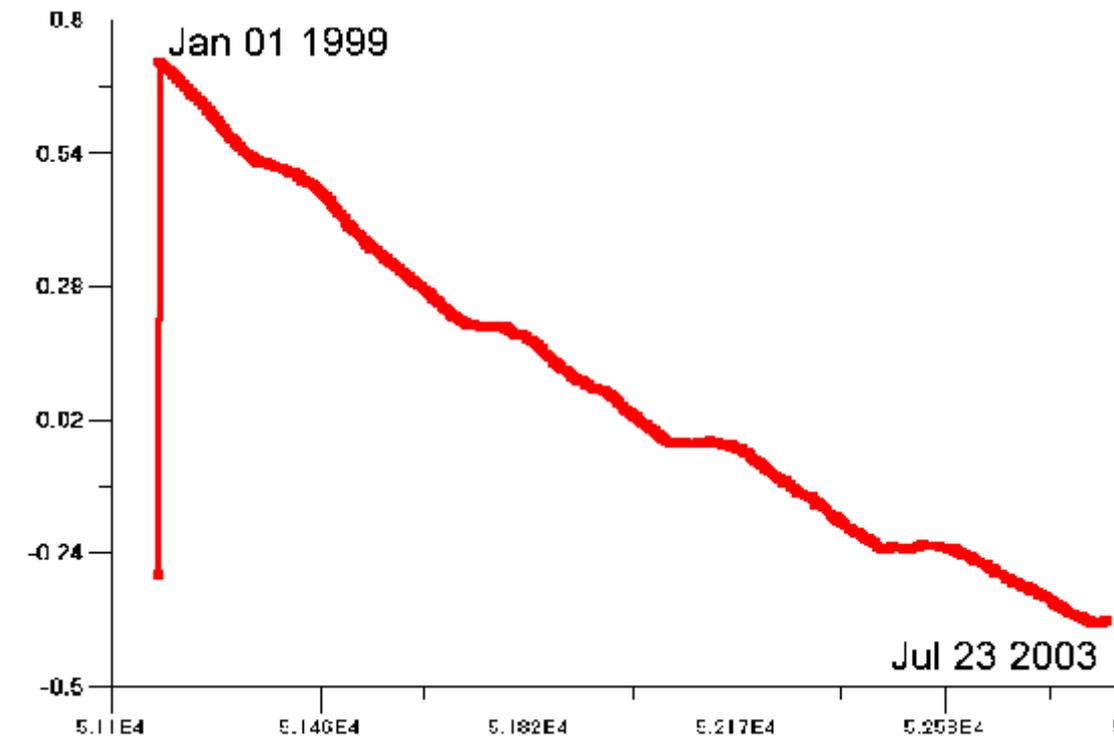
There is, first of all, a fairly well established recent history that shows the rotational rate of the earth has been slowing down^{1,2,3}. This rate is stated from numerous sources to be on the order of 0.7 to 0.9 seconds per year, and it seems to have held fairly steady since approximately 1900. In the interest of completeness, a graph⁴ depicting the history back to 1620 does show a period of increased rotational rate in contradiction to the more recent trend. To make matters additionally confusing, most sources that attribute a geophysical process of tidal actions to the slow down speak on the order of milliseconds per century, as opposed to a fraction of a second per year¹¹. The same sources also do not appear to address the contradictions raised by the graphed data extending back to 1620. So there does appear to be many questions as to magnitude and rotational rate increase and decrease that must remain unanswered at this point.

The more immediate question is to ask whether or not it is conceivable that the aerosol operations are affecting the rotational rate of the earth. If this is the case, one would look for variance in the data beginning approximately 4 1/2 years ago as a potential indicator. The data that we should look at is the difference between atomic time (TA1) and the time based upon the rotational rate of the earth (UT). Although it required some labor

to extract the data, this information is available from the United States Naval Observatory. In addition, the International Earth Rotation Service (IERS) also becomes an important source of information. The graph of this difference expresses any unusual changes that may be taking place with respect to the rotational rate of the earth.

This graph is presented above for your review, and there are some intriguing findings that are to be mentioned.

1. The most recent leap second added to bring UTC (based upon rotational rate of the earth) in closer accordance with atomic time (TA1) occurred on Dec 31 1998. The lack of leap seconds (at the anticipated rate loss of approximately 0.8 seconds year) since that time is very much out of character with the preceding historical data set spanning more than 25 years. This indicates to us that the earth's rotational rate must have actually increased in more recent years relative to the historical record. As a point of observation only, the aerosol operations are generally understood to have begun at a global level at the close of 1998 and beginning of 1999.
2. The post 1999 change is in contradiction to the numerous sources that claim a fairly steady rotational rate decrease on the order of 0.7 to 0.9 seconds per year.
3. No explanation can be found at this time by IERS as to the abrupt change in leap second additions (decline of) at the beginning of 1999. There have been no leap seconds added since Dec 31 1998, and this is at variance with the regular history preceding this announcement and as shown on the graph from the US Naval Observatory data. It would appear that a leap second addition is inevitable in the near future, after a lapse of 4 1/2 years.
4. The rate of decline (slope) shown within the graph also shows itself to be unique within the time period covered, from 1976 to 2003. The decline (slope) post 1999 is considerably less than that which has preceded.
5. The "stair -step" behavior of the decline rate since 1999 is a most interesting feature of the data. There are 4 periods (and the beginning of a fifth), fairly regularly spaced, where the rotational rate decline temporarily levels off. This pattern also does not appear within the general data set, and it does indicate the possibility of a disturbing mechanism (artificial or otherwise) to the rotation rate.



"Stair Step" Pattern Visible in Post 1999 Series

Y Axis is the Difference in Time Between TAI and UTC

TAI is based upon atomic time. UTC is based upon the rotational speed of the earth.

X Axis is the Julian Day Number. Data begins on Jan 01 1999 and ends on Jul 23 2003

Source of Data : U.S. Naval Observatory

6. The long term predictions issued by the IERS for the period of 1997 – 2007 indicated that approximately 7 leap seconds were anticipated to be added within the period from 1999 to 2007. However, NO leap seconds have been added (as of this date), i.e., a period of 4 1/2 years have elapsed without any additions. This is out of character with the historical record as well as at odds with the last known predictions of the worldwide time standard service.

7. Curiously, the long term time prediction service of the U.S. Naval Observatory has apparently been discontinued, at least to the public. This is apparently the case with IERS also, as no updates past 1999 for long term predictions have been found. The question is, WHY? Why would a fundamental geophysical service that is important to many human endeavors be eliminated?

8. A statistical test between the means of the daily differences (leap seconds excluded) between the post Jan 01 1999 data and the pre Jan 01 1999 data is significant at the 99.9999+% level¹². This test demonstrates that the data after Jan 01 1999 is highly anomalous relative to the previous history. The slope ratio between the two data sets is on the order of 1 to 3, with the post Jan 01 1999 data decreasing at a rate of 1/3 the pre Jan 01 1999 data. ($N_1 = 8245$, $Mean_1 = -.00201$ secs. / day, $sigma_1 = .000701$; $N_2 = 1633$, $Mean_2 = -.00067$ secs. / day, $sigma_2 = .000501$: $Z = 91.4$)

9. If attempts have been made to decrease the rotational rate decline, an analysis of the data would suggest that it may have been only momentarily successful and delaying; a more deeply entrenched geophysical process appears to reign.

In an effort to monitor this issue, this researcher has developed independent time standards. Astronomic occultation observations have been and are being conducted^{8,9,10}, and a digital time standard has been established. The expected error in the astronomic observations is approximately 0.5 seconds, and the digital time reference system has an expected error of approximately 0.2 seconds per month. The insertion of leap seconds can likely be detected independently with these reference frames in place. The difference between UT1 (atomic time) and UTC (based upon rotational rate of the earth and adjusted within tolerance of atomic time) continues to be available to a high level of precision through the U.S. Naval Observatory, and can be monitored by the public.

If one now considers the possibility that the earth's rotation rate can be artificially affected, the next important step is to ask what physical mechanism can conceivably accomplish this. This will undoubtedly lead toward advanced studies in physics, and at this point I can only make a suggestion as to where such research might lead. The source behind the hypothesis being discussed has stated only that methods of resonance involving sub-atomic particles are the basis of the physical mechanism; no additional specific or detailed information is available.

Any hypothesis that merits serious consideration must stand the tests of cross-examination and hopefully is tenable within the laws of physics and science that we have adopted in this time and place. In an effort to conclude the current discussion and yet prompt the reader with an avenue for further work, I would like to mention the following area of physics which holds some promise for the consideration of resonance as a physical mechanism.

I have acquainted myself with a sub-discipline of physics that is termed "nuclear magnetic resonance", and it appears to be worthy of additional effort. Nuclear magnetic resonance has developed to become a highly significant branch of modern physics, and is most commonly known within the medical community. The fundamental principle behind nuclear magnetic resonance, as I understand it, is this:

Certain atomic particles, when subjected to radio frequency energy in the presence of a magnetic field, will absorb that energy to cause variations in their sub-atomic spin rates, i.e., the angular rate of rotation of that particle. Energy absorption will occur at resonance if the proper frequencies are used in conjunction with a particular magnetic field strength^{5,6,7}. (Note : the source states that nuclear magnetic resonance is only ancillary to the primary mechanisms which operate at a broader level and with variable energy forms beyond that of radio frequencies).

This principle is clearly under the domain of quantum physics, and as such much work lies before us to fairly evaluate the viability of such a mechanism to operate at a geophysical level. Readers with knowledge of the 4 1/2 years of research embedded within this site may recognize why such a mechanism is to be considered in all seriousness. The apparent anomalies with the earth rotational data, as they have been described above, provide a further impetus for the deeper study ahead of us.

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Jul 23 2003
Edited Jul 24 2003

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