Location of the Allais Effect on the Earth's Surface:

A Hypothetical Field Model

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Note 2

Table of Contents

1 Introduction

This paper addresses the Allais Effect (AE)[i] and presents a hypothetical field model that proposes the distortion of gravitational potentials in the region of the Barycentre of the Earth Moon system. The model is consistent with the phenomena Allais and Saxl and Allen observed during their respective pendulum experiments. It also presents an analysis of the coincidence of large hail events with the field model as a test of its voracity.

The model illustrates the gravitational field distortions from two perspectives:

- the shape bounding the area of the distortions (see section 2.1)
- the nature of the distortions within the shapes (see Section 2.2)

Further, the model is tested with the aid of a concept developed by the author—the Iasoberg—which is defined in Section 2.3.

2 Hypothesised Model

The net gravitational field resulting from the masses of the Sun, Earth-Moon and Galaxy is subject to variations and distortions in the region of the barycentre of the Earth-Moon System as a result of the motion/position of these bodies.

2.1 Shape of Field Distortions

The model proposes that the respective Solar and Galactic gravitational field distortions are contained in disk-shaped envelopes which are focused at the barycentre of the Earth-Moon System. More particularly, the envelopes have the form of a hollow discus, where the plane of symmetry that intersects the outer edge of the discus is slightly curved to coincide with surface of a large sphere (see Figures 1A and 1B). A property of these envelopes is that the envelope is symmetrical about the axis through the centre of the discus. For the purposes of this paper, the radius taken from the axis to the edge of the envelope does not need to be defined; however, it is assumed that both Solar and Galactic envelopes intersect the Earth's surface during their motion.

Figure 1A
Cross Section of Distortion Envelopes for the Sun and Galaxy

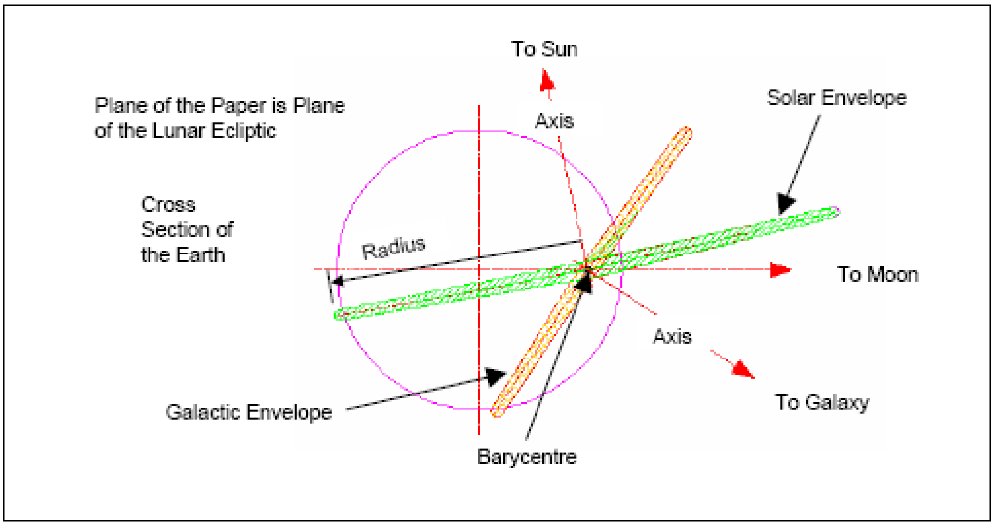
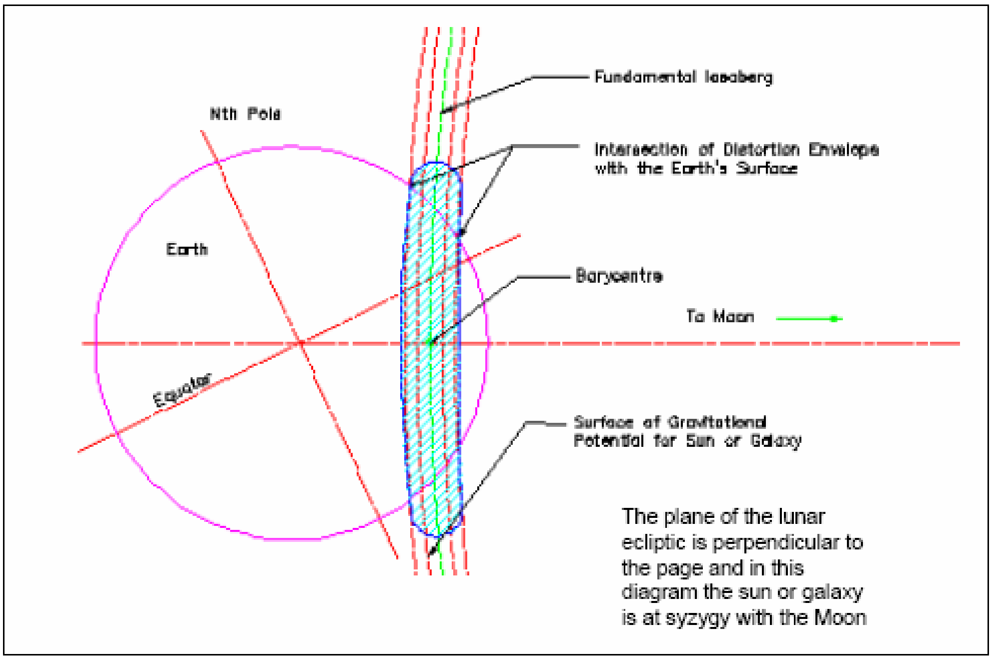


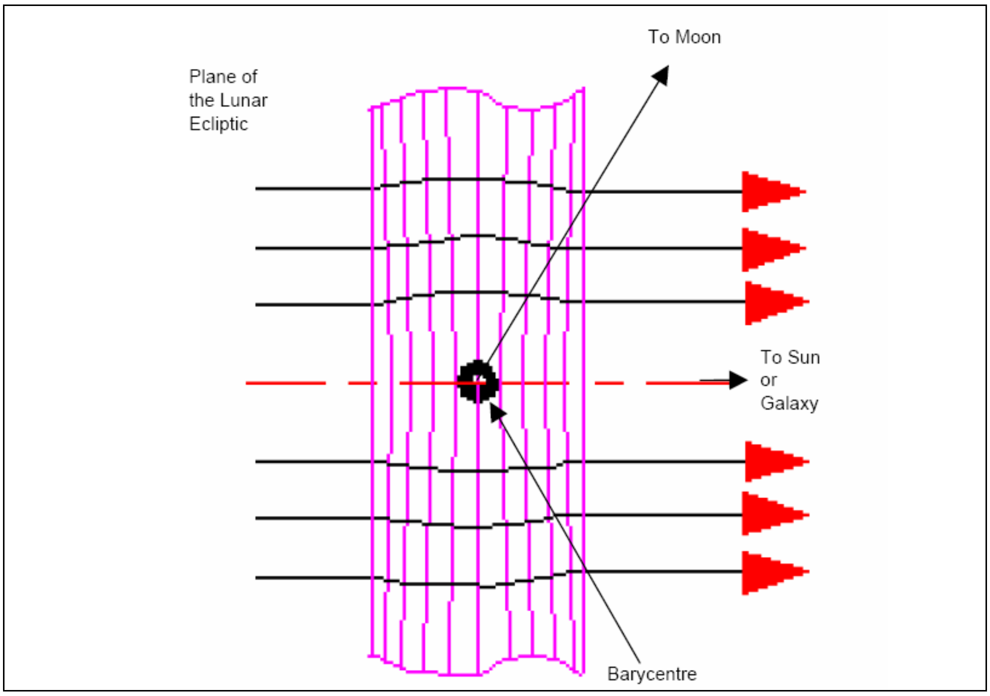
Figure 1B
Cross Section of a Typical Distortion Envelope for the Sun or Galaxy



2.2 Nature of Field Distortions

The hypothesis further proposes that the gravitational field surfaces of potential (GFSPs) falling within the above envelopes are distorted toward the barycentre. The greatest distortions of the GFSPs occur near the barycentre along the envelope's axis which intersects the barycentre and the centre of mass of the Galaxy or Sun. As a result of the distorted GFSPs in the envelope, it can be assumed that the associated orthogonal gravitational force vectors of the Galaxy or Sun within the respective envelopes are distorted accordingly (see Figure 2).

Figure 2
Typical Cross Section of a Distortion Envelope at the Barycentre with Distorted GFSPs and Associated Distorted Gravitational Field Vectors



2.3 Iasoberg

The term Iasoberg (pronounced ice-so-berg) was coined by the author to describe the intersection (a line that forms a closed loop) on the surface of the Earth of the hypothesised distortion envelopes. 'Iasoberg' is the generic term for these closed loops that represents their primary location.

A ***fundamental*** Iasoberg identifies the loops (Solar and Galactic) on the Earth's surface that extend from the barycentre. The ***mirror image*** Iasobergs are extended from a point that is directly opposite the Barycentre, on the same axis, and at the same distance as the Barycentre from the centre of the Earth.

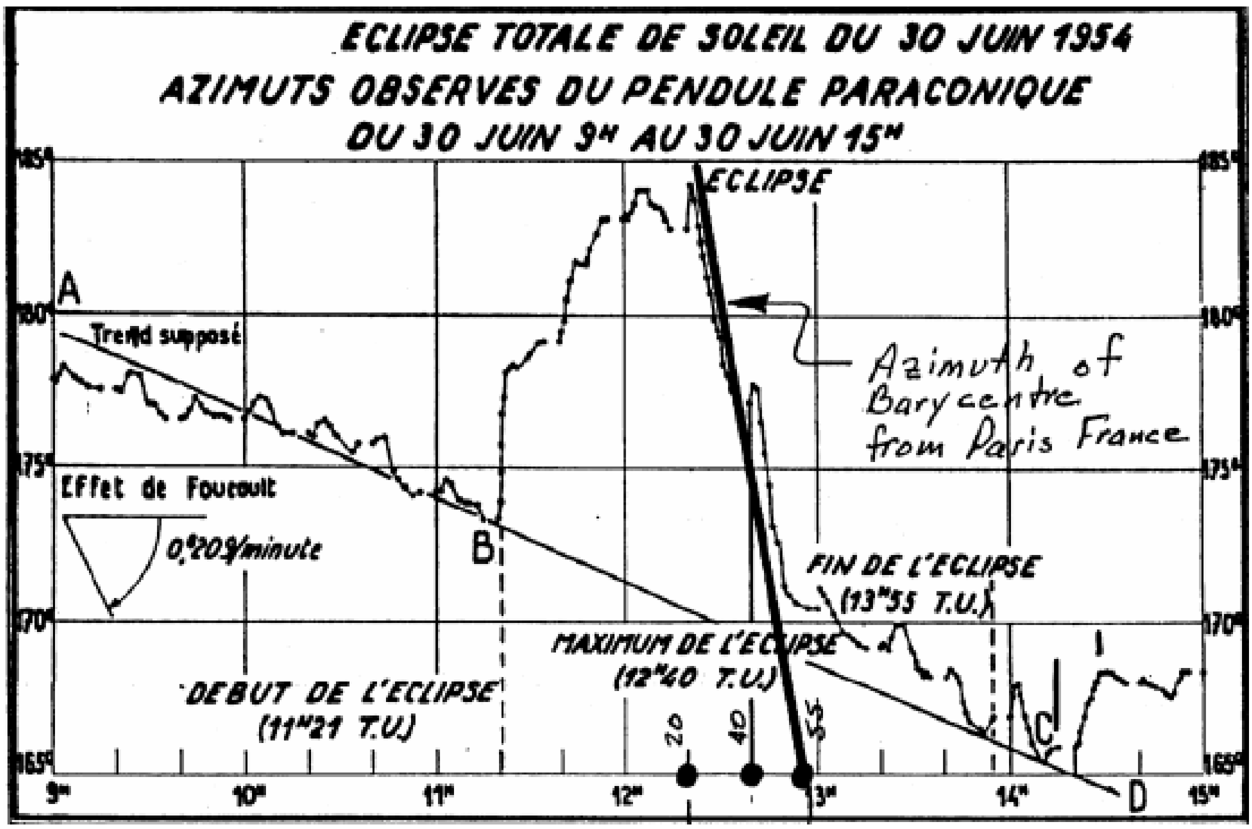
The rationale for incorporating a mirror image of the distortions in the model was 1) observations of various phenomena were made at these intersection points and 2) should the model describe the location of the AE, it is not unreasonable to postulate a reactionary component to the fundamental distortions.

2.4 How the Model fits Allias' and Saxl and Allen's Observations

The model has the following features, which are consistent with Allais' and Saxl and Allen's observations:

- the 12, 12 hr 30 min, 24 hr and 25 hr periods observed in Allais' pendulum experiments
- the focus of the field distortions (new/changing fields) are at the barycentre of the Earth-Moon system
- the intersection and location of the field distortions (new/changing fields) are manifest on the surface of the Earth.

Figure 3A
Allais Experimental Observations 30 June 1954 Solar Eclipse at Paris France



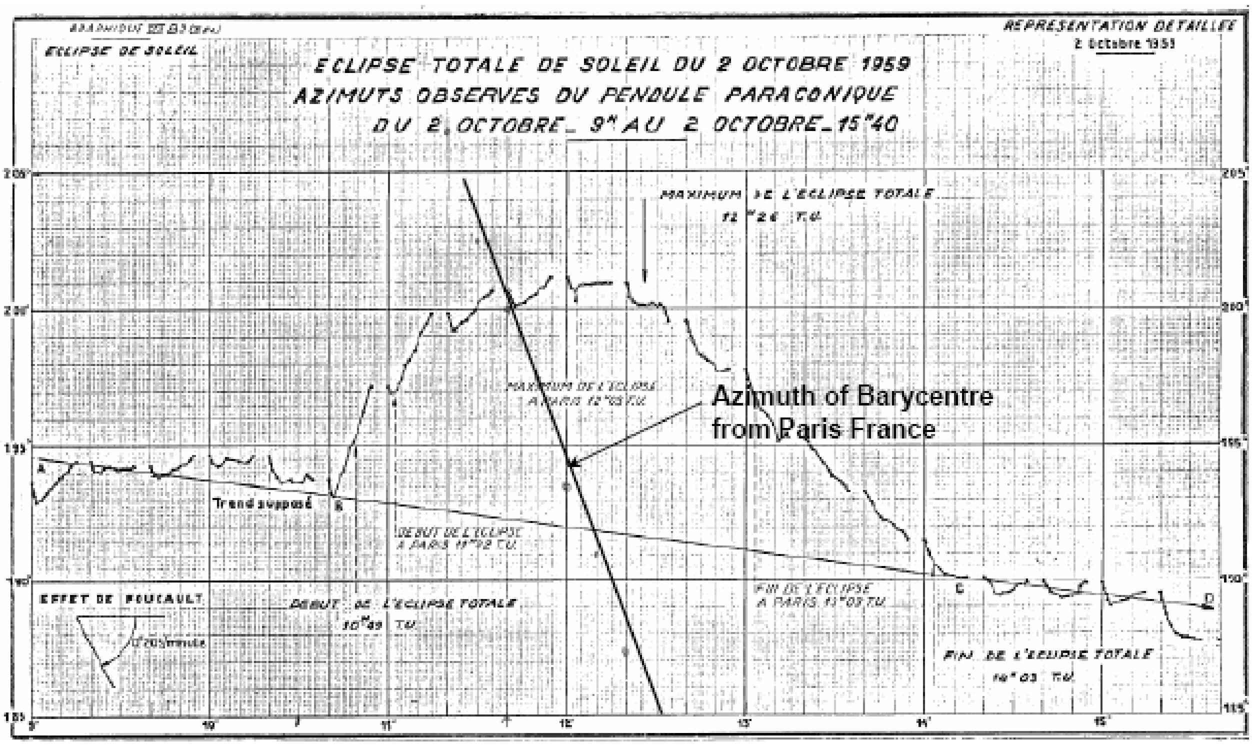
An initial analysis of the Allais (1954) pendulum observations in conjunction with the barycentre azimuth returned by the model, shows the azimuth of the barycentre from Paris during the eclipse coinciding with the azimuth of the motion of the pendulum during the maximum period of the eclipse (Figure 3A).

The motion of the pendulum at the time of the eclipse could reasonably be interpreted as follows:

- the pendulum was in a force field where the potential was increasing with time prior to and during the eclipse
- as the eclipse ensued, the pendulum's motion was influenced to move in the same direction as the increasing force field vectors
- the pendulum's motion eventually coincided with the force field vectors
- the pendulum's motion coincided with the force field vectors for 35 minutes while the field strength was greater than any other perturbing forces
- the pendulum's motion then fell away as the field intensity subsided.

If this analysis is correct, it will serve as a useful pointer to examine the possibility of any field effects that may be associated to the motion/position of the barycentre of the Earth/Moon system.

Figure 3B
Allais Experimental Observations 2 October 1959 Solar Eclipse at Paris France



The azimuth of the pendulum only coincided with the azimuth of the barycentre from Paris France for a period of approximately 5 minutes during this eclipse (Figure 3B).

Figure 3C
Saxl and Allen Experimental Observations 3 March 1970 Solar Eclipse at Boston Massachusetts USA

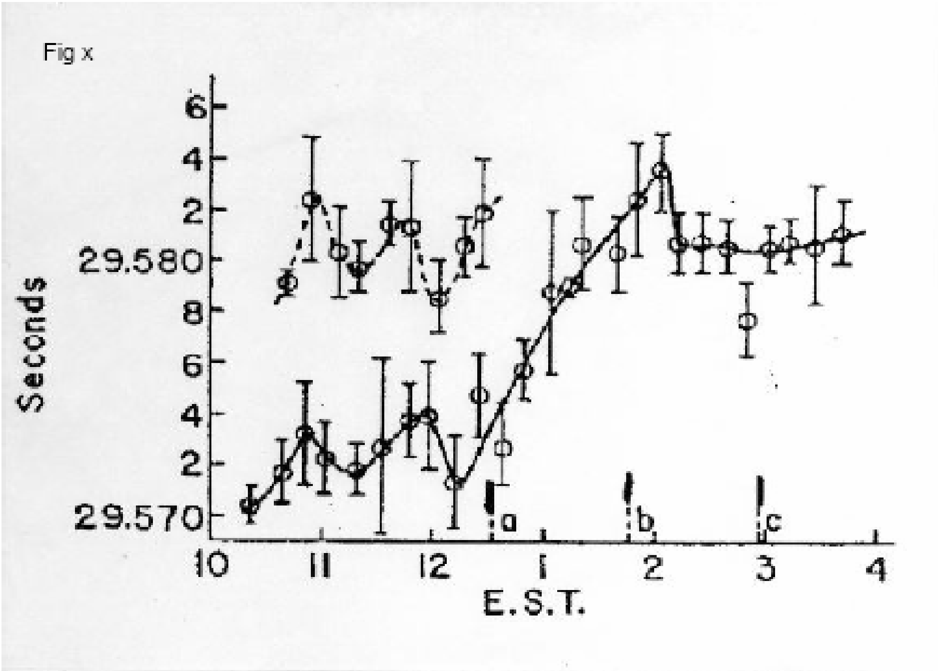


FIG. 1. Times required to traverse the fixed part of the path of oscillation (ordinates) vs the hour at which the observations were made, from about 10 a.m. until nearly 4 p.m. (abscissas). The full line shows the observations made on 7 March 1970, the day of the total eclipse. The short vertical dashed lines, *a*, *b*, and *c*, show the times of onset, midpoint, and endpoint of the eclipse. The curved dashed line shows the data taken two weeks later, 21 March, when the sun and moon were on opposite sides of the earth.

Refer to section 3.1 for the description of the dual band configuration of the field model which is shown in the following Figures. The Legend for the graphics in these Figures is shown below.

Legend

- Galactic Point - Fundamental Iasoberg
- Galactic Point - Mirror Image Iasoberg
- Solar Point - Fundamental Iasoberg
- Solar Point - Mirror Image Iasoberg

Figures 3D and 3E
Saxl and Allen Experimental Observations 3 March 1970 Solar Eclipse
with Iasobergs at 1627 UT

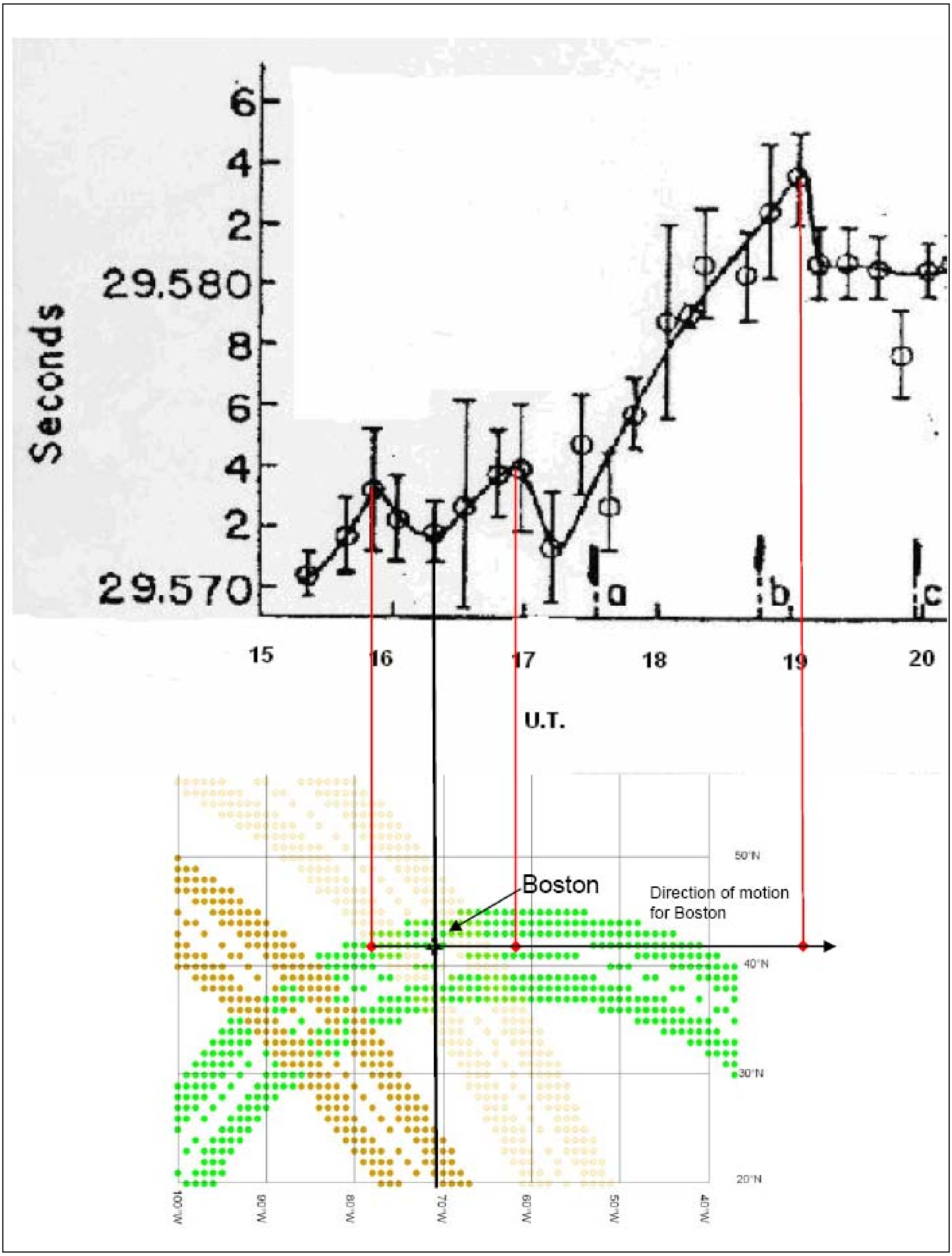
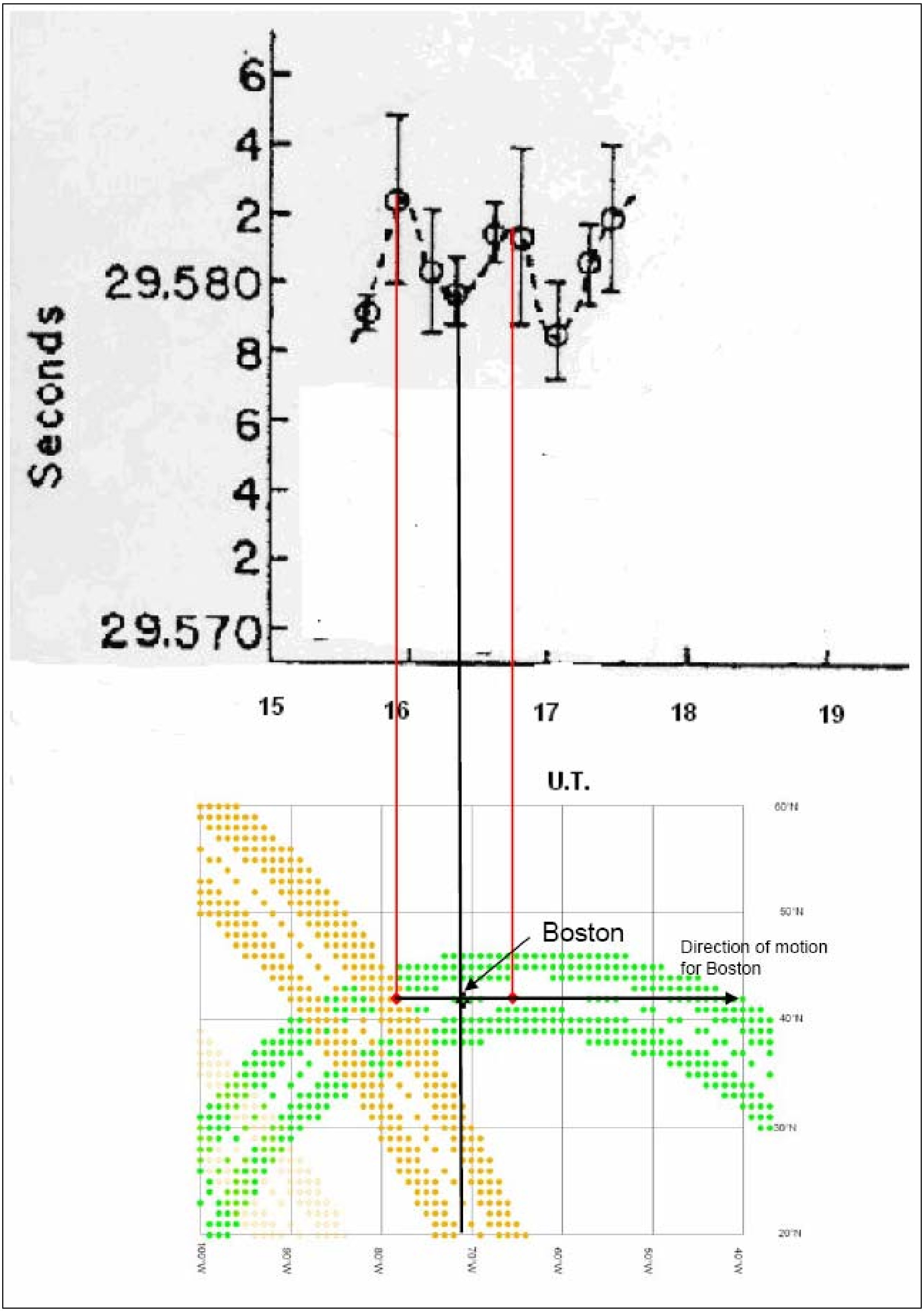


Fig 3D and Fig 3E compare the Saxl and Allen observations at Boston with the field model at 1627UT 7 March 1970.

Figures 3F and 3G
Saxl and Allen Experimental Observations 21 March 1970 Solar Eclipse
with Iasobergs at 1634 UT



3 Further Testing

Given that the AE forces are very small and the model proposes they manifest on the Earth's surface, the atmosphere should be a most responsive medium to such forces and thus useful for observing events resulting from the AE.

When examining the various atmospheric/meteorological phenomena, large hail events meet a number of useful criteria to test for the location of the AE effect(s). Those criteria are:

- hail begins its existence as a gas, i.e. water vapour
- large hail events (> 2 inches in diameter) are relatively rare and extreme meteorological events which may be caused or exacerbated by the AE
- a hail event provides the observer with a:
  - very accurate geographical location of the end result of the event
  - very accurate time of the end result of the event
  - physical phenomena than can be readily observed and measured.

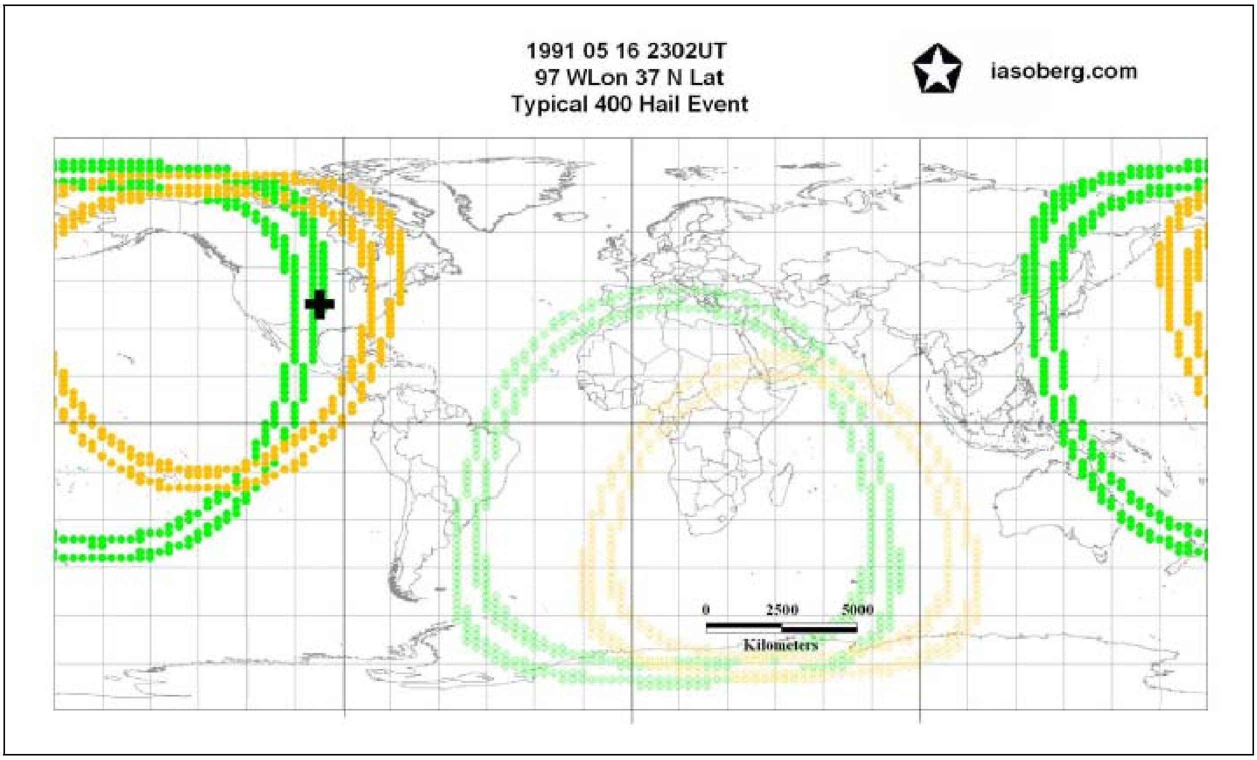
Another point of the utility in using large hail events is that these observations have been captured over the last 40 years and there are nearly 10,000 such events accurately documented in a data set produced by an agency of the US Federal Government, the National Oceanic and Atmospheric Administration (NOAA).

It should be noted, however, that one drawback of using the hail event data is that the interaction of the proposed field model with atmospheric water vapour is displaced in time and distance from where the hail is observed on the earth's surface. Should it be necessary to refine this analysis, a time and distance factor could be developed, say, proportional to the range of masses of the hail stones, and introduced into the analysis to more closely tie the interaction of the Iasoberg with the time and location where the hail was spawned in the atmosphere.

3.1 Test of Large Hail Events

Figure 4
Dual Band Iasoberg Model on a Mercator Projection of the Earth's surface

A MS QBasic program was developed initially to display the Iasobergs (intersections) on a Mercator Projection of Earth's surface (see Fig 4). This program was modified to test for instances where a large hail event coincided with the Iasobergs. Two bands on each side of the primary location for each Iasoberg were coded as the regions to test for coincident hail events. This approach (as shown below) resulted in 8 test bands in total – each approximately 250 kms in width. The bands located on each side of the primary location of the respective Iasobergs are at a distance of approximately 125 km from the inner edge of the band to the primary location of the Iasoberg. The model was configured in this manner for the analysis to attempt to replicate the locations where many pendulum "M" trace observations (refer Figure 3C) were made by Saxl and Allen during 17 years of their experiments.



When an event occurs within these bands, the program writes the specific parameters of that event as a record to a text file along with the type of Iasoberg and a factor that is proportional to the distance of the event from the primary location of the respective Iasoberg.

Figure 5
Close Up View of Test Bands and Typical Coincident Event

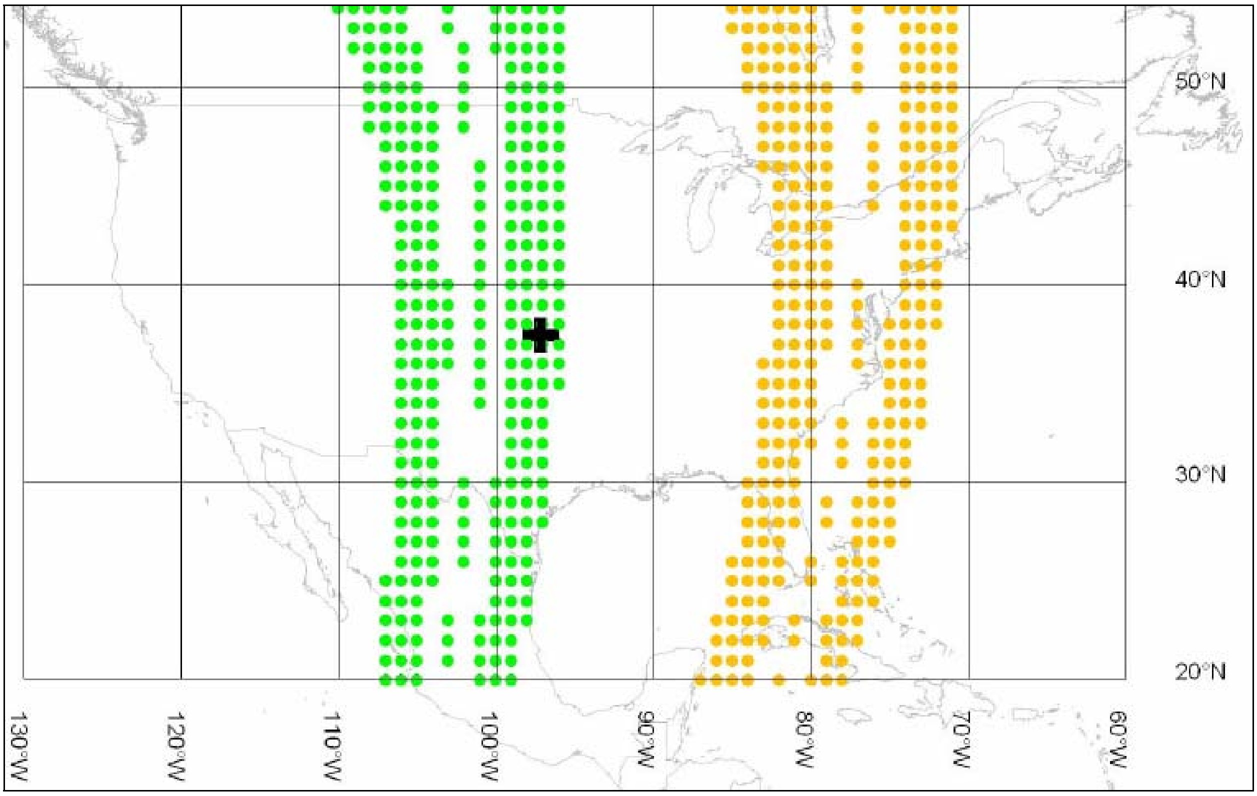


Figure 5 is a close up of the hail event area. The '+' is the location of the 19910516 2302UT Large Hail Event.

3.2 How the Model Fits the Large Hail Data

Approximately 16% of the large hail events in the continental USA during the period 1955 to 2005 occurred within the 2 bands specified in the model. It is important to note that the statistical significance of this analysis has not yet been determined.

Observations of interest include:

- 8 out of a total of the 34 very large hail size events, i.e. > 5 inches in diameter, are coincident within the bands specified in the model
- the Solar Iasobergs percentage of coincidence decreases with the decreasing hail size
- the Galactic Iasobergs percentage is constant over the range of events, suggesting that a 7+% coincident level might be the expected probable outcome for coincidence for the dual band model where there is no Iasoberg influence on these events
- the fact that the events that occur between the bands (745) have not been included in this analysis.

3.3 Further Work on the Analysis and Large Hail Data Set

The first task is to statistically analyse the results of the dual band model. Statistically modelling the test method presented in this note is not within the scope of knowledge of the author.

Should the statistical analysis prove significant, further work should be carried out on the hail event dataset generated by this analysis and the Large Hail Data Set (9874 events). The MS QBasic program can be readily recoded to test the data for other parameters.

Further analysis of these data sets could test for following parameters:

- whether the event occurred within or outside the Iasoberg loop
- test for hail size associated with an event vs.:
  - occurrence within/outside the Iasoberg loop
  - occurrence when the moon was at perigean/apogee
  - occurrence at a particular phase of the moon
- location of the event with respect to a particular location on/near an Iasoberg
- the intersection of the Iasobergs with terrestrial gravitational anomalies, e.g. the large anomaly near New Guinea
- comparison of large hail events in the Eastern USA with Saxl and Allen observations
- other field model configurations, such as coincidence with the axis that passes through the sub-lunar point and the intersection points of the fundamental Solar and Galactic Iasobergs.

3.4 Further AE Work

There are three areas of work relevant to unravelling AE phenomena that need to be explored they are:

- examining various datasets for evidence of the effect
- developing more field models, such as the one described in this paper
- assessing the current physical laws/theories to ascertain if any physical phenomenon has been overlooked in the development of the current laws that may relate the AE.

Examples of data sets that could be analysed for the AE include:

- all Allais and Saxl and Allen pendulum data sets
- meteorological data sets such as:
  - tornadoes
  - hail
  - rain bursts
  - barometric pressure
- oceanographic data e.g. freak ocean waves.

Dr. Seymour's magneto tidal resonance model[ii] is an example of the type of field modelling that may prove useful in exploring the cause(s) of the AE.

In regard to theoretical investigations, Fergus J. Wood in his monograph *The strategic role of perigean spring tides in nautical history and North American coastal flooding, 1635-1976*[iii] presents a refinement to the laws of tidal forces which resulted in a more informed understanding of lunar motion defined as the 'Short-Period Motions of Perigee'. His work is an example of general laws being re-examined to find they did not fully explain the physical phenomena they describe.

Appendix A: Large Hail Test Methodology and Results

Testing Methodology

The NOAA hail dataset (1955-2005) was searched for all records with a hail size greater than 2 ½ inches (9478 events). These events were used to make the large hail dataset for testing the field model.

The hail event records in the large hail data set were converted from US Central Standard Time to UT to accommodate the input time protocol of the test program. The large hail dataset is available at www.iasoberg.com/datafiles/largehaildataset.xls .

The 9478 events were broken up into the following data sets and tested.

Hail size	Data set	Events
> 6 inch	650plus	13
~ 6 inch	550 – 649	21
~ 5 inch	450 – 549	643
~ 4 inch	350 – 449	696
~ 3 inch	250 – 349	8105

Presentation of the Test Results

The test program outputted the coincident events as consecutive records to a comma separated variable (csv) file. Each record contains the following data:

- year - yyyy
- month - mm
- day - dd
- Universal Time in xx.xx hours
- longitude of coincident event in decimal degrees xxx.xx
- latitude of coincident event in decimal degrees xx.xx
- a factor that indicates the displacement between the primary location of the Iasoberg and the coincident event
- a count of coincident events.

The csv files from the tests were then imported into a MS Office Excel spread sheet and sorted by the type of Iasoberg coincident with the event and the magnitude of the distance factor. A summary of the test results is presented below. The complete results are available at www.iasoberg.com/datafiles/largehailanalysis.xls.

Summary of Test Results

Hail Size Event	Number of Hail Events per hail size	Total Number of Iasoberg coincidences with hail event per hail size	Number of Solar Iasoberg coincidences with hail event per hail size	Number of Galactic Iasoberg coincidences with hail event per hail size	% of Solar Iasoberg coincidences per hail events per hail size	% of Galactic Iasoberg coincidences per hail events per hail size	% of Iasoberg coincidences per total hail events per hail size
Total Events[iv]	9478	1575	885	700	9.3%	7.4%	16.6%
650 plus Events	13	3	3	0	23.1%	0.0%	23.1%
550-649 Events	21	5	3	2	14.3%	9.5%	23.8%
450-549 Events	643	117	75	42	11.7%	6.5%	18.2%
350-449 Events	696	128	82	56	11.8%	8.0%	18.4%
250-349 Events	8105	1322	722	600	8.9%	7.4%	16.3%

[i] It is assumed that the audience for this note is familiar with the Allais Effect (AE) and most of the work conducted to explore this gravitational anomaly. A review of the significant experiments was presented in a paper to the *Review on possible Gravitational Anomalies* in 2005 by Dr. Xavier E. Amador (*This is an expanded version of the work published in the Proceedings of* VI Mexican School on Gravitation and Mathematical Physics, "*Approaches to Quantum Gravity"* in the *Journal of Physics: Conferences Series* of the Institute of Physics (IoP-USA). nov. 21-27, 2004, México). The results of recent work conducted by Tom Goodey during the April 2005 solar eclipse in Central America are accessible at http://www.allais.info/eclipsereport.htm.

[ii] Percy Seymour, The scientific proof of astrology: A scientific investigation of how the stars influence human life Publisher: London : Quantum, 2004

[iii] Fergus J. Wood, The strategic role of perigean spring tides in nautical history and North American coastal flooding, 1635-1976. U.S. Department of Commerce, National Oceanographic and Atmospheric Administration. 1976.

[iv] ASCII NOAA 1955 to 2005 Hail Data Set for the Continental USA is part of the updated dataset at URL http://www.spn.noaa.gov/wcm/FHAIL5506.txt - link to metadata for the dataset.