

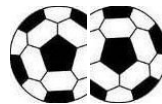
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Introduction to a “Stochastic” Global Seismic Distribution Model
SuDBE2011 Sustainable Development in Building and Environment, Oct/2011

TECTONIC EQUILIBRIUM

Introduction to a “Stochastic” Global Seismic Distribution Model

Charl E Janeke (PE), Kartago Inc, Los Angeles California (USA)

SuDBE2011
Sustainable Development in Building and Environment
Chongqing, China
October 2011



Earthquakes are the result of pressure surges and consequential fractures of the crust of the earth emanating from the interaction of tectonic plates as a consequence of continental drift.

The most severe global disasters are the consequence of earthquakes.

Earthquakes are the result of pressure surges and consequential fractures of the crust of the earth emanating from the interaction of tectonic plates as a consequence of continental drift.

The most severe global disasters are the consequence of earthquakes.

Earthquakes generate three types of seismic waves.

Primary “P” (high frequency) waves propagate at 20,000mph.

Secondary “S” waves are absorbed and attenuated in the molten core of the earth.

Tertiary “L” (low frequency) waves propagate on the surface and is highly destructive due to the amplitude and energy content and displacement surge.

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In accordance with the SuDBE2009 “Polar Equilibrium” analysis, rapid chilling resulted in the “1st Harmonic of Formation” 3.5-4B years after formation that fractured the mantle of the earth due to stress concentrations.

The fractured mantle resulted in continental drift that spawned an era of intense volcanic activity breaking the the deep freeze that was settling onto the incipient earth at the time.

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Rapid surface temperature regression ...3.4B year old fossils ...119F/44C

37	<u>0.83</u>	124	197	<u>0.0115</u>	<u>2</u>	<u>173.72</u>	612	1262	1881	2462	3040
38	<u>0.85</u>	121	197	<u>0.0111</u>	<u>2</u>	<u>180.48</u>	609	1245	1854	2447	3040
39	<u>0.87</u>	119	197	<u>0.0107</u>	<u>2</u>	<u>187.35</u>	605	1230	1838	2439	3040
40	<u>0.90</u>	116	197	<u>0.0103</u>	<u>2</u>	<u>194.32</u>	602	1220	1830	2435	3040
41	<u>0.92</u>	114	197	<u>0.0099</u>	<u>2</u>	<u>201.39</u>	599	1215	1825	2432	3040
42	<u>0.94</u>	112	197	<u>0.0096</u>	<u>2</u>	<u>208.58</u>	597	1211	1821	2431	3040
43	<u>0.97</u>	110	197	<u>0.0093</u>	<u>2</u>	<u>215.87</u>	594	1208	1819	2430	3040
44	<u>0.99</u>	108	197	<u>0.0090</u>	<u>2</u>	<u>223.28</u>	591	1205	1817	2429	3040
45	<u>1.01</u>	106	197	<u>0.0087</u>	<u>2</u>	<u>230.80</u>	589	1203	1816	2428	3040
46	<u>1.04</u>	104	197	<u>0.0084</u>	<u>2</u>	<u>238.44</u>	586	1201	1814	2427	3040
47	<u>1.06</u>	102	197	<u>0.0081</u>	<u>2</u>	<u>246.19</u>	584	1199	1813	2427	3040
48	<u>1.08</u>	101	197	<u>0.0079</u>	<u>2</u>	<u>254.07</u>	582	1197	1812	2426	3040
49	<u>1.10</u>	99	197	<u>0.0076</u>	<u>2</u>	<u>262.06</u>	579	1196	1811	2425	3040
50	<u>1.13</u>	97	197	<u>0.0074</u>	<u>2</u>	<u>270.18</u>	577	1194	1810	2425	2914
51	<u>1.15</u>	96	197	<u>0.0072</u>	<u>2</u>	<u>278.42</u>	575	1192	1809	2361	2848

<http://www.polarequilibrium.com/pdfs/PEQ.Macro29Sep09.pdf>

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“A microbial bacteria fossil discovered in Australian may be proof of life on Earth before oxygen 3.4 billion years ago” ...Strelley Pool Formation in Western Australia (Aug/22 2011).

Stromatolies are structures that are formed in shallow water (temperature stamp =119F) through the trapping, binding, and cementing sedimentary grains using biofilms and microorganisms.

<http://www.ibtimes.com/articles/202030/20110822/oldest-fossils-on-earth-life-on-mars.htm>

According to the cosmic furnace analysis the earth comprised 5% carbon at formation.

The consequence is that 50% of the carbon equates to a 50-100 mile graphite layer 50-100 miles below the surface.

With $\mu=0.05$ at 800F, the friction coefficient of graphite matches the superposition (viz. vector sum) of the spin and spatial surface vectors.

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H He Li Be ... XXX XXX = SUN

~~~~~ Total time = **16.21+5 = 21.21BY**

The **COSMIC furnace** hypothesis (actually real).

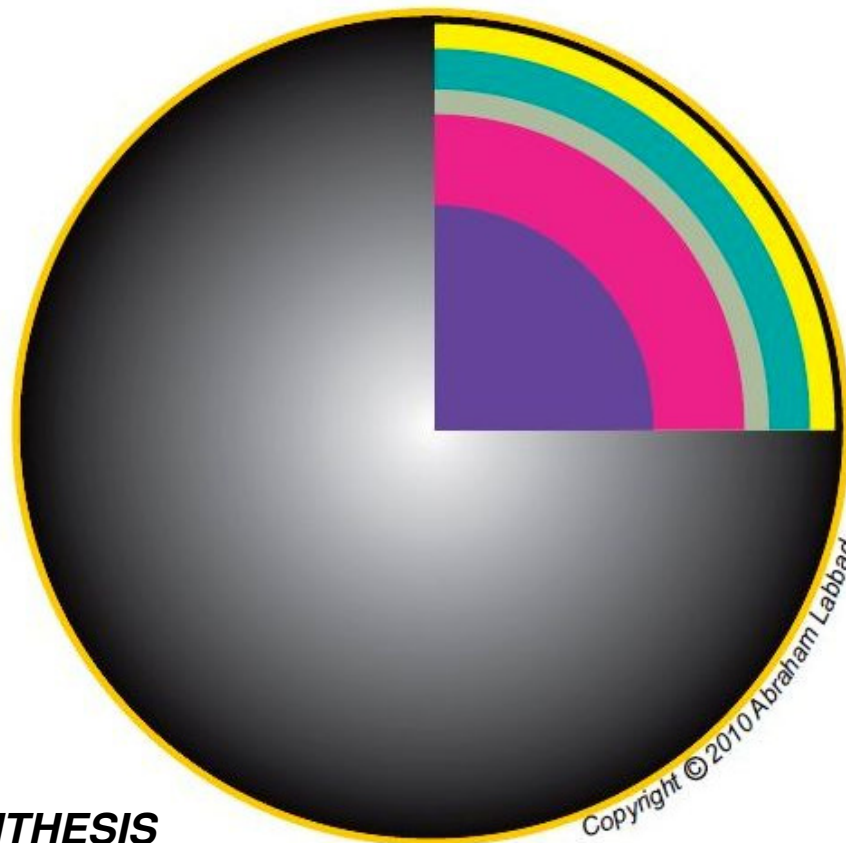
**AGE OF THE UNIVERSE: PERFECT sequencing** (...the doctrine of infinite resources!!)

H > He > Li > Be > B > C > N > O > F > Ne > Na > Mg > Al > Si > P > S  
 5.46>6.83>7.62>8.23>8.74>9.2>9.59>9.94>10.23>10.5>10.74>10.96>11.17>11.36>11.54>11.71 (16)  
 Cl > Ar > K > Ca > Sc > Ti > Cr > Fe > Co > Ni > Cu > Zn > Ga > Ge > As  
 11.87>12.01>12.15>12.28>12.41>12.52>12.63>12.73>12.83>12.93>13.03>13.12>13.21>13.29>13.37 (31)  
 Se > Br > Kr > Rb > Sr > Y > Zr > Nb > Mo > Tc > Ru > Rh > Pd > Ag > Cd  
 13.45>13.52>13.59>13.66>13.72>13.79>13.85>13.91>13.97>14.03>14.09>14.15>14.2>14.25>14.3 (46)  
 In > Sn > Sb > Te > I > Xe > Cs > Ba > La > Ce > Pr > Nd > Pm > Sm > Eu

## Age of the universe: The cosmic furnace synthesis

<http://kartagoinc.com/BSAnalysis-Tianjin-Jan2010.pdf>

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**GRAPHITE GLOBE SYNTHESIS**

<http://kartagoinc.com/BSAnalysis-Tianjin-Jan2010.pdf>

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**We need to understand the thermodynamics of formation of the crust of the earth, global harmonics and the dynamics of seismic events.**

**SuDBE2009 “Polar Equilibrium” was directed at a consequential global heat balance.**

**SuDBE2011 conversely focuses on a global tectonic (equilibrium) model and the associated plate dynamics.**

**As a consequence of the Graphite Globe analysis, centripetal acceleration is being considered as the principal seismic motive force.**

**The oblique/tilted orbit of the earth around the sun exercise a profound impact on the continental plate dynamics and consequential harmonic seismic stress propagation.**

The presentation is focused at the elements of a seismic prediction model comprising;

- (1) a *Centripetal* vector disturbance model
- (2) a *Random walk* simulation model and
- (3) a *Stochastic gain* prediction model.

The concept can be better understood by means of an automobile analogy whereby the auto is driven via an engine + transmission + steering.

**In the abstract centripetal acceleration [Ac] may  
in the abstract be presented as;**

$$Ac = \lim (d > 0) dV_t/dt = W^2 \times R = V_t^2/R$$

**where Ac = centripetal acceleration in ft/sec<sup>2</sup>,  
W = angular velocity/rotation in radians/sec,  
Vt = tangential velocity in ft/sec and  
R = radius of the focal point in ft.**

The centripetal acceleration of the earth may be equated as follows;

$$(1) Re = 6,378 \text{ km} = 6,378 \times 1,000 \times 3.3 = 21,047,400 \text{ ft}$$

$$(2) We = (2 \times \text{Pi}) / (24 \times 60 \times 60) = 7.275 \times 10^{-5} \text{ Radians/sec}$$

$$(3) Ae = (7.275 \times 10^{-5})^2 \times 21,047,400 = 0.1114 \text{ ft/sec}^2$$

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The centripetal acceleration of the earth may be equated as follows;

At 90deg latitude;  $Ae.90 = Ae \times \sin (90deg) = 0.1114 \text{ ft/sec}$

At 60deg latitude;  $Ae.60 = Ae \times \sin (60deg) = 0.0965 \text{ ft/sec}$

At 45deg latitude;  $Ae.45 = Ae \times \sin (45deg) = 0.0788 \text{ ft/sec}$

At 30deg latitude;  $Ae.30 = Ae \times \sin (30deg) = 0.0557 \text{ ft/sec}$

At 00deg latitude;  $Ae.00 = Ae \times \sin (00deg) = 0.0000 \text{ ft/sec}$



The surface centripetal vector may be equated as follows;

At 90deg latitude;  $Aes.90 = Ae.90 \times \cos (90deg) = 0.0000$  ft/sec

At 60deg latitude;  $Aes.60 = Ae.60 \times \cos (60deg) = 0.0079$  ft/sec

At 45deg latitude;  $Aes.45 = Ae.45 \times \cos (45deg) = 0.0091$  ft/sec

At 30deg latitude;  $Aes.30 = Ae.30 \times \cos (30deg) = 0.0079$  ft/sec

At 00deg latitude;  $Aes.00 = Ae.00 \times \cos (00deg) = 0.0000$  ft/sec

The spatial centripetal acceleration of the sun  
may be equated as;

$$(1) R_s = 140M \text{ km} = 140M \times 1000 \times 3.3 = 4.62 \times 10^{11} \text{ ft}$$

$$(2) W_s = (2 \times \pi) / (8,800 \times 60 \times 60) = 1.984 \times 10^{-7} \text{ Radians/sec}$$

$$(3) A_s = (1.984 \times 10^{-7})^2 \times 4.62 \times 10^{11} = 0.0182 \text{ ft/sec}^2$$

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The ***Random*** walk OR ***Markov*** chain will hence become  
an the primary computational tool as to;

(1) Movement/displacement of the continental plates

(2) Stress as a consequence of tectonic interaction

as driven by the centripetal reaction vector emanating  
from the earth's rotational spin, the spatial trajectory around  
the sun and the tilt/inversion of the axis of the earth towards  
the sun.

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The superposition OR gross tectonic impact vector is determined as the vector sum of the rotational and spatial vectors for both “inner” and “outer” orbits.

INNER Orbit;

At 90deg ratio =  $Aes/As = Ae.90 \times \cos(90deg) + 0.0182 \times \sin(90) = 0.018$

At 80deg ratio =  $Aes/As = Ae.80 \times \cos(80deg) + 0.0182 \times \sin(80) = 0.037$

At 70deg ratio =  $Aes/As = Ae.70 \times \cos(70deg) + 0.0182 \times \sin(70) = 0.053$

At 60deg ratio =  $Aes/As = Ae.60 \times \cos(60deg) + 0.0182 \times \sin(60) = 0.064$

At 45deg ratio =  $Aes/As = Ae.45 \times \cos(45deg) + 0.0182 \times \sin(45) = 0.068$

At 30deg ratio =  $Aes/As = Ae.30 \times \cos(30deg) + 0.0182 \times \sin(30) = 0.057$

At 20deg ratio =  $Aes/As = Ae.20 \times \cos(20deg) + 0.0182 \times \sin(20) = 0.042$

At 10deg ratio =  $Aes/As = Ae.10 \times \cos(10deg) + 0.0182 \times \sin(10) = 0.022$

At 00deg ratio =  $Aes/As = Ae.00 \times \cos(00deg) + 0.0182 \times \sin(00) = 0.000$

## SUPERPOSITION VECTOR

### OUTER Orbit;

At 90deg ratio =  $Aes/As = Ae.90 \times \cos(90deg) - 0.0182 \times \sin(90) = -0.018$

At 80deg ratio =  $Aes/As = Ae.80 \times \cos(80deg) - 0.0182 \times \sin(80) = -0.001$

At 70deg ratio =  $Aes/As = Ae.70 \times \cos(70deg) - 0.0182 \times \sin(70) = 0.019$

At 60deg ratio =  $Aes/As = Ae.60 \times \cos(60deg) - 0.0182 \times \sin(60) = 0.032$

At 45deg ratio =  $Aes/As = Ae.45 \times \cos(45deg) - 0.0182 \times \sin(45) = 0.043$

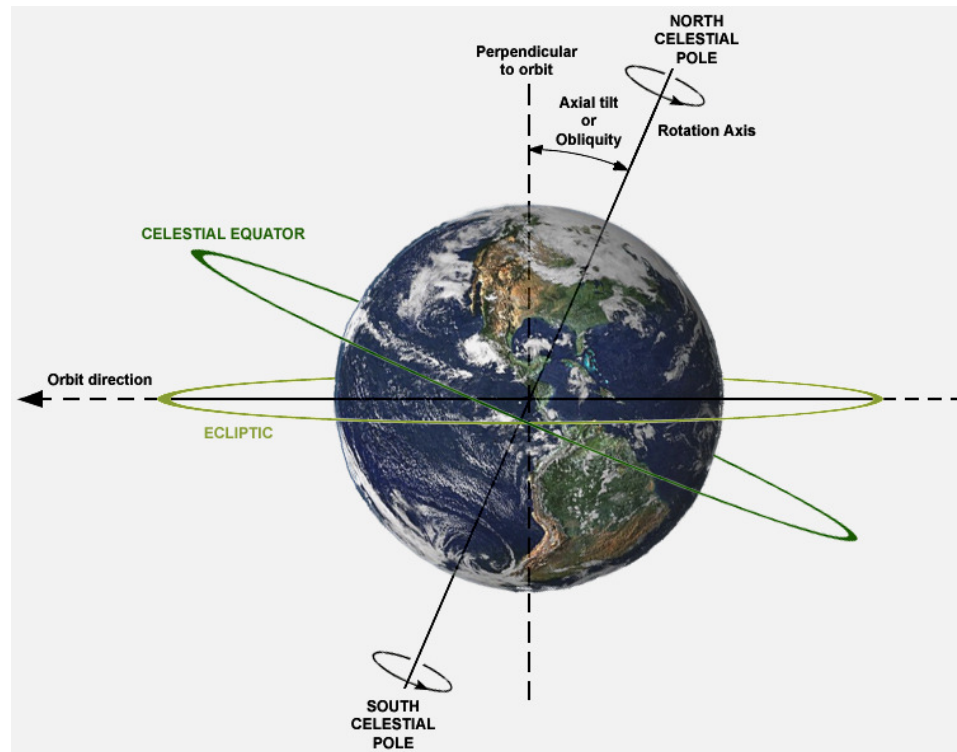
At 30deg ratio =  $Aes/As = Ae.30 \times \cos(30deg) - 0.0182 \times \sin(30) = 0.039$

At 20deg ratio =  $Aes/As = Ae.20 \times \cos(20deg) - 0.0182 \times \sin(20) = 0.029$

At 10deg ratio =  $Aes/As = Ae.10 \times \cos(10deg) - 0.0182 \times \sin(10) = 0.016.$

At 00deg ratio =  $Aes/As = Ae.00 \times \cos(00deg) - 0.0182 \times \sin(00) = 0.000$

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**TILT INVERSION: The impact of tilt is twofold as a consequence of seasonal inversion of the planetary trajectory of the earth around the sun.**

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**Random walk:** *Random* walk is driven by random disturbances. *Random* walk has no beginning or an end. There is also no relationship between the initial and the terminal state of a *Random* walk process.

**Stochastic process:** In event of the  $(n+1)$  *th* state germane to the  $(n)$  *th* state, *Random* walk becomes a *Stochastic* process

**Markov chain:** A *Markov* chain is a random walk process whereby the  $(n)$  *th* state contains the COMPLETE history of ALL proceeding steps akin to computational DNA.

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A **Markov** chain may be expressed as the probability vector {Pij};

$$P_{ij} = \text{SUM } (k=1, k=r) [P_{ik} \cdot P_{kj}]$$

where “k” denotes the number of steps of process “Pij” from beginning “1” to state “r” with P<sub>ik</sub> and P<sub>kj</sub> the transitional values of probability vector {Pij} at the [ij] th instant.

A tectonic plate impacted by harmonic disturbances becomes a **Markov** chain in event of (1) a rational relationship between the “n” and (n+1)” steps and (2) the infiniteness of the disturbances as a consequence of the galactic time scale of plate dynamics



### **KALMAN FILTER**

The ***Kalman*** filter is a “stochastic” process that pairs recorded data and computationally predicted estimates of state as to an uncertainty between the measured and computationally predicted values of state and hence inverses the uncertainty into an optimal gain vector (the “filter” lemma).

**KALMAN REQUISITES**

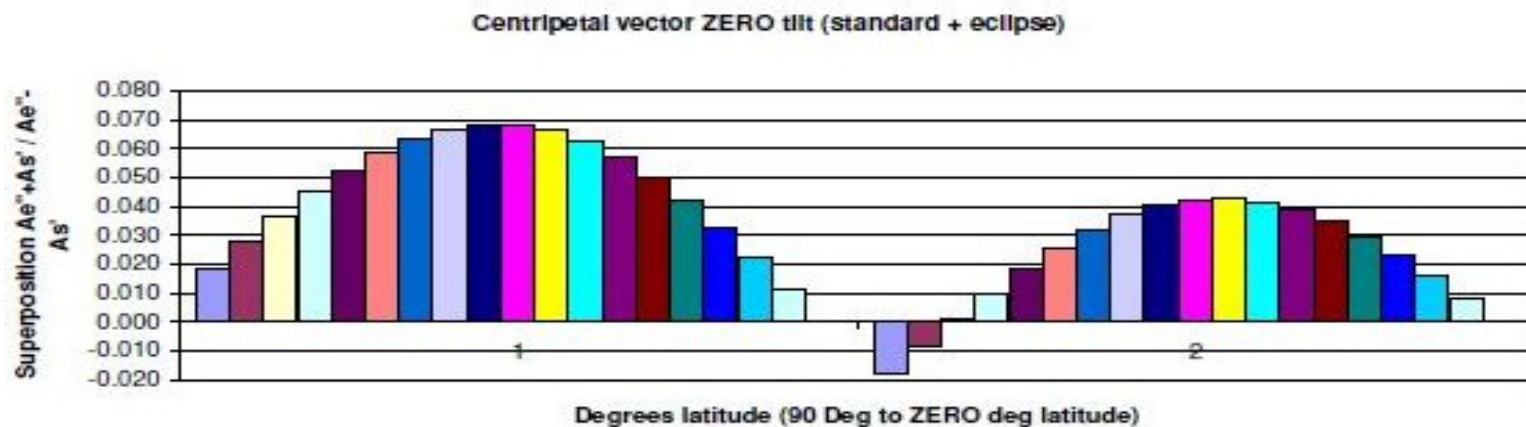
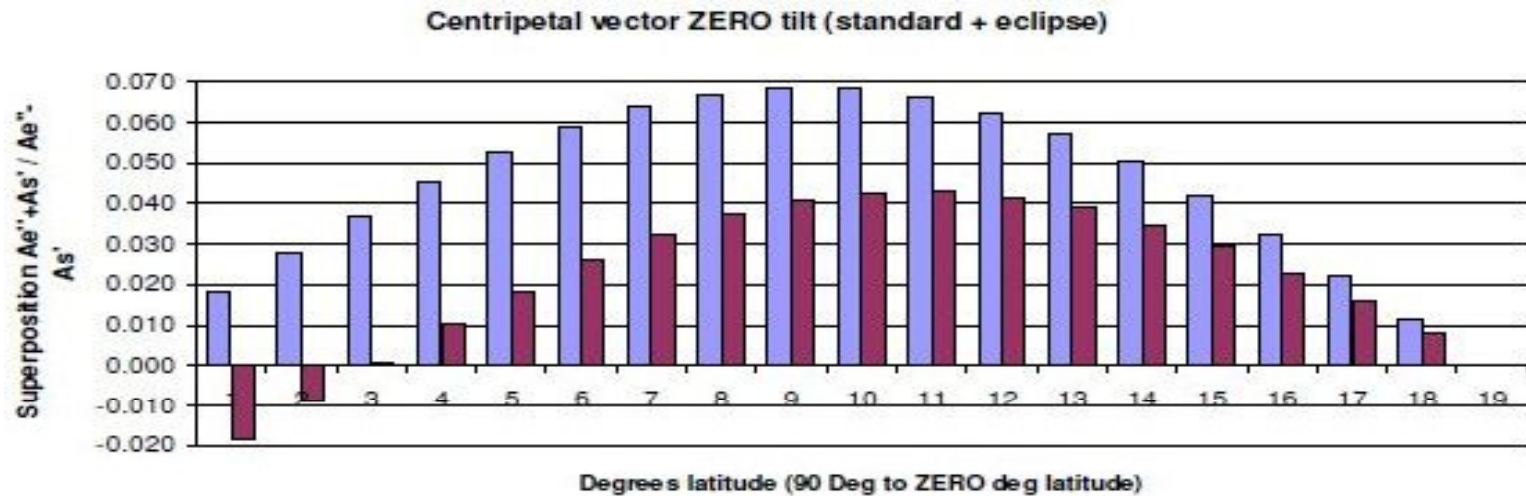
1. System model: The system model is employed to equate the transition from state (n) to state (n+1) with the “filtered” measurements at state (n) as input.
2. Raw data: Abundance of measurements are necessary to equate the propagation of uncertainty in order to excite the filtering algorithm.
3. White noise: Properly developed measurements streams with a ***Gaussian*** white noise distribution base are therefore essential ***Kalman*** filter requisites.

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***ZERO Tilt Tectonic Centipetal ACCELERATION Vector***

| <u>Deg</u> | <u>3.142</u><br><u>Pi</u> | <u>Cos</u> | <u>Sin</u> | <u>24</u><br><u>We</u> | <u>8800</u><br><u>Ws</u> | <u>6350</u><br><u>Re</u> | <u>Re'</u> | <u>1.4E+08</u><br><u>Rs</u> | <u>2Pi</u><br><u>Ae</u> | <u>Ae'</u> | <u>Ae''</u> | <u>2Pi</u><br><u>As</u> | <u>As'</u> |       |        |
|------------|---------------------------|------------|------------|------------------------|--------------------------|--------------------------|------------|-----------------------------|-------------------------|------------|-------------|-------------------------|------------|-------|--------|
| 90         | 1.571                     | 0.000      | 1.000      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 2.10E+07   | 4.62E+11                    | 0.111                   | 0.111      | 0.000       | 0.018                   | 0.018      | 0.018 | -0.018 |
| 85         | 1.484                     | 0.087      | 0.996      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 2.09E+07   | 4.62E+11                    | 0.111                   | 0.110      | 0.010       | 0.018                   | 0.018      | 0.028 | -0.009 |
| 80         | 1.396                     | 0.173      | 0.985      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 2.06E+07   | 4.62E+11                    | 0.111                   | 0.109      | 0.019       | 0.018                   | 0.018      | 0.037 | 0.001  |
| 75         | 1.309                     | 0.259      | 0.966      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 2.02E+07   | 4.62E+11                    | 0.111                   | 0.107      | 0.028       | 0.018                   | 0.018      | 0.045 | 0.010  |
| 70         | 1.222                     | 0.342      | 0.940      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.97E+07   | 4.62E+11                    | 0.111                   | 0.104      | 0.036       | 0.018                   | 0.017      | 0.053 | 0.019  |
| 65         | 1.135                     | 0.422      | 0.906      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.90E+07   | 4.62E+11                    | 0.111                   | 0.100      | 0.042       | 0.018                   | 0.016      | 0.059 | 0.026  |
| 60         | 1.047                     | 0.500      | 0.866      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.81E+07   | 4.62E+11                    | 0.111                   | 0.096      | 0.048       | 0.018                   | 0.016      | 0.064 | 0.032  |
| 55         | 0.960                     | 0.573      | 0.819      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.72E+07   | 4.62E+11                    | 0.111                   | 0.091      | 0.052       | 0.018                   | 0.015      | 0.067 | 0.037  |
| 50         | 0.873                     | 0.643      | 0.766      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.61E+07   | 4.62E+11                    | 0.111                   | 0.085      | 0.055       | 0.018                   | 0.014      | 0.069 | 0.041  |
| 45         | 0.786                     | 0.707      | 0.707      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.48E+07   | 4.62E+11                    | 0.111                   | 0.078      | 0.055       | 0.018                   | 0.013      | 0.068 | 0.043  |
| 40         | 0.698                     | 0.766      | 0.643      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.35E+07   | 4.62E+11                    | 0.111                   | 0.071      | 0.055       | 0.018                   | 0.012      | 0.066 | 0.043  |
| 35         | 0.611                     | 0.819      | 0.574      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.20E+07   | 4.62E+11                    | 0.111                   | 0.064      | 0.052       | 0.018                   | 0.010      | 0.063 | 0.042  |
| 30         | 0.524                     | 0.866      | 0.500      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.05E+07   | 4.62E+11                    | 0.111                   | 0.055      | 0.048       | 0.018                   | 0.009      | 0.057 | 0.039  |
| 25         | 0.436                     | 0.906      | 0.423      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 8.86E+06   | 4.62E+11                    | 0.111                   | 0.047      | 0.042       | 0.018                   | 0.008      | 0.050 | 0.035  |
| 20         | 0.349                     | 0.940      | 0.342      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 7.17E+06   | 4.62E+11                    | 0.111                   | 0.038      | 0.036       | 0.018                   | 0.006      | 0.042 | 0.029  |
| 15         | 0.262                     | 0.966      | 0.259      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 5.42E+06   | 4.62E+11                    | 0.111                   | 0.029      | 0.028       | 0.018                   | 0.005      | 0.032 | 0.023  |
| 10         | 0.175                     | 0.985      | 0.174      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 3.64E+06   | 4.62E+11                    | 0.111                   | 0.019      | 0.019       | 0.018                   | 0.003      | 0.022 | 0.016  |
| 5          | 0.087                     | 0.996      | 0.087      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 1.83E+06   | 4.62E+11                    | 0.111                   | 0.010      | 0.010       | 0.018                   | 0.002      | 0.011 | 0.008  |
| 0          | 0.000                     | 1.000      | 0.000      | 7.27E-05               | 1.98E-07                 | 2.10E+07                 | 0.00E+00   | 4.62E+11                    | 0.111                   | 0.000      | 0.000       | 0.018                   | 0.000      | 0.000 | 0.000  |

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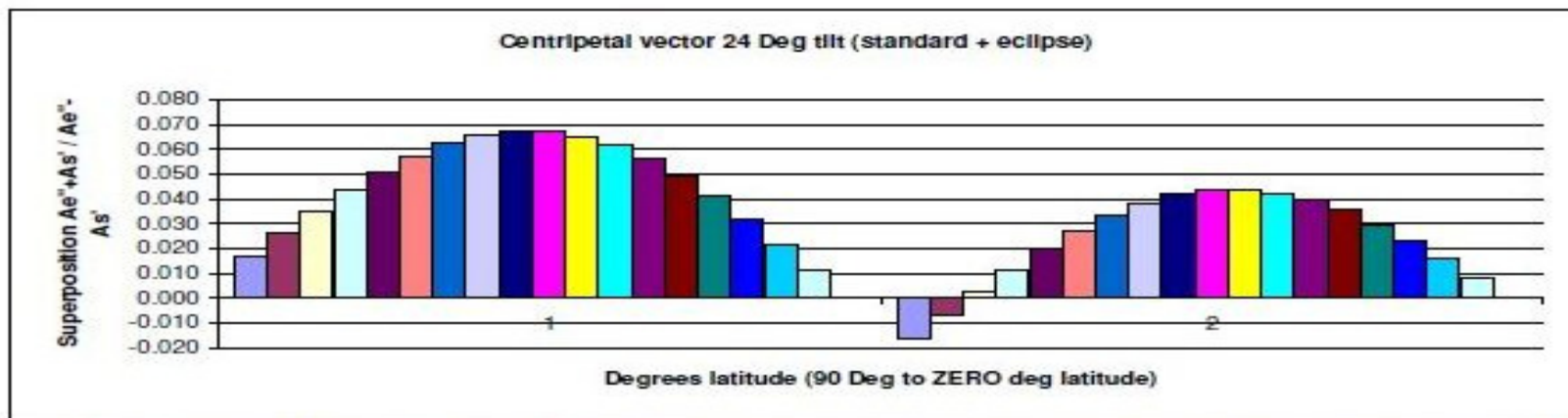
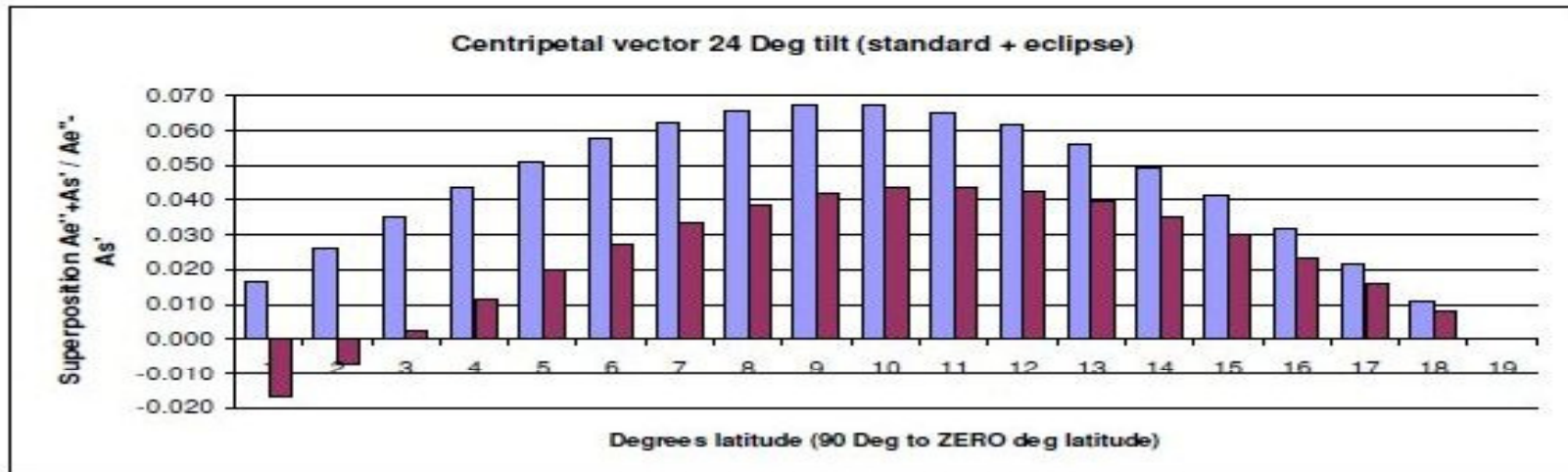


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**24 Deg Tilt Tectonic Centripetal ACCELERATION Vector**

|            | <u>3.142</u> |            |            | <u>24</u> | <u>8800</u> | <u>6350</u> |            | <u>1.4E+08</u> | <u>2Pi</u> |            |             |           | <u>2Pi</u> | <u>0.42</u>  |        |  |
|------------|--------------|------------|------------|-----------|-------------|-------------|------------|----------------|------------|------------|-------------|-----------|------------|--------------|--------|--|
| <u>Deg</u> | <u>Pi</u>    | <u>Cos</u> | <u>Sin</u> | <u>We</u> | <u>Ws</u>   | <u>Re</u>   | <u>Re'</u> | <u>Rs</u>      | <u>Ae</u>  | <u>Ae'</u> | <u>Ae''</u> | <u>As</u> | <u>As'</u> | <u>24.00</u> |        |  |
| 90         | 1.571        | 0.000      | 1.000      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.10E+07   | 4.62E+11       | 0.111      | 0.111      | 0.000       | 0.018     | 0.017      | 0.017        | -0.017 |  |
| 85         | 1.484        | 0.087      | 0.996      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.09E+07   | 4.62E+11       | 0.111      | 0.110      | 0.010       | 0.018     | 0.017      | 0.026        | -0.007 |  |
| 80         | 1.396        | 0.173      | 0.985      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.06E+07   | 4.62E+11       | 0.111      | 0.109      | 0.019       | 0.018     | 0.016      | 0.035        | 0.003  |  |
| 75         | 1.309        | 0.259      | 0.966      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.02E+07   | 4.62E+11       | 0.111      | 0.107      | 0.028       | 0.018     | 0.016      | 0.044        | 0.012  |  |
| 70         | 1.222        | 0.342      | 0.940      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.97E+07   | 4.62E+11       | 0.111      | 0.104      | 0.036       | 0.018     | 0.016      | 0.051        | 0.020  |  |
| 65         | 1.135        | 0.422      | 0.906      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.90E+07   | 4.62E+11       | 0.111      | 0.100      | 0.042       | 0.018     | 0.015      | 0.057        | 0.027  |  |
| 60         | 1.047        | 0.500      | 0.866      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.81E+07   | 4.62E+11       | 0.111      | 0.096      | 0.048       | 0.018     | 0.014      | 0.062        | 0.034  |  |
| 55         | 0.960        | 0.573      | 0.819      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.72E+07   | 4.62E+11       | 0.111      | 0.091      | 0.052       | 0.018     | 0.014      | 0.066        | 0.038  |  |
| 50         | 0.873        | 0.643      | 0.766      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.61E+07   | 4.62E+11       | 0.111      | 0.085      | 0.055       | 0.018     | 0.013      | 0.067        | 0.042  |  |
| 45         | 0.786        | 0.707      | 0.707      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.48E+07   | 4.62E+11       | 0.111      | 0.078      | 0.055       | 0.018     | 0.012      | 0.067        | 0.044  |  |
| 40         | 0.698        | 0.766      | 0.643      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.35E+07   | 4.62E+11       | 0.111      | 0.071      | 0.055       | 0.018     | 0.011      | 0.065        | 0.044  |  |
| 35         | 0.611        | 0.819      | 0.574      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.20E+07   | 4.62E+11       | 0.111      | 0.064      | 0.052       | 0.018     | 0.010      | 0.062        | 0.043  |  |
| 30         | 0.524        | 0.866      | 0.500      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.05E+07   | 4.62E+11       | 0.111      | 0.055      | 0.048       | 0.018     | 0.008      | 0.056        | 0.040  |  |
| 25         | 0.436        | 0.906      | 0.423      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 8.86E+06   | 4.62E+11       | 0.111      | 0.047      | 0.042       | 0.018     | 0.007      | 0.049        | 0.035  |  |
| 20         | 0.349        | 0.940      | 0.342      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 7.17E+06   | 4.62E+11       | 0.111      | 0.038      | 0.036       | 0.018     | 0.006      | 0.041        | 0.030  |  |
| 15         | 0.262        | 0.966      | 0.259      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 5.42E+06   | 4.62E+11       | 0.111      | 0.029      | 0.028       | 0.018     | 0.004      | 0.032        | 0.023  |  |
| 10         | 0.175        | 0.985      | 0.174      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 3.64E+06   | 4.62E+11       | 0.111      | 0.019      | 0.019       | 0.018     | 0.003      | 0.022        | 0.016  |  |
| 5          | 0.087        | 0.996      | 0.087      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.83E+06   | 4.62E+11       | 0.111      | 0.010      | 0.010       | 0.018     | 0.001      | 0.011        | 0.008  |  |
| 0          | 0.000        | 1.000      | 0.000      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 0.00E+00   | 4.62E+11       | 0.111      | 0.000      | 0.000       | 0.018     | 0.000      | 0.000        | 0.000  |  |

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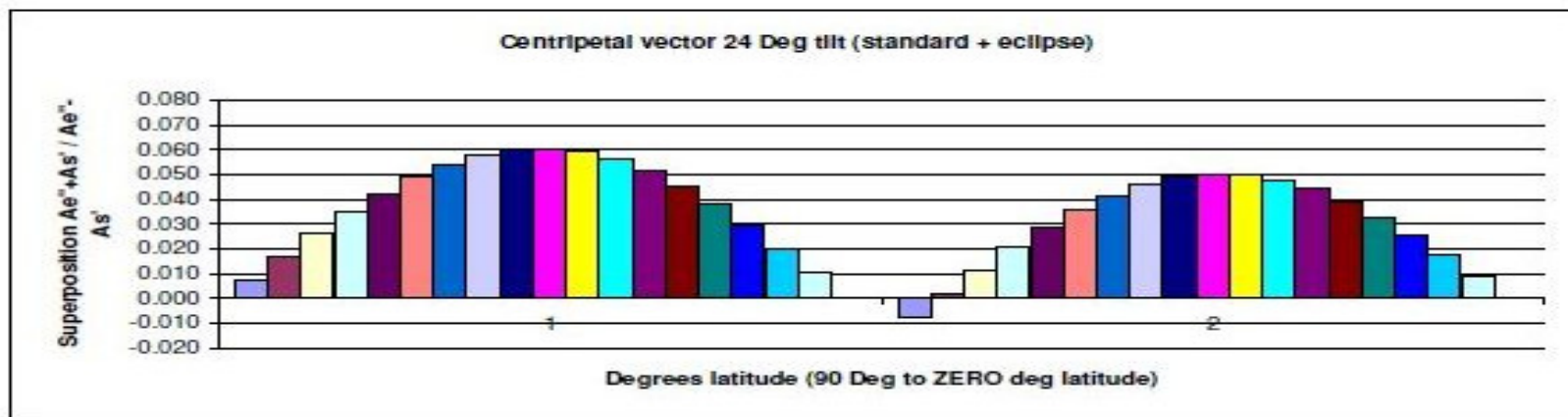
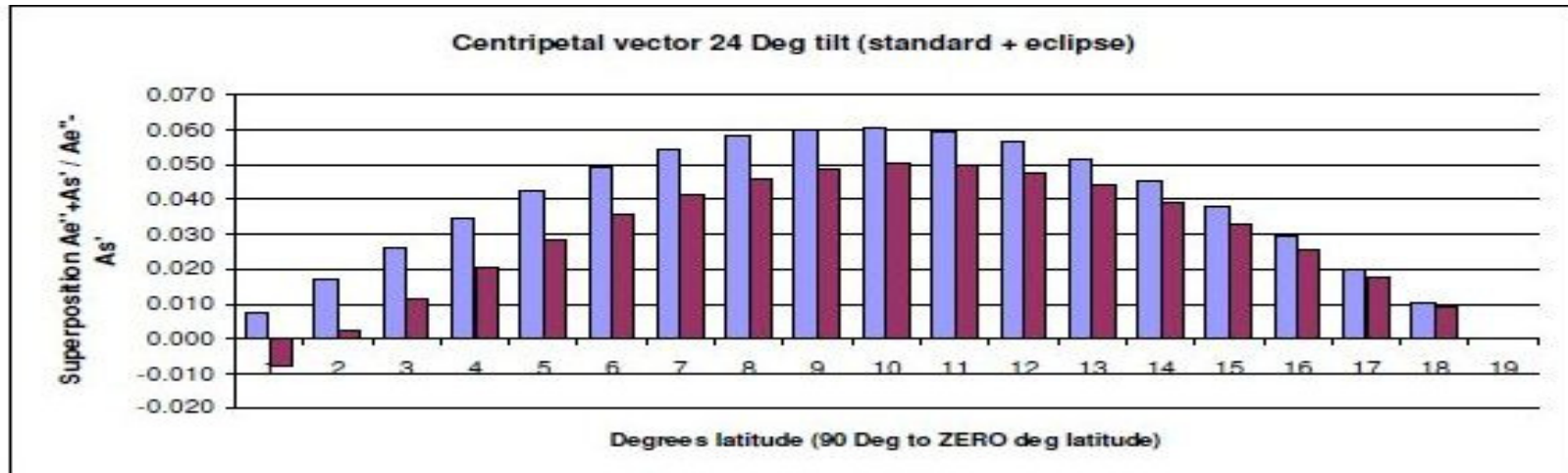


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**66 Deg Tilt Tectonic Centripetal ACCELERATION Vector**

|            | <u>3.142</u> |            |            | <u>24</u> | <u>8800</u> | <u>6350</u> |            | <u>1.4E+08</u> | <u>2Pi</u> |            |             |           | <u>2Pi</u> | <u>1.15</u>  |        |  |
|------------|--------------|------------|------------|-----------|-------------|-------------|------------|----------------|------------|------------|-------------|-----------|------------|--------------|--------|--|
| <u>Deg</u> | <u>Pi</u>    | <u>Cos</u> | <u>Sin</u> | <u>We</u> | <u>Ws</u>   | <u>Re</u>   | <u>Re'</u> | <u>Rs</u>      | <u>Ae</u>  | <u>Ae'</u> | <u>Ae''</u> | <u>As</u> | <u>As'</u> | <u>66.00</u> |        |  |
| 90         | 1.571        | 0.000      | 1.000      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.10E+07   | 4.62E+11       | 0.111      | 0.111      | 0.000       | 0.018     | 0.007      | 0.007        | -0.007 |  |
| 85         | 1.484        | 0.087      | 0.996      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.09E+07   | 4.62E+11       | 0.111      | 0.110      | 0.010       | 0.018     | 0.007      | 0.017        | 0.002  |  |
| 80         | 1.396        | 0.173      | 0.985      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.06E+07   | 4.62E+11       | 0.111      | 0.109      | 0.019       | 0.018     | 0.007      | 0.026        | 0.012  |  |
| 75         | 1.309        | 0.259      | 0.966      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 2.02E+07   | 4.62E+11       | 0.111      | 0.107      | 0.028       | 0.018     | 0.007      | 0.035        | 0.021  |  |
| 70         | 1.222        | 0.342      | 0.940      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.97E+07   | 4.62E+11       | 0.111      | 0.104      | 0.036       | 0.018     | 0.007      | 0.043        | 0.029  |  |
| 65         | 1.135        | 0.422      | 0.906      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.90E+07   | 4.62E+11       | 0.111      | 0.100      | 0.042       | 0.018     | 0.007      | 0.049        | 0.036  |  |
| 60         | 1.047        | 0.500      | 0.866      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.81E+07   | 4.62E+11       | 0.111      | 0.096      | 0.048       | 0.018     | 0.006      | 0.054        | 0.042  |  |
| 55         | 0.960        | 0.573      | 0.819      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.72E+07   | 4.62E+11       | 0.111      | 0.091      | 0.052       | 0.018     | 0.006      | 0.058        | 0.046  |  |
| 50         | 0.873        | 0.643      | 0.766      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.61E+07   | 4.62E+11       | 0.111      | 0.085      | 0.055       | 0.018     | 0.006      | 0.060        | 0.049  |  |
| 45         | 0.786        | 0.707      | 0.707      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.48E+07   | 4.62E+11       | 0.111      | 0.078      | 0.055       | 0.018     | 0.005      | 0.061        | 0.050  |  |
| 40         | 0.698        | 0.766      | 0.643      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.35E+07   | 4.62E+11       | 0.111      | 0.071      | 0.055       | 0.018     | 0.005      | 0.059        | 0.050  |  |
| 35         | 0.611        | 0.819      | 0.574      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.20E+07   | 4.62E+11       | 0.111      | 0.064      | 0.052       | 0.018     | 0.004      | 0.056        | 0.048  |  |
| 30         | 0.524        | 0.866      | 0.500      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.05E+07   | 4.62E+11       | 0.111      | 0.055      | 0.048       | 0.018     | 0.004      | 0.052        | 0.044  |  |
| 25         | 0.436        | 0.906      | 0.423      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 8.86E+06   | 4.62E+11       | 0.111      | 0.047      | 0.042       | 0.018     | 0.003      | 0.046        | 0.039  |  |
| 20         | 0.349        | 0.940      | 0.342      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 7.17E+06   | 4.62E+11       | 0.111      | 0.038      | 0.036       | 0.018     | 0.003      | 0.038        | 0.033  |  |
| 15         | 0.262        | 0.966      | 0.259      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 5.42E+06   | 4.62E+11       | 0.111      | 0.029      | 0.028       | 0.018     | 0.002      | 0.030        | 0.026  |  |
| 10         | 0.175        | 0.985      | 0.174      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 3.64E+06   | 4.62E+11       | 0.111      | 0.019      | 0.019       | 0.018     | 0.001      | 0.020        | 0.018  |  |
| 5          | 0.087        | 0.996      | 0.087      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 1.83E+06   | 4.62E+11       | 0.111      | 0.010      | 0.010       | 0.018     | 0.001      | 0.010        | 0.009  |  |
| 0          | 0.000        | 1.000      | 0.000      | 7.27E-05  | 1.98E-07    | 2.10E+07    | 0.00E+00   | 4.62E+11       | 0.111      | 0.000      | 0.000       | 0.018     | 0.000      | 0.000        | 0.000  |  |

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**SUMMARY**

Predicting OR understanding the forces of nature generally and tectonic equilibrium specifically has been an elusive quest to date.

The analysis therefore serves the purpose of developing a large scale (global) tectonic model on the foundation of

- (1) a global ***Centripetal*** reaction model
- (2) a global ***Random*** walk model and
- (3) a ***Kalman*** filter model.

This presentation hence serves as an invitation to participate with the development of a global tectonic model based on the underlying Centripetal, Randomwalk and Kalman filter systems as illustrated.