

The Ionic Growing Earth

Eight Element Supplement = 98.8% of Mass

By Eugene A. Ellis (modified Nov. 2017)

Table 1, Mass Doubling Rates, in earlier Ionic Growing Earth (IGE) papers originally utilized five elements and a decay rate of 1 eV per 2 MY. This table was later designated as Table 2 using the same five elements and a rate of 1 eV per 1.75, MY which conforms to geological events better. Adding three elements (Al-1.4%, Ni-1.8%, and Ca-1.5%) to the five elements that make up 93.3% of Earth's matter brings the total to 98.8%. All the other elements combined make up the remaining 1.2%.

The earlier work (IGE page 4) indicates exponential growth is of the order y^x where x is the rate per 100 MY (CMY). The exponential growth equation for doubling the mass is $y^x = 2$. Table 2 below is arranged to show what is presently known regarding the 8 elements and what is not known. The third column is the element's atomic mass divided by the mass equivalent of 1 electron volt ($1 \text{ eV} \cong 1.073544 \text{ AMU}$). The "y" in column 7 is the percentage in column 5 (per 100 MY) divided by the mass in column 3. The total "y" in column 7 fixes the total "x" in column 6 by the doubling equation $y^x = 2$.

Solving for x: $x \ln y = \ln 2$, or $x = \ln 2 / \ln y$;

And for y: $y = \sqrt[x]{2}$

TABLE 2 - MASS DOUBLING RATES - KNOWN VS UNKNOWN							
	Elemental			Total Earth			
	Atomic Mass	AMU/1.073544	Rate (MY)	Percentages	x (MY) % Rate	y (100 MY) Rate/ \cong e V	x (MY) ln 2/ln y
O	15.9994	14.90335		30.10%		2.01968	
Fe	55.8470	52.02116		32.10%		0.61706	
Si	28.0855	26.16148		15.10%		0.57718	
Mg	24.3050	22.63997		13.90%		0.61396	
S	32.0600	29.86370		2.90%		0.09711	
Al	26.9815	25.13311		1.40%		0.05570	
Ni	58.7000	54.67871		1.80%		0.03292	
Ca	40.0800	37.33429		1.50%		0.04018	
Totals				98.80%		4.05379	49.5228

From the known total in column 7, ($y = 4.05379$) one calculates a total for "x" in Column 6 ($\ln 2 / \ln 4.05379$ equals 0.495228 CMY or 49,522,800 years).

Reverse engineering a decay rate of **1 eV per 1.595235 MY** produces a total in column 6 matching the **49.5228** in column 8. The resulting rates in the fourth column is the third column times 1.595235 MY and provides the time it takes to double the mass of each element, i.e. oxygen doubles in mass around every 24 MY. This column 4 rate times the column 5 percentage is the "x" rate in column 6.

TABLE 2R - MASS DOUBLING RATES (Energy = Mass) known factors							
	Elemental			Total Earth			
	Atomic Mass	AMU/1.073544	Rate (MY)	Percentages	x (MY) % Rate	y (100 MY) Rate/≅ eV	x (MY) ln 2/ln y
O	15.9994	14.90335	23.7743	30.10%	7.15608	2.01968	
Fe	55.8470	52.02116	82.9860	32.10%	26.63850	0.61706	
Si	28.0855	26.16148	41.7337	15.10%	6.30179	0.57718	
Mg	24.3050	22.63997	36.1161	13.90%	5.02013	0.61396	
S	32.0600	29.86370	47.6396	2.90%	1.38155	0.09711	
Al	26.9815	25.13311	40.0932	1.40%	0.56131	0.05570	
Ni	58.7000	54.67871	87.2254	1.80%	1.57006	0.03292	
Ca	40.0800	37.33429	59.5570	1.50%	0.89335	0.04018	
Totals				98.80%	49.5228	4.05379	49.5228

The energy levels in Table 1 of NBS-34 are shown below for the 8 elements. Multiplying these levels by the energy decay rate **(1 eV / 1.595235 MY)** fixes the time at each level. The shaded areas in Table 3R are the times when no energy converts to mass.

TABLE 3R IONIZATION POTENTIALS of the 8 ELEMENTS

	Energy in eV								Time in MY								
	Ni	Fe	Ca	S	Si	Al	Mg	O	1.595235eV	Ni	Fe	Ca	S	Si	Al	Mg	O
I	7.635	7.870	6.113	10.360	8.151	5.986	7.646	13.618		12.2	12.6	9.8	16.5	13.0	9.5	12.2	21.7
II	18.168	16.180	11.871	23.330	16.345	18.828	15.035	35.116		29.0	25.8	18.9	37.2	26.1	30.0	24.0	56.0
III	34.170	30.651	50.908	34.830	33.492	28.447	80.143	54.934		54.5	48.9	81.2	55.6	53.4	45.4	127.8	87.6
IV	54.900	54.800	67.100	47.300	45.141	119.990	109.240	77.412		87.6	87.4	107.0	75.5	72.0	191.4	174.3	123.5
V	75.500	75.000	84.410	72.680	166.770	153.710	141.260	113.896		120.4	119.6	134.7	115.9	266.0	245.2	225.3	181.7
VI	108.000	99.000	108.780	88.049	205.050	190.470	186.500	138.116		172.3	157.9	173.5	140.5	327.1	303.8	297.5	220.3
VII	133.000	125.000	127.700	280.930	246.520	241.430	224.940	739.315		212.2	199.4	203.7	448.1	393.3	385.1	358.8	1179.4
VIII	162.000	151.060	147.240	328.230	303.170	284.590	265.900	871.387		258.4	241.0	234.9	523.6	483.6	454.0	424.2	1390.1
IX	193.000	235.040	188.540	379.100	351.100	330.210	327.950			307.9	374.9	300.8	604.8	560.1	526.8	523.2	
X	224.500	262.100	211.270	447.090	401.430	398.570	367.530			358.1	418.1	337.0	713.2	640.4	635.8	586.3	
XI	321.200	290.400	591.250	504.780	476.060	442.070	1761.802			512.4	463.3	943.2	805.2	759.4	705.2	2810.5	
XII	352.000	330.800	656.390	564.650	523.500	2085.983	1962.613			561.5	527.7	1047.1	900.7	835.1	3327.6	3130.8	
XIII	384.000	361.000	726.030	651.630	2437.676	2304.080				612.6	575.9	1158.2	1039.5	3888.7	3675.5		
XIV	430.000	392.200	816.610	707.140	2673.108					686.0	625.7	1302.7	1128.1	4264.2			
XV	464.000	457.000	895.120	3223.836						740.2	729.0	1427.9	5142.8				
XVI	499.000	489.500	947.000	3494.099						796.0	780.9	1510.7	5573.9				
XVII	571.000	1266.100	1087.000							910.9	2019.7	1734.0					

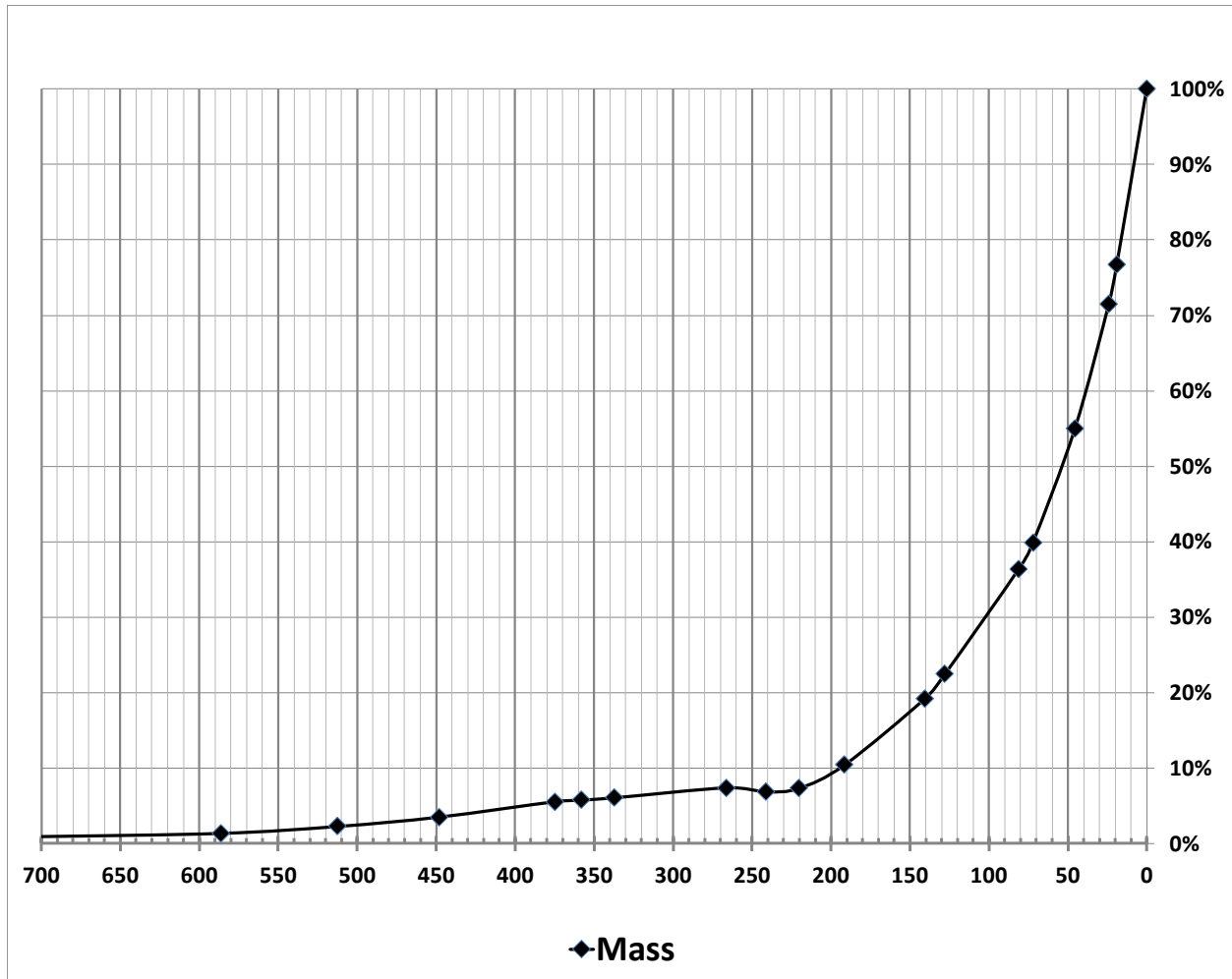
Sequencing the shaded time of the 8 elements forms the first column of New Table 4 and one can use these times to calculate the duration of "t" in CMY (100 MY) in the second column. The present rate from Table 2R starts the "y" column at **4.05379**.

EARTH - NEW TABLE 4 - VARIABLE MASS GROWTH RATES FROM IONIZATIONS of the 8 ELEMENTS										
MY	Duration t (CMY)	% total earth	Element	Rate/ \approx eV	y	Mass/y ^t (kg)	% of Current	x (ln 2/ln y) MY	% growing	% heating
0	0.189	98.8%	0	0	4.05379	5.98000E+24	100.00%	49.5228	98.8%	0.0%
18.9	0.051	-1.5%	-Ca	-0.04018	4.01361	4.59003E+24	76.76%	49.8778	97.3%	1.5%
24.0	0.214	-13.9%	-Mg	-0.61396	3.39965	4.27597E+24	71.50%	56.6448	83.4%	15.4%
45.4	0.266	-1.4%	-Al	-0.05570	3.34395	3.29085E+24	55.03%	57.4200	82.0%	16.8%
72.0	0.092	-15.1%	-Si	-0.57718	2.76677	2.38701E+24	39.92%	68.1106	66.9%	31.9%
81.2	0.466	1.5%	+Ca	0.04018	2.80695	2.17367E+24	36.35%	67.1591	68.4%	30.4%
127.8	0.127	13.9%	+Mg	0.61396	3.42091	1.34374E+24	22.47%	56.3578	82.3%	16.5%
140.5	0.509	-2.9%	-S	-0.09710	3.32380	1.14942E+24	19.22%	57.7089	79.4%	19.4%
191.4	0.289	1.4%	+Al	0.05570	3.37950	6.23689E+23	10.43%	56.9213	80.8%	18.0%
220.3	0.207	-30.1%	-O x 100%	-2.01968	1.35982	4.38662E+23	7.34%	225.5210	50.7%	48.1%
241.0	0.250	-32.1%	-Fe	-0.61707	0.74275	4.11622E+23	6.88%	-233.0739	18.6%	80.2%
266.0	0.710	15.1%	+Si	0.57718	1.31994	4.43392E+23	7.41%	249.7078	33.7%	65.1%
337.0	0.211	-1.5%	-Ca	-0.04018	1.27976	3.64079E+23	6.09%	281.0025	32.2%	66.6%
358.1	0.168	-1.8%	-Ni	-0.03292	1.24684	3.45614E+23	5.78%	314.1964	30.4%	68.4%
374.9	0.732	32.1%	+Fe	0.61707	1.86391	3.33039E+23	5.57%	111.3177	62.5%	36.3%
448.1	0.643	2.9%	+S	0.09710	1.96101	2.11128E+23	3.53%	102.9233	65.4%	33.4%
512.4	0.739	1.8%	+Ni	0.03292	1.99393	1.36924E+23	2.29%	100.4405	67.2%	31.6%
586.3	1.189	-13.9%	-Mg	-0.61396	1.37997	8.22233E+22	1.37%	215.2211	53.3%	45.5%
705.2	0.757	-1.4%	-Al	-0.05570	1.32427	5.60647E+22	0.94%	246.7924	51.9%	46.9%
780.9	0.542	-32.1%	-Fe	-0.61707	0.70720	4.53266E+22	0.76%	-200.0770	19.8%	79.0%

A new column, ln 2/ln y, indicates Earth's mass doubling rate in MY and the last two columns indicates the active mass growing and heating percentages for the times specified in the first column. The highlighted time, beginning when the rate for oxygen (-2.01968) is entered, are skewed and indicate all the corresponding "y" values are also skewed. The chart indicates that iron is growing between 241.0 MYA and 220.3 MYA while its graph below shows it declining and losing mass. A reason for this anomaly may involve an unknown ... how much of the 30.1% oxygen on Earth became water ~1,400 MYA? Or possibly because water having a density of one, neither adds to nor subtracts from or contributes to the physical expansion of the planet. Upon growing, it merely fills holes and cracks and lies on or near the surface. An unusual build up of density before a severe split in the cracks is also a possibility.

The chart also indicates the Earth's radius would double ~700 MYA (100% mass/64= 1.56%)... a physical impossibility. Some of the elements just started to grow prior to that time (from 19.8% to 51.9%) and it takes an 8-fold increase of the mass (or volume) to obtain a single doubling of the radius.

GRAPH OF NEW TABLE 4



To normalize the x value (ln 2/ln y) several percentages of the oxygen rate at line 10 were tested and summarized as follows:

% Oxygen (line 10)	1.56% present mass \cong 25% present radius	x at 243 MYA (line 11)
1.00 x 2.01968 = 2.01968	~700 MYA	-200.xxx
0.85 x 2.01968 = 1.71673	~510 MYA	6744.xxx
0.80 x 2.01968 = 1.61574	~490 MYA	656.xxx
0.75 x 2.01968 = 1.51476	~470 MYA	360.xxx
0.70 x 2.01968 = 1.41378	~450 MYA	254.xxx
0.60 x 2.01968 = 1.21181	~430 MYA	166.xxx

From the above, it appears the first doubling of the radius occurred between 430 MYA and 490 MYA but more likely between 455 MYA and 490 MYA since sulfur (2.9%) stopped growing 448.16 MYA. Table 4R utilizes 75% oxygen. Any such change in oxygen percentage only

affects the data for times older than 220.3 MYA and the radius doubling ~175 MYA would remain the same.

EARTH - TABLE 4R - VARIABLE MASS GROWTH RATES FROM IONIZATIONS of the 8 ELEMENTS										
MY	Duration t (CMY)	% total earth	Element	Rate/=eV	y	Mass/y ^t (kg)	% of Current	x (ln 2/ln y) MY	% growing	% heating
0	0.189	98.8%	0	0	4.05379	5.98000E+24	100.00%	49.5228	98.8%	0.0%
18.9	0.051	-1.5%	-Ca	-0.04018	4.01361	4.59003E+24	76.76%	49.8778	97.3%	1.5%
24.0	0.214	-13.9%	-Mg	-0.61396	3.39965	4.27597E+24	71.50%	56.6448	83.4%	15.4%
45.4	0.266	-1.4%	-Al	-0.05570	3.34395	3.29085E+24	55.03%	57.4200	82.0%	16.8%
72.0	0.092	-15.1%	-Si	-0.57718	2.76677	2.38701E+24	39.92%	68.1106	66.9%	31.9%
81.2	0.466	1.5%	+Ca	0.04018	2.80695	2.17367E+24	36.35%	67.1591	68.4%	30.4%
127.8	0.127	13.9%	+Mg	0.61396	3.42091	1.34374E+24	22.47%	56.3578	82.3%	16.5%
140.5	0.509	-2.9%	-S	-0.09710	3.32380	1.14942E+24	19.22%	57.7089	79.4%	19.4%
191.4	0.289	1.4%	+Al	0.05570	3.37950	6.23689E+23	10.43%	56.9213	80.8%	18.0%
220.3	0.207	-30.1%	-O x 75%	-1.51476	1.86474	4.38662E+23	7.34%	111.2377	50.7%	48.1%
241.0	0.250	-32.1%	-Fe	-0.61707	1.24767	3.85577E+23	6.45%	313.2457	18.6%	80.2%
266.0	0.710	15.1%	+Si	0.57718	1.82486	3.64827E+23	6.10%	115.2362	33.7%	65.1%
337.0	0.211	-1.5%	-Ca	-0.04018	1.78468	2.38020E+23	3.98%	119.6656	32.2%	66.6%
358.1	0.168	-1.8%	-Ni	-0.03292	1.75176	2.10637E+23	3.52%	123.6396	30.4%	68.4%
374.9	0.732	32.1%	+Fe	0.61707	2.36883	1.91704E+23	3.21%	80.3747	62.5%	36.3%
448.1	0.643	2.9%	+S	0.09710	2.46593	1.01970E+23	1.71%	76.7971	65.4%	33.4%
512.4	0.739	1.8%	+Ni	0.03292	2.49885	5.70729E+22	0.95%	75.6851	67.2%	31.6%
586.3	1.189	-13.9%	-Mg	-0.61396	1.88489	2.90068E+22	0.49%	109.3516	53.3%	45.5%
705.2	0.757	-1.4%	-Al	-0.05570	1.82919	1.36516E+22	0.23%	114.7834	51.9%	46.9%
780.9	0.542	-32.1%	-Fe	-0.61707	1.21212	8.64279E+21	0.14%	360.3164	19.8%	79.0%

The red highlight in the last column (% heating) indicates an extensive heating period between 358.1 MYA and 241.0 MYA that materially intensified for the 25 MY period between 266.0 MYA and 241.0 MYA. In the light of today's global heating debate where a few degrees rise in temperature in a few decades (or centuries) is considered highly detrimental to life by many, envision 25 million years of increasing heat with very small incremental increases in temperatures (permitting some adaptation) and its affect upon all life on the planet. Coincidentally, the intensified heating culminated near the Permian-Triassic boundary (250 MYA); the geological time of the world's greatest extinction. Consequently, geologists may want to ponder excessive heating as a cause for that event.

The initial breakup of the continents likely started between 600 and 700 MYA, meaning the older mass data is probably less accurate. The unknown density due to compression before the breakup should have been much greater than after the mantle and crust was severely broken and the planet's integrity forever weakened to the point where the volume could expand more freely at the cracks with less compression. After the severe initial breakup, the Earth's density remained reasonably constant with very small incremental gravity/compression increases. As the radius increased, the cracks lengthened and widened becoming the continental shelves. Some of these shelves later cracked and opened to accommodate the floor of the oceans.

EARTH TABLE 5R -MASS FROM TABLE 4R WITH ~100 YEAR LAGGING RADIUS													
MY	X	Element	Rate/eV	(49.5228 MY)			(49.5229 MY)			Density (g/cc)	Current Density	Gravity (m/sec ²)	Current Gravity
				Rate of Growth	Mass (kg)	Current Mass	Rate of Growth	Radius (km)	Current Radius				
0	0.189	0	0	4.05379	5.98E+24	100.00%	4.05378	6378.96	100.00%	5.5000	100.00%	9.80	100.00%
18.9	0.051	-Ca	-0.04018	4.01361	4.59003E+24	76.76%	4.01360	5840.56	91.56%	5.5000	100.00%	8.97	91.56%
24.0	0.214	-Mg	-0.61396	3.39965	4.27597E+24	71.50%	3.39964	5704.20	89.42%	5.5000	100.00%	8.77	89.42%
45.4	0.266	-Al	-0.05570	3.34395	3.29085E+24	55.03%	3.34394	5227.40	81.95%	5.5000	100.00%	8.03	81.95%
72.0	0.092	-Si	-0.57718	2.76677	2.38701E+24	39.92%	2.76675	4696.79	73.63%	5.5000	100.00%	7.22	73.63%
81.2	0.466	+Ca	0.04018	2.80695	2.17367E+24	36.35%	2.80693	4552.47	71.37%	5.5000	100.00%	7.00	71.37%
127.8	0.127	+Mg	0.61396	3.42091	1.34374E+24	22.47%	3.42089	3878.13	60.80%	5.5000	100.00%	5.96	60.80%
140.5	0.509	-S	-0.09710	3.32380	1.14942E+24	19.22%	3.32379	3681.38	57.71%	5.5000	100.00%	5.66	57.71%
191.4	0.289	+Al	0.05570	3.37950	6.23689E+23	10.43%	3.37949	3002.66	47.07%	5.5000	100.00%	4.61	47.07%
220.3	0.207	-O x 75%	-1.51476	1.86474	4.38662E+23	7.34%	1.86473	2670.30	41.86%	5.5000	100.00%	4.10	41.86%
241.0	0.250	-Fe	-0.61707	1.24767	3.85577E+23	6.45%	1.24766	2557.93	40.10%	5.4999	100.00%	3.93	40.10%
266.0	0.710	+Si	0.57718	1.82486	3.64827E+23	6.10%	1.82484	2511.19	39.37%	5.4999	100.00%	3.86	39.37%
337.0	0.211	-Ca	-0.04018	1.78468	2.3802E+23	3.98%	1.78466	2177.99	34.14%	5.4999	100.00%	3.35	34.14%
358.1	0.168	-Ni	-0.03292	1.75176	2.10637E+23	3.52%	1.75174	2091.05	32.78%	5.4999	100.00%	3.21	32.78%
374.9	0.732	+Fe	0.61707	2.36883	1.91704E+23	3.21%	2.36881	2026.42	31.77%	5.4999	100.00%	3.11	31.77%
448.1	0.643	+S	0.09710	2.46593	1.0197E+23	1.71%	2.46592	1641.89	25.74%	5.4999	100.00%	2.52	25.74%
512.4	0.739	+Ni	0.03292	2.49885	5.70729E+22	0.95%	2.49884	1353.10	21.21%	5.4998	100.00%	2.08	21.21%
586.3	1.189	-Mg	-0.61396	1.88489	2.90068E+22	0.49%	1.88488	1079.83	16.93%	5.4998	100.00%	1.66	16.93%
705.2	0.757	-Al	-0.05570	1.82919	1.36516E+22	0.23%	1.82918	839.94	13.17%	5.4998	100.00%	1.29	13.17%
780.9	0.542	-Fe	-0.61707	1.21212	8.64279E+21	0.14%	1.21211	721.23	11.31%	5.4997	100.00%	1.11	11.31%

In Table 5R, a shortcut to the procedure outlined in the IGE Lagging Radius paper is used. To obtain a 100-year lag, one merely adds 100 to the total "x" time from the sixth column of Table 2R (49,522,800 years + 100 years = 49,522,900 years). The present rate of growth for the radius in Table 5R is then **4.05378** ($0.4952290\sqrt{2}$).

The left half of Table 5R is essentially Table 4R. The right half results when the increasing radius (volume) follows the increasing mass by 100 years.

The above chart and its graph below indicate a surface gravity and a radius of 75% of present around 75 MYA, 50% around 175 MYA, and 25% around 470 MYA. It also indicates no essential change in density (mass/volume) with a 100-year lag of the radius.

The table also indicates the phenomenal amount of new mass added each year during the past 18.9 MY equaling $\sim 7.354 \text{ E}+16 \text{ kg/yr}$ $[(5.98 \text{ E}+24 - 4.59003 \text{ E}+24) / 18.9 \text{ E}+6]$ with an average increase in radius of about 2.85 cm/yr $[(6378.16 - 5840.56) / 18.9 \text{ E}+6 = 2.8486 \text{ E}-5 \text{ km/yr}]$.

In perspective, a mass of $7.354 \text{ E}+16 \text{ kg/yr}$ translates to adding about 2.5 million tons of "new" mass per second.

FIGURE 4R - GRAPH OF TABLE 5R

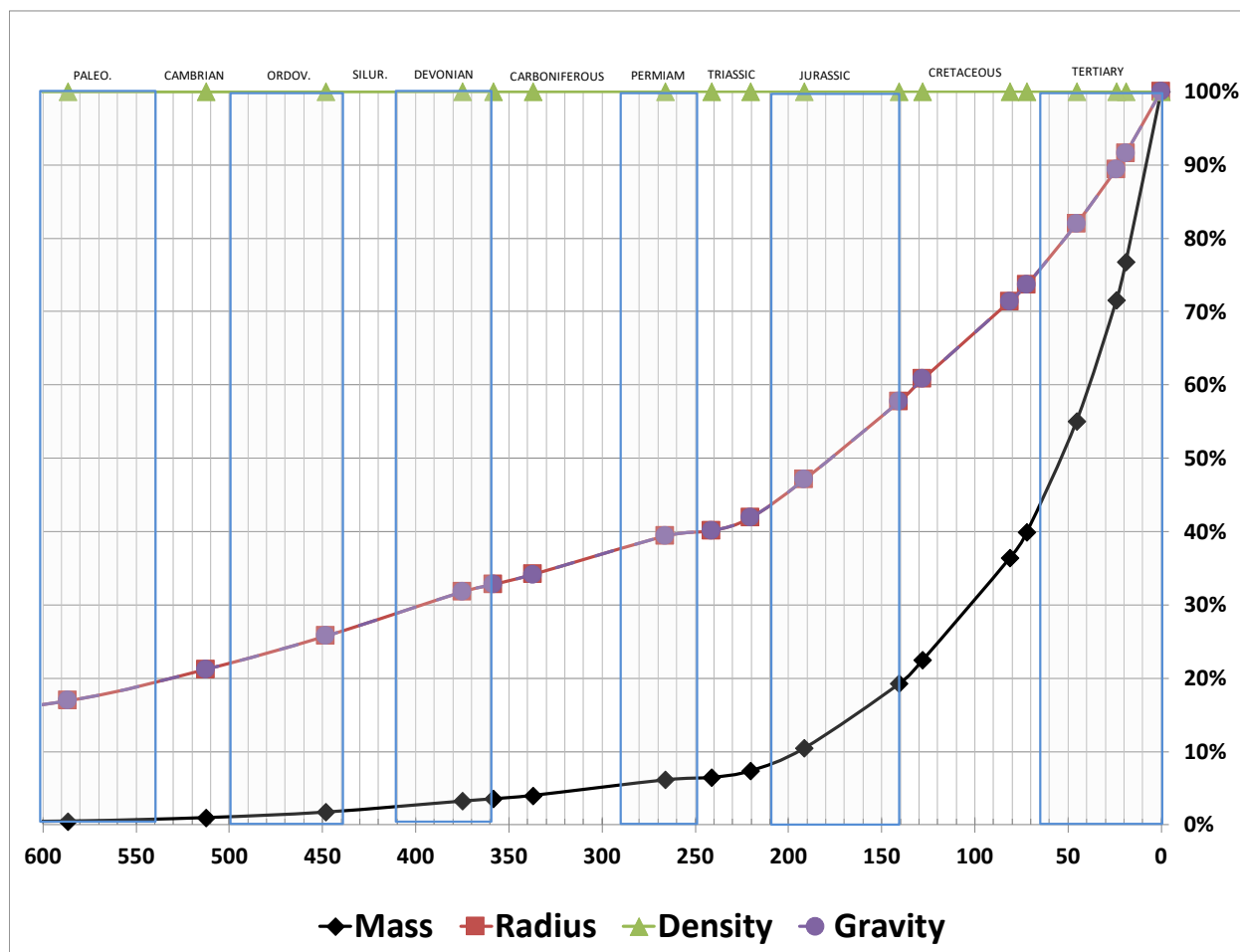
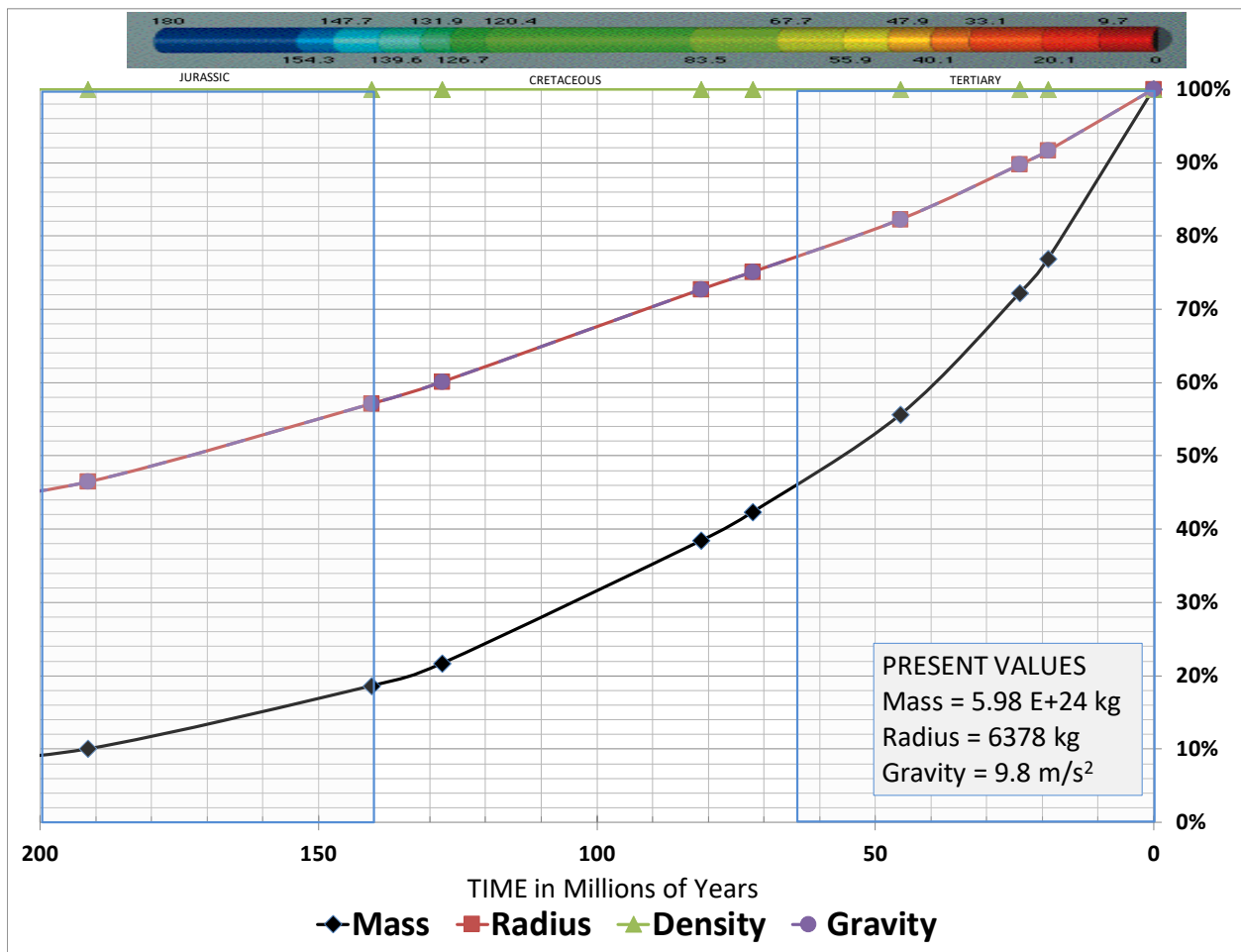


Figure 3R correlates the past 200 MY with the NOAA Age of the Ocean Floor map. Adding the radius/gravity curves now allows one to estimate the size and surface gravity as well as the mass in accord with the NOAA map colors. The present values are:

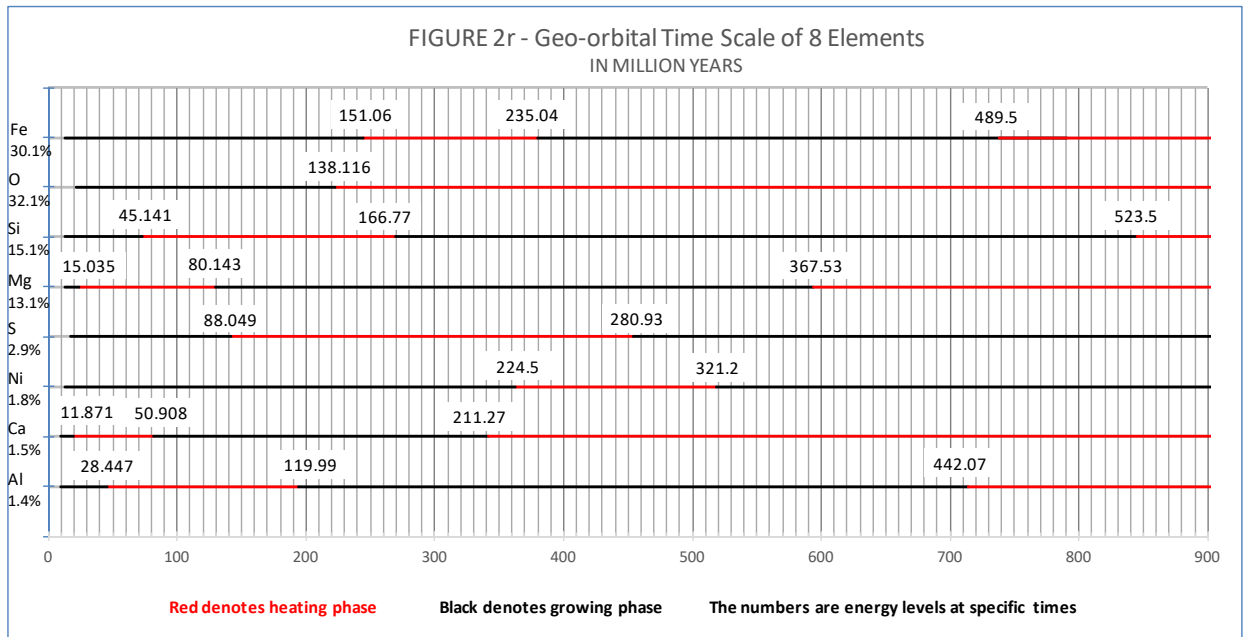
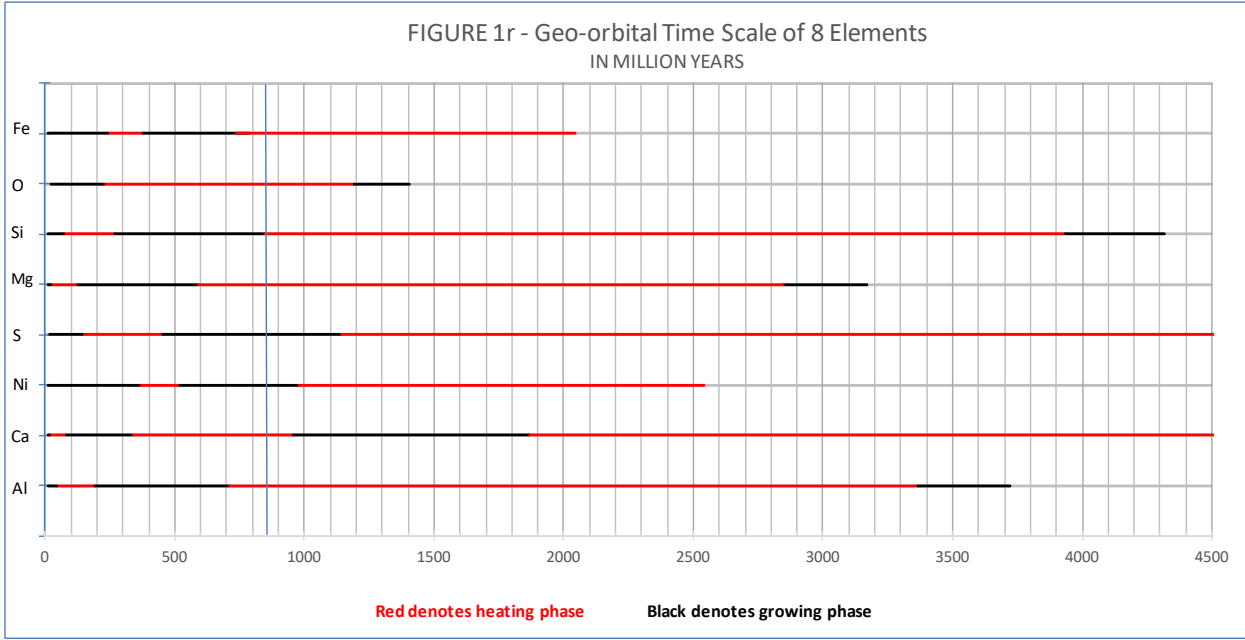
Mass = 5.98 E+24 kg Radius = 6378.96 km Gravity = 9.8 m/s² Density = 5.5 g/cc

Figure 3r - Mass, Radius, Gravity Correlated with NOAA Age of the Ocean Floor Map*



* <http://www.ngdc.noaa.gov/mgg/image/crustageposter.gif>

When the time of the ionization energy levels (from Table 3R) are plotted as shown in Figures 1r and 2r, it is obvious the planet was primarily heating for the first 3,000-3,500 million years of its existence. Temperatures during that period were sufficient to melt the iron that gravitated to the core while the lighter elements rose to form the molten crust. After water arrived as a cooling agent ~ 1400 MYA, the molten crustal rock solidified. Unfortunately, this limits radiometric dating of “ancient rock” to the time of solidification. The time scale charts also indicates very little change in the size of the planet prior to ~700-800 MYA; the time when exponential growth essentially started with iron (31.1%) beginning to grow along with silicon (15.1%).



Earth's internal heat from radioactive decay is an addition to the heat from elemental decay.

COMMENTS AND CONCLUSIONS

Science is about numbers. The underlying data and methodology of an Ionic Growing Earth demonstrates the same eight basic elements that started the planet have been growing (and heating) and expanding Earth's radius in consonance with recorded geology. For most people, growing the elements (atoms) counters an assumed certainty in modern science that essentially states... atoms cannot change size...can never grow larger. Credo quia absurdum...I believe because it is absurd. The entire universe is growing or expanding except the very elemental atoms of which it consists. The doubling procedure herein reveals the opposite and questions this perceived and numerically unproven "certainty".

We are conditioned to believe the Earth formed with its present size; was born warm and was bathing in water. This is what one "sees" and "hears" today and thinks the world was always this way. We believe the impossible size of dinosaurs because we can see the largeness of their fossils, and yes, reduced gravity on a smaller planet would explain some, but not all, of the perceived largeness. We do not believe or even suspect that the elements of those petrified bones and fossils (Ca, Si, Mg, or Fe) could grow. We tend to believe water was always here or imported from space because we do not truly know when hydrogen joined oxygen for the first time to become a molecule of water. Would not the mechanism (ionization?) that produces water be universal and be responsible for the water on comets, asteroids or other planets? Before ionization, the elements were unable to chemically bond and form molecules or compounds. With the ionization potential of an element defined as a measure of its ability to enter into chemical reactions, the timing of those potentials (and limits) as presented herein, tells us when water arrived. The enigma of having so much water on a smaller Earth is easily reconciled when one considers the oxygen in water growing along with the other seven elements.

We believe assumptions and accept them as authoritative. Perhaps we should question our beliefs by questioning the assumptions and follow Professor Samuel Warren Carey's advice ...
"We are blinded by what we think we know, therefore disbelieve if you can."

<http://ionic-expanding-earth.Weebly.com>

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