The Committed Force or the Fifth Force of Nature in Geophysics

By: Babak Dion (Panahian-Jand), M.D.

Canadian Iranian Amateur Physicist, Toronto, Canada

Why do earthquakes and volcanoes happen on Earth? The answer is internal geo-forces, but I think these geo-forces arise from a lack of equilibrium in matter properties which raises the idea of the fifth force of nature. A deviation of average matter density from a designated density on the Earth surface creates a fifth force, which I have named this fifth force "The Committed Force". I personally believe in "determinism", but of course set aside religious determinism! I believe in mathematical and physical determinism which I have a new name for it, and it's called a "Mathematical and Physical Commitment". The Committed Force is responsible for earthquakes and volcanoes.

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The Commitment Factor and the Committed Force

If all planets and stars which are spheres are simply created from an angular expansion of cosmic strings around one end, then a homogenous string would give rise to a planet which has a special order and properties in its matter density from surface to center of the planet. Matter properties translate to a combination of density, pressure, and temperature. Let's do calculation for our planet the "Earth". Consider a homogenous cosmic string with a mass equal to Earth mass and length of Earth Radius. Angular expansion of this string will result in the following values.

$M = 5.98 \times 10^{24}$ kg

$R = 6370$ km

Mass of a segment of string is: $m_i = \dfrac{M}{n}$ $\qquad n = \dfrac{R}{L_{Pl}}$

n = number of segments each with a length of a superstring

L_{Pl} = superstring length or Planck Length

Average density of Earth: $\qquad\qquad \rho_{average} = \dfrac{M}{\dfrac{4}{3}\pi R^3}$

Density of matter at earth surface with a minimal Planck Length thickness:

$$\rho_{surface} = \frac{m_i}{4\pi R^2 L_{Pl}}$$

This is defined as the committed density of matter at earth surface and it is physically deterministic :

$$\rho_{surface} = \frac{\rho_{average}}{3} = \frac{5400}{3} = 1800 \left(\frac{kg}{m^3}\right)$$

Earth surface is covered with %30 of land made of granite and basalt rocks with average density of 2800 kg/m^3 and %70 ocean with a density of water or a little more than 1000 kg/m^3.

Average actual density at surface:

$$\rho_{actual} = \frac{((70\times 1000) + (30\times 2800))}{100} = 1540 \left(kg/m^3\right)$$

Here I define the commitment factor "K" as a deviation from committed density:

$$K = \frac{\rho_{surface} - \rho_{actual}}{\rho_{surface}} = \frac{1800 - 1540}{1800} = \frac{260}{1800} = 0.144$$

The committed force "F$_K$" is derived as:

$$F_K = Ad\rho gK$$

A= Area of Earth surface piece
d= depth
ρ= density of matter at A
g= 9.8 m/s^2
K=commitment factor = 0.144

Approximately %14.4 of any objects gravitational pull is that objects fifth or committed force on the planet Earth. A positive K demands quakes and volcanoes happening on that planet.

For Mars and the Moon, "K" comes out to be a negative value, so Moonquakes and Mars quakes happen very rarely.

The End