Re: The Moon, Pangea and Drake's Equation

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- *From*: Agent Smith <agent−smith@xxxxxxxxxxxxxxxxxxxxxxxxxx>
- *Date*: Sun, 02 Mar 2008 16:21:31 GMT

jaunty.akhenaten@xxxxxxxxx wrote in
news:c45a2171−26d2−4aa7−bfee−6af07dc2603d@xxxxxxxxxxxxxxxxxxxxxxxxxxxx:

> This is my idea for very much simplified model of Earth's continental timeline: Picture an undisturbed pail of water, then drop a rock into it. Water splashes out, and ripples continue to form patterns on the surface over a period of time. In 3 dimensions, on a ball of freestanding matter, the shifting and twisting between sea and continental landmasses may be somewhat analogous to the wave patterns in a closed system like a water pail.

You'll need to keep spherical coordinates, and account for the changing viscosities and solidities of the crust and mantle, etc. There might be waves, but you'll need a model to show it.

> Also, when referring to axial tilt, we should never leave out the additional phenomenon of true polar wander.

Have you got a link to a reliable source, describing this?

> Agent Smith wrote:
>
> > I've always been fascinated by the gross planetary dipole antisymmetry associated with the supercontinent Pangea, and wondered whether it was the other half of the dipole left behind when the moon separated from the earth. However, Pangea only dates to 225 million years ago, while the moon was created about 3.5 billion years ago. This leaves unaccounted for the entire period of time between those two dates.
> >
> > Of course, the earth wasn't static during that time, which raises the question of what happened to Pangea before 225 million years ago? Were there many continents that coalesced into Pangea or just one large one that drifted around for 3.25 billion years? When did it

appear and what was there before it?

The Drake Equation has a parameter called fl, which is the probability that any given planet harbors life. It seems to me that we can try to write an expression for fl that breaks down Drake's problem into another series of probabilities for more specific parameters that affect the occurrence of life. It is a multiplicative series of whatever parameters require any planet to fall with a band around the parameters that our earth has. Some of those important parameters would be the sun's habitable band, parameters of the moon, the tilt of the earth's axis, and the surface proportions of water and land. I guess that the density and O/N proportion in the atmosphere must also be accounted for, but that doesn't seem like a probabilistic question to me.

Thus Drake's fl has the terms fh, ft, fm, and fco, where fh corresponds to the habitable band, fm embodies all the necessary lunar parameters, ft the tilt of the axis and fco the continent−to−ocean ratio on the surface. That's where Pangea comes in. My improvement to Drake's Equation is then fl~fh*ft*fm*fco, where the tilde is read "scales as," and implies a linear scaling. Some people use a symbol very much like the Greek letter alpha for that, but that's not on my keyboard. I could also write this as an equation fl=ff*fh*ft*fm*fco, where ff is the fudge factor that accounts for any parameters that I've forgotten. If nobody can think of anything I've left out, then ff=1.

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