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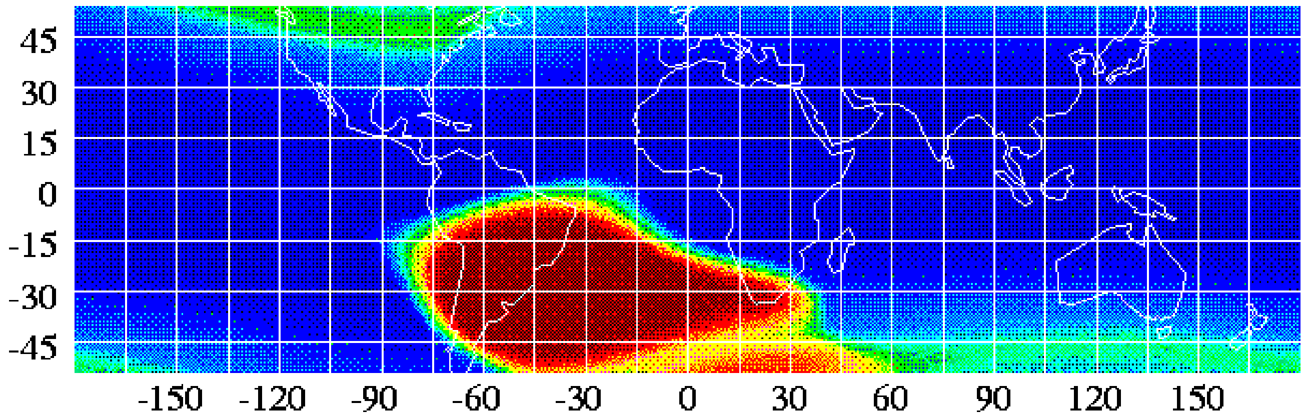
The SOUTH ATLANTIC ANOMALY
and the charge field



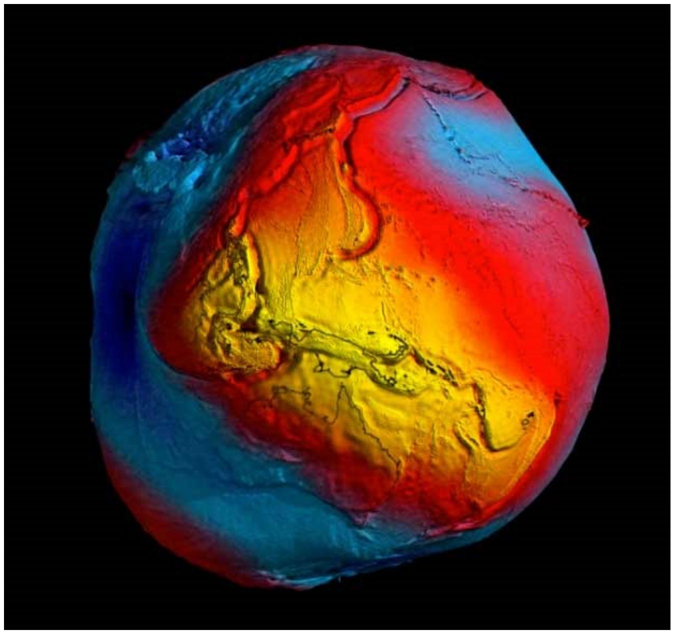
by Miles Mathis

The South Atlantic Anomaly, hereafter just SAA, is an anomaly in the inner Van Allen radiation belts. It also corresponds to a low in the Earth's magnetic field. It is said to be caused by the non-concentricity of the magnetic pole and the spin pole. That is another way of saying that the poles don't align. The SAA is also drifting very slowly, and this is said to be at the rate the core drifts from the crust. I will show that both these explanations are wrong.

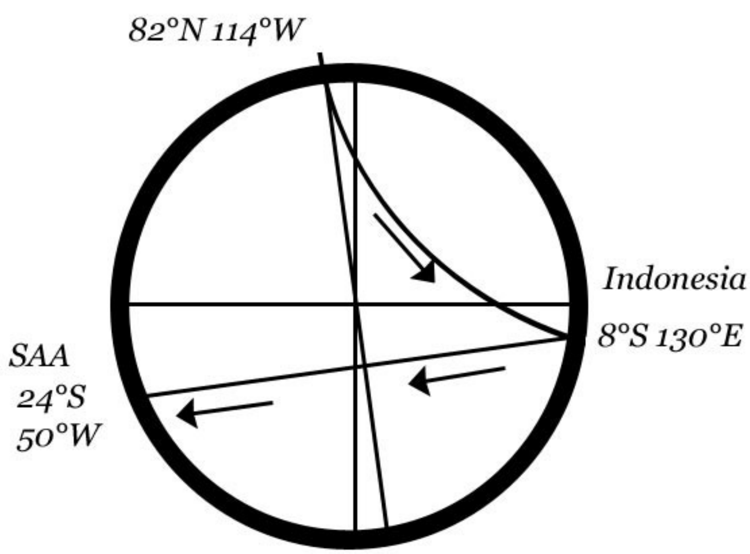
Concerning the first, we will see that the angle of the magnetic pole is important, but not in the way the current model thinks. As usual, the current model either dodges the mechanics of exactly how one angle causes another, or they shunt you off into some endless equations that make you wish you never asked. As soon as they start talking about dynamos in the core, I know they don't have a real answer. I will show the answer is much simpler than we have been taught.

You might think that since the SAA is centered nearly on the Tropic of Capricorn, it might have more to do with the tilt of the Earth than with the tilt of the magnetic field. But I will show that it isn't the tilt of the Earth that causes the SAA. That turns out to be a dead-end clue.

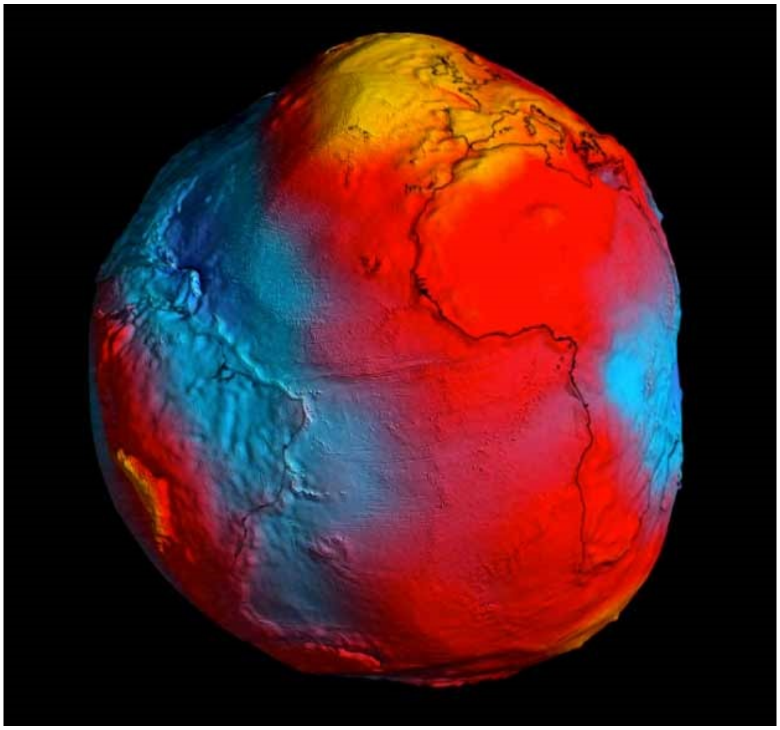
The thing that allowed me to solve this is that I noticed that this anomaly is about 180^{o} in longitude from the gravitational anomaly discovered by GOCE in the past year. GOCE is the European gravity satellite.



It is doubtful anyone else has noticed this. I could see this, of course, since I just published a paper on GOCE, analyzing the models. In that paper I showed that this yellow gravitational high in Indonesia was caused by dense tectonic plates under this area, blocking charge. But we now see that the charge is not just blocked. It is *reflected*.



That is, the charge enters at the poles, in this case the north pole. Charge is emitted near the equator, but in this case it gets partially blocked by dense tectonic plates under Indonesia, which reflect it back through the Earth, as in the diagram. This should create a gravitational low there (at SAA), and the GOCE model confirms that also:



As you see, we have a blue patch centered over Rio de Janeiro. Blue models a gravitational low. Check that against the diagram under title. We have a match, since the South Atlantic Anomaly is also centered over Rio.

If you haven't read my GOCE paper or my Unified Field papers, you won't understand why there is a gravitational low there, so I will quickly gloss it. The Unified Field unifies solo gravity and charge. The two together are what we now call gravity. Solo gravity still points in, charge points out in the field of the Earth. Therefore, if you increase local charge, as in this reflection, you get a UF reduction. What we call gravity will decrease. And the mechanism is simple: the photons come up from under you, hit your feet, and thereby dampen the gravity effect. You are being partially levitated by charge right now. If this sounds like a wild assertion, you should know that I have shown where the charge field exists in the equations of Newton, Coulomb, and Lagrange. I have pulled apart the current field math, including the Lagrangian, showing exactly where the charge field is in the variables.

So we already have a model of the fundamental mechanism of the SAA. Now let me answer some questions, to fill it out. I will be asked why the SAA shape in the diagram under title doesn't match the shape of this blue patch from GOCE. Well, we are told that the SAA is measured at 560km up in the atmosphere. The diagram is a model at that altitude. This GOCE model is modeled nearer the surface, the data being taken at 250 km—less than half the altitude of SAA. In going from one altitude to the other, the blue patch does two things: 1) It spreads, due to surface area dissipation of the field. Any field emitted by a sphere will do the same thing. 2) It gets blown *forward* by the atmospheric field. New charge interacts with existing charge, and gets blown forward, as by a wind.

The Earth is spinning west to east, so the normal *molecular* wind would tend to create a tail pointing west. But the charge wind doesn't work like that. Unlike the more normal wind that we feel on our faces, the charge wind moves with the spin of the Earth. Due to drag, the normal wind would tend to blow to the west, ignoring all other factors than spin. But the charge wind blows east because the photons themselves are moving east. And because they are moving faster than photons in the Earth, they create a tail that points east. They don't create a drag tail, they create a forward tail.

I will told, “Wait, even photons have to feel drag. They are physical, at least according to your theory. They can't dodge the atmosphere altogether. I don't see how they can be moving so fast to the east.” Think of it like this: almost all charge in the atmosphere comes from being recycled by the Earth. Most charge is coming up, not going down, even taking into account heat and visible light from the Sun. As this charge travels up through the Earth, it suffers collisions with matter, giving it a tangential vector as well as a radial vector. While in the Earth, both vectors are damped. As a sum, light travels slower through Earth than through atmosphere, due to density. But as soon as the charge field clears the surface of the Earth, both vectors increase. So any tangential motion the charge field has will increase as the field rises above the surface. For this reason, the field above the Earth will appear to be spinning faster than the field in the Earth, *in the same direction as the Earth*. It won't really be “spinning”, since the photons will not be orbiting the Earth. They are traveling too fast for that. But the increased tangential vector will act the same: it will create a tail that points forward instead of back. That explains the tail in the diagram under title.

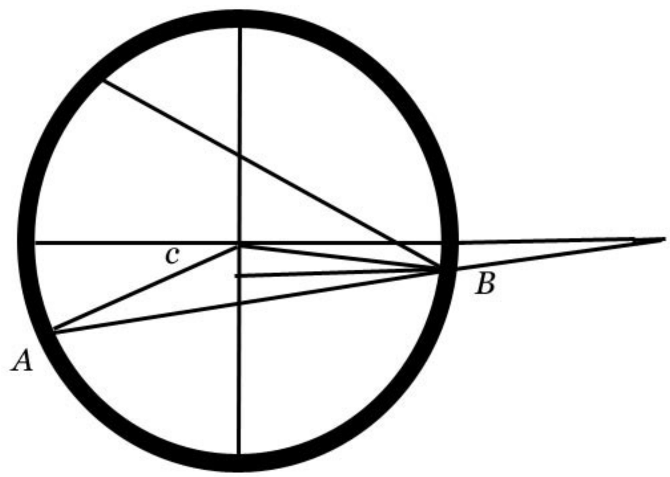
This also explains why the reflection from Indonesia doesn't interfere with the yellow high in the GOCE model over Chile. The red blob in the diagram under title would appear at first to contradict this yellow high from GOCE. But it doesn't because the red blob is *above* South America. If we reverse time, and take the data from GOCE backwards down to the surface, the red blob gets smaller. It doesn't interfere with the model from GOCE. We can accept both models at the same time.

The next question concerns my own diagram. Why have I drawn a curve? And how do we figure the reflection angle? I have just drawn lines to and from the points I need, without any math or theory to explain it. Well, the line from north pole to Indonesia is a curve because that is how the emission would work inside a gyroscope. I am just obeying known laws of angular momentum. It is a sort of interior Coriolis Effect, where the nearer you are to the equator, the greater the outward forces are (due to the centrifugal effect, you see). The only way charge coming in at the poles would not be drawn to the equator is if each photon stayed right on the axis line. In that case, the photon would go straight through the Earth on the axis line, and I imagine that does happen. But any photon that strays from the axis line will feel a tug sideways, due to the spin, and the further into the Earth the photon travels, the greater the tug. Just inside the pole, it will feel the least tug, but in the plane of the equator it will feel the greatest tug. Hence the curve. I should think that is the least difficult thing to understand.

But why draw the curve ending at Indonesia? Can't charge come out anywhere? Yes, it is heaviest at the equator, but it can be emitted anywhere. I draw the curve ending at Indonesia simply because that is the point of reflection. It is the area we are interested in. I am not implying that charge must go there, or that the heaviest charge goes there. I am just diagramming the charge that *does* go there. So that is also pretty straightforward.

The biggest problem is the angle of reflection. What is it, and why is it that number instead of any other. Well, I think we can see why the reflection would be about 180^o through the Earth, so we will look only at the latitude angle, at first. It goes from about 8^{o}S to about 24^{o}S. I could do a lot of fancy math, but I will do the shortcut instead, as usual. To start with, I encourage you to study my diagram above, which I have made as accurate as I could. Just from a glance, you can see that the reflection might work. It looks right, and that is not unimportant. It is proof of nothing, true, but it is a good place to start. Now, if the curve ended at the equator, the incoming angle would be zero. We assume the curve would be completely flat, like a hyperbola hitting an x-axis. But because we are 8^o S, and because the magnetic pole is also 8° past the line, the incoming angle is 16° (from the radial line). Due to the rules of reflection, the outgoing angle is also 16°, which gives us a total angle of 32° at point *B*. This causes the reflection to hit point *A* with an angle at *c* of about 24° S.

Now, I admit that I chose the numbers 8° and 24° to simplify this math. It is difficult to tell from the models exactly what the latitudes are, and if I chose other numbers than 8° and 24°, I would have to do a lot of difficult trigonometry. I prefer not to bother with that in a theoretical paper like this. The diagram below shows you the method, and shows why I chose the numbers I did. If someone wants to do the full math, that is fine by me.

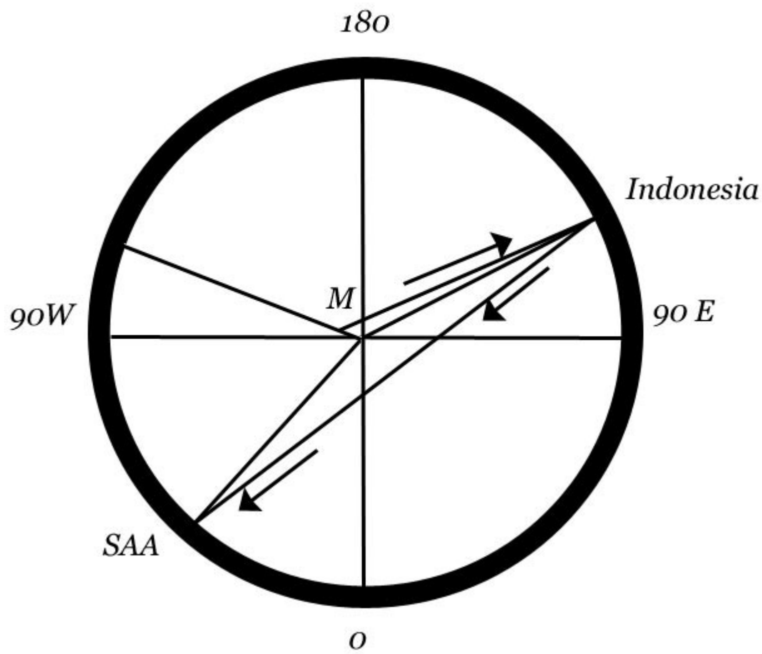


Now we just have to explain the magnetic low. Why would we have a magnetic low with a gravitational low? We should have a charge high, since it is charge that is being reflected. Shouldn't we also have a magnetic high? No, *because the reflection also changes the photon spin direction*. In other words, it will turn photons into anti-photons, or the reverse.

Here is how it normally works, without reflection: As photons move through the Earth, they suffer many collisions, but most of these collisions are deflections, not reflections. In other words, the angles are more than 90 degrees. Some individual photons suffer reflections, of course, because anything that can happen will happen, with photons. But in general we don't see large-scale reflections in the recycling of the charge field. We sum all the *deflections* to get the curve from pole to equator. Reflections are a smaller phenomenon, and they are overwhelmed by the summed deflections.

But in the case of this anomaly, we are seeing a large-scale reflection and its outcome. The upside-down photons that are created by the reflection create an upside down magnetic field, which acts just like any other magnetic field until it meets an upside-up field. This happens when the charge goes up and hits the ionosphere and then the Van Allen belt. We get spin cancellations and thereby a **reduced** magnetic field. This reduced magnetic field cannot hold up the Van Allen belt as well, and the belt falls lower. This is why the belt tightens in that area.

Now let us look at the drift of the SAA. We are told that the SAA drifts something less than half a degree per year. That is, it should move all the way around the Earth every 800-1,300 years. You will say, "Good lord, tectonic plates don't move that fast! Your theory is washed up." But it isn't the plates that are moving, it is the north magnetic pole that is moving. We have done some amount of math on the latitude angle, but we haven't looked very closely at the longitude angle. So far, I have just proposed that the SAA was 180° from the reflection point, but that isn't really true. It was only to get you started. Actually, the center of the SAA is nearer 160° from the high in Indonesia. And we have to look at the longitude angle from the pole, which is nowhere near 180°. It is more like 70°. Let us look down from the north axial pole to get a feel for this.



You can see that if you move the north magnetic pole M, keeping the reflection point under Indonesia the same, SAA will move. If you move M north or east, SAA will move to the west. If you move M south and toward Russia, SAA will move east, which is what we are seeing now. However, given the position of the reflection point, there is only so much SAA can move. For instance, no matter where we put M, we cannot put SAA in the same quadrant as Indonesia (assuming M can't move down by the equator).

We also find that the rate of motion of the north magnetic pole matches the rate of motion of SAA. SAA moves .3 to .5 degrees per year. The pole moves up to 1 degree per year, but not all motion of M causes motion of SAA. For instance, if the pole moved from its present location directly toward Indonesia, this motion would cause no change in SAA. Only motion of the pole *lateral* to Indonesia causes motion of SAA. It turns out that the lateral motion of M relative to Indonesia is in the same range as SAA, being about 0 to .6 per year. Again, this is a rough estimate, and I am not going to post the math, since I did it in my head and it isn't important anyway. If someone wants to run all the numbers from the charts, they should be my guest. The important thing is that I have shown the mechanism.

To see how this affects Canada's gravity deficit, you may read my new paper on that.

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