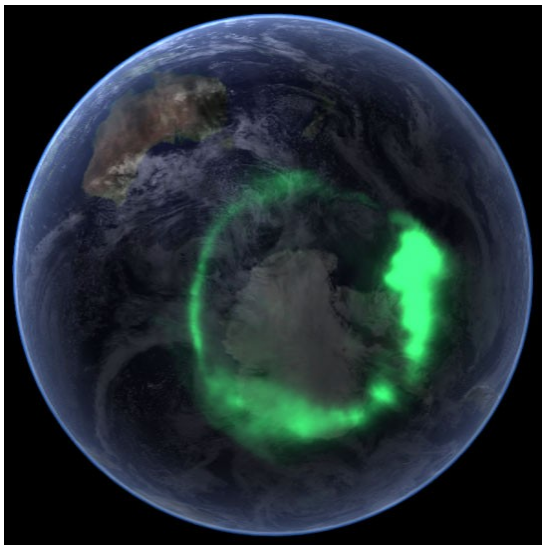
return to updates

The Polar Aurorae



by Miles Mathis

First published March 21, 2014

A reader just sent me some images of the polar aurorae from NASA. These are artist's renderings, I take it, not pictures from space, but either way they give us something to start from. The unanswered question is why these aurorae are positioned in circles about the magnetic poles, rather being at the poles themselves. In this paper we will answer that question, while also answering several other major questions concerning the aurorae.

The current cause of the aurorae is given to the Solar Wind. Although this answer is incorrect, it does point us generally in the right direction. This is obviously an E/M effect of the Earth's field, and I am not here to question that. Nor I am here to question the Sun's role in determining these effects. However, my charge field will allow us to fine-tune the mechanism, discovering many things not previously known.

The mainstream admits its knowledge of the aurorae is very partial. Wikipedia tells us that although the main mechanism is thought to be the Solar Wind, the Solar Wind is mainly positive ions while the aurora is caused mainly by negative ions. We also see aurorae where the Solar Wind has no direct access. As a sample of mainstream theory, we find this:

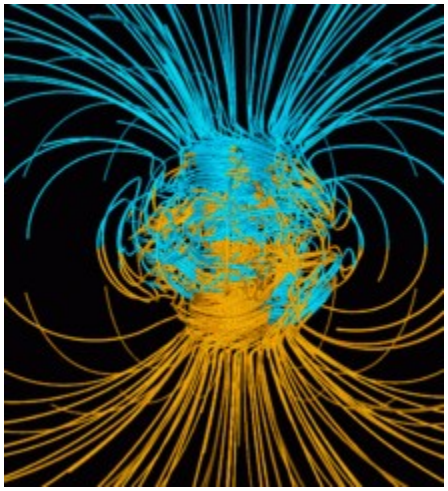
Auroras are associated with the solar wind, a flow of ions continuously flowing outward from the Sun. The Earth's magnetic field traps these particles, many of which travel toward the poles where they are accelerated toward Earth. Collisions between these ions and atmospheric atoms and molecules cause energy releases in the form of auroras appearing in large circles around the poles.

None of that is strictly wrong, but it is vague. Why do ions travel toward the poles? Why do the

collisions only take place in auroral zones? Why are the zones where they are? Etc.

In fact, Kristian Birkeland's theory of auroral production was eventually dismissed because the aurorae were seen not at the poles, but at nearer 15 from the magnetic poles. Unfortunately, the mainstream doesn't tell us how this affects their theory, which also cannot explain this phenomenon. The data disproves parts of Birkeland's theory, that is, but does not prove the mainstream theory—since the mainstream has no theory here. The mainstream doesn't have a good theory for why the aurorae are seen where they are, instead of somewhere else.

Another problem is that although we are told aurorae follow magnetic field lines, they don't.



As you see, geomagnetic lines run vertically, like longitude lines. The aurorae run along latitude lines, being above 60^{o} N and S. There is some confusion on that point, since as you can see, they draw both vertical and horizontal lines there. The vertical ones are at high altitude while the horizontal ones are near the surface. Since the aurorae are in between, it is unclear what the mainstream theory is here. As usual, the mainstream theory is heavy on description of the effect and light on cause of it.

The mainstream says the aurorae follow magnetic fields, but it would be more accurate to say that the magnetic fields they now draw follow the aurorae. The aurorae came first you know, and *then* the mainstream drew the lower magnetic field lines (as above) to follow them. It was another instance of matching the field to data. But the mainstream has no good theory for why these auroral field lines should be running from east to west.

The problem is that, once again, the mainstream doesn't know of the Earth's charge field, or how it is recycled. The Solar Wind is a good pointer to the first cause of aurorae, but it *isn't* the first cause. The first cause is the Sun's *charge* field, which enters the Earth at both poles. Since the Solar Wind travels via the Sun's charge field, we see the link, and see why the mainstream got fooled. And, the ions in the Solar Wind can indeed cause some of the secondary effects here. But the main effect is a charge field effect, one that does not rely on the Solar Wind. It relies on the charge that carries the Solar Wind, but we would see aurorae even if the Solar Wind temporarily lost all its ions. There are enough ions already here to cause the aurorae for years, and the Solar charge field is capable of creating new ions here without any help from Solar ions.

This by itself answers the question above, as to why the effect is near the poles. The ions don't have to travel toward the poles by some mysterious and unnamed cause (having to do with Terrellas, core

theory, or something). The charge field is *already* entering at the poles by a straightforward mechanism, which I have explained in many previous papers. In short, any spinning sphere will create field potentials, with lows at the poles. Any passing field of particles will be drawn to the poles by a simple process, with no mystery. Since charge is real photons, these real particles will be drawn to the poles.

As I have said many times before, the charge field is recycled through the Earth, with charge coming in at the poles and being emitted everywhere else (but heaviest between 30° N and S). What I haven't previously discussed is the effect begged by this recycling: the boundary that must be created between incoming charge and outgoing charge. Obviously, if there is least outgoing charge at the poles proper, and least incoming charge at the equator proper, there must be some latitude in between where incoming and outgoing charge are equal. Some "crossover point" or boundary must be created by this mechanism. Well, that is what we are seeing in the creation of the aurorae. The aurorae inhabit that crossover point. In other words, at the latitude of the aurorae, the same amount of charge is coming down that is going up. The charge going downs spin up the charge going up, and—in the proper place—we get a light show.

You will say, "That doesn't work on a first look, because in that case, the crossover point would just be 45° N and S." No, it wouldn't. My critic is assuming incoming charge and outgoing charge must be in equal amounts, which is true. *But they aren't equally focused.* Incoming charge will be focused at the poles, with that focus depending on the speed of spin. A higher rate of spin will focus the incoming stream more. This higher rate of spin will also focus more outgoing charge near the equator. However, the focus at the pole does not equal the focus at the equator, due to the mass distribution of the sphere. Given a spinning sphere, the equatorial regions are much larger than the polar regions, which will tend to disperse outgoing charge across a greater surface area. Therefore, a first glance would tell that our crossover point must be well above 45°.

Actually, it is a bit more complicated than that, and you have to take several other things into consideration. As the first of these, you may wish to consider the influence of the centrifugal effect. With a sphere spinning about an axis, the force out emanates from the entire axis, not the center. As soon as charge enters a pole, it begins feeling this force pushing it back out. The charge does not have to travel to center to begin feeling it. This is why we get charge emitted everywhere, not just at the equator. Well, if you factor in this motion, it will also drive the crossover point further toward the poles. Although incoming charge has to enter fairly near one pole or the other, outgoing charge can be emitted at any latitude. There is less near the poles, but not zero. You can see how this pushes our boundary toward the poles.

We also have to take spin speed into consideration. At a high enough spin speed, there would be no crossover point at all. The entire charge field would be compressed into a disk, as we see when modeling the proton. All the outgoing charge would be emitted below 30°, and no boundary would be created. But a slow spin speed such as we see with planets and moons tends to disperse emitted charge across the entire sphere, driving the crossover point to higher latitudes. This is what we see on Venus, where a lower spin speed pushes the aurorae closer to the poles.

You will say, "Wait, there are no aurorae on Venus! Venus doesn't even have a magnetic field." Well, I guess you missed this press release from Space.com in 2012, admitting that Venus does have magnetic reconnection and probably has aurorae. I think you can see that this tends to confirm my theory using charge as the cause rather than magnetism. I have previously used charge to explain many things on Venus, including its magnetotail, its exclusion of the Solar Wind, and so on. It certainly throws a

wrench into the mainstream explanation of aurorae, which depends on the geomagnetic field. If Venus can create aurorae without a planetary magnetic field, that must disprove the mainstream mechanism here on Earth.

The mainstream has recently linked aurorae production to magnetic reconnection, which is interesting in this regard. In most cases they are talking about Solar magnetic reconnection, but we have a second instance of reconnection here on Earth. To see what I mean, you need to read my recent paper on Solar magnetic reconnection. You can also consult recent papers on the Rayleigh effect and on planetary and lunar brightness, where I show a similar mechanism. For that matter, you can consult my paper on Iron and period four, where I show the same basic mechanism once again. In all these phenomena, you have opposing charge or photon fields meeting head to head. If ions are present to focus these fields, we have the fields spinning eachother up, creating a summed field stronger than the constituent fields. This is the mechanism beneath what is now called reconnection, and it is also the mechanism beneath magnetism itself, as created at the nuclear level.

The mainstream knows this, in a way, since we have seen them explaining Venus' aurorae and magnetotail with reconnection. However, the mainstream explanation of reconnection is very different from mine, using various squishy pseudo-mechanisms rather than explain the effect as an outcome of charge and real spins on photons. The mainstream doesn't have my charge field at the macro-level, you know, and they don't have real spins on real photons. They think charge is restricted to the quantum level, and even there it is virtual.

But, as we have seen, planetary charge recycling is the root cause of the aurorae. In the auroral band, charge coming down meets charge going up, giving us a sort of boundary maximum in the field. At lower latitudes, you have no charge coming down. At higher latitudes, you have more charge coming down and less going up, so although you still have the spun-up or reconnection effect, the *position* of the effect is beneath the surface of the Earth. The crossover point is buried in the ground and invisible, you understand. To find the position of the aurorae, you have to calculate not only the crossover maximum in the field, but also the position where it is visible. The spun-up charge will not be visible on its own. The charge field has to react with an ionic or molecular field in the right way to create visible effects, so even with a spun-up charge field, we won't necessarily see an aurora.

We will see or feel *some* E/M effects on the boundary regardless, which is what explains the east-to-west running auroral electrojets. These jets run below the aurora and can be measured even at ground level. Without my charge field boundary—which of course would be expected to run east to west—these jets are difficult to explain. As I have shown in my recent paper on the Equatorial Anomaly, equations are tortured by the mainstream to force E and B to do what we know they do, but once you have the recycled charge field to work with, these problems pretty much solve themselves. Since the E field always follows the charge field, this charge field boundary maximum will automatically create an E field in the presence of any ions. Notice I said *any* ions, either positive or negative. The charge field doesn't necessarily discriminate between positive ions and negative ions, as a matter of motion. It will drive them both like a stream. Only when we look at spins (and particle sizes) will we be able to differentiate positive from negative [see previous papers for more on this].

So, although our boundary line is running east to west, that line is neither an E nor a B line. It isn't H, either. It isn't even a charge field line or D line, rigorously, since charge isn't *moving* east to west. Charge is moving *up* (into the sky), so the line isn't indicating linear motion of photons. Again, it isn't a field line, it is a *boundary* line. It indicates a field maximum, not a field motion. The aurorae position themselves along these lines not for magnetic or electrical reasons, but for charge reasons. At the

fundamental level, this is a charge interaction boundary. Yes, charge creates electrical and magnetic effects after the fact, but—like the aurora itself—these effects are secondary. The cause of all of them is charge. The mainstream has lost Maxwell's D-field over the years, but they need it here to explain the aurorae. Modeling all these known effects with the D-field explains many things, as I have shown over the past decade.

It is known that during geomagnetic storms, aurora move somewhat lower. My theory also gives us a simple explanation for that. Since what we see causing these storms is an increase in Solar Wind speed or density, we know that driving this storm must be an increase in charge from the Sun. Everything comes to us on the charge stream. Therefore, we simply increase the density of charge recycled, and calculate how that would affect our boundary.

As we solve this problem, it allows us to ask an interesting question: shouldn't more charge from the Sun cause the Earth to spin faster? Shouldn't we find very small variations in the length of the day caused by geomagnetic storms? I would say yes. I don't know what data says on this, but it is logical to assume that an increase in charge would increase the spin of the Earth. Since the spin of the Earth is caused by recycling the charge field, and is a function of it, greater charge must cause faster spin. That said, these magnetic storms are usually of quite short duration, and it takes time for such forces to be felt by a body the size of the Earth and translated into greater motions. Therefore, we would expect to see a lag between the storm and its spin effect. During that lag, other variations in the charge field will take place, so what the Earth is responding to is always a sum of these short-term variations. This tends to mask or minimize any real expression of charge field variation in the spin speed. Only if we had some semi-permanent "storm" or increase in the charge density would we expect to find a measurable increase in spin or a decrease in length of day.

For this reason, we cannot theorize an increase in centrifugal effect caused by more charge being recycled. We could long term, but not short term. So we have to explain the movement of the boundary in a different way. The mechanism is actually quite simple. Since we can't immediately spin the Earth faster to accommodate the increase in incoming charge from the Sun, the area over which the charge enters must increase. In other words, the polar vortex widens a bit to accommodate the new charge. Increasing the diameter of this polar vortex is the same as increasing the diameter of the auroral circle, so the effect is explained without further effort.

Next question: why are the aurorae at a maximum at the equinoctes?* According to the previous analysis, the equinoctes should should give us a charge *minimum*, since at night the Sun is orthogonal to both polar vortices. Shouldn't that give us a total charge minimum? No. It wouldn't give us a minimum for either pole. Both the minimum and maximum for each pole would be at the solstices, not the equinoctes. That is, the solstices would give us both the best angle (67^{o}) and the worst angle (113^{o}) for incoming charge. Well, if the single pole maximum is at the solstice, why is the auroral maximum at the equinoctes? Because we haven't considered a thing called through charge. In our analysis so far, we have looked at only the main mechanism, so our analysis has been a simplification. But to understand this current problem, we have to dig a little deeper. To understand this, it will help if you have read my paper on through charge in Iron, in my paper on period 4. There you will see that the nucleus works much like the Earth and Sun, recycling charge. But there we saw two ways charge could be recycled by a proton. It could go from pole to equator—which is what we have seen in this paper so far. Or it could go pole to pole, in which case I called it *through* charge. Charge that enters on the polar vortex close enough to the axis of spin can dodge the centrifugal effect for the most part and exit via the opposite pole. We saw through charge causing the increased magnetism of Iron, and it has its effects here on Earth as well. This effect of the aurorae is just one such.

To understand how, you have to understand that the Earth is pulling in charge at both poles all the time. It is pulling in less at night at the darker pole, and less at the solstice at the darker pole, due only to the less straight path. Therefore, to sum the total intake of charge at any one time, you have to sum the incoming charge at both poles. Well, as it turns out, this *sum* varies throughout the year. And, although neither the north nor south pole is at a maximum at the equinoctes, the sum of the two *is* at a maximum. This is due to the fact that the Earth loses more on the dark side (or weak solstice side) than it gains on the day side (or strong solstice side).

Think of trying to pour into a funnel from an angle. As you lower the angle, it is easier to pour, and you will probably lose less to drippage. The path into the funnel is straighter, so the pour is more efficient. But if you increase the angle, you get the opposite effect: more loss and a less efficient pour. Well, the same thing happens with charge being sucked into the poles. If you increase the angle past a certain point, your loss becomes considerable. Although light can go around corners by various methods (reflection and refraction in the atmosphere, diffraction, and so on), as the turn becomes greater, the likelihood of light being turned goes down. At an angle above 90^{o}, the dark pole loses more charge than the light pole can make up by a straighter path. Therefore, the total charge is at a maximum at the equinoctes.

But even that wouldn't help us without through charge. This is because without through charge, any charge being emitted (coming up from the surface) to cause the aurora borealis would have to come from the south pole. At equinox, that charge would not be at a maximum. But since all charge recycling is a function of total charge, it is at a worldwide maximum at either equinox. *All* charge entering the poles is spun up by exiting through charge, so you have to factor in charge from both poles at all times.

Next question: why are the aurorae furthest from the poles at just before midnight? This answer links to the previous answer, since the charge is greatest at that time. Why? Because when it is midnight at the north pole, say, the Sun is nearest to being over the south pole. When the Sun is over either pole, the charge path into that pole is most direct. This causes less loss or dissipation at the polar vortex, and less charge leaks out. The gathering of charge is most efficient at that time. More charge at the south pole causes more through charge from S to N, which also gives us this short-term daily charge maximum at the north pole. An increase in through charge acts just like an increase in incoming charge, forcing the circle to widen.

You can see that—just as in the hundreds of other problems I have solved using charge—the charge field gives us a fairly simple mechanical method of answering these questions. Without charge, the mainstream has been forced to manufacture increasingly desperate solutions to all field problems, none of them mechanical. But with real spinning photons and charge recycling by bodies of all sizes, I have shown we can answer any question that arises.

*That is the correct plural of equinox, although equinoxes is more often used. *Nox* is Latin, and the Latin plural is *noctes*. It is where we get the word “nocturnal”.