

**Earth Shadow, propagation related to earth shadow**

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Not well understood it seems but the Earth Shadow has an enormous effect on over the horizon single and multi hop propagation on the HF bands.

Once the Ionized Layers are illuminated by the sun we generally get good refraction above certain frequencies which can and do vary (dependant of course on take off angle and so on). As we approach the poorer part of the 11 year cycle we can see this phenomena better.

With the Earths rotation relative to the sun we naturally and inevitably get areas on Earth which are gradually illuminated and then darkened by the apparently moving shadow (the earth is spinning & rotating too silly) relative to the sun in this case-- also we are moving relative to the other galaxies outside our own solar system.

When darkness comes as a result of this rotation so the refraction characteristics change too.

In the evenings then the East to West HF propagation at MUF (regardless of what it actually is in MHz) is usually better than the West to East.

The shadow appears to move Westwards at appx. 1000MPH at the equator so its quite noticable. (In fact the Earth is rotating Eastwards at the same speed) speaking from Planet Earth



The West to east suffers attenuation (in fact signals not being refracted) or going straight through the less ionized layers-while the East to West signals are better refracted (less attenuated) being refracted by the more existed (by the sun) ionized layers.

Attenuation is my way of describing less than perfect refraction in the above case. Just in case someone loses focus, I'm not discussing attenuation per se or even levels of attenuation. Just the phenomena we like to call by that name.

This phenomena is best observed in the twilight zone.



If we project ourselves well out into space and view the Earth and Sun from a distance we would have a better overview. Observe it and see for yourself even from Earth.

**Michael Higgins, EI 0 CL**



By the way I have just discovered that the "Black Hole " in our very own Solar system is actually located in Ireland. Try it and see for yourself. It took me many years to discover this.

At first the article was published at [www.qrz.com](http://www.qrz.com). The article calls a great discussion about the shadow influence to propagation of radio waves. I agree with Michael, there is the influence! And, of course, it must be studied.



73! Igor Grigorov, RK3ZK