

Natural Planet

Ep.24 – Greatest Shows on Earth: Aurora

The most vivid and extraordinary light show isn't in fact on Earth. Today shall see Natural Planet take a look at a larger view and step off Earth. It is visible in two places; the north pole with the Aurora Borealis and the south pole with the Aurora Australis, the Northern Lights and the Southern Lights. These two events are linked by their original formation in our closest star, the sun. When one occurs the other will also be lighting the sky on the opposite end of the planet, both will have the same colours and have very similar shapes.

The origin of the lights can be tracked to the sun. The sun, while it burns bright in space releases a lot of charged particles; both positive (protons) and negative (electrons). These are transported to Earth by the solar wind, radiation the sun has produced, and then before they can actually hit Earth, are deflected by the planet's magnetic field. This is a field around the Earth generated by the movement of molten iron in the centre of the planet. The charged particles are deflected away from the main surface and get channelled to the weakest point in the magnetic field, the two poles. The particles hit our atmosphere and each collision that takes place between a proton or neutron and our atmosphere produces a flash of light. The streamers and arcs that can be seen are showing millions of collisions every second, producing different colours depending on the molecules that the charged particles hit. If the skies are lit up with green, the collision is with oxygen at a height of about 100 kilometres, when colliding with nitrogen the patterns are of blue and lilac. Very rarely the lights are red and orange, showing the collisions are with oxygen but instead of 100 kilometres are taking place at 320, way above the surface of our Earth.

The further north you go, the more likely you are to see them. A brilliant display of snaking streamers and bright explosions of light, all in complete silence, definitely one to put on the to do list.