

Lesson 05: Aurora Phenomenon



❖ Definition:

An **aurora phenomenon** (plural: **auroras**) The Aurora is an incredible light show caused by collisions between electrically charged particles released from the sun that enter the earth's atmosphere and collide with gases such as oxygen and nitrogen. The lights are seen around the magnetic poles of the northern and southern hemispheres. This collision emits light that we perceive as the dancing lights of Auroras.

Auroras that occur in the northern hemisphere are called 'Aurora Borealis' or 'northern lights' and auroras that occur in the southern hemisphere are called 'Aurora Australis' or 'southern lights'.

Both Aurora's can be seen in the northern or southern hemisphere, in an irregularly shaped oval centred over each magnetic pole. Scientists have learned that in most instances northern and southern auroras are mirror-like images that occur at the same time, with similar shapes and colours. Auroral displays can appear in many vivid colours, although green is the most common. Colours such as red, yellow, green, blue and violet are also seen occasionally. The auroras can appear in many forms, from small patches of light that appear out of nowhere to arcs, or shooting rays that light up the sky with an incredible glow.

The word "aurora" is derived from the name of the Roman goddess of the dawn, Aurora, who travelled from east to west announcing the coming of the sun. Ancient Greek poets used the name metaphorically to refer to dawn, often mentioning its play of colors across the otherwise dark sky.

❖ **What causes the Auroras?**

Auroras are the result of collisions between gaseous particles (in the Earth's atmosphere) with charged particles (released from the sun's atmosphere). Variations in colour are due to the type of gas particles that are colliding. The most common aurora colour which is green, is produced by oxygen molecules located about 60 miles above the earth. The rarer red auroras are produced by high-altitude oxygen. Nitrogen produces blue or purple aurora.

❖ **When is the best time to watch for Auroral Displays?**

Winter in the north is generally a good season to view lights. The long periods of darkness and the frequency of clear nights provide many good opportunities to watch the auroral displays. Usually the best time of night (on clear nights) to watch for auroral displays is between 10pm to 2am. The best places to watch the aurora usually are North America or Europe. In North America, the north western parts of Canada, Northwest Territories and Alaska. In Europe, Scandinavia, particularly the Lapland areas of Norway, Sweden and Finland is very good for aurora viewing. Iceland is also a good place for auroras and auroral displays can also be seen over the southern tip of Greenland.