



## **My Drift**

**Title: The Northern Lights**

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### **WHAT ARE THE NORTHERN LIGHTS?**

The bright dancing lights of the aurora are actually collisions between electrically charged particles from the sun that enter the earth's atmosphere. The lights are seen above the magnetic poles of the northern and southern hemispheres. They are known as 'Aurora Borealis' or 'Northern Lights' in the north and 'Aurora Australis' or 'Southern Lights' in the south.

Auroral displays appear in many colors although pale yellowish green is the most common. Most colors are produced by oxygen molecules located about 60 miles above the earth. Rare, all-red auroras are produced by high-altitude oxygen, at heights of up to 200 miles. Nitrogen produces blue or purplish-red aurora. Shades of pink, red, yellow, dark green, blue, and violet have also been seen.

The lights appear in many forms from patches or scattered clouds of light to streamers, arcs, rippling curtains or shooting rays that light up the sky with an eerie glow.

## WHAT CAUSES THE NORTHERN LIGHTS?

The connection between the Northern Lights and sunspot activity has been suspected since about 1880. Thanks to research conducted since the 1950's, we now know that electrons and protons from the sun are blown towards the earth on the 'Solar Wind'. The temperature above the surface of the sun is millions of degrees Celsius. At this temperature, collisions between gas molecules are frequent and explosive. Free electrons and protons are thrown from the sun's atmosphere by the rotation of the sun and escape through holes in the magnetic field. Blown towards the earth by the solar wind, the charged particles are largely deflected by the earth's magnetic field. However, the earth's magnetic field is weaker at the poles and therefore some particles enter the earth's atmosphere and collide with gas particles. These collisions emit light that we perceive as the dancing lights of the north (and the south). The lights of the Aurora generally extend from 50 miles to as high as 400 miles above the earth's surface.

### Some Northern Lights Pictures



## **BEST PLACES TO VIEW THE NORHTERN LIGHTS**

### **Fairbanks, Alaska**



**Fairbanks is one of the best places in the world to view the northern lights as it's located directly under the Auroral Oval. This ring-shaped zone sits over the Earth's geomagnetic north pole, where aurora activity is concentrated. You can expect to see the lights on an average of four out of five clear nights during aurora season, which lasts from August 21 to April 21.**

**Fairbanks is one of the only places in the United States where you can clearly see the Northern Lights. I went to Fairbanks four times while working for the government and saw the Northern Lights on two of these trips – they were beautiful! Fairbanks is also one of the coldest places on earth during the winter. It was 44 degrees below zero on our TDY trip there in early December 2010.**

### **Tromsø, Norway**

**Located above the Arctic Circle, Tromsø is one of several top spots to view the northern lights in Norway. The northern part of the country is dark in the early afternoon until late morning from the end of September to late March. With this extreme darkness, there are more opportunities to see the aurora. Tromsø itself is a modern city, so there's plenty to see and do when you're not looking up at the sky.**





## **Lapland, Finland**



**Lapland is Finland's northernmost region, a sparsely populated area bordering Sweden, Norway, Russia, and the Baltic Sea. A place where there is more forest and water than anywhere else in Europe is bound to ensure a beautiful light display. It's known for its vast subarctic wilderness and natural phenomena including the midnight sun and the Northern Lights. Capital city Rovaniemi is the gateway to the region. This is the homeland of the indigenous Sami people, which extends into far north neighboring countries.**

**The northern lights are visible approximately 200 nights a year from this region in Finland. Lapland is also known as the home of Santa Claus and as many as 190,000 reindeer. Aurora chasers can expect to see the lights almost every clear night between September and March.**

## **Orkney, Scotland**

**The islands encompass Neolithic sites, tall sandstone cliffs and seal colonies. The 'Heart of Neolithic Orkney' is a group of 5,000-year-old sites on Mainland, the largest island in Orkney.**

**This group of captivating islands, located on Scotland's remote northern coast, is the best place to see the northern nights in the country. Fall and winter are the best seasons to witness the aurora, also known in local dialect as the "Mirrie Dancers." This time of year brings cold evenings with clear skies, which makes for ideal viewing conditions.**



### **Yellowknife, Canada**



**Yellowknife is the capital of Canada's Northwest Territories. It's also known as the Aurora Capital of North America. With its position in the middle of the Auroral Oval, the city puts on one of the world's most awe-inspiring light shows from December through March. Located on the northern shore of Great Slave Lake, Yellowknife boasts winter sports such as ice fishing and cross-country skiing.**

### **Jukkasjärvi, Sweden**



**The optimal time for viewing the northern lights in Sweden is during the darkest months, from December through March. The small Swedish village of Jukkasjärvi sits approximately 125 miles above the Arctic Circle on the Torne River and is an ideal locale for aurora viewing.**

### Reykjavik, Iceland



**September to April is the best time to chase the aurora borealis in Iceland. For optimum viewing away from the light pollution, head to Öskjuhlíð. This densely wooded area in Reykjavik has walkways and paths where you can see the nighttime show. Atop of this forest sits Perlan, which is the only planetarium in the country and a museum featuring exhibits about Iceland.**

### Kangerlussuaq, Greenland



**Greenland may not be the most accessible place to travel for viewing the northern lights, but those who make it there will be thrilled they did. The tundra of Kalaallit Nunaat (the Greenlandic name for the country) is one of the best places on the globe to see the aurora. The viewing window extends from September to April, when you can then enjoy the midnight sun. The tiny town of Kangerlussuaq is located on a fjord right along the Arctic Circle. The town is the former home of a U.S. Air Force Base and the Greenland Ice Cap.**



### **The Kola Peninsula, Russia**



**The aurora season on the Kola Peninsula in northeastern Russia extends from late August until April, but the cold winter nights are the best time to see the lights. This is because the region, which sits within the Arctic Circle, boasts 42 polar nights, meaning the area is shrouded in total darkness for more than 24 hours. It's also one of the more temperate and accessible regions in Russia where you can chase the aurora. The best place to view the lights on the peninsula is from the small port city of Murmansk.**

### **Yukon, Canada**

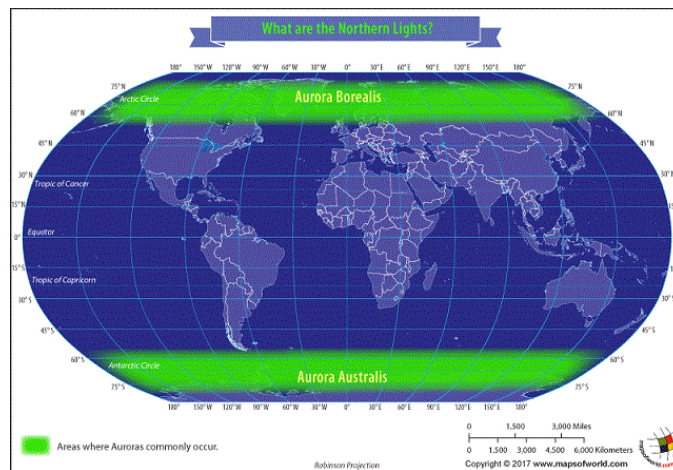


**The best conditions to view the Northern Lights are when the sky is clear and there are no ambient lights around you. Auroras occur throughout the year; but you cannot see the Lights in the summer months because it does not get dark enough. January to mid-April are the most popular Yukon months for Aurora hunting because they bring long, dark nights. You need the sky to be very dark to see the Northern Lights.**

## Northern Lights Cruises



**A great way to view the Northern Lights is to take a cruise. The two best are the Alaska and Norway northern lights cruises. They have access to open ocean water in the best aurora viewing areas.**



**World map showing best (in green) areas for viewing auroras**

**You don't hear too much about the "Aurora Australis" or "Southern Lights" mainly because there is very little land or countries for people to view them.**



**The Southern Lights viewed from New Zealand**



## CAN PEOPLE IN THE “LOWER 48” STATES EVER SEE THE NORTHERN LIGHTS?



The answer is YES providing the conditions are perfect. This means:

- ✚ Intense solar activity including strong solar winds
- ✚ Dead of winter (December to March)
- ✚ Clear dark skies with no moon or other distracting lights
- ✚ You get lucky!

The best place to see the Northern Lights in the contiguous 48 states is Michigan's Upper Peninsula.



However, the Northern Lights show will not be as good as the places we discussed above.

## **DOES THE NORTHERN LIGHTS MAKE NOISE? CAN YOU HEAR IT?**

**Yes and sometimes Yes. Next time you are lucky enough to witness an aurora borealis, you may want to also listen carefully for some faint weird sounds. These colorful displays of northern lights can produce audible sounds like clapping, radio static, faint crackling, light rustling, or hissing. While these sounds were long considered folklore, Finnish scientists have not only shown that they really happen, but now they know why. They are caused by charged particles trapped in a layer of the atmosphere that forms during cold nights. These particles rapidly discharge when bursts of material from the sun slam into Earth, producing clapping and other weird noises.**

## **MYTHS AND LEGENDS OF THE NORTHERN LIGHTS**



**Many of the stories surrounding the Northern Lights in Northern communities arose from the belief that they were the souls of departed ancestors; some even believed the lights might be the spirits of the animals they hunted. But not all North American legends painted the Northern Lights as quite so benevolent. Here are some examples:**



**Some Native American stories depict the Northern Lights as torches held by spirits who were tasked with leading the souls of the recently deceased over the abyss to the land of brightness and plenty. To communicate with people on Earth, they believed the Northern Lights made a whistling sound, which was to be answered by humans with whispers. Eskimo tribes believed they could summon the Aurora to converse with their dead relatives. Cree Indians believed strongly in the 'circle of life,' and that the lights were a way of communicating with their ancestors; when dogs barked at the lights, they thought it was because they recognized their lost companions.**

**In Canada and northern Michigan, Algonquin tribes believed the creator of the Earth, Nanabozho, moved to the far north and lit a huge fire. The Aurora was a reflection of this fire, created to let his people know that even though he was far away, he was still thinking of them. The Menominee Indians of Wisconsin believed what they saw were gentle giants fishing at night, and that the lights were created by their torches as they fished.**

**The Inuits of northern Greenland believed the lights were the spirits of the dead playing celestial games with a walrus skull, while other local Inuit communities believed walruses were playing games with a human skull.**

**Not all native communities in North America were comforted by the presence of the Northern Lights; many believed they were an evil omen.**

**Great Plains Indians believed the lights were the reflection of large fires, but not one made by a loving creator. Theirs were the reflections of giant flames under huge cooking pots, lit by northern tribes to cook their enemies.**

**In Hudson Bay, Canada, they believed the lights were the lanterns of demons chasing lost souls. In Wisconsin, the Fox Indians thought the Northern Lights were the restless spirits of their slain enemies attempting to rise again for revenge—and were an omen of pestilence and war.**

**The Northern Lights feature prominently in Norse mythology. Legend suggests that the lights were reflections or glow from the shields and armor of the Valkyrie, female warriors who would choose who may die in battle and who may live to fight another day.**

**These myths bring to life the magical power of the Aurora. Even now, with all of our scientific explanations of the Northern Lights, it can still feel like a spiritual experience.**



## **SUMMARY**

**Here is a quick recap of what we learned about the Northern Lights in this article:**

- ✚ The bright dancing lights of the aurora are result of collisions between electrically charged particles from the sun that enter the earth's atmosphere.**
- ✚ Auroral displays come in many colors although pale yellowish green is the most common.**
- ✚ The best places to view the Northern Lights is directly under the Auroral Oval that circles the earth at or just below the North Pole.**
- ✚ The best place in the United States to view the Northern Lights is Fairbanks, Alaska.**
- ✚ The best time to view the Northern Lights is in the dead of winter with clear dark skies.**
- ✚ The Auroral lights make weird noises that can sometimes be heard by humans.**
- ✚ There are many myths and legends associated with these auroral displays. For example, Eskimo tribes and Cree Indians believe strongly in the 'circle of life' where the Northern Lights are a way of communicating with their dead ancestors.**

**If you have not seen the colorful Aurora Borealis (Northern Lights), you might want to add it to your bucket list. Then you can form your own opinions of what causes them and what they mean.**

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