

# AUORORAS!

## MYSTERIOUS LIGHTS IN THE SKY

Would you like to go to the far, far North  
and the far, far South...to a dark, starry night  
outside of your house?

...And to a place where scientists work,  
and up into space above the Earth?

Just say **YES** and off we'll go!



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In the far, far North, when it's dark late at night, often  
you'll see mysterious lights.  
They're called the auroras and they shimmer and  
glow, like curtains of color, they wave and they flow.





Each aurora is different, no two are alike. They are different colors and some are quite bright.

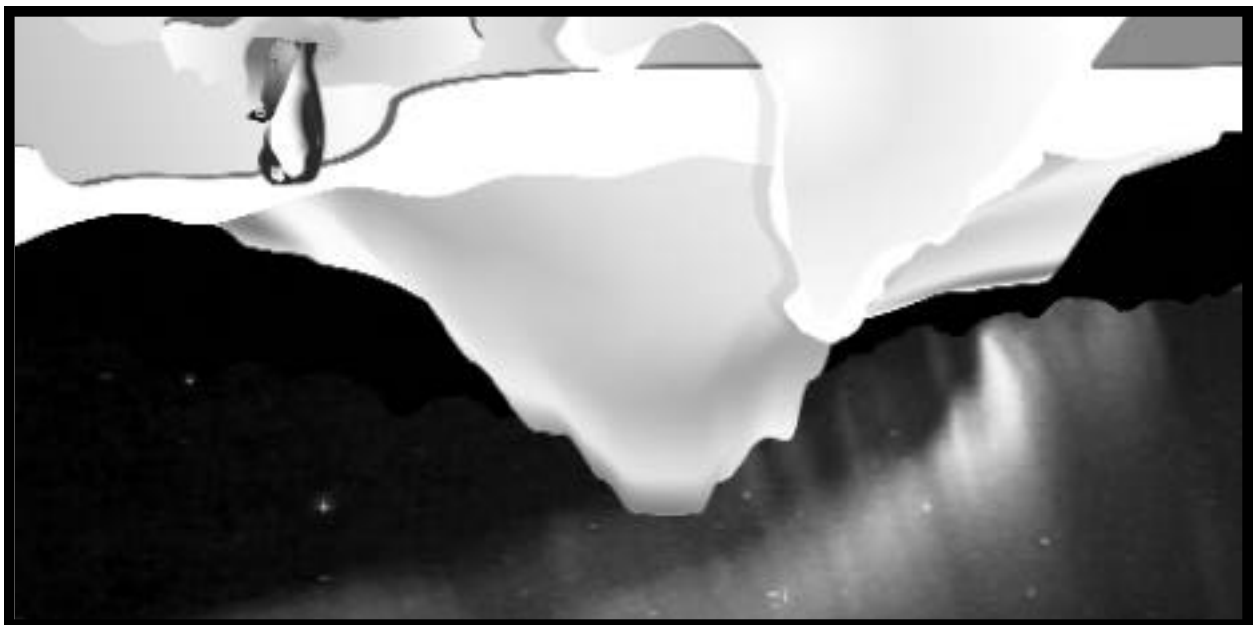
Up here in the North, when people see them at night, sometimes they call them the “Northern Lights.”

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Green, blue and red, they can be quite bright! Down here they're called the “Southern Lights.”

Auroras can happen far, far in the South, late in the night, when few people are out.





Every once in a while, maybe once a year, auroras can be seen almost anywhere.

Just outside your home on a very dark night, you may see them glow and shimmer so bright.

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They're caused by the Sun, which has solar storms. Solar wind blows to Earth and auroras are formed!

So what causes these mysterious lights that shimmer and glow in the sky late at night?





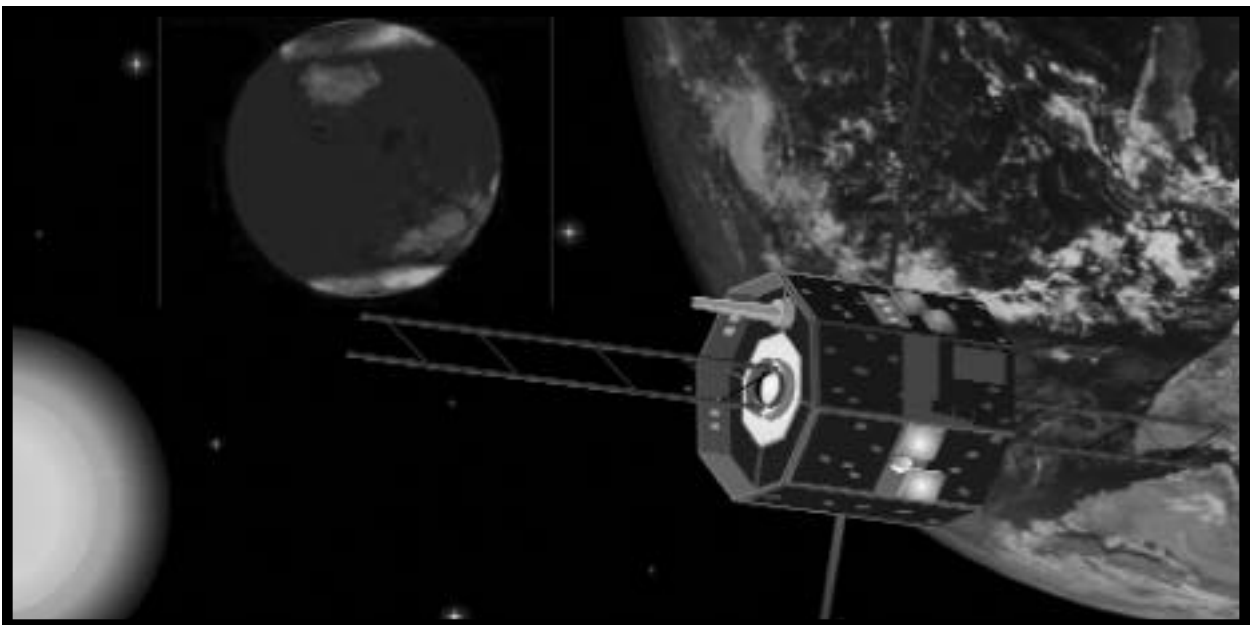
How do we know this? How are we sure? There are scientists who study the Sun and the Earth.

We know that the Sun causes auroras to glow, but there's still more to learn, and more we don't know.

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Satellites gather images of the Earth and the Sun, and scientists study them one by one. The images show the Sun and its storms, and the places on Earth where auroras are formed!





So, if you find yourself out late, late at night, and you happen to see these mysterious lights...

It's no mystery to you! You can tell everyone! You know they're auroras caused by the Sun.

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THE END



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**Aurora facts for teachers & parents**

**Science Facts**

People all over the world have wondered about auroras:

- The greek philosopher Aristotle called auroras "light torches," "barrels," and "jumping goats."
- In the Middle Ages, people in Europe thought that auroras were flaming heavenly castles or armies of warriors who had died in battle.



## Science Facts

People all over the world have wondered about auroras:


- Children in northern Norway used to believe that if they waved a napkin to the Northern Lights, the lights would swoop them into the sky.
- The Eskimos who lived on the lower Yukon River believed that the aurora was the dance of animal spirits, especially those of deer, seals, and salmon.

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## Science Facts

- Auroras most often occur near the north and south magnetic poles of the Earth, which are located very close to — but not directly on — the North and the South poles.
- Auroras are faint and can only be seen at night, when the sky is dark.



Auroras at the North & South poles



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## Science Facts

- The Northern Lights have been seen as far south as Florida and Arizona.




Auroras over the southern United States

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## Science Facts


- Storms from the Sun send charged particles to Earth. These particles are what make up the solar wind.
- The Earth has a protective shield called the magnetosphere. Interactions between the solar wind and the magnetosphere send electrons to the atmosphere of Earth near the poles.




The magnetosphere




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## Science Facts

- Electrons make atoms in the atmosphere glow in different colors. Oxygen and nitrogen glowing in the atmosphere cause red and green auroras. Nitrogen can also cause auroras with a violet-purple color.
- The Northern Lights are called the Aurora Borealis. The Southern Lights are called the Aurora Australis.



Auroras seen from the space shuttle

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THE END

• The view from a satellite: The lights from an aurora look like curtains hanging in space. They're seen as two rings of light, and are called auroral ovals.

• NASA has sent satellites to space to study auroras; some of their fact-finding missions have been called FAST, POLAR, and IMAGE.

## Science Facts

An auroral oval as seen from space



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## CREDITS



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