

# MINI AURORA HUNTING GUIDE



WHAT ARE THE NORTHERN LIGHTS?



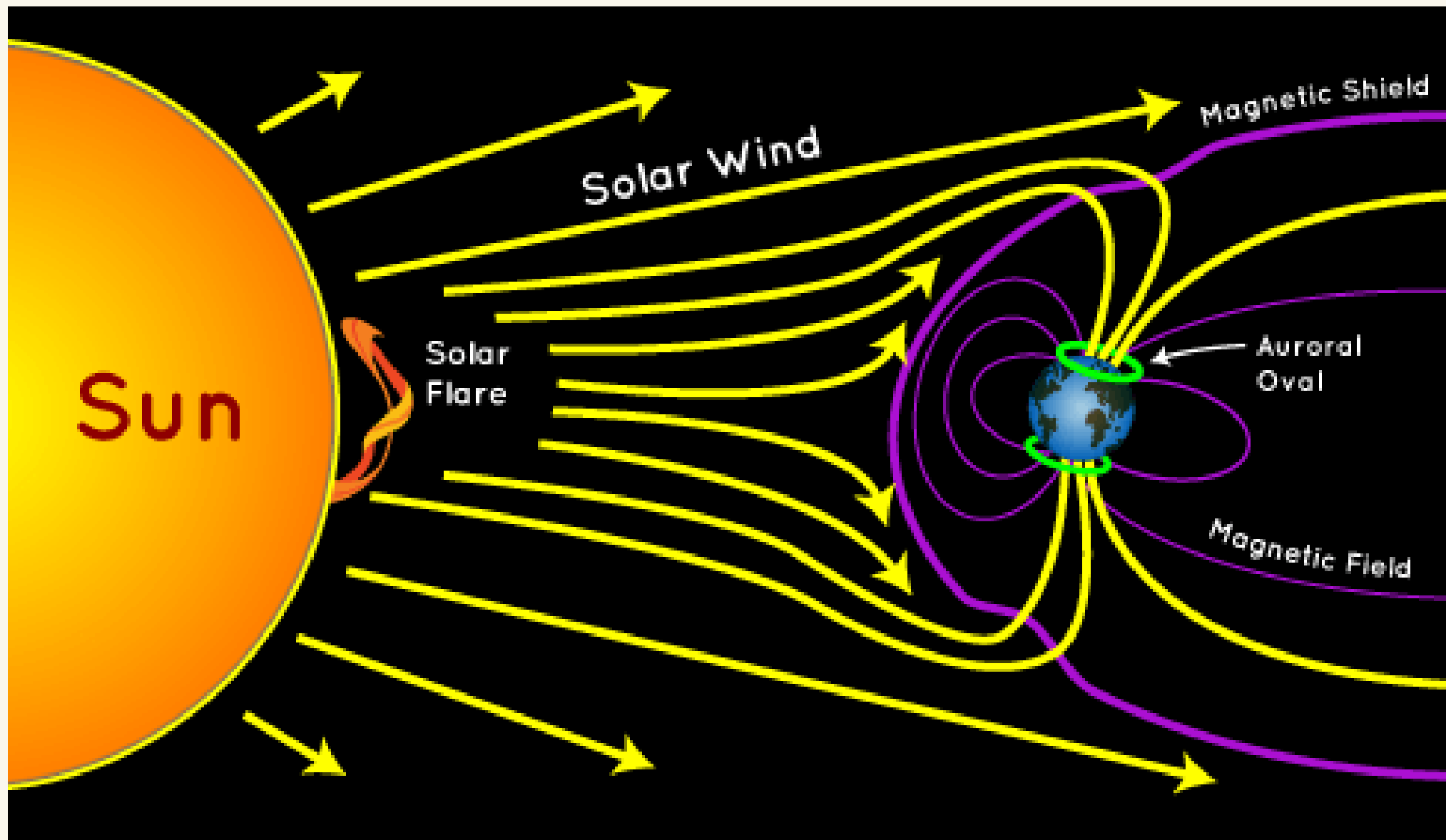
You've probably heard about the Northern Lights. You may have seen pictures, on TV or even been lucky enough to see them in person. But, do you know what causes them, to appear?

The Northern Lights, formally called aurora borealis ("ah-ROAR-ah bore-ee-AH-lis") are coloured lights that appear and dance around in the dark northern sky. Think of them as Mother Nature's fireworks!



# NOW FOR THE SCIENCE...

ALTHOUGH THE NORTHERN LIGHTS MIGHT LOOK LIKE MAGIC, THEY CAN ACTUALLY BE EXPLAINED BY SCIENCE!



The energy for making the Northern Lights starts 93,000,000 miles away on the Sun, with a massive explosion called a Coronal Mass Ejection (CME). These explosions create something called “solar wind” which drifts away from the Sun through space, carrying tiny particles (called protons and electrons) which contain lots of energy.



SOUNDS TECHNICAL, RIGHT? BUT THINK OF IT THIS WAY: IT'S LIKE THE SUN BURPING OUT TINY PARTICLES INTO SPACE.

When the solar wind reaches planet Earth, it hits the Earth's magnetic field, which guides the protons and electrons away from the middle of the planet and toward the North and South poles. Because of this, we get both Northern and Southern Lights – also known as the Aurora Borealis and the Aurora Australis.





When the solar wind gets past the magnetic field and travels towards the Earth, it enters the atmosphere. The atmosphere is like a big blanket of gas surrounding our planet, which contains lots of different particles that make up the air that we breathe and help to protect us.

As the particles in the solar wind hit the Earth's atmosphere, they get 'excited' and release energy – and this is what causes the Northern Lights.

Imagine if you shake a bottle of fizzy drink. This puts lots of energy into the bottle. In the same way, the particles from the solar wind “shake up” the particles in the atmosphere. Then, as they cool down they let out all that energy in the form of light (instead of bubbles).

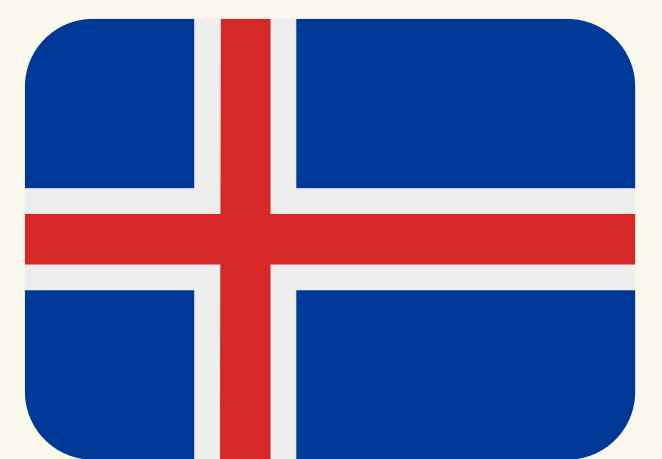
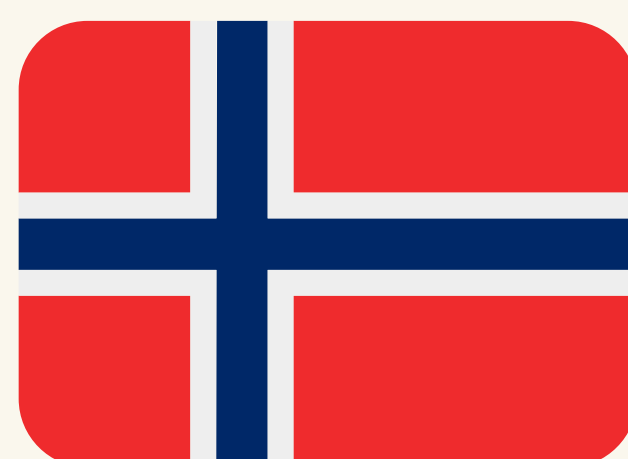
Different types of particles in the atmosphere make different colours after they're shaken up – oxygen makes red and green light, and nitrogen makes blue light.

Imagine: If you shake a fizzy drink, this puts lots of energy into the bottle, and when you open it, this energy will be released in a big stream of fizzy bubbles.



## WHERE IS THE BEST PLACE TO SEE THE NORTHERN LIGHTS?

The Northern lights are most visible between 66°N and 69°N, we call this the 'auroral zone' and it stretches across the northern areas of Finland, Sweden, Norway, Iceland and Greenland. The band can expand when the sun's activity is very high which is why we can very occasionally see the Aurora from parts of the UK too! To see the Northern Lights it's important to go outside and get away from street lights.



# WHEN IS THE BEST TIME TO SEE THE NORTHERN LIGHTS?

The easiest time to see the Northern Lights is in winter when it is very dark at night. Winter lasts a long time in the auroral zone so anytime from September to March is a good time to see the Lights. The Northern Lights most typically appear between 10pm and 2am – so expect to stay up well past bedtime if you do go on a Northern Lights hunt!



## MYTHS AND LEGENDS OF THE NORTHERN LIGHTS



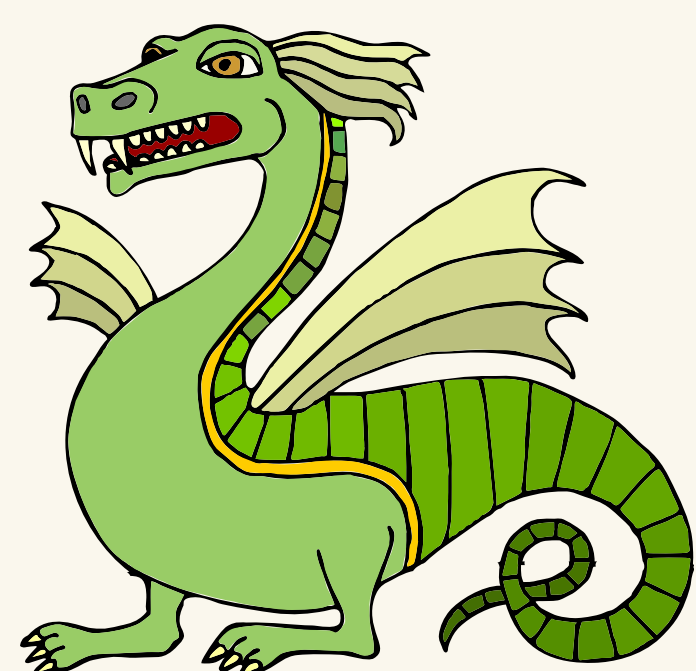
The Sámi people of Finnish Lapland believed the Northern Lights were caused by a Firefox who ran across the snow with sparks flying into the night sky from its tail. Another belief was that the lights were created from a spume of water ejected from whales.

People in the Baltic states believed that the Lights were horse drawn carriages taking guests to a fabulous celestial wedding.



Many Inuit people believed the Lights to be the spirits of the dead playing a game using the skull of a walrus as their ball.

Early Chinese legends believed them to be a celestial battle between good and evil dragons who breathed fire across the sky.



# FUN FACTS .. DID YOU KNOW?



The northern lights appear 200 to 300 kilometers above the earth and are bright enough to be seen from space!

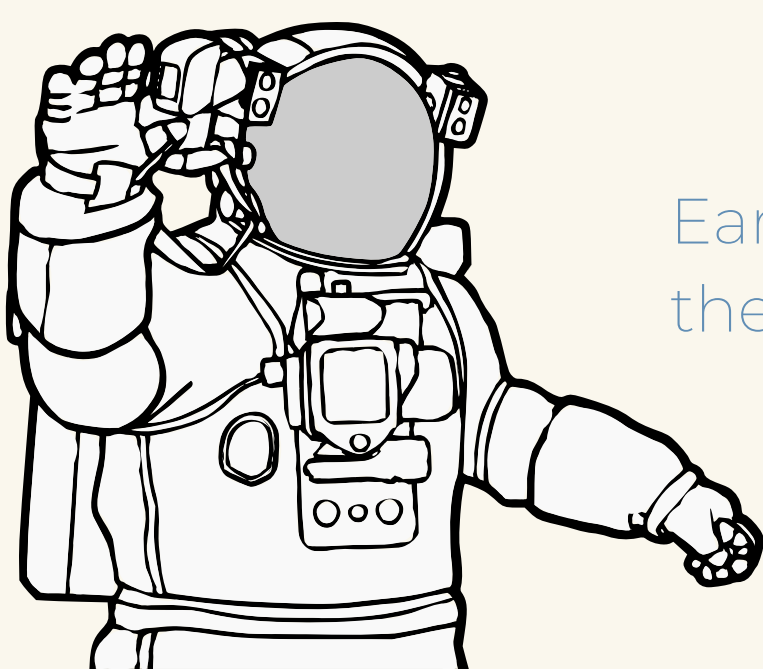
One of the Sámi words for the Northern Lights is “guovssahasah”- can you have a go at saying this?

“guovssahasah”



The Northern Lights are not visible during the summer because the North Pole faces the sun which causes 24 hours of daylight.

The most common colour of the northern lights is green, however pink, purple, red, yellow and blue are also possible. No two Northern Lights displays will ever look the same — you will always see different patterns and colours in the lights.



Earth isn't the only planet to have auroras — scientists have found them on Neptune, Jupiter, Saturn and Uranus.

# VOCABULARY LIST – AMAZE YOUR FAMILY WITH THE NEW WORDS YOU HAVE LEARNT!

*Sami people:* The native people of Scandinavia

*Auroral Zone:* The area describing the band in Northern Europe between 66°N and 69°N where the Northern Lights appear most frequently..

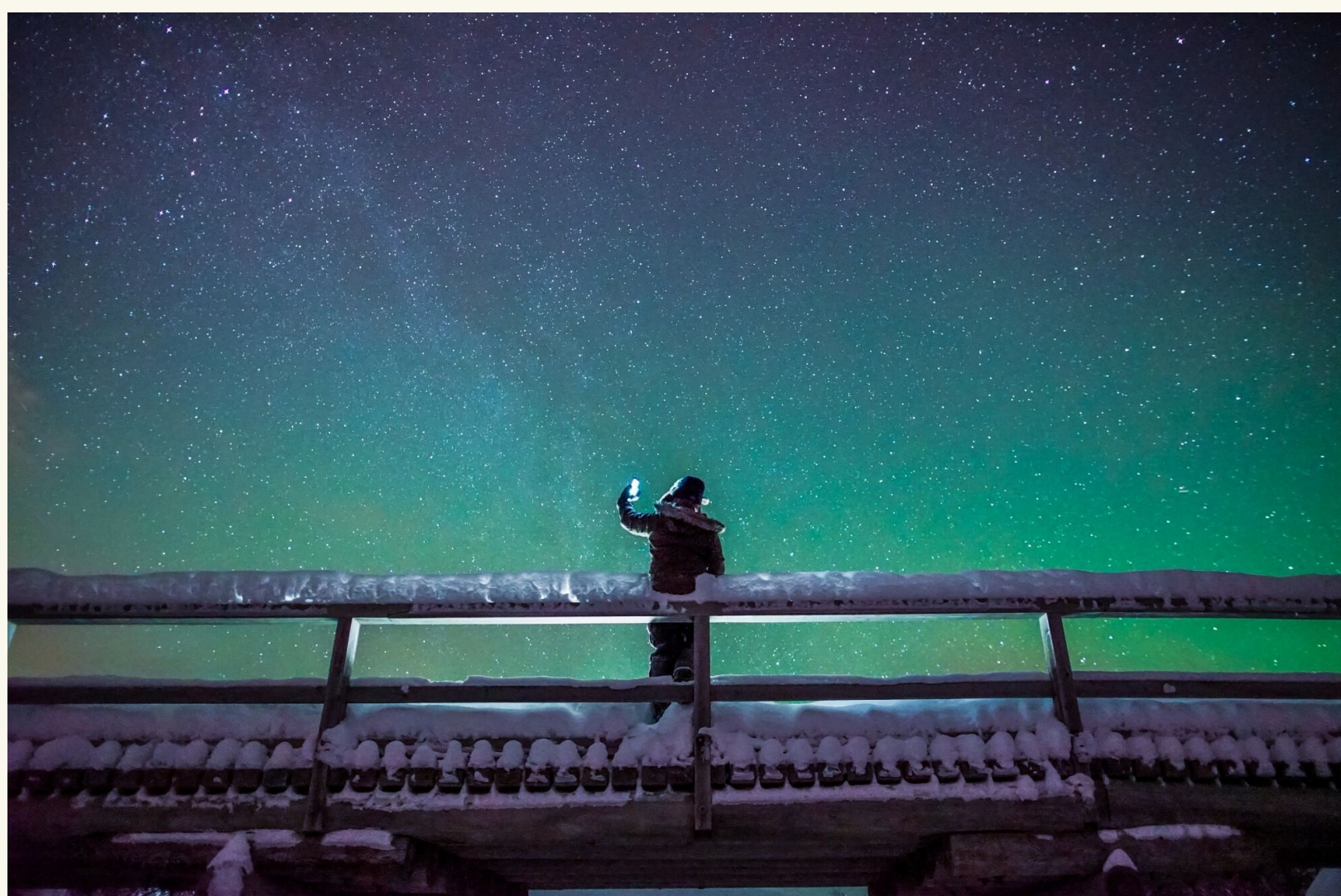
*Aurora Borealis:* Northern Lights

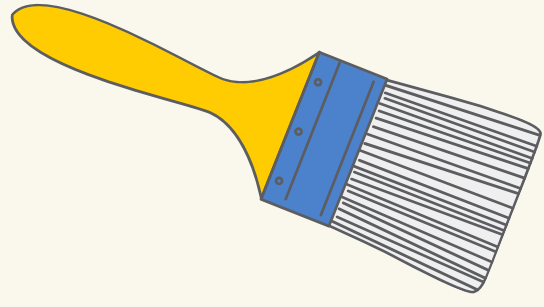
*Arctic:* The North Pole and surrounding regions with polar conditions, plants and animals.

*Solar wind:* When the sun burps out a stream of particles.

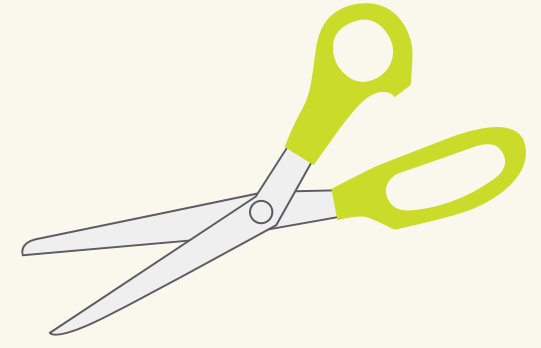
*Light pollution:* Any artificial lights produced from cities such as street lights car lights, or office or house lights.

*Earth's atmosphere:* The blanket of gases that surround planet Earth





# CRAFT CHALLENGE!



Create a picture or sculpture of the Northern Lights from materials you can find in your house.

## SOME IDEAS...

- Melt crayons to create your own Northern Lights picture (stick crayons along the top of a piece of paper using glue or a glue gun and apply heat with a hairdryer). Make sure an adult is present to help you!
- Find some black card and use chalk or paints and draw the swirls and shapes of the Northern Lights!



Ask an adult to share your creation with us and we may feature it on our social media!