DANCING LIGHTS

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Regarded as the holy grail of skywatching, northern lights are a picturesque light show that have attracted people around the globe. Exploring its vivid colours and ethereal displays, Yash Wadhwa, XI F & Harshil Bedi, X C, AIS Pushp Vihar, discover the science and folklore around this natural occurrence. So come and join this marvellous journey!

THE DAZZLING LIGHT

To a common man, Northern lights appear to be dancing ribbons of light. However, the phenomenon is a violent one.

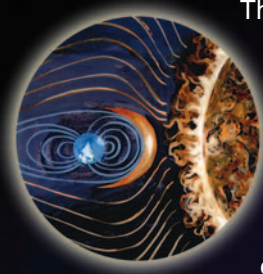
WHAT?

The Aurora Borealis, commonly known as the Northern Lights are opalescent waves of light that pierce the dark skies, predominantly in the high-latitude regions.

WHEN?

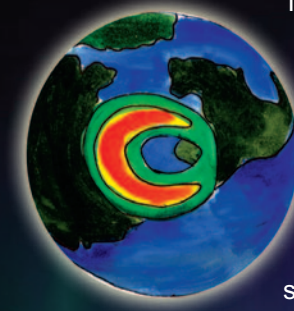
They occur year-round but are best seen during the dark, clear nights of winter.

WHY?



They originate from sun expending charged particles which strike the earth, that results in the electrons in earth's atmosphere to gain energy. The magnetic field deflects the charged electrons to where the magnetic field is weak - the poles. As the electrons return to their former state by losing energy, they release light. This light is what our eyes witness as northern lights.

WHERE?



They take the stage within the 'auroral oval', above geomagnetic poles. They are observed in regions close to the magnetic poles in the Northern Hemisphere such as Alaska, Canada, Norway etc. Auroras exist on all planets of the solar system besides Mercury.

HOW?

Auroras happen when charged particles from the sun interact with the Earth's magnetic field, causing the gases in the atmosphere to emit light. The electrons' interaction with oxygen and nitrogen is the reason behind the auroras' shifting shades of light.

Oxygen: Red in colour seen at an altitude of 300 miles

Nitrogen: Pink or yellow in colour seen at an altitude of 225 miles

Oxygen: Emits 50 shades of green seen at an altitude of 225 miles

Nitrogen: Blue and purple in colour seen at any altitude below 75 miles

Illustration: Parkhi Arora, AIS PV, IX E

THE SHAPE SHIFTERS

The spectacular show is not uniform in nature and auroras can be seen in various shapes. Here are some that occur at different locations...

Homogeneous arc | Greenland
Nature: It is a uniform band of auroras with no ray structures. They have a uniform upper and lower boundary, like a rainbow extending from east to west.
Cultural significance: In Greenland, the indigenous people believed the lights to be dancing spirits of the children who had passed away during/at birth.

Rayed arc or band | Norway
Nature: They have multiple rayed vertical structures which move upward.
Cultural significance: The Vikings believed that the auroras were the lights reflected from the Valkyries' armours and shields, as they escorted the fallen valiant warriors to their final resting place.

Striated Band | Canada
Nature: These lights comprise clumps of auroras with strips of clear sky visible through them.
Cultural significance: In Canada, the Algonquin tribe believed the auroras to be the fire lit by the creator of Earth, Nanabhozo. He lit this fire to tell his relatives that he was still thinking of them.

Aurora Rays | Iceland
Nature: These are independent in nature. Though they appear in a ray ban, they are often secluded and have distinct structures.
Cultural significance: Icelandic folklore believes that these lights are birthed from elves and "hidden people" dancing in the night sky.

Pulsating | Sweden
Nature: They are vivid bursts or 'pulsations' of auroras, which disappear as rapidly as they emerge.
Cultural significance: Swedish fishermen thought the lights were reflections of giant schools of herring swimming nearby and a mark of good fortune.