



Participatory Science With **AURORASAURUS**

Reporting Auroras From the Ground Up



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Consortium/NASA



WHAT A STORM!

May 10-11, 2024

FIRST

major storm ever captured primarily by digital cameras (largest since Halloween 2003).

5,000+

Aurorasaurus reports

55+

countries on all 7 continents



AURORASAURUS
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Photo by Gunjan Sinha, acquired on May 11, 2024, from near Saskatoon in Saskatchewan, Canada, published in NASA Earth Observatory

THANK YOU!

You can still science with us and make backdated reports to aurorasaurus.org!



Photo by Kashmir Wilkinson, May 11, 2024, from the Olympic Peninsula in Washington, U.S., published in NASA Earth Observatory

AURORASAURUS
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Did you see the aurora? Yes No

Map Satellite

12:00 PM 10 May 2024

Preliminary view

Probability of visible aurora: 10% (red minus), 50% (yellow), 90% (green plus)

Keyboard shortcuts | Map data ©2024 | Terms



AURORASAURUS.ORG

Reporting Auroras From the Ground Up Since 2014



Register for a free account to **receive email notifications** when the aurora is observed near your location



Be a participatory scientist and earn points when you **report aurora sightings** (location, time, terms of use are required)



Examine the map to see locations of real sightings and the predicted auroral oval showing where conditions might be right for auroral viewing

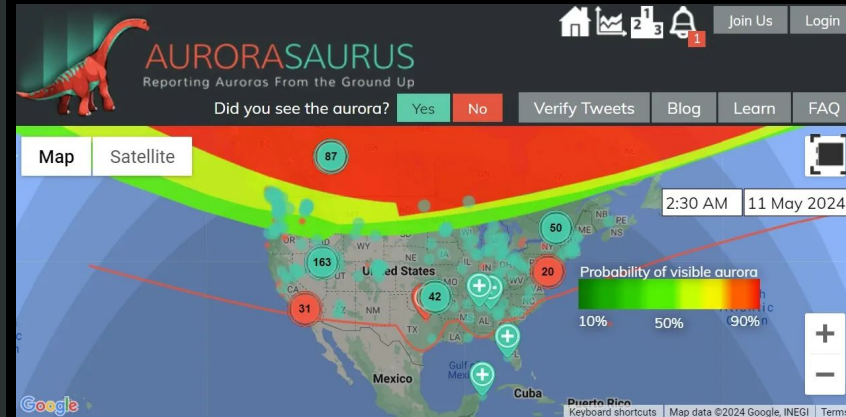


Learn more about the aurora with our blog, and keep an eye on space weather with our Storm Tracker

"Aurorasaurus made all the difference for me. I was able to see [the aurora] in Oakland, CA, and knew it was coming based upon user data in Reno." Damon T

Resources for educators here:

<https://infiniscope.org/page/aurorasaurus>



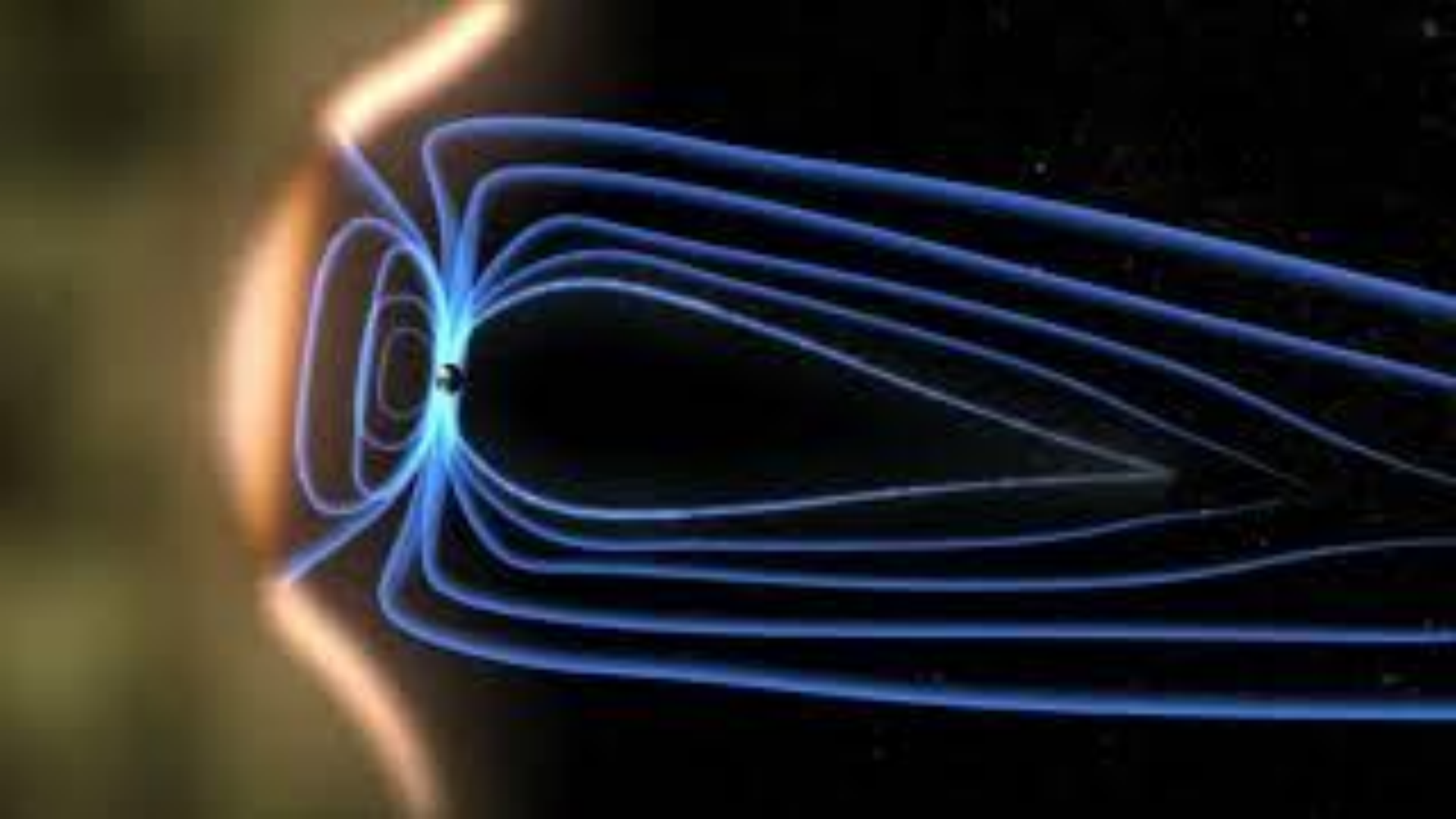
Users in Texas and Alabama received special alerts generated by nearby Aurorasaurus reporters

What is aurora?

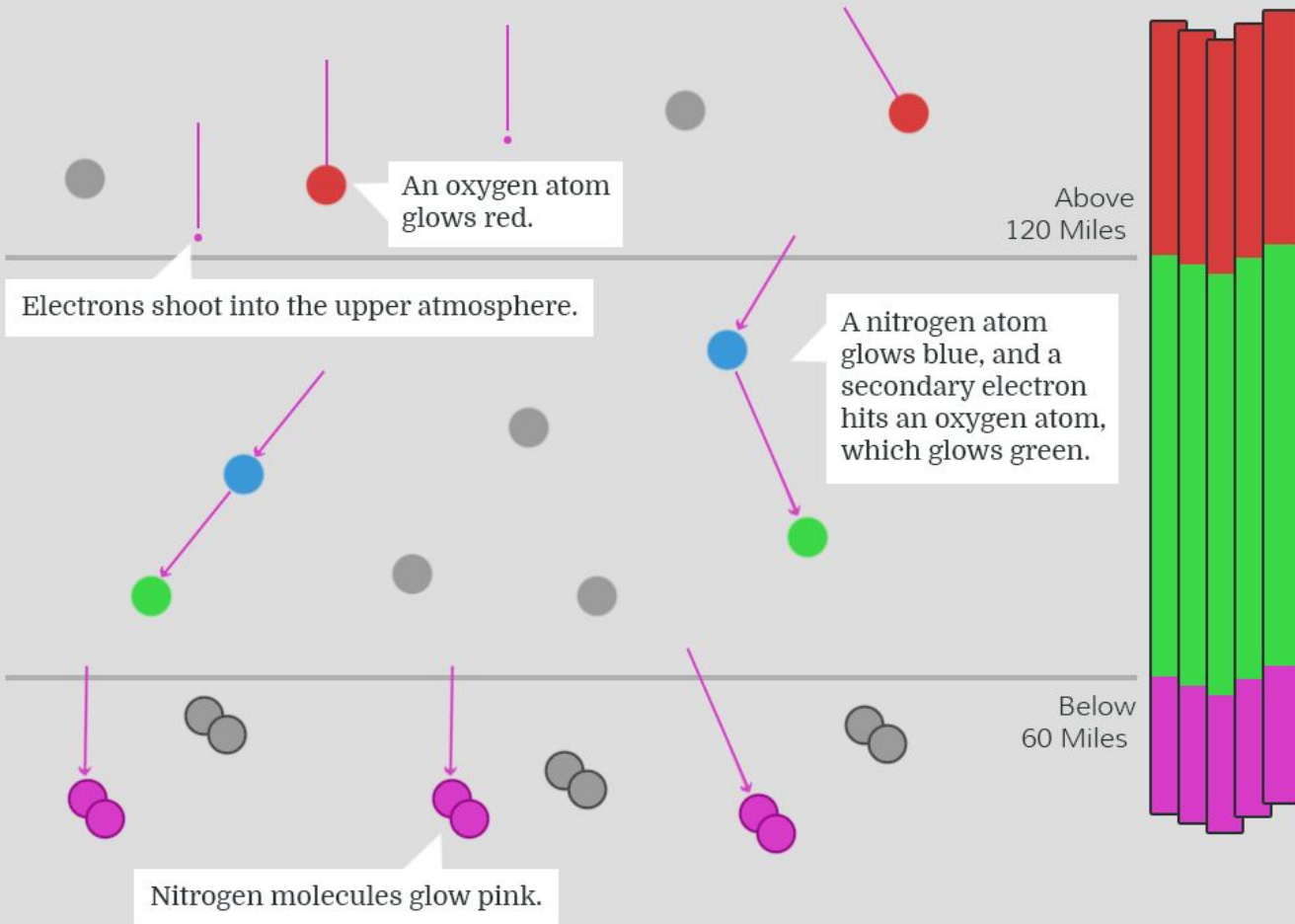


Photo by Andy Witteman

- The Northern Lights (aurora borealis) and Southern Lights (aurora australis)
- Made by processes in the space between the Sun and the Earth, as well as in the Earth's upper atmosphere. Auroras can also happen on some other planets!



Auroral Colors Vary with Altitude



Left: Different kinds of atoms and molecules make different colors. Graphic by Aurorasaurus.

Above: “Red, green, and blue lights combining and reflecting off a white wall.” [Wikimedia Commons](#)

Types of aurora

Discrete Arcs

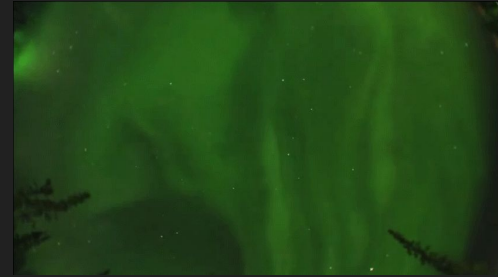


Used with permission of Todd Carlson, Canada,
Nov. 7, 2004



Photo Credit: Senior Airman Joshua Strang,
courtesy of United States Air Force. [CC-NC-SA](#)

Pulsating Patches



Used with permission of [Poul Jenssen](#)

Diffuse Glows



Credit: John Chumack, Dayton, OH, Nov. 09,
2004, from [Spaceweather.com](#)



Larry Koehn, Nashville, TN, Nov. 07, 2004, from
[Spaceweather.com](#)

STEVE



Photo by Catalin Tapardel

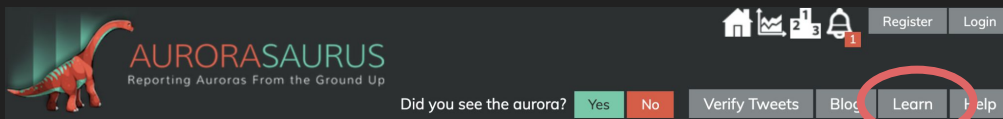
Note that STEVE's features tend to appear grey to the eye or may only show up on camera.

How can I see the aurora?

- Be in part of the world underneath the auroral oval
- Go during a time of year when the sky gets dark
- Find a place with a clear view toward the pole (North or South, whichever you are closest to)
- Watch space weather forecasts
- Watch weather forecasts (clouds block the view of auroras)
- Follow nearby aurora chaser groups on social media
- The aurora is fickle, so it may take multiple tries, even when everything looks promising.



Learn about the Northern Lights, no physics background required!



The screenshot shows the top navigation bar of the Aurorasaurus website. It includes a home icon, a bar chart icon, a camera icon, and a notification bell icon with a '1' badge. To the right are 'Register' and 'Login' buttons. Below the navigation bar is the site logo 'AURORASAURUS' with the tagline 'Reporting Auroras From the Ground Up' and a red dinosaur illustration. A survey question 'Did you see the aurora?' is followed by 'Yes' and 'No' buttons. Further right are 'Verify Tweets', 'Blog', 'Learn', and 'Help' buttons. The 'Learn' button is circled in red.

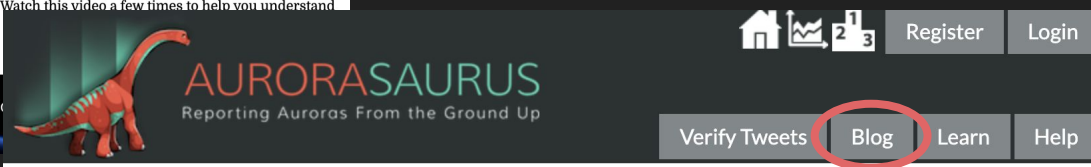
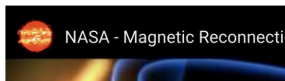
Beginner-level background information in the Learn section of aurorasaurus.org

Learn

- What Causes the Auroras?
- Where and When Do Auroras Occur?
- What Gives Auroras Different Colors?
- What Are the Common Shapes of Auroras?

What Causes the Auroras?

The making of an aurora is an intricate dance of particles and magnetism between the Sun and Earth. The Sun continuously produces a solar wind, made of charged particles (plasma) carrying the Sun's magnetic field. As the solar wind nears Earth, it causes the magnetic field of the Earth to be drawn into a giant teardrop shape, squashed on the side closest to the sun and drawn out into a long tail on the side farthest from the sun. This giant magnetic bubble is called the magnetosphere. Watch this video a few times to help you understand the description below!



This screenshot shows the same website header as above, but with the 'Blog' button circled in red. The navigation icons and 'Register'/'Login' buttons are also present.

Beginner- to intermediate-level deeper exploration in the Aurorasaurus blog



“What if North Dakota had its own aurora camera?”

Posted on June 30, 2021

Meet the North Dakota Dual Aurora Cameras (NoDDAC)! This project is led by university student and Aurorasaurus Ambassador Vincent Ledvina in collaboration with Aurorasaurus, the University of North Dakota (UND), and LiveAuroraNetwork. Using both a north-facing and an allsky camera, NoDDAC provides aurora



AURORASAUROS

Reporting Auroras From the Ground Up

Red aurora ends: row 50

ISS: row 42

STEVE: row 24

Red aurora starts: row 20

Low Earth Orbit begins: row 16

Visible meteors: row 13

Green aurora starts: row 11

Nitrogen pink aurora: row 9

Noctilucent clouds: row 8

Sprites: row 8

Highest scientific balloon: row 5

Highest clouds: row 2

Commercial aircraft: row 1

Mount Everest: row 1



300 mi/483 km

Aurora Altitudes Hat

120 mi/193 km

60 mi/97 km

6 mi/10 km

Altitude

What can auroras tell us?



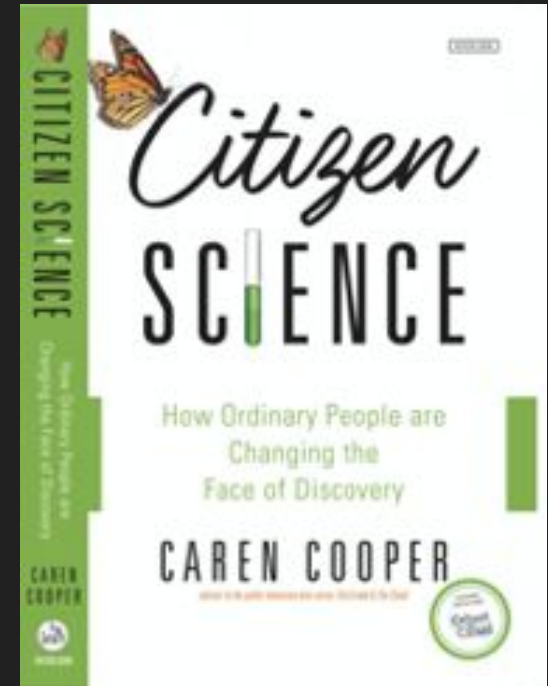
Photo by Donna Lach

- They reveal conditions in near-Earth space that scientists call “space weather”
- They show that the Earth has an atmosphere and a magnetic field, which are why we can live here

“Citizen science is about falling in love with the world more.”

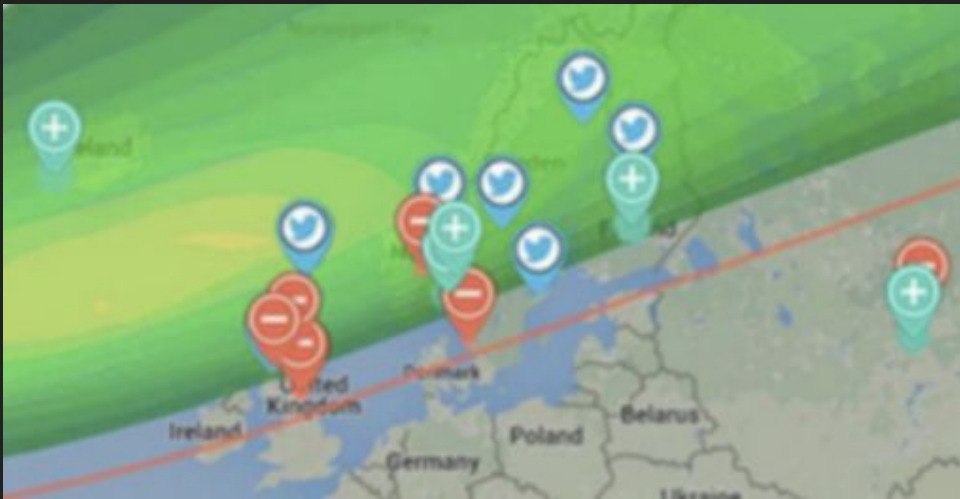
- Organized research in which members of the public engage in the processes of scientific investigation
 - Asking questions, collecting data, and/or interpreting results
- Works on a massive scale and generates high quality data
 - Leads to reliable, valid scientific outcomes, and unexpected innovations

Sharman Russell, author of
Diary of a Citizen Scientist



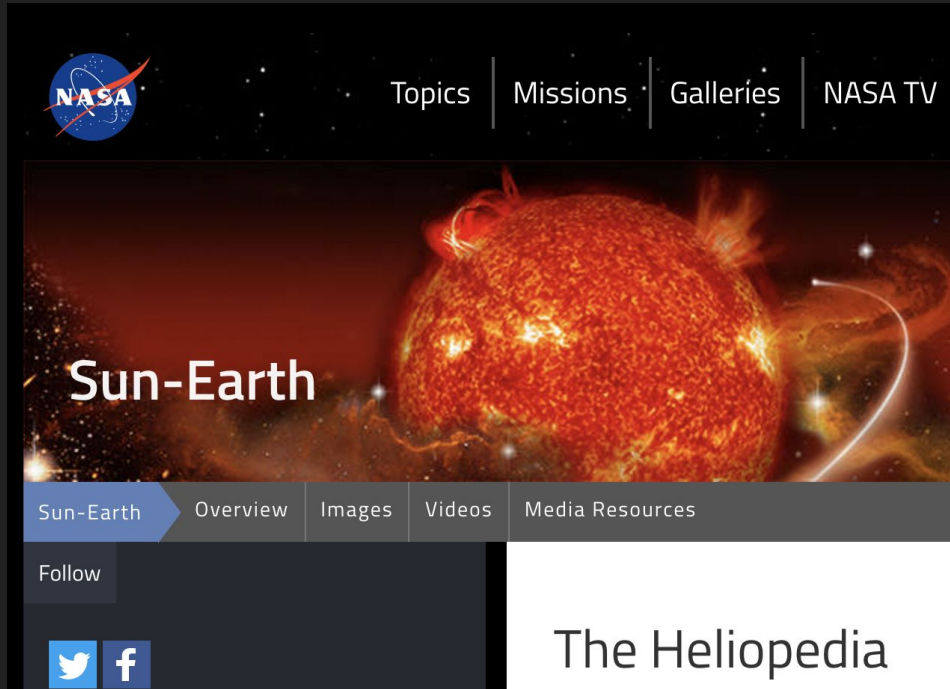
How does Aurorasaurus work?

- A scientific aurora model and “view line” are projected onto a map
- Participatory scientists add reports
- Participatory scientists verify tweets as realtime aurora sightings
- Sightings become data that scientists use to study aurora



Screenshot of Aurorasaurus website during an auroral display over Europe

More Resources



The screenshot shows the NASA Sun-Earth website. At the top left is the NASA logo. To its right are navigation links for "Topics", "Missions", "Galleries", and "NASA TV". The main header features a large image of the Sun with the text "Sun-Earth" overlaid. Below this is a secondary navigation bar with "Sun-Earth" (highlighted), "Overview", "Images", "Videos", and "Media Resources". A "Follow" section contains social media icons for Twitter and Facebook. The main content area is titled "The Heliopedia".



The screenshot shows the NASA Science Space Place website. It features the NASA logo and the text "NASA Science Space Place Explore Earth and Space!". Below this are three large, colorful icons: a green icon of Earth, a red icon of the Sun, and a purple icon of Saturn representing the Solar System. Each icon has its corresponding label ("Earth", "Sun", "Solar System") centered below it.



The screenshot shows a webpage with a background image of a green aurora over a lake at night. The text "AN AURORA NAMED STEVE" is displayed in the center, flanked by lightning bolt and star icons. In the bottom right corner, there is a red starburst graphic with the text "WOW IN THE WORLD" and a small "NP" logo.

A person is silhouetted against a night sky filled with the aurora borealis. The person has their arms raised in a gesture of awe or gratitude. The aurora displays vibrant green and blue hues, with some yellow and red near the horizon. The scene is set over a calm body of water, with dark hills and trees visible in the background under a starry sky.

Thank you!

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aurorasaurus.info@gmail.com

Photo by Christy Turner Photography