

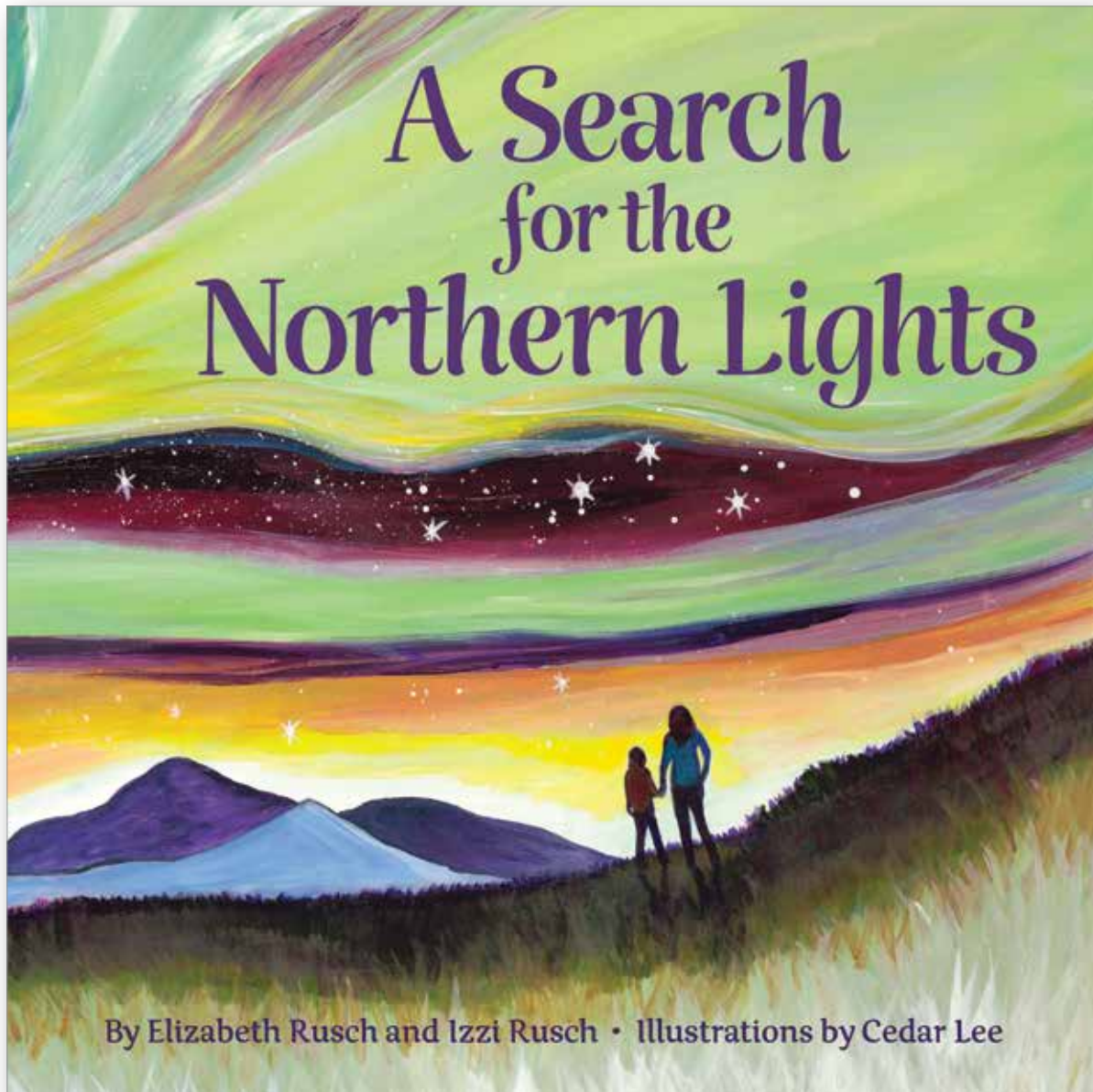


BOOK GUIDE FOR  
*A Search for the  
Northern Lights*

Elizabeth Rusch and Izzi Rusch

Illustrated by Cedar Lee

This guide was created by Kira Mesch and Cedar Lee.



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Recommended for ages 7–10

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# SUMMARY

Alix and her mom are fascinated by the nighttime light displays in the sky known as auroras, or northern lights, but being able to see them in person proves to be more challenging than expected. Inspired by the authors' own experiences, *A Search for the Northern Lights* follows a mother-daughter journey to learn everything about auroras, from what they are and where to find them to when they appear, and more.



## About the Authors

Elizabeth Rusch is an award-winning author, magazine writer, editor, writing teacher, and speaker. She has written more than a dozen acclaimed children's books, including *Glacier on the Move*, and has a passion for science and natural history. She currently lives in Portland, Oregon. Learn more at [ElizabethRusch.com](http://ElizabethRusch.com).

Izzi Rusch chased the northern lights with their mother Elizabeth Rusch and was so inspired by the experience that it led to cowriting their first book. Izzi attends school in Portland, Oregon, and is passionate about science.



## About the Illustrator

Cedar Lee discovered art at a young age, selling her first paintings at age twelve and holding her first solo show at sixteen. Today her work can be found internationally in galleries, private collections, and even on buildings. She finds most of her inspiration from nature and enjoys painting in her backyard studio in Portland, Oregon. Learn more at [ArtByCedar.com](http://ArtByCedar.com).

# READING DISCUSSION

1. How does the search for the northern lights start? How does Alix's mom describe auroras?
2. Alix and her mom travel to many places to look for the northern lights.  
Where do they go? Do you want to travel to any of those places?
3. What animals do Alix and her mom meet on their search for the northern lights?  
Where do they meet them?
4. Alix and her mom spend a lot of time outside in nature.  
What plants can you spot in the illustrations?
5. What colors are auroras? What makes an aurora different from the rest of the night sky?
6. How many times in the book do Alix and her mom see an aurora?  
Find the first time they see an aurora. Then find the last time.  
How are the first and last auroras different from each other?

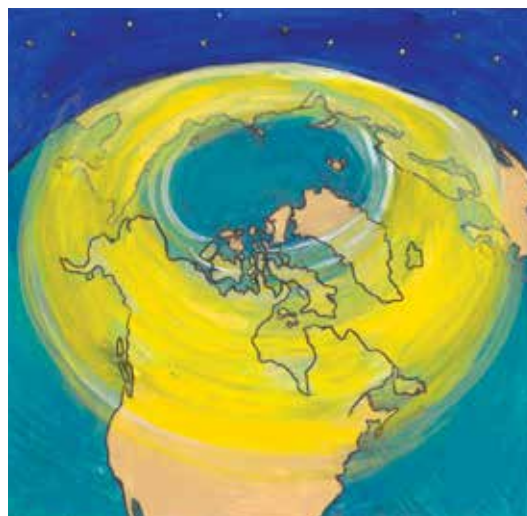


# SCIENCE

**Aurora or Northern Lights?** The aurora borealis is also known as the auroras, or northern lights—they refer to the same thing! What exactly are the northern lights, and why are they called that? Which places can you travel to see them?

**Magnetosphere:** The northern lights are a result of electrons, gases, solar wind, and the earth's magnetic field. Do some research to see these react with each other to give us the northern lights.

**Colors of the Aurora:** Charged particles from solar storms interacting with molecules in the atmosphere create the colors of the auroras. Research what colors oxygen makes when charged particles interact with it and what colors nitrogen makes. Make a drawing of an aurora and label the colors "O" for those made from oxygen or "N" for those made from nitrogen.



# GEOGRAPHY

Print out the maps of the United States and the world on pages 6 and 7.

Color in aurora ovals on the maps to show where you may be able to view the northern lights right now. *Hint:* You can use the NOAA's Aurora 30 Minute Forecast <https://www.swpc.noaa.gov/products/aurora-30-minute-forecast> and University of Alaska Fairbanks' Aurora Forecast <https://www.gi.alaska.edu/monitors/aurora-forecast> for help.

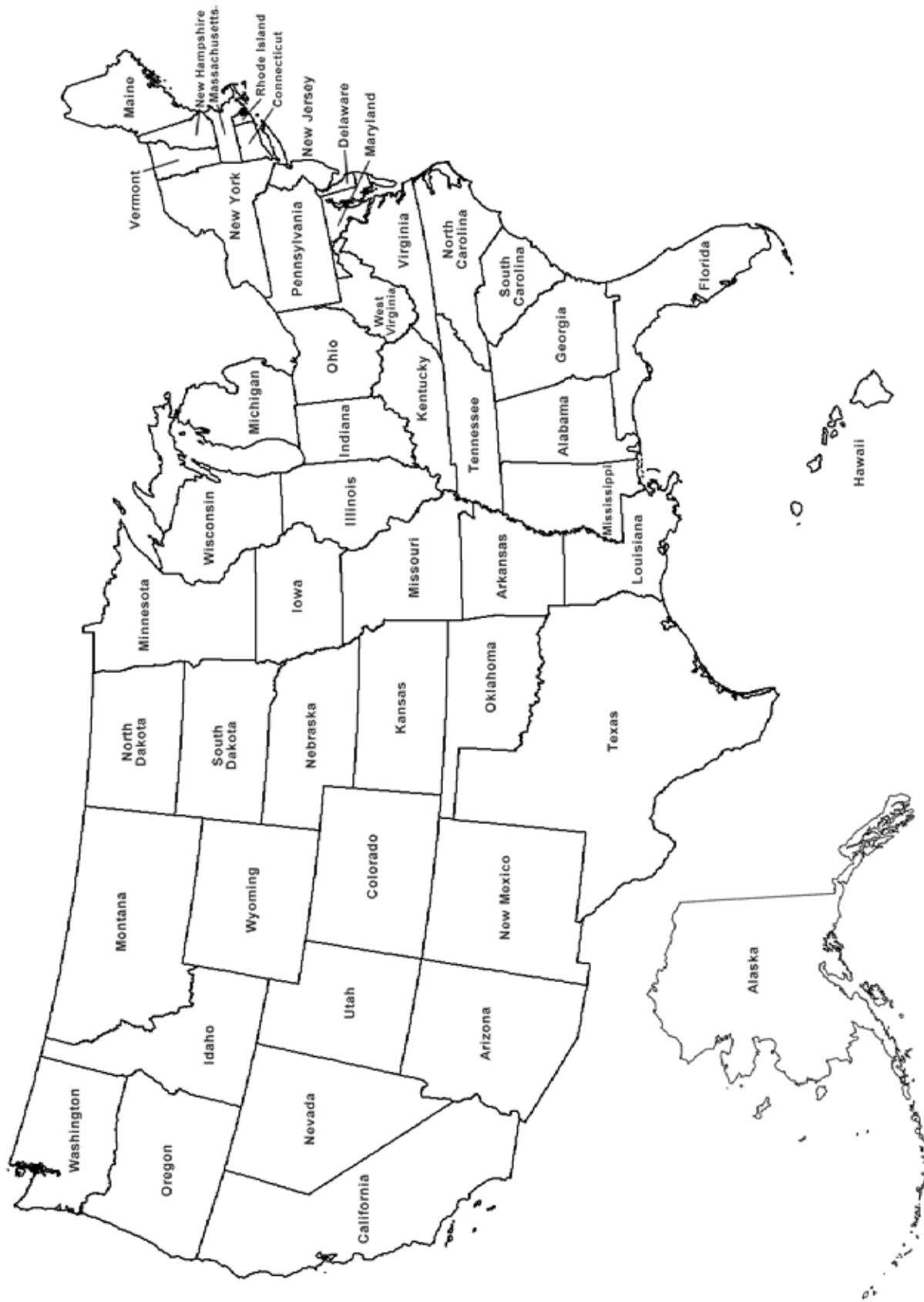
- Where in the United States are you most likely to see an aurora?
- Does going further north make you more or less likely to see an aurora?



# Map of the World Showing Major Countries



Map By: [WaterproofPaper.com](http://WaterproofPaper.com)



Printable Maps By: [WaterproofPaper.com](http://WaterproofPaper.com)

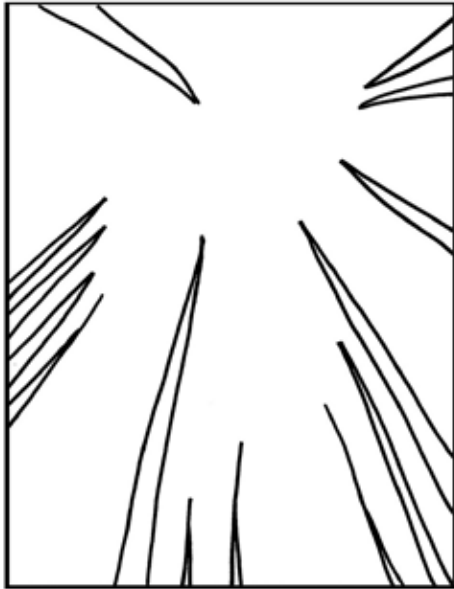




# HOW TO PAINT BEAUTIFUL TREES IN THE SKY

Learn how to paint your own beautiful scene of trees in the sky! You will need:

- Blank piece of paper
- Paintbrush
- Color paints
- Pencil
- Water container



**Step 1:** Draw tree trunks from the edges pointing toward the center. Make them wider at the bottom.



**Step 2:** Add where your tree branches and leaves will be.



**Step 3:** Paint the sky in the background in a very light color. Leave some parts white to add clouds.



**Step 4:** Paint the leaves in a medium color so they overlap the sky in the background. Paint the tree trunks last in a very dark color.

# VIDEOS & INTERACTIVE RESOURCES

Take a self-guided tour of auroras: [https://www.exploratorium.edu/learning\\_studio/auroras/](https://www.exploratorium.edu/learning_studio/auroras/)

Watch the electrons from a solar storm interact with the earth's atmosphere to make an aurora: <https://svs.gsfc.nasa.gov/vis/a010000/a010000/a010058/index.html>

A NASA image of an aurora as seen from space: [https://www.nasa.gov/mission\\_pages/sunearth/news/gallery/ontario\\_vir\\_2012282.html](https://www.nasa.gov/mission_pages/sunearth/news/gallery/ontario_vir_2012282.html)

Create your own aurora with this Icelandair interactive: <https://www.icelandair.com/en-gb/northern-lights/>

Track the sun's activity: <https://www.spaceweatherlive.com/en/solar-activity>

TED-Ed video: What is an aurora? By Michael Molina  
<https://www.youtube.com/watch?v=czMh3BnHFHQ>

National Geographic video: "Sled Dogs: More Than Meets the Eye"  
<https://www.youtube.com/watch?v=6nVfFNbxX7s>

Videos of the northern lights:

Maciej Winiarczyk: <https://www.youtube.com/watch?v=fVsONlc3OUY>

Maciej Winiarczyk: <https://www.youtube.com/watch?v=KGtjoxFtYo>

Eric Cheng: <https://www.youtube.com/watch?v=zdosKWW2YZ0>

Eclipse videos:

National Geographic: <https://www.youtube.com/watch?v=cxrLRbkOwKs>

The Salt Lake Tribune: [https://www.youtube.com/watch?v=t7FP\\_lyg1uE](https://www.youtube.com/watch?v=t7FP_lyg1uE)

