

# Observing and Exploring Our Night Sky

## Activities and Design Challenges for Families and Caregivers

The night sky has always fascinated people of all cultures and generations. Stars, constellations, planets, our moon -- our Earth is a very small part of our solar system and Milky Way galaxy. These resources offer sky observation apps, activities, design challenges, a citizen science project measuring light pollution using constellations, interactive online activities, and inspiring and informative videos. Resources include activities for preschoolers and videos of Indigenous star stories.

### Apps for Night Sky Observations (free)

- **Star Charts: Starview Lite App, Star Chart App, Night Sky Lite App.** Stargaze night and day with these digital real-time star charts. Download a free app. Wherever you point your phone, the screen will show you the location of stars, constellations, planets, moon, and more. Download at [App Store: https://apple.co/3eYBv1g](https://apple.co/3eYBv1g). [Google Play: https://bit.ly/2UhVr79](https://bit.ly/2UhVr79)
- **Moon Phase Calendar Apps.** Download at [Google Play: https://bit.ly/3gYIrgm](https://bit.ly/3gYIrgm). [App Store: https://apple.co/3dEleOE](https://apple.co/3dEleOE)

### Activities

- [My Night Sky](http://astrosociety.org/education-outreach/early-learners/my-sky-tonight.html) (young astronomers). A variety of astronomy activities for PreK. <http://astrosociety.org/education-outreach/early-learners/my-sky-tonight.html>
- [Make an Earth-Moon Model](https://bit.ly/2MzyRTk) (Exploratorium) <https://bit.ly/2MzyRTk>
- [Moon Phases Model](https://go.nasa.gov/372NZ58). (NASA) Create a model that shows the different phases of the moon using a white (styrofoam) ball, pencil, light source, and you. <https://go.nasa.gov/372NZ58>
- [Make a Moon Phases Calendar and Calculator](https://go.nasa.gov/2XGUyY9). (NASA) Make a moon calendar to figure out when and where to spot the moon every day of the year. <https://go.nasa.gov/2XGUyY9>
- [Look at the Moon! Journaling Project](https://go.nasa.gov/376JxT1). (English and Spanish) (NASA). Map out the patterns of the moon by keeping a calendar journal for a month. <https://go.nasa.gov/376JxT1>
- [Celestial Navigation: The North Star](http://www.teachengineering.org/activities/view/cub_navigation_lesson02_activity2). (Teach Engineering) Make a paper or protractor quadrant to measure the altitude of Polaris and your latitude on Earth. [www.teachengineering.org/activities/view/cub\\_navigation\\_lesson02\\_activity2](http://www.teachengineering.org/activities/view/cub_navigation_lesson02_activity2)
- [Family STEM Activities](https://www.jpl.nasa.gov/edu/teach/) (NASA Jet Propulsion Laboratory). Large collection of design activities to explore the universe. STEM Lessons homepage: Filter for "Family Activities." <https://www.jpl.nasa.gov/edu/teach/>
- **NASA STEM @ Home Resources.** Activities you can do together.
  - Grade K-4 activities: [www.nasa.gov/stem-at-home-for-students-k-4.html](http://www.nasa.gov/stem-at-home-for-students-k-4.html)
  - Grade 5-8 activities: [www.nasa.gov/stem-at-home-for-students-5-8.html](http://www.nasa.gov/stem-at-home-for-students-5-8.html)
  - Grade 9-12 activities: [www.nasa.gov/stem-at-home-for-students-9-12.htm](http://www.nasa.gov/stem-at-home-for-students-9-12.htm)

### Design Challenges

- [Constellation Design Challenge](https://bit.ly/372O7I8). (Discovery World @ Home) Bring the night sky inside by creating constellations with a light source. <https://bit.ly/372O7I8>
- [Build a Telescope](https://bit.ly/2z7eaLi). (National Geographic Kids) This is one of many web links you can find by searching "build a telescope at home." <https://bit.ly/2z7eaLi>

### Citizen Science

- [Globe At Night](http://www.globeatnight.org/). An international citizen-science campaign to measure the brightness of light pollution in your night sky by the visibility of a constellation. [www.globeatnight.org/](http://www.globeatnight.org/)



## Interactive Online Activities

- [Mindy's Constellation Exploration](https://bit.ly/2XBzMJ4) (young astronomers). Connect the stars and learn the stories of constellations. <https://bit.ly/2XBzMJ4>
- [NASA Kids' Club: Info for Parents, Teachers and Caregivers](https://go.nasa.gov/3cDDd6u). Play online games and learn about NASA. <https://go.nasa.gov/3cDDd6u>
- [NASA Space Play](https://spaceplace.nasa.gov/menu/play/). Explore Earth and space.  
English <https://spaceplace.nasa.gov/menu/play/>  
Spanish <https://spaceplace.nasa.gov/sp/menu/play/>
- [Stellarium](https://stellarium-web.org/). A free open source planetarium that shows a realistic sky in 3D. <https://stellarium-web.org/>
- [Find Your Way Using the Stars](http://www.naturalnavigator.com/find-your-way-using/stars/). How do you find directions using stars instead of a compass?  
[www.naturalnavigator.com/find-your-way-using/stars/](http://www.naturalnavigator.com/find-your-way-using/stars/)

## Videos:

### Stars and constellations:

- [Why Do the Stars Come Out at Night?](https://bit.ly/3gZtr1X) (Mystery Science) (2:41 min) <https://bit.ly/3gZtr1X>
- [The Unbearable Beauty of the Night Sky](https://bit.ly/2MAP5eX) Extraordinary photography of the night sky at an observatory. (7:02 min) <https://bit.ly/2MAP5eX>
- [Relearning the Star Stories of Indigenous Peoples](https://bit.ly/2Y6vvpF). Audio interviews: "Ways of Knowing, Written in the Stars." Elder story: The Story of Grandmother Spider and Star Woman. (PBS Science Friday) <https://bit.ly/2Y6vvpF>
- [Navajo: Story of the Stars](http://www.youtube.com/watch?v=gYWyIISAMGs) (13:29 min) [www.youtube.com/watch?v=gYWyIISAMGs](http://www.youtube.com/watch?v=gYWyIISAMGs)

### Solar system:

- [To Scale: The Solar System](https://bit.ly/3f07XzY) (7:06 min) People build a scale model of the solar system on a dry lakebed using trucks to create orbits. <https://bit.ly/3f07XzY>

### Moon phases and eclipses:

- [Lunar Eclipse 101](https://youtu.be/VW2xRR75lKE) (National Geographic). Video that explains the three types of lunar eclipses (total, partial and penumbral). (3:17 min) <https://youtu.be/VW2xRR75lKE>
- [Lunar Eclipse](http://www.exploratorium.edu/video/what-lunar-eclipse) (Exploratorium). Video that shows basic information on a lunar eclipse. (1:13 min) [www.exploratorium.edu/video/what-lunar-eclipse](http://www.exploratorium.edu/video/what-lunar-eclipse)

### Effects of light pollution:

- [Light Pollution 101](http://www.youtube.com/watch?v=3V6KWt6flbA) (National Geographic), with Spanish subtitles. (2:44 min) [www.youtube.com/watch?v=3V6KWt6flbA](http://www.youtube.com/watch?v=3V6KWt6flbA)
- [Losing the Dark: Contaminacion Luminica/Light Pollution](http://www.youtube.com/watch?v=ul0vbPse4yA) (6:27 min) [www.youtube.com/watch?v=ul0vbPse4yA](http://www.youtube.com/watch?v=ul0vbPse4yA)
- [Why the Stars Are Disappearing](https://bit.ly/3h0XVjY) (11:29 min) <https://bit.ly/3h0XVjY>

### NASA astronaut experiments:

- [NASA STEMonstrations](http://www.nasa.gov/stemonstrations). Videos of Space Station astronauts doing STEM demonstrations for students. [www.nasa.gov/stemonstrations](http://www.nasa.gov/stemonstrations)

## Resources

- [Every Child Deserves to See the Stars: Five Ways to Make It So](https://bit.ly/2z7blKb). (Richard Louv article) <https://bit.ly/2z7blKb>
- [Celestial Objects](https://bit.ly/3gYZuiE) (uploaded by NASA Goddard). <https://bit.ly/3gYZuiE>

These and more at [http://csencolorado.org/Family and Caregiver Investigations](http://csencolorado.org/Family%20and%20Caregiver%20Investigations).