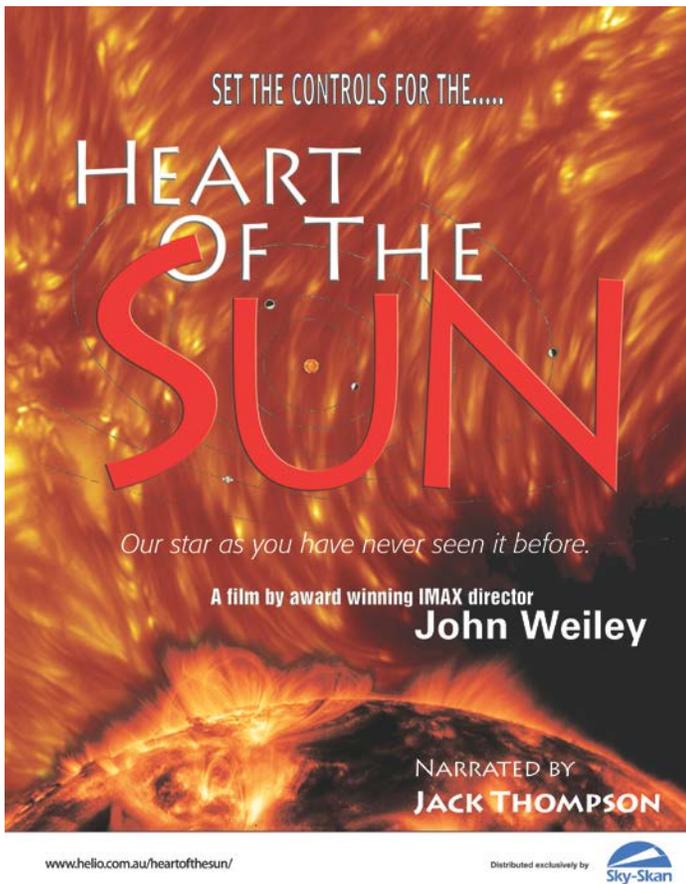


# Heart of the Sun

Recommended for grades 4 & up



## Program Summary

Experience our closest star, the Sun, from a new perspective. This full-dome show by award-winning IMAX director John Weiley takes you inside the Sun in breathtaking high definition. Space-based telescopes, along with a new generation of Earth-based instruments, capture both the fine surface detail and the vast eruptions of the corona with unprecedented clarity. From the Neolithic skywatchers of Europe to the solar observatories of Mesoamerica to the dawning of modern science, *Heart of the Sun* reveals how the development of our cosmology has been informed by our struggle to understand this living star that continues to challenge our imagination today.

*This show is a production of Heliograph Productions and is distributed by Sky-Skan, Inc.*

## Curriculum Connections

- The Sun as a Star
- Energy from the Sun
- Earth's Axial Tilt & the Seasons
- Earth's Climate
- Revolution of Earth Around the Sun
- Technology to Observe the Sun
- The Role of Magnetic Fields in Sun-Earth Interactions

## Vocabulary

- Aurora (Northern Lights)
- Copernican model
- Corona
- Coronal mass ejections
- Earth's tilt
- Galileo
- Greenland
- Land of the Midnight Sun
- Machu Picchu
- Magnetic field
- Magnetosphere
- Plasma
- Revolve
- Rotate
- SOHO satellite
- Solar eclipse
- Solar observatory
- Solar power
- Solar storms
- Solar wind
- Solstices (Winter/Summer)
- Sunspot cycle
- TRACE satellite
- Yohkoh satellite

## Resources

### PRE- or POST-VISIT ACTIVITIES/TOPICS FOR DISCUSSION:

- Use the <spaceweather.com> website listed below to look at the face of the Sun today. Click on the picture of the Sun on the left side of the web page. Are there any sunspots? Make counts every day of the number of sunspots and graph the numbers.
- Using the same website <spaceweather.com>, measure the width of a large sunspot in millimeters. Using the Sun's diameter as a scale (the Sun is 864,000 miles across), how wide are the sunspots? Compare them to the size of the Earth.
- Brainstorm ways the Sun affects the Earth – make a list before visiting the planetarium, then add to it after seeing the “Heart of the Sun” program.
- The Sun maintains its size due to a balance between gas pressure and gravity. Energy from the fusion process produces outward pressure from hot gases expanding, which is exactly balanced by the inward pull of gravity. You can model this with two volunteer students pushing and pulling on each other, but not really going anywhere. One student represents the outward push of gas pressure; the other represents the inward pull of gravity.

### INTERNET RESOURCES:

- The latest solar activity: <http://www.spaceweather.com>
- Solar Dynamics Observatory: <http://sdo.gsfc.nasa.gov/>
- SOHO satellite: <http://soho.nascom.nasa.gov/>
- STEREO mission: [http://www.nasa.gov/mission\\_pages/stereo/main/index.html](http://www.nasa.gov/mission_pages/stereo/main/index.html)
- Lifespan of a star: [http://aspire.cosmic-ray.org/labs/star\\_life/starlife\\_main.html](http://aspire.cosmic-ray.org/labs/star_life/starlife_main.html)
- or <http://www.enchantedlearning.com/subjects/astronomy/stars/lifecycle/>
- Activities for students from Stanford: <http://solar-center.stanford.edu/activities/>
- How big is the Sun? Activities from Harvard:  
<http://hea-www.harvard.edu/scied/SUN/SunActivitiesIntro.html>
- More excellent activities (including sunspot counts):  
[http://www.sunearthplan.net/media/9984\\_IHY\\_activities.pdf](http://www.sunearthplan.net/media/9984_IHY_activities.pdf)