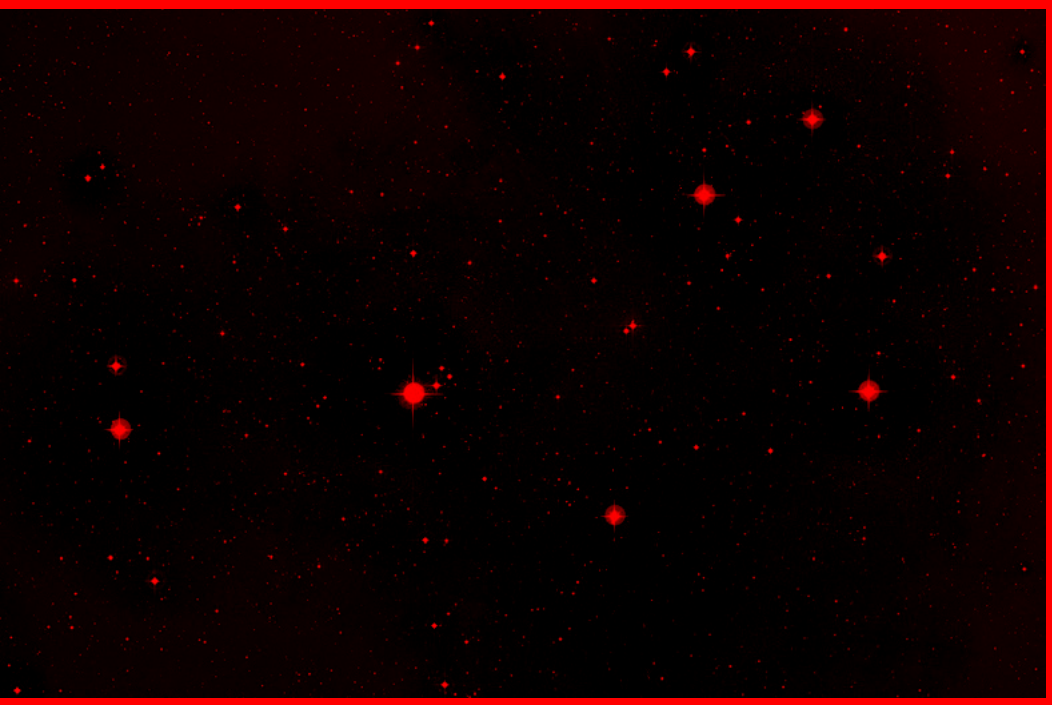
National Aeronautics and
Space Administration

UNIVERSE DISCOVERY GUIDES

March

PLEIADES STAR CLUSTER



Credit: NASA, ESA and AURA/Caltech

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Published 2013.

The universe is a place of change. NASA missions advance our understanding of the changing universe.

PLEIADES, TEENAGE SISTER STARS READYING TO LEAVE HOME

How many were in your family as you grew up? Over the years, did some move away to live on their own?

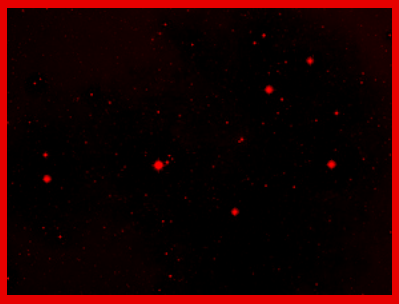
The Pleiades represents a huge family of young stars. They were born, like most stars are, from a cloud of gas and dust in our galaxy.

In ancient Greek stories, two of the Pleiades were the parents and the rest were their children — now all teenage sisters. When you look up at the Pleiades, you may only see only five or six stars. Binoculars reveal over a hundred more. Large telescopes have found over 3,000 stars in the Pleiades family.

Born while the dinosaurs were roaming the Earth, the Pleiades family has been together for about 100 million years.

This image captures the sister stars all decked out in blue gowns — the effect of the blue light from the young stars reflecting off of a passing dust cloud. Within 250 million years from now, they will all have moved away from their natal home to go out and mingle with the general population of other adult stars in our Galaxy.

After our Sun was born a few billion years ago, it was likely part of a large family of stars like the Pleiades. Imagine if the Sun were one of the stars in the middle of the Pleiades. Our night sky would be ablaze with thousands of stars all relatively close to us — within about six or seven light-years. Today, the Sun has only a couple of other stars that close. We have long since moved away from our original family of sister stars, but most of our sisters are still out there traveling through the cosmos.



Credit: NASA, ESA and AURA/ Caltech

SKY FEATURE: PLEIADES STAR CLUSTER

How to Find it

Distance: 440 light-years
Consists of about 3,000 stars

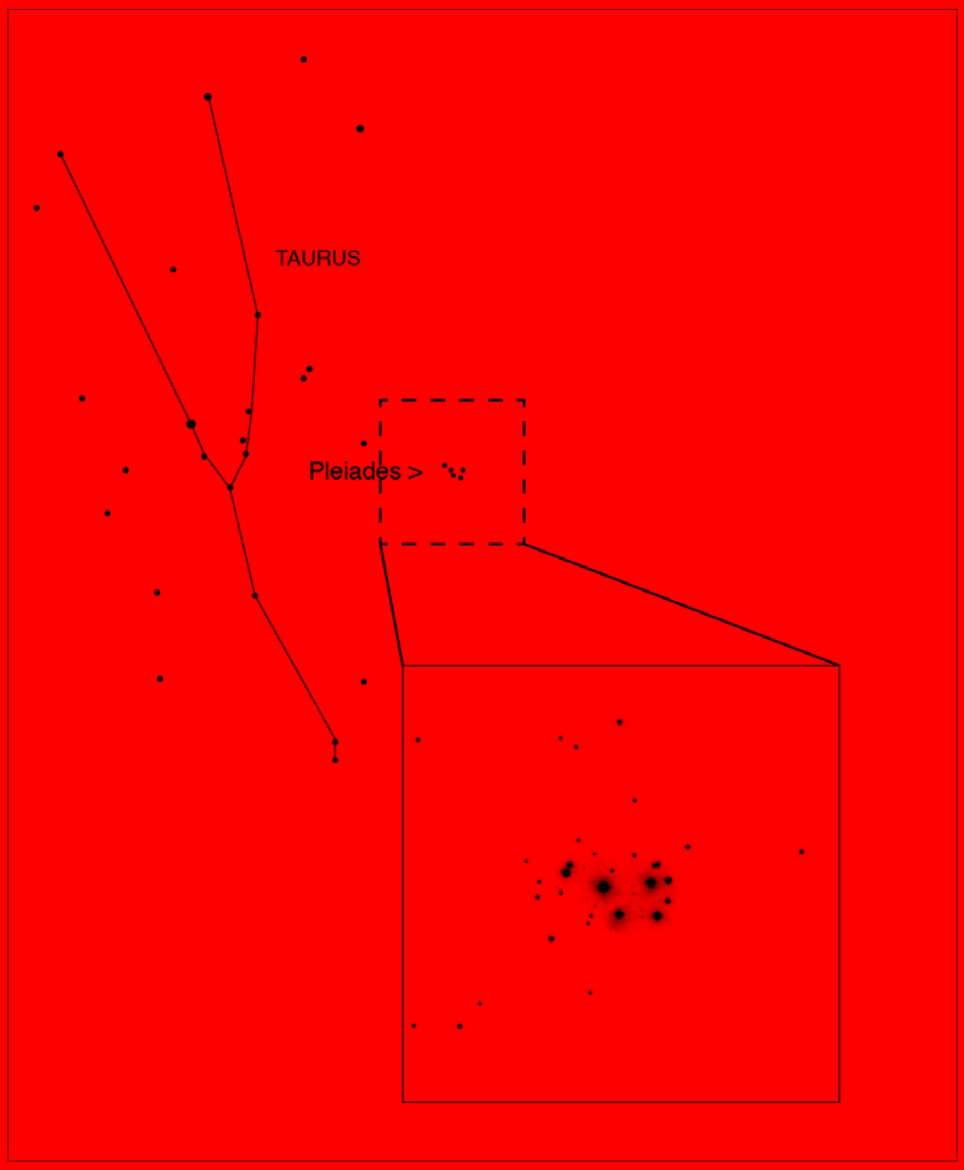
Visual Magnitude: 1.6

Apparent dimension: 110 arcminutes
(about the width of 2 fingers held at arm's length)

Actual dimension: About 13 light-years across

To view: binoculars or small telescope

Click here to jump to the full-sky March Star Map.

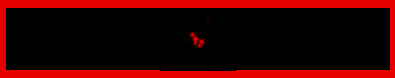


In March in the early evening, the Pleiades open star cluster is above the western horizon. You might notice a haziness surrounding the stars. The cluster is drifting through a random cloud of gas and dust in our Galaxy and the stars are lighting up the cloud. This is not the cloud from which the Pleiades were born. The cloud that surrounded the Pleiades when they were infants dissipated long ago.

TRY THIS!

The Pleiades is not the Little Dipper!

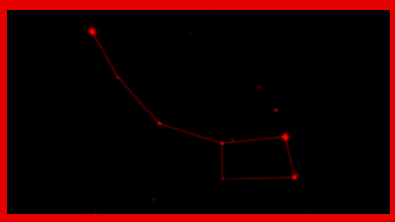
Many think the Pleiades cluster looks like a little dipper. But to see the group of stars we call “The Little Dipper” you need to face north. In addition, the Little Dipper covers a lot more sky than the Pleiades. See how they compare in these two images.



Pleiades

In Greek mythology, the Pleiades represent the seven daughters of the titan Atlas and the sea-nymph Pleione. So the Pleiades are also called the Seven Sisters, even though you can probably only see five or six with just your eyes.

Take a look through binoculars. You’ll see it is a huge family indeed!



Little Dipper

Take your own family portrait of the Pleiades!

NASA’s portal to the MicroObservatory Network allows you to control a telescope right from your home computer or mobile device and tell the telescope to take your own images of the Pleiades and many other features of the sky.

It’s easy! Start here to select your target:

http://mo-www.harvard.edu/cgi-bin/OWN/Own.pl



MicroObservatory Robotic Telescope Network, Harvard Smithsonian Center for Astrophysics

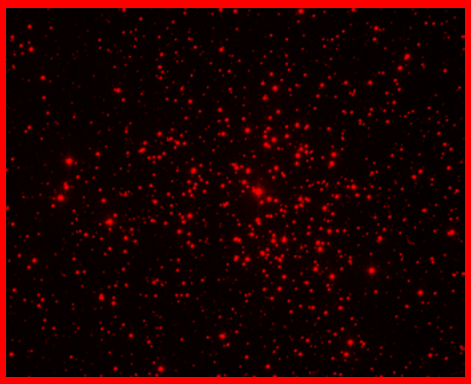
ACTIVITY: YOUNG STAR CLUSTERS AND OLD STAR CLUSTERS

Time: 10–20 minutes
Age: 12 and up

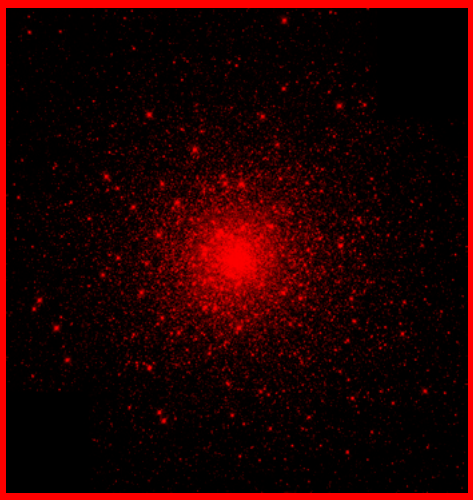
Scientists call groups of stars like the Pleiades an “open star cluster.” These clusters are young and just starting out in the Galaxy. They are “open” because they will eventually disperse.

Another type of star cluster is called a “globular cluster.” These contain very old stars in dense clusters like the Hercules Cluster. They don’t disperse and stay together all their lives.

What differences do you see between the Open Cluster (named M37) and the Globular Cluster (named M80)?



Open Cluster M37. Credit: NOAO/AURA/NSF



Globular Cluster M80. Credit: AURA/STScI/NASA

This is Activity 5 in *The Hidden Lives of Galaxies* activity booklet provided by the NASA Goddard Space Flight Center. For more tips on how to use this activity, see:
http://imagine.gsfc.nasa.gov/docs/teachers/galaxies/imagine/act_clusters.html

For more education and public outreach activities from the Goddard Space Flight Center’s High Energy Astrophysics Science Archive Center:
http://heasarc.gsfc.nasa.gov/docs/outreach.html

Find more NASA Activities

Looking for more Earth and Space Science formal and informal education activities?

Try out NASA’s digital collection of resources at NASA Wavelength:
http://nasawavelength.org



http://imagine.gsfc.nasa.gov



http://nasawavelength.org

CONNECT TO NASA SCIENCE

How do we know?

How did the scientists use the Hubble Space Telescope to figure out how far away the Pleiades are?
http://hubblesite.org/newscenter/archive/releases/2004/20/text/

For the latest news from Hubble, visit
http://hubblesite.org/newscenter/

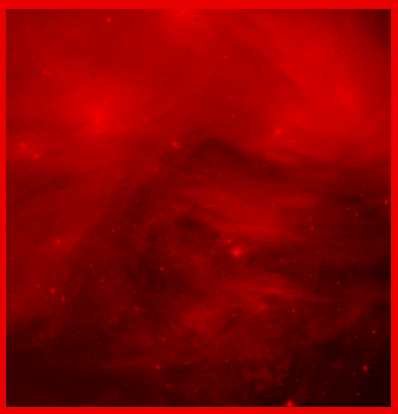
NASA SCIENCE | ASTROPHYSICS
http://science.nasa.gov

Pleiades: Pretty in Pink

Spitzer Space Telescope gives us a different view of the Sisters, all dressed in pink.

The warmth of the Sisters heats the dust surrounding them, causing their dusty veil to glow in infrared light. Spitzer Space Telescope detects this infrared light, and scientists chose a reddish color to highlight the warm dust for this image.
http://www.spitzer.caltech.edu/images/1766-ssc2007-07b-Pink-Pleiades

For the latest news from Spitzer, visit
http://www.spitzer.caltech.edu/news



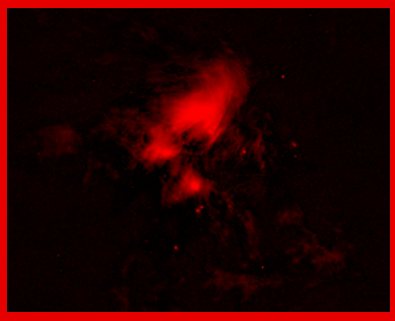
Credit: NASA/JPL-Caltech/
J. Stauffer (SSC-Caltech)

The Sisters peek through a Dusty Veil

So photogenic, the Sisters are captured in another type of light.

The WISE telescope showcases the Sisters hiding behind a veil of dust.
http://wise.ssl.berkeley.edu/gallery_Pleiades.html

For the latest news from WISE, visit
http://wise.ssl.berkeley.edu/news.html



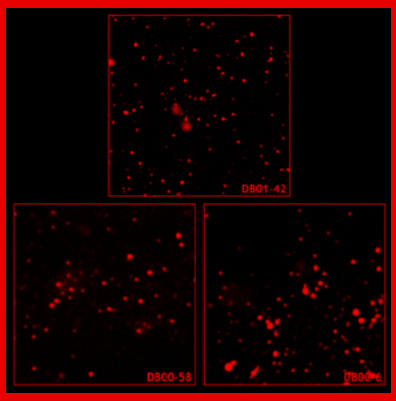
Credit: NASA/JPL-Caltech/
WISE Team

Young Star Families are Sometimes Hidden from View

There are many families of young stars like the Pleiades in our galaxy, but they often reside behind so much dust that it makes them almost impossible to see in visible light. Here are some examples of such clusters, these particular ones studied by the Chandra X-ray Observatory and the 2MASS infrared sky survey.
http://chandra.harvard.edu/photo/2004/db/

For the latest news from Chandra, visit
http://chandra.harvard.edu/press/

To learn more about NASA Astrophysics Missions, visit:
http://science.nasa.gov/astrophysics/



Credit: X-ray: NASA/CXC/
Northwestern U./C.Law & F.Yusef-
Zadeh; Infrared: 2MASS/UMass/
IPAC-Caltech/NASA/NSF

ACKNOWLEDGEMENTS

The Universe Discovery Guides are a collaborative effort between members of the NASA Astrophysics education and public outreach (E/PO) community and the NASA Astrophysics Science Education and Public Outreach Forum. We also gratefully acknowledge the informal educators from the Astronomy from the Ground Up (AFGU) and the Sky Rangers communities who field-tested the guides.

Contributing NASA Astrophysics E/PO programs include: Afterschool Universe, Alien Earths, Astronomy Picture of the Day (APOD), the Chandra X-ray Observatory, the Cosmic Background Explorer (COBE), Cosmic Questions, the Euclid mission, Exoplanet Exploration, the Fermi Gamma-ray Space Telescope, the Galaxy Evolution Explorer (GALEX), the Herschel Space Observatory, the High Energy Astrophysics Science Archive Research Center (HEASARC), the Hubble Space Telescope, Imagine the Universe, the Infrared Processing and Analysis Center (IPAC), the James Webb Space Telescope, the Kepler Mission, the Milky Way Project, the Night Sky Network (NSN), the Nuclear Spectroscopic Telescope Array (Nu-STAR), Observing with NASA (OwN), Other Worlds, the Planck mission, PlanetQuest, Planet Hunters, the Spitzer Space Telescope, StarChild, the Stratospheric Observatory for Infrared Astronomy (SOFIA), the Swift mission, the Two Micron All-Sky Survey (2MASS), the Wide-Field Infrared Survey Explorer (WISE), the Wilkinson Microwave Anisotropy Probe (WMAP), the X-ray Multi-Mirror Mission (XMM-Newton), and Zooniverse.

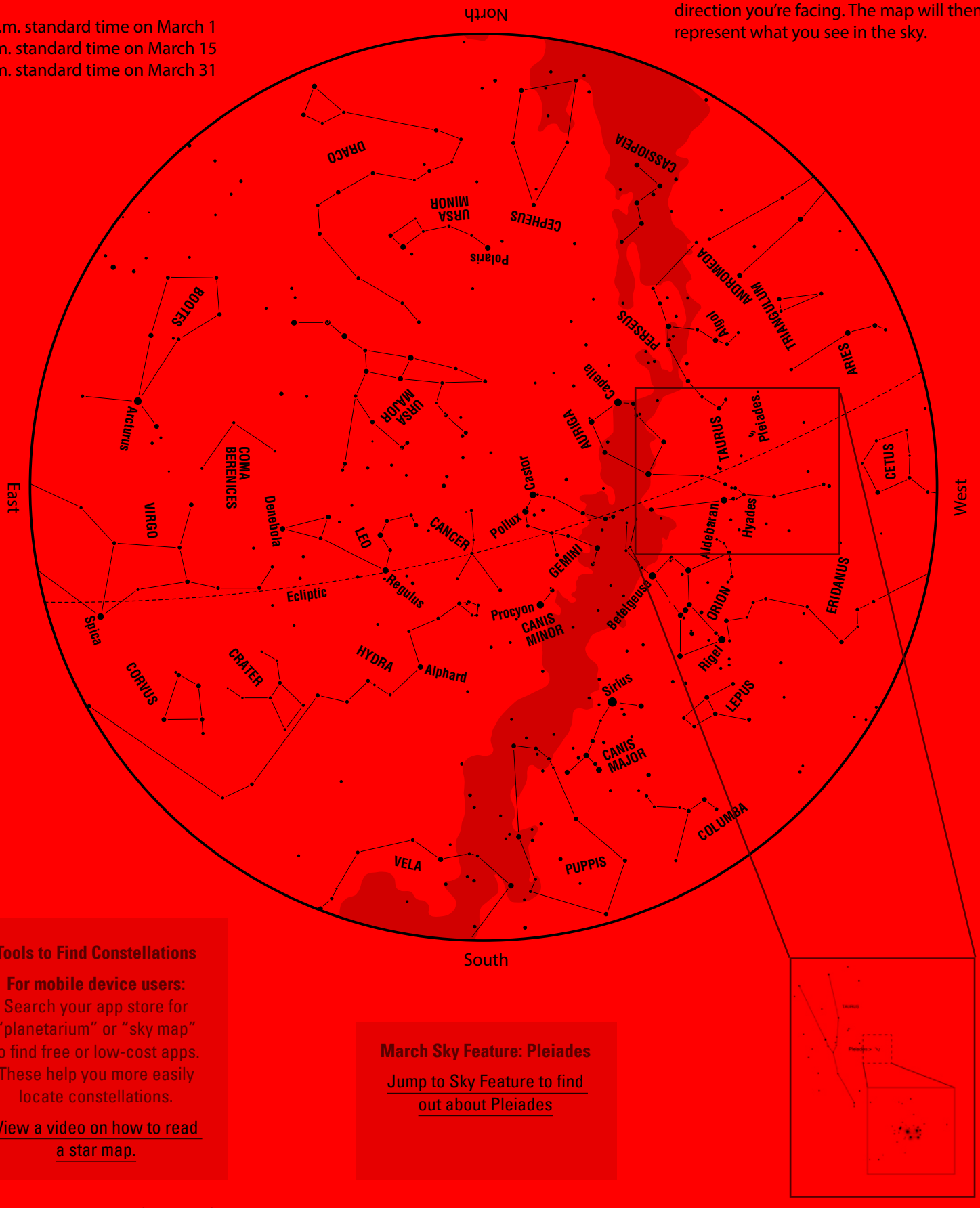
The Astrophysics Forum is supported by NASA's Science Mission Directorate under Cooperative Agreement NNX09AQ11A to the Space Telescope Science Institute, Astronomical Society of the Pacific, Adler Planetarium and Astronomy Museum, and Johns Hopkins University.

APPENDIX: MARCH STAR MAP

The all-sky map represents the night sky as seen from approximately 35° north latitude at the following times:

10 p.m. standard time on March 1
9 p.m. standard time on March 15
8 p.m. standard time on March 31

To locate stars in the sky, hold the map above your head and orient it so that one of the four direction labels matches the direction you're facing. The map will then represent what you see in the sky.



Tools to Find Constellations

For mobile device users: Search your app store for "planetarium" or "sky map" to find free or low-cost apps. These help you more easily locate constellations.

View a video on how to read a star map.

March Sky Feature: Pleiades

Jump to Sky Feature to find out about Pleiades