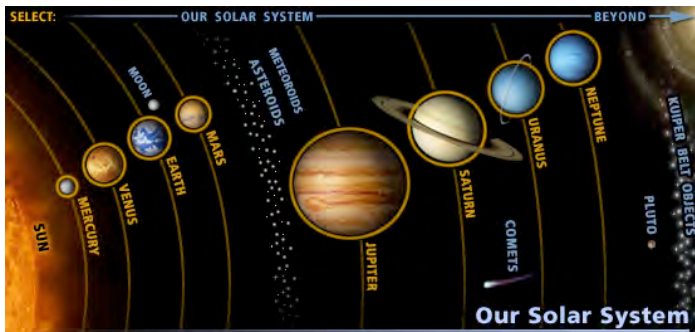




## Where are the Planets? Star Maps

### About the Activity

Teach your visitors how to use a star map and mark the current locations of planets and the Moon along the ecliptic.



### Topics Covered

- Provide visitors with a handout to plot the positions of the planets they saw in the evening sky.
- Provide visitors with scaled sizes of the planets.
- Provide a way for visitors to find out more about the planets and NASA missions.

### Materials Needed

- Copies of current month's star map for your visitors: Where are the Planets?
- Pencils or pens
- *Optional:* You may want to copy your club information on the back of the map.

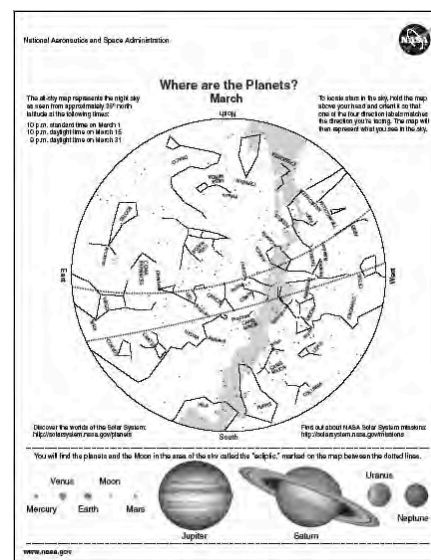
### Location and Timing

Use this activity at a star party on a clear night. It only takes about 15 minutes to show your visitors how to use the star map and mark the planets. But observing and finding things on the maps can last as long as they are interested.

### Participants

Star maps are appropriate for families, the general public, and school groups ages 10 and up. Any number of visitors can participate using the star maps.

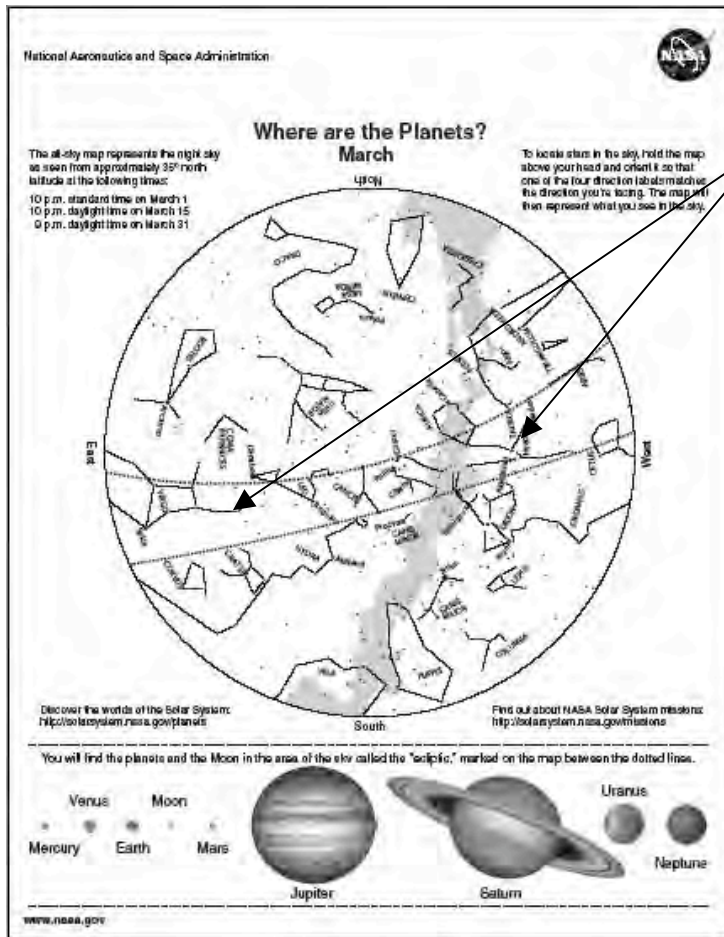
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## Detailed Activity Description

<p><u>To Do:</u> Pass around copies of the star maps.</p> <p><u>To Say:</u> These star maps just show the constellations in the sky and don't include the positions of the planets. You get to mark on the map where you saw the planets. Pictures of the planets, scaled to the correct sizes, are shown at the bottom of the map.</p> <p>See the dotted area on the map? This is the region of the sky where you look to find planets and Earth's Moon.</p> <p>If you see a bright object that looks like a star and it's not moving (moving "stars" could be airplanes or satellites), it might be a planet. Look at your star map and see if the star-like object shows up as one of the stars on the map. If it doesn't, you are probably seeing a planet. Ask one of the telescope operators to show it to you. You might be able to tell which planet it is by seeing it in the telescope.</p>	<p>Takes maps.</p> <p>Yes.</p> <p>Looks up at the sky, looking for planets.</p>
<p><u>To Do:</u> You may want to provide a quick training on how to use a star map.</p> <p><u>To Say:</u> Road maps are read with the map oriented down, where the roads are.</p> <p>A star map is oriented up, where the stars are.</p> <p>Let's all face north. Rotate your star map so the side of the map marked "North" is down toward the northern horizon. All the constellations in that quarter of the map will be visible in front of you.</p> <p>Now let's turn toward the east. Rotate the map so the side of the map marked "East" is down toward the eastern horizon. All the constellations in that quarter of the map will be visible in front of you.</p>	<p>Visitors follow directions.</p>
<p><u>To Say:</u> Now look straight up. What part of the map will show the stars over your head?</p> <p>Right! Now, who can find [name a constellation]?</p>	<p>The center of the map?</p> <p>Visitors use star map.</p>

## Helpful Hints



**More information on the star maps:** This star map has 20-degree wide area centered on the ecliptic. The planets and Earth's Moon will be found in this region of the sky.

### Presentation Tip:

Most people think the Moon and planets might be found anywhere in the sky. This map helps reinforce the message of the banner that the planets will be found in the direction of the constellations of the ecliptic in the plane of our Solar System.

Be sure to help your visitors orient the map correctly. If facing north, the side of the map marked "North" should be down, toward the northern horizon. The same is true for each direction.

## Background Information

### Constellations of the Zodiac

Most people think of the 12 classical astronomical constellations of the Zodiac. It is acknowledged that Ophiuchus is the “13<sup>th</sup> constellation” along the ecliptic: the apparent path of the Sun across the sky

Brief background on a person’s “astrological sign”:

A person’s *astrological* sign or “Sun Sign” was traditionally the constellation that contained the Sun at the time the person was born. This is why the constellation with the same name as the person’s astrological sign is not visible at night on their birthday – the Sun is very roughly in the direction of that constellation.

However, due to the Earth’s precession, a 26,000–year wobble in the Earth’s axis, the Sun no longer occupies its traditional constellations for astrological signs. The “signs” have all been carried about one constellation to the west (clockwise on the banner).

In addition, the astrological signs each cover 30 degrees of sky (12 signs in 360 degrees). The modern boundaries of the *astronomical constellations* are of varying sizes. So the Sun appears to be in front of each constellation along the ecliptic for varying periods of time.

So do not confuse astrological signs with astronomical constellations.

Dr. James Kaler and Dr. Phil Plait provide more information:

<http://www.astro.uiuc.edu/~kaler/celsph.html> (See the chart of when the Sun crosses the boundary into each constellation of the Classical Astronomical Zodiac of 12 constellations).

<http://www.badastronomy.com/bad/misc/zodiac.html>

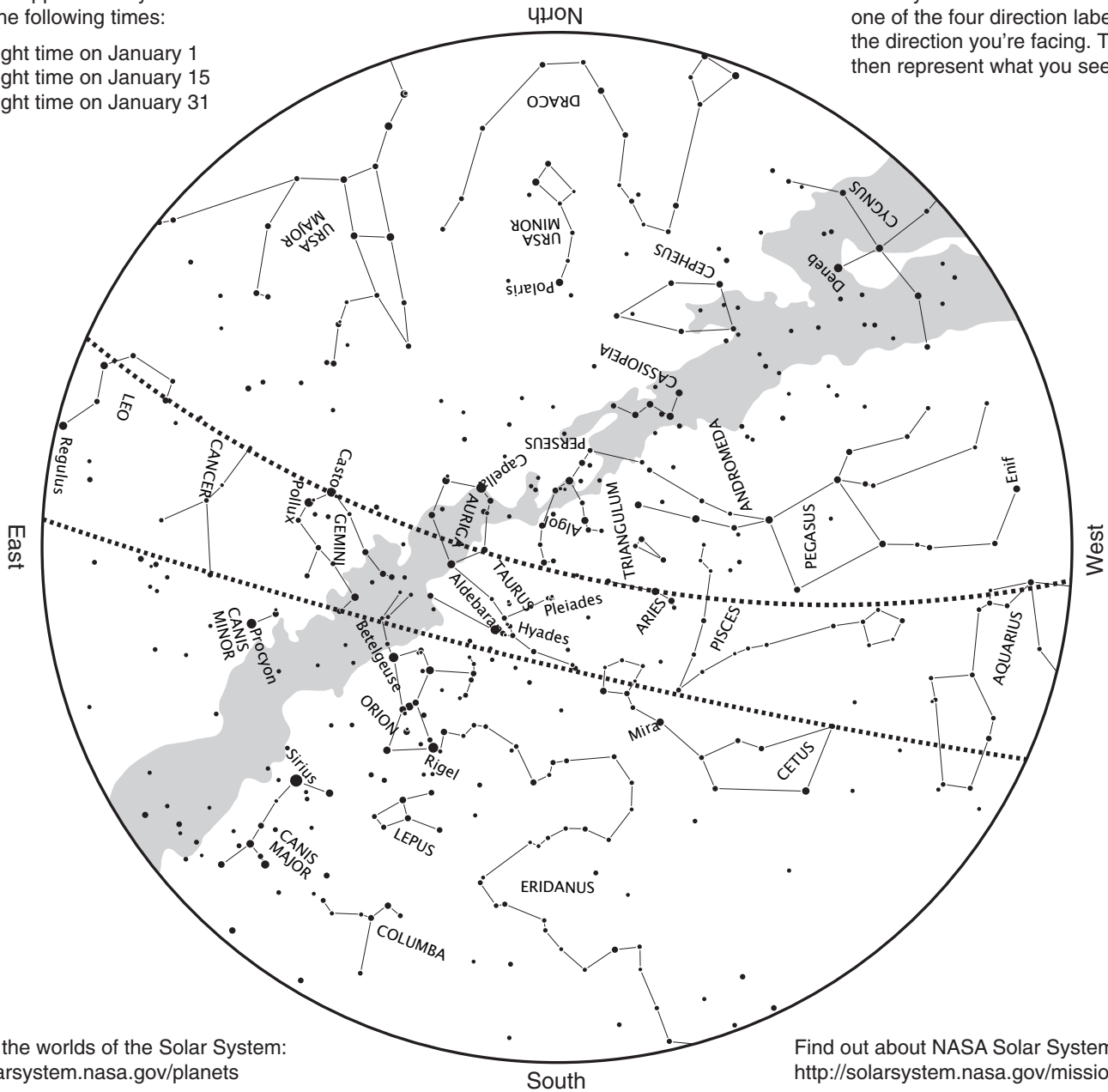


# Where are the Planets? January

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

- 9 p.m. daylight time on January 1
- 8 p.m. daylight time on January 15
- 7 p.m. daylight time on January 31

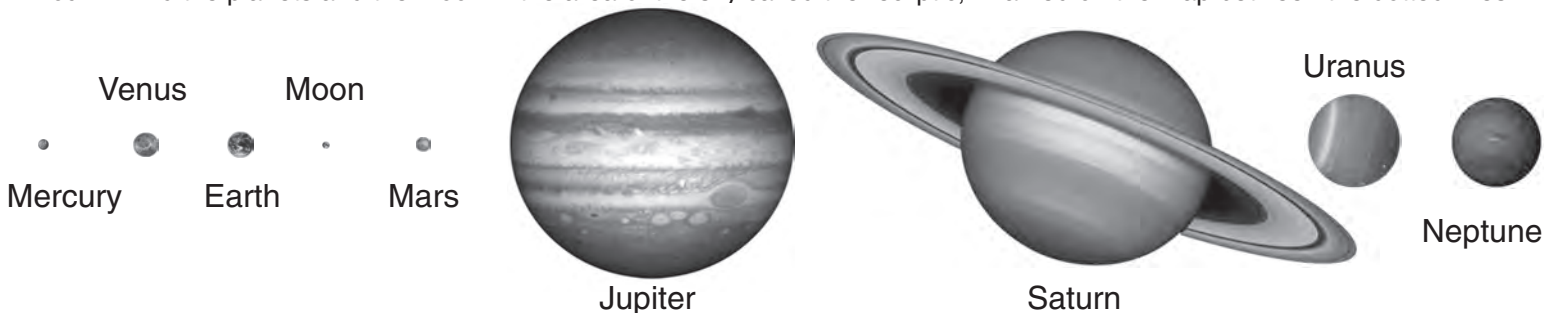
To locate stars in the sky, hold the map above your head and orient it so that one of the four direction labels matches the direction you're facing. The map will then represent what you see in the sky.



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Find out about NASA Solar System missions:  
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You will find the planets and the Moon in the area of the sky called the "ecliptic," marked on the map between the dotted lines.



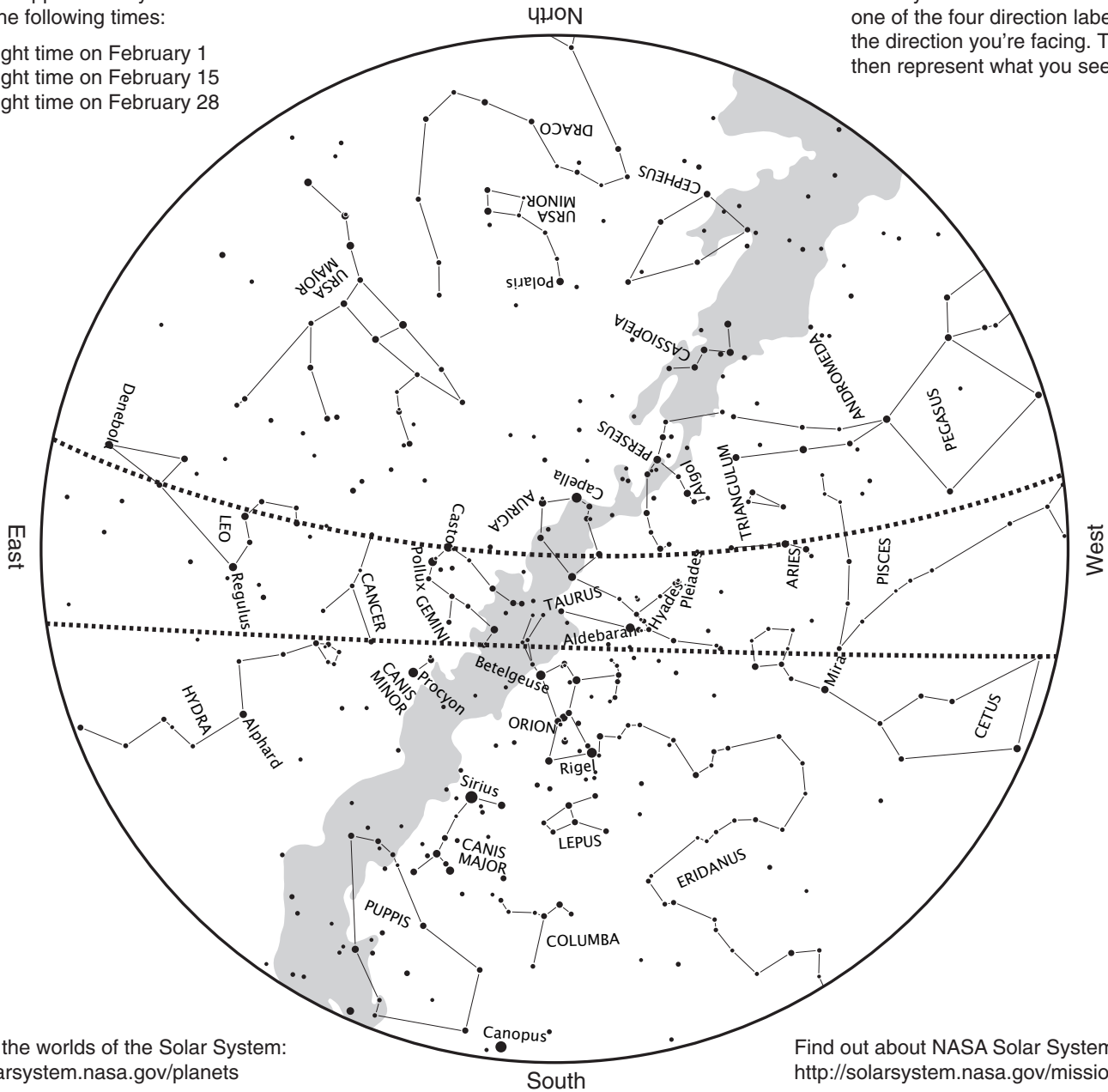


# Where are the Planets? February

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

- 9 p.m. daylight time on February 1
- 8 p.m. daylight time on February 15
- 7 p.m. daylight time on February 28

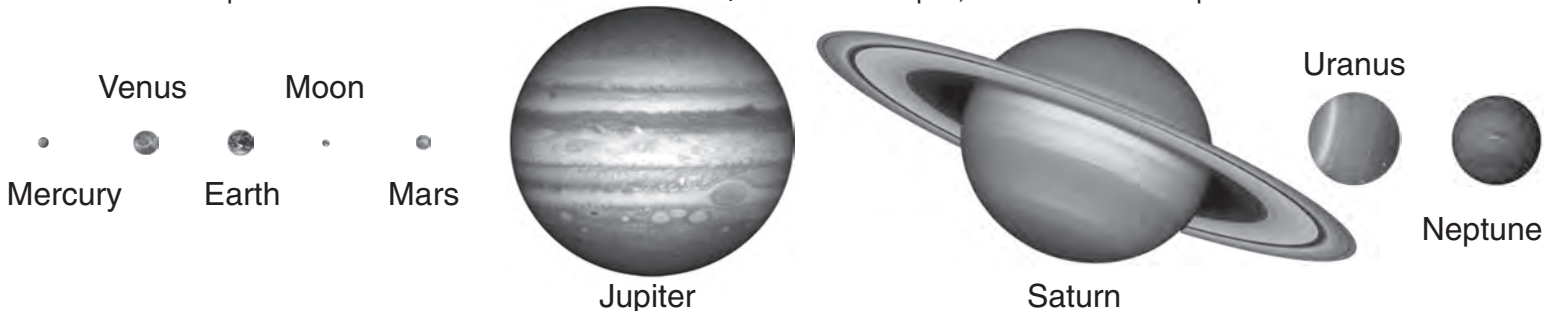
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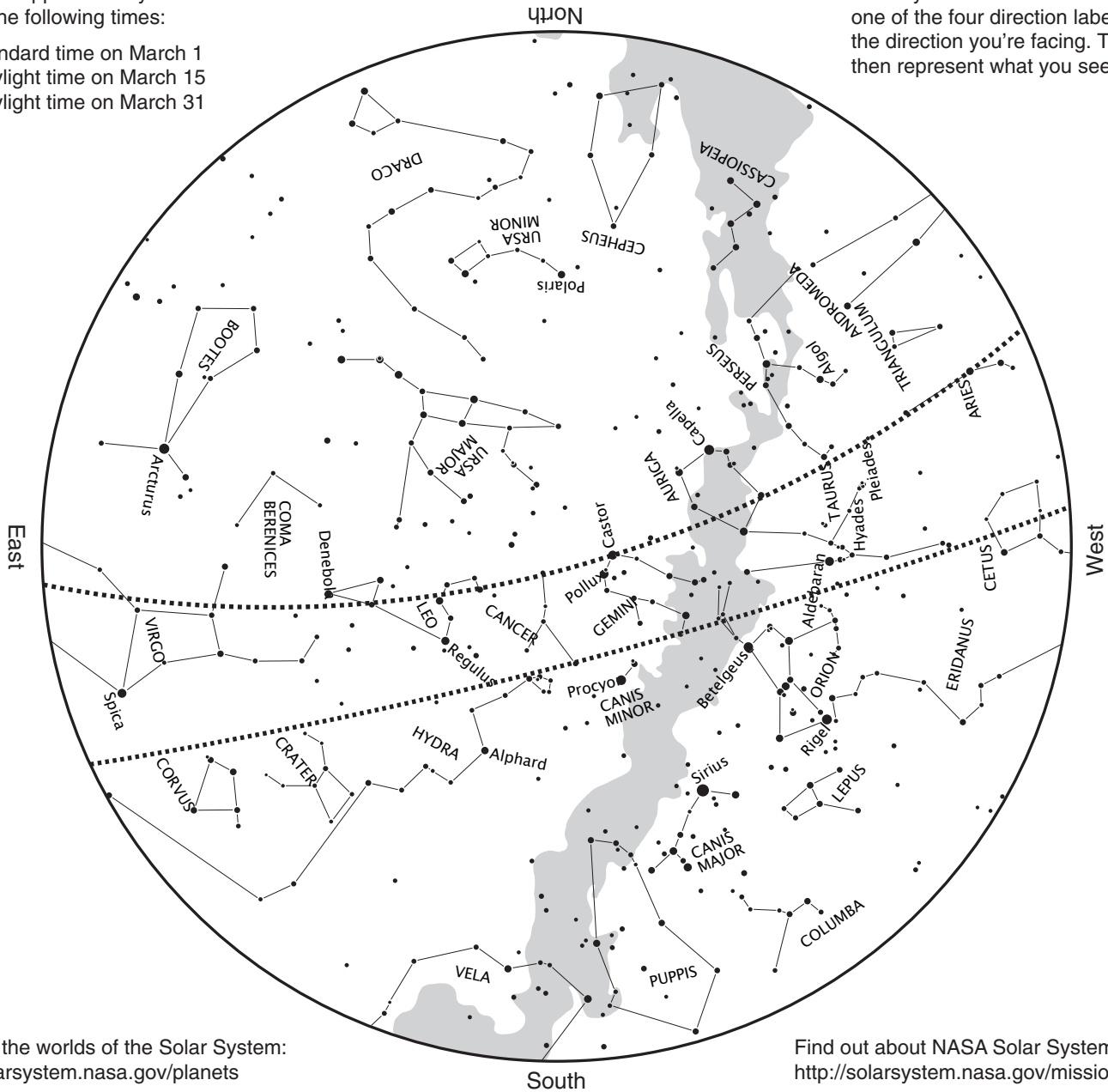


# Where are the Planets? March

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
- 10 p.m. daylight time on March 15
- 9 p.m. daylight time on March 31

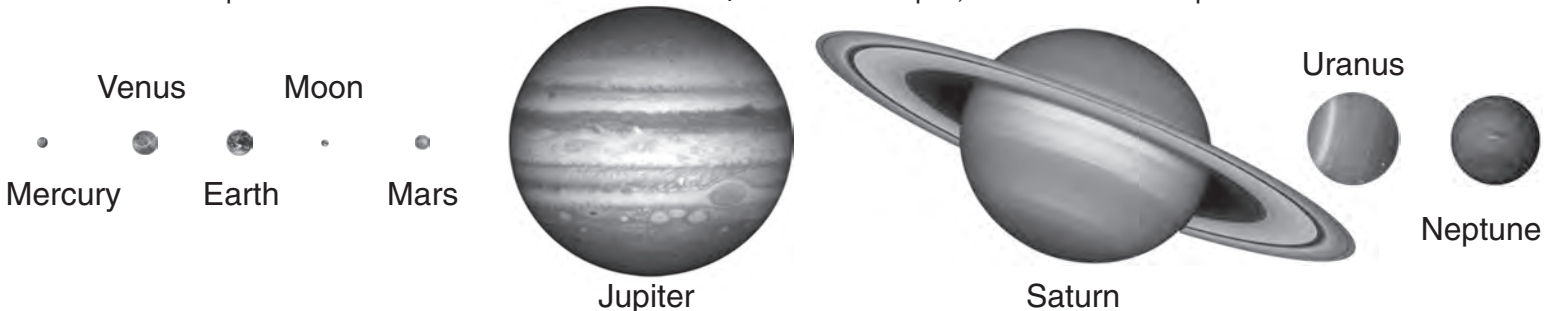
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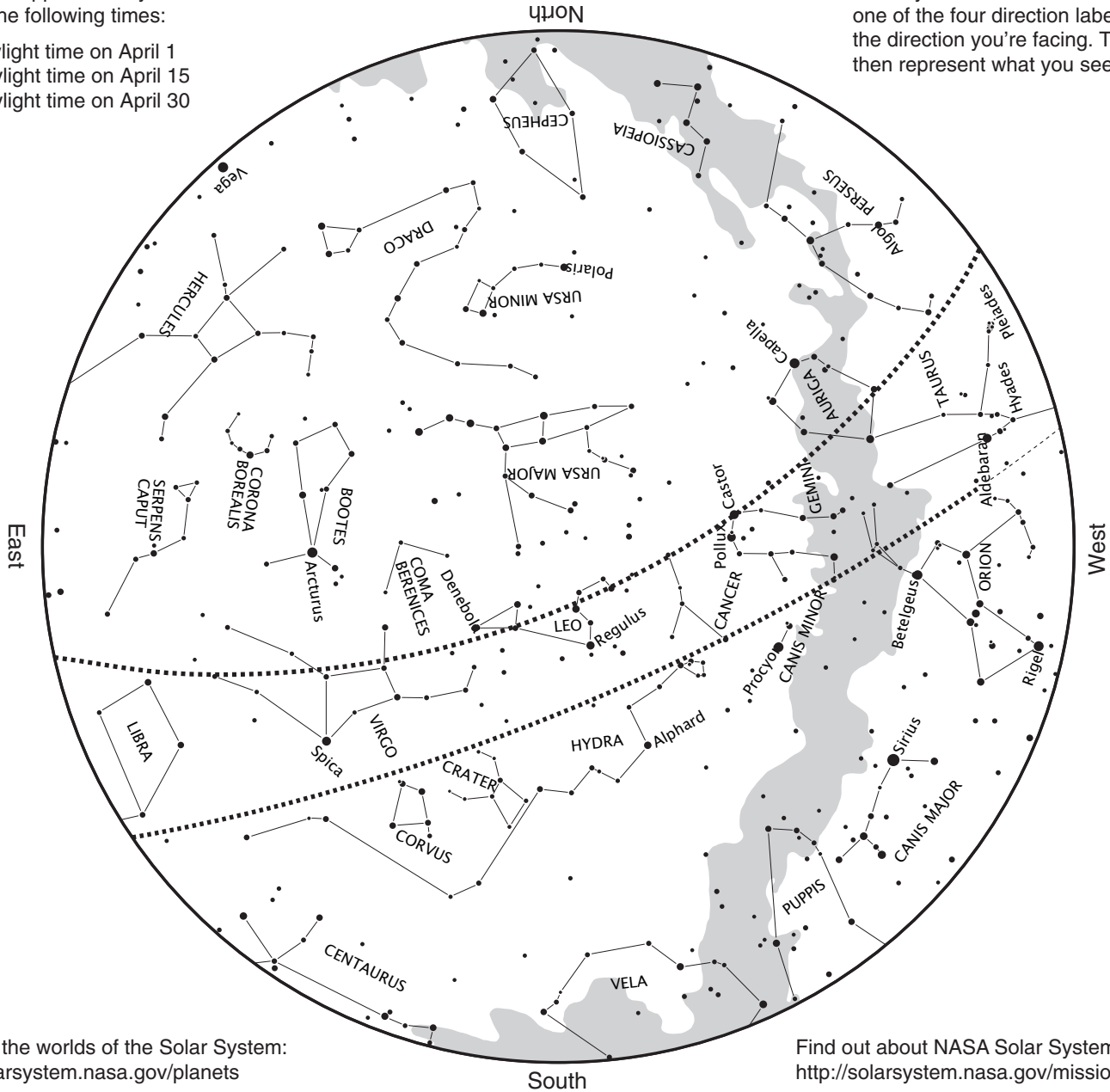


# Where are the Planets? April

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

- 11 p.m. daylight time on April 1
- 10 p.m. daylight time on April 15
- 9 p.m. daylight time on April 30

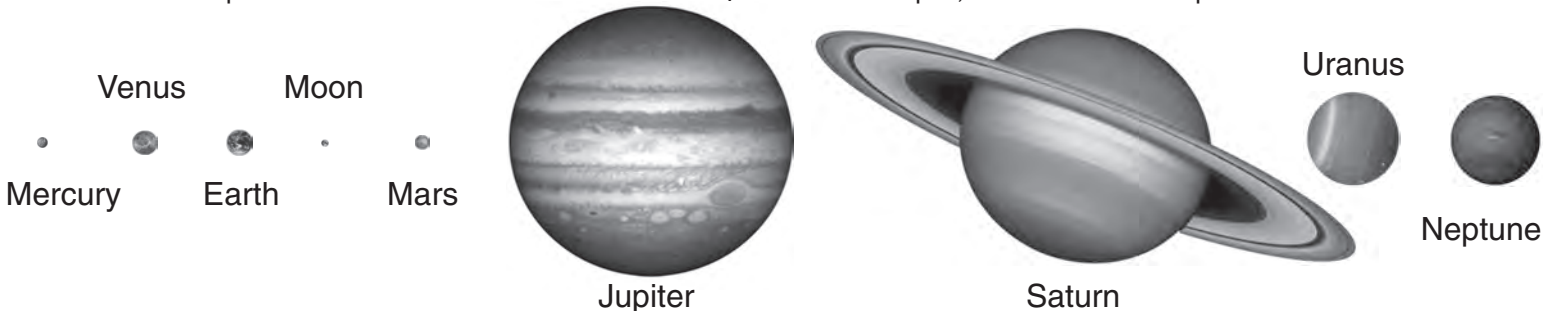
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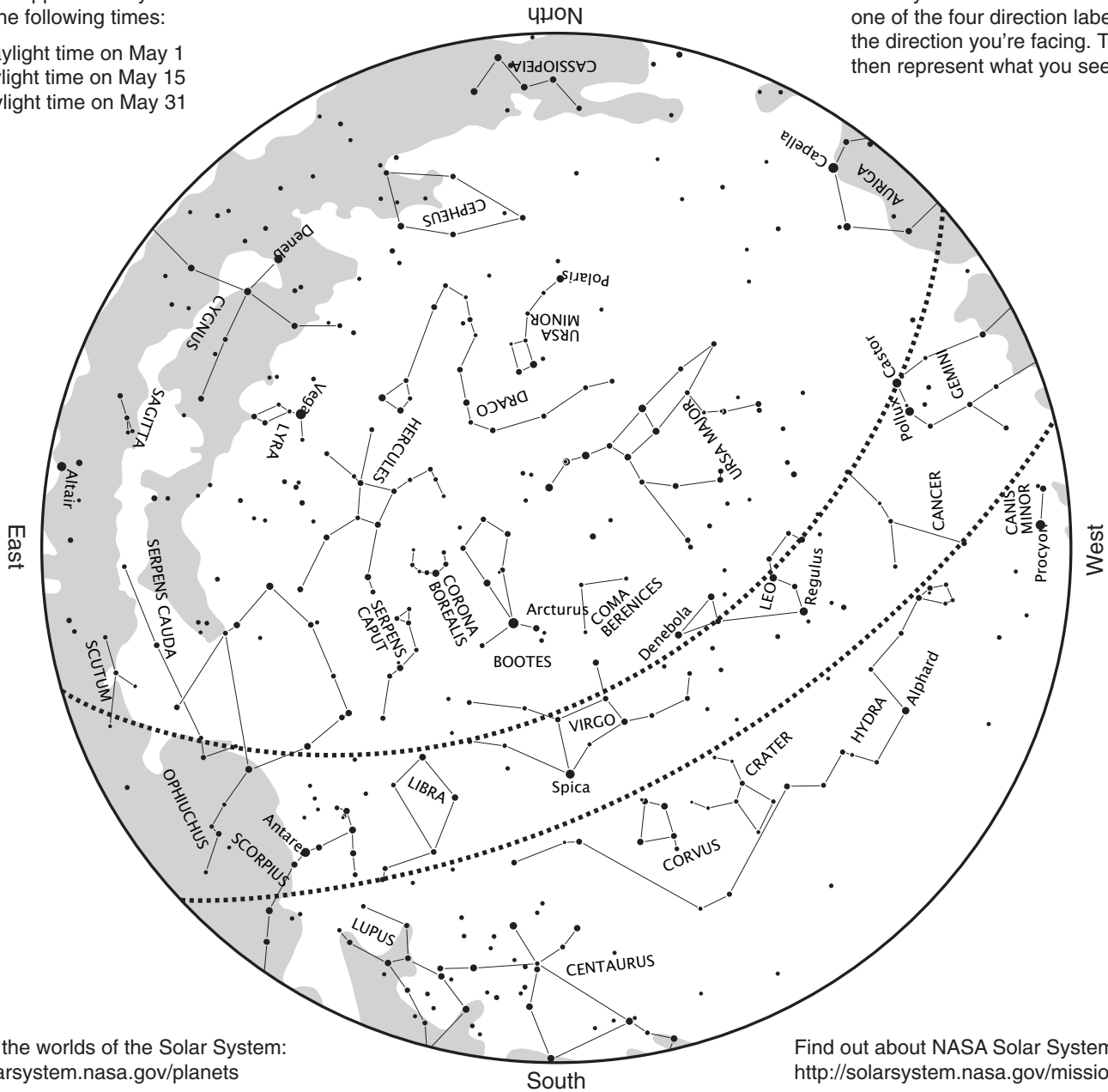
# Where are the Planets?

## May

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

- Midnight daylight time on May 1
- 11 p.m. daylight time on May 15
- 10 p.m. daylight time on May 31

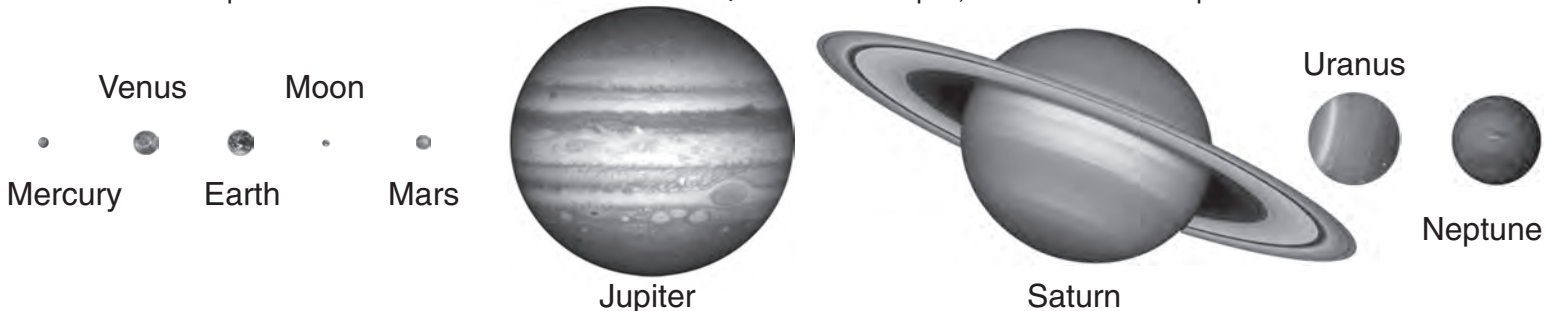
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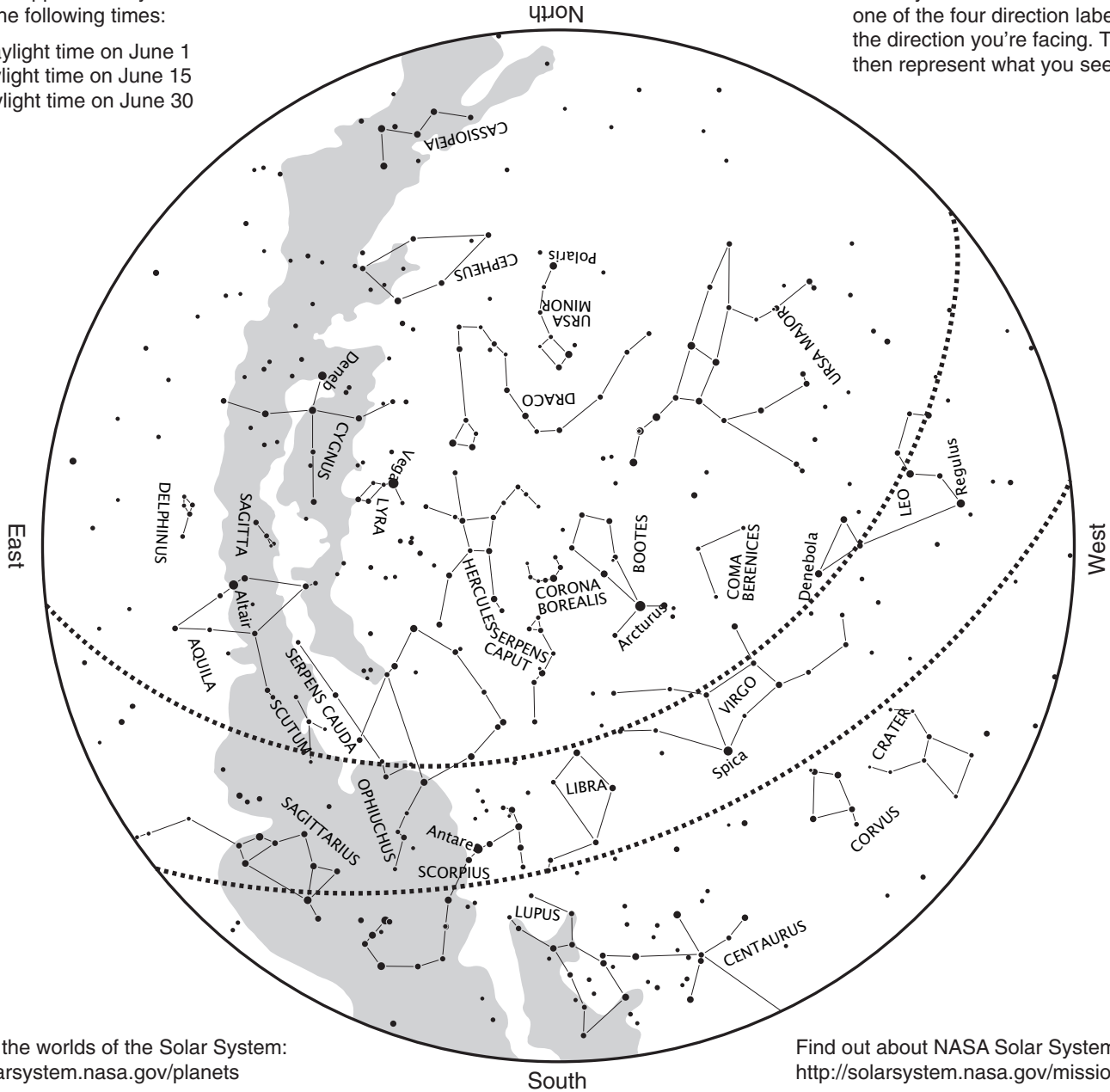
# Where are the Planets?

## June

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

- Midnight daylight time on June 1
- 11 p.m. daylight time on June 15
- 10 p.m. daylight time on June 30

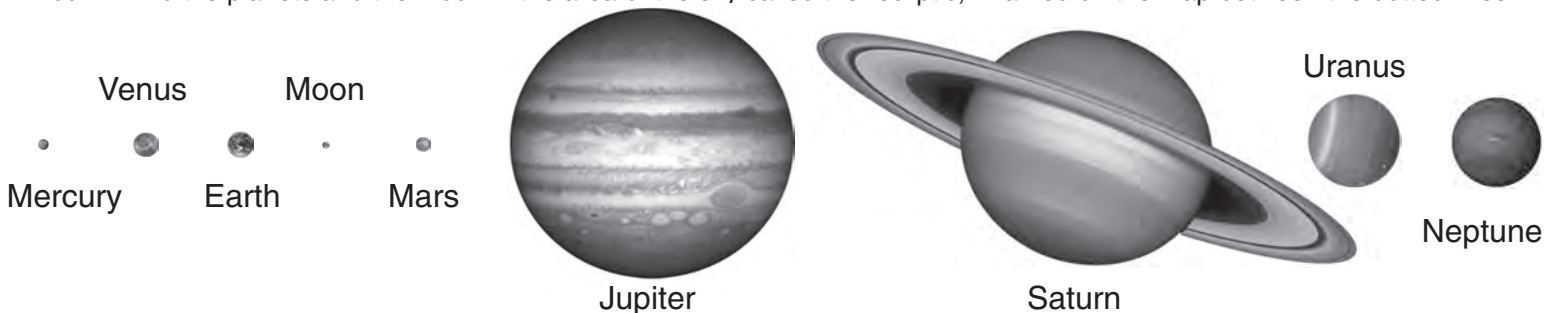
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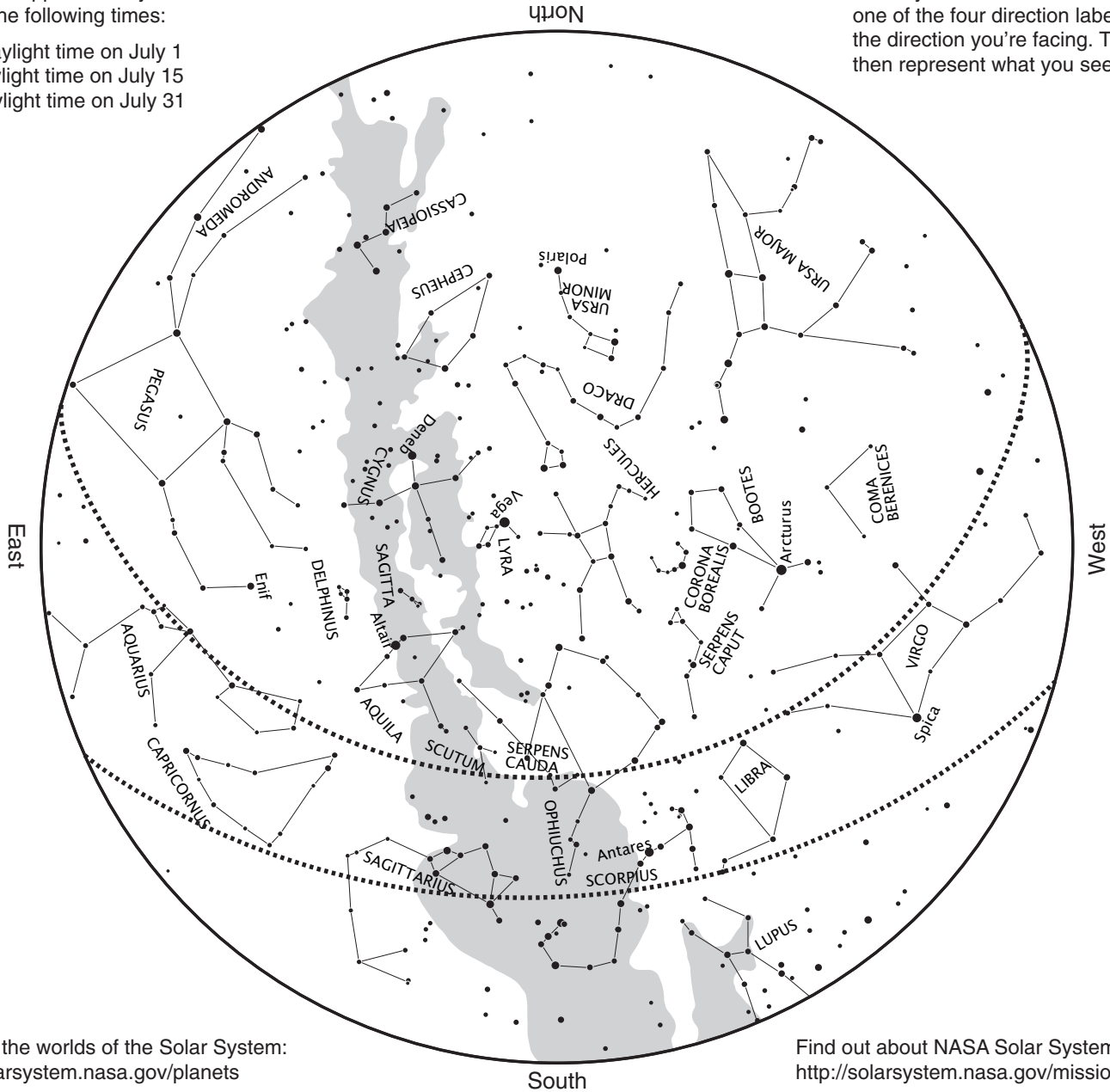
# Where are the Planets?

## July

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

- Midnight daylight time on July 1
- 11 p.m. daylight time on July 15
- 10 p.m. daylight time on July 31

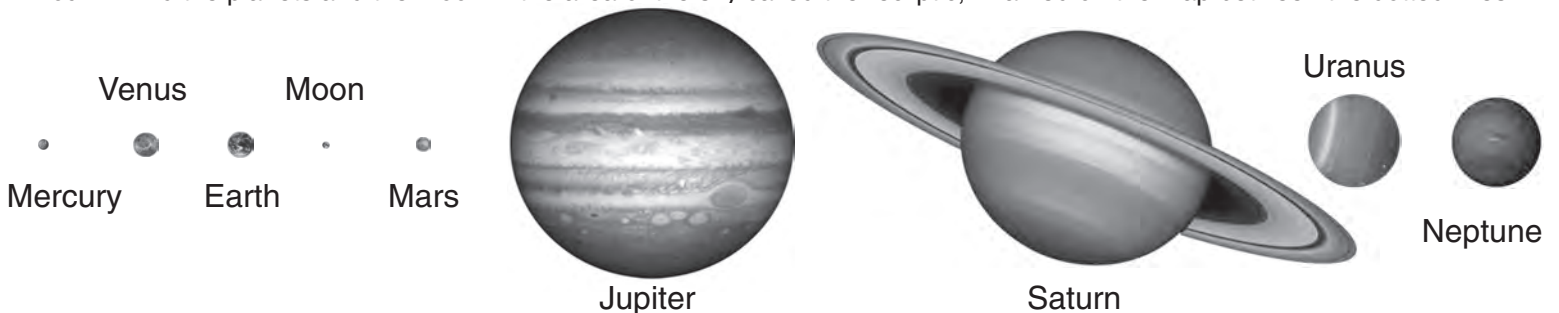
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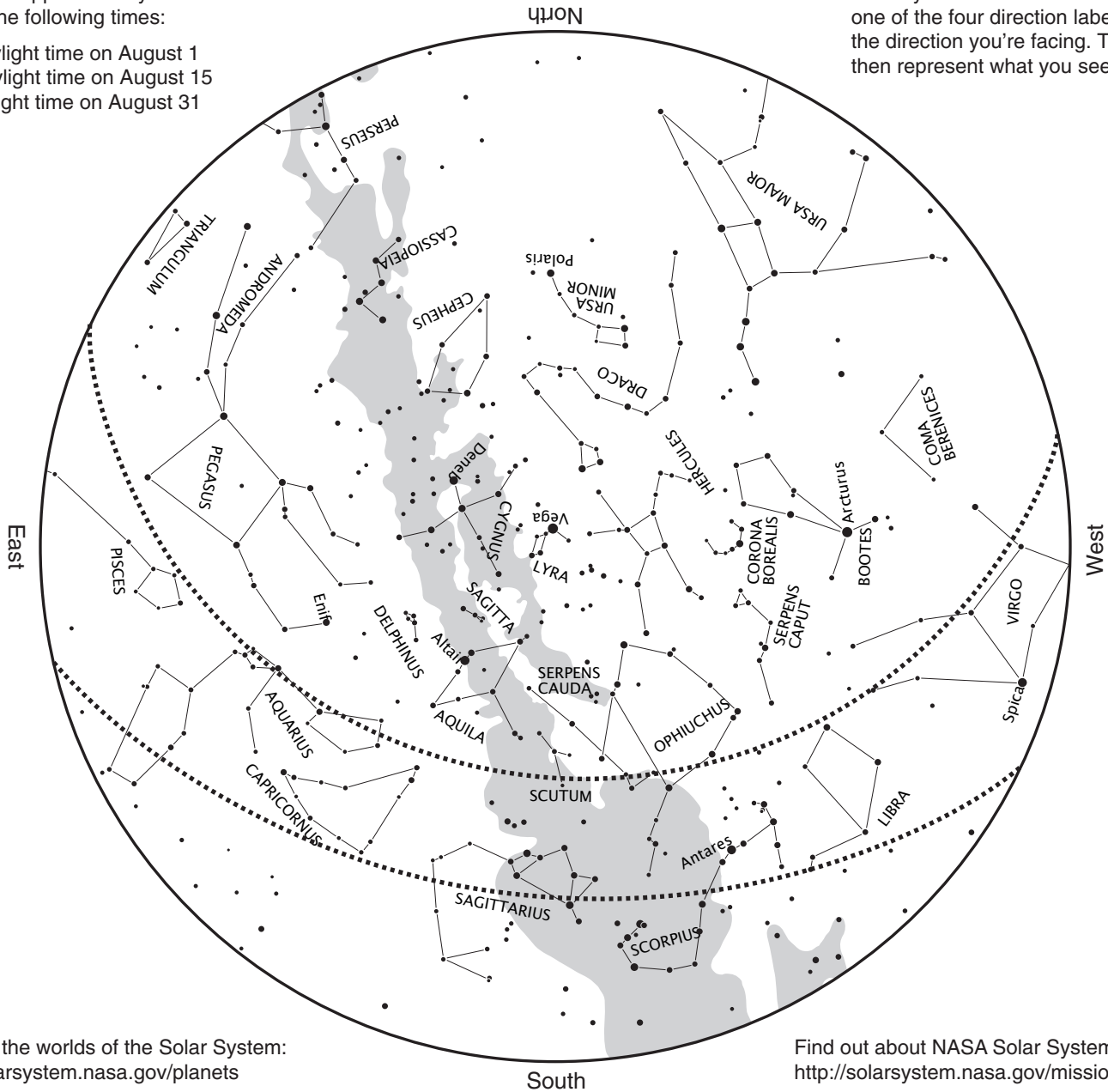


# Where are the Planets? August

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

- 11 p.m. daylight time on August 1
- 10 p.m. daylight time on August 15
- 9 p.m. daylight time on August 31

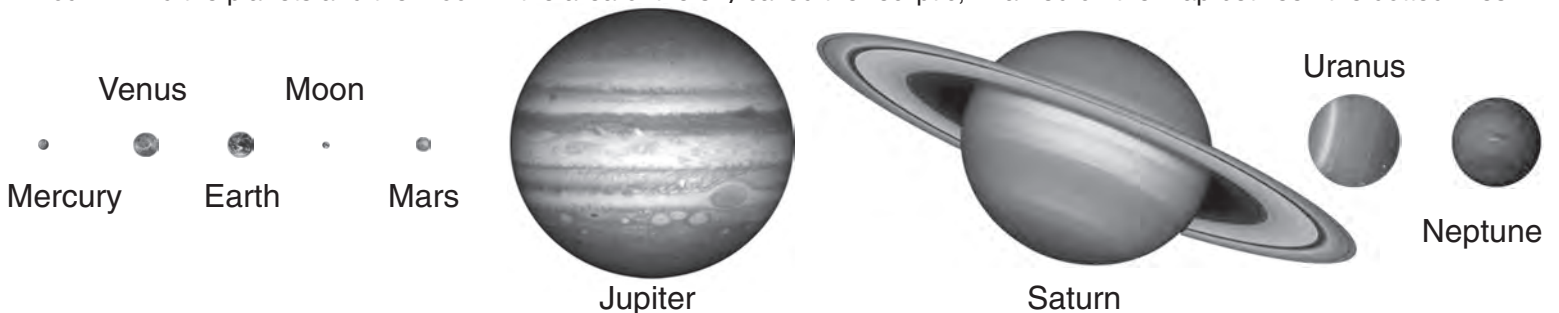
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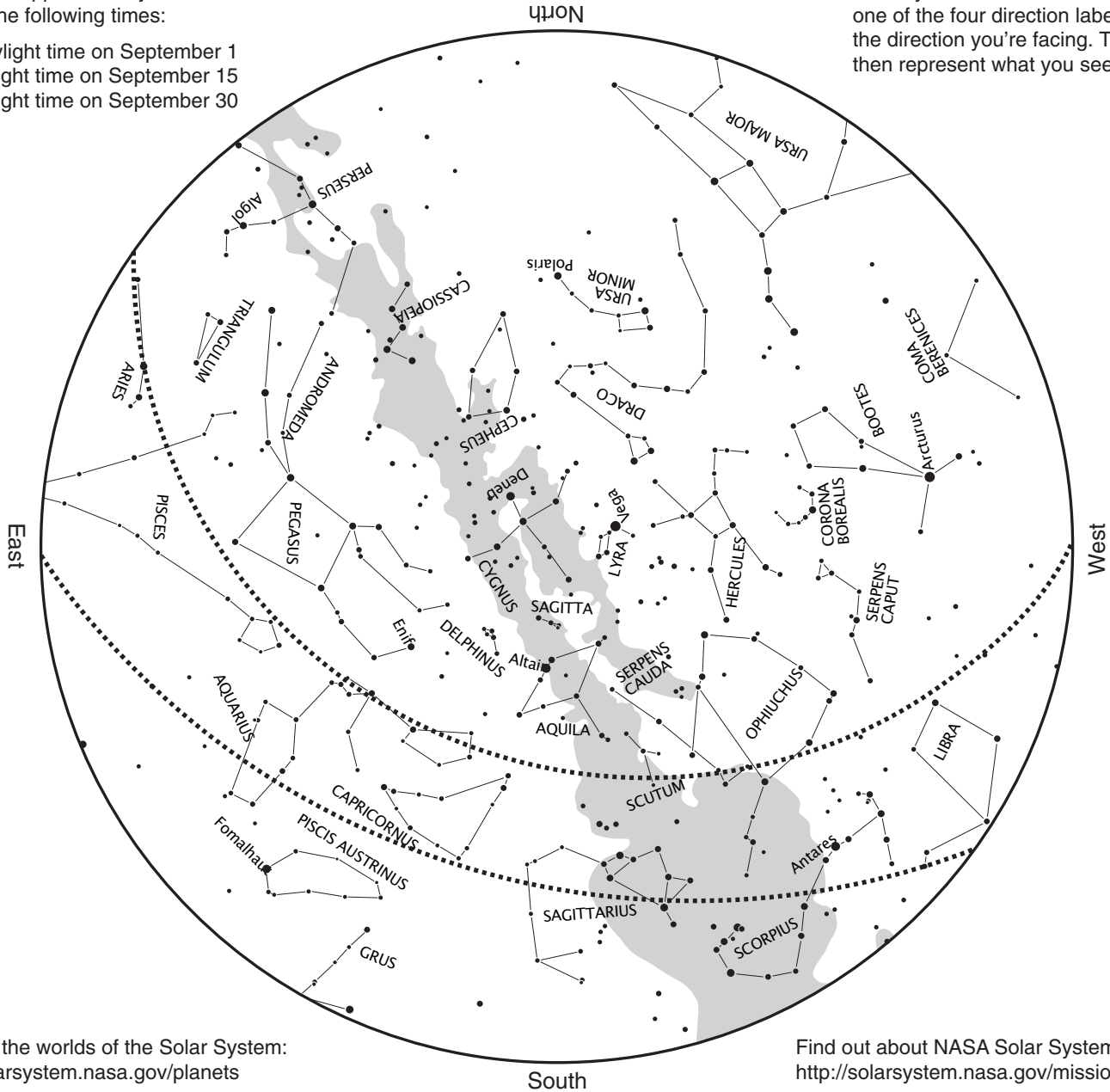


# Where are the Planets? September

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

- 10 p.m. daylight time on September 1
- 9 p.m. daylight time on September 15
- 8 p.m. daylight time on September 30

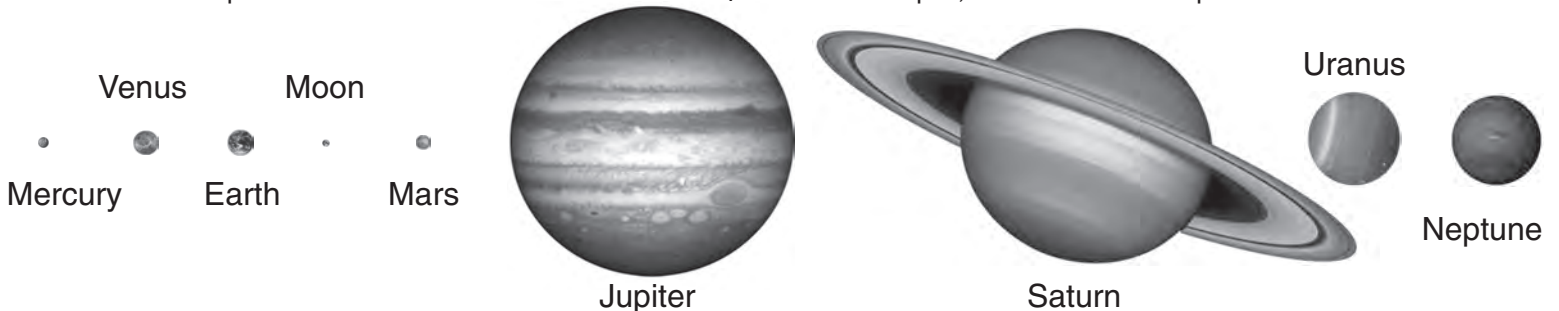
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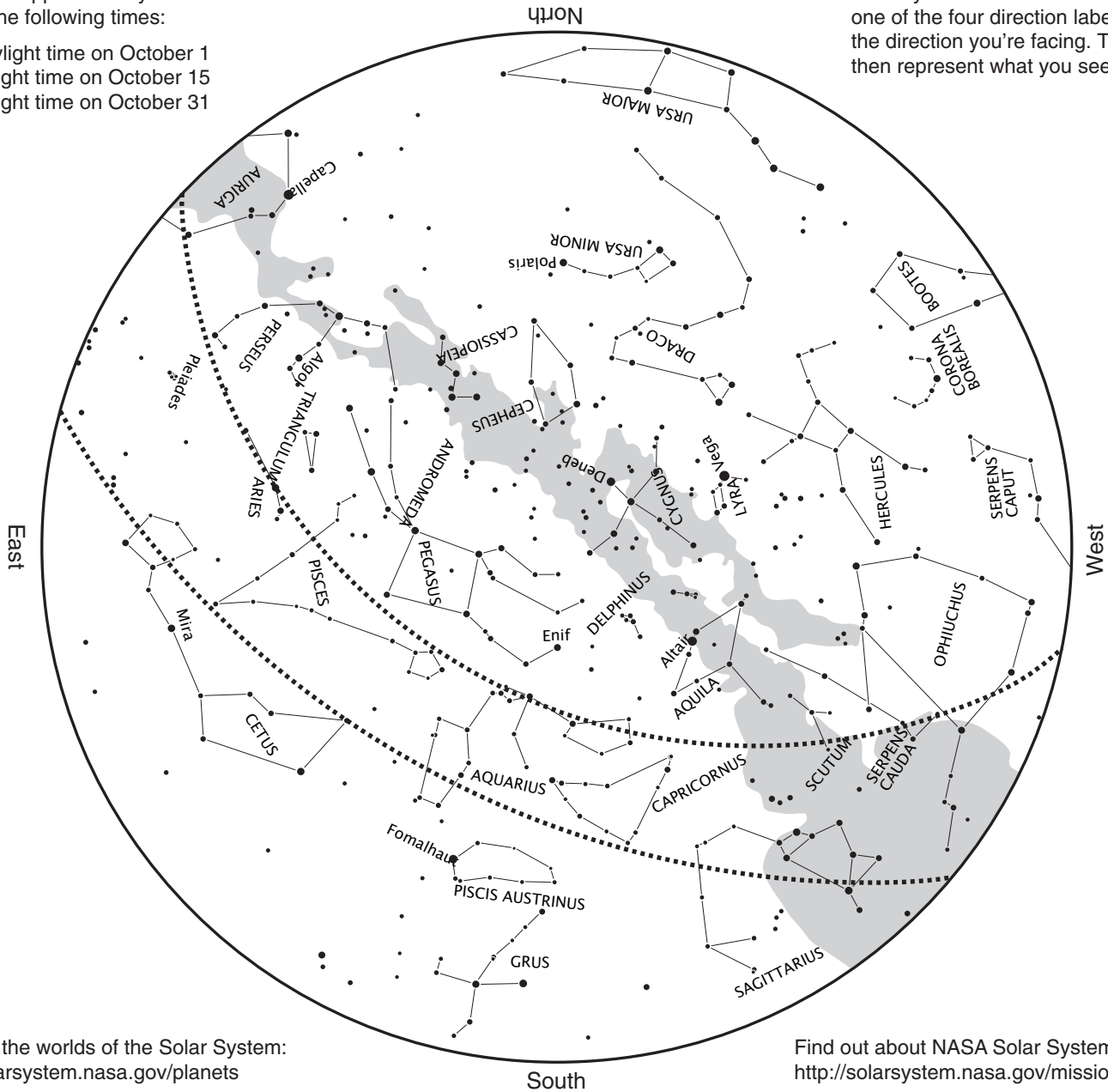


# Where are the Planets? October

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

- 10 p.m. daylight time on October 1
- 9 p.m. daylight time on October 15
- 7 p.m. daylight time on October 31

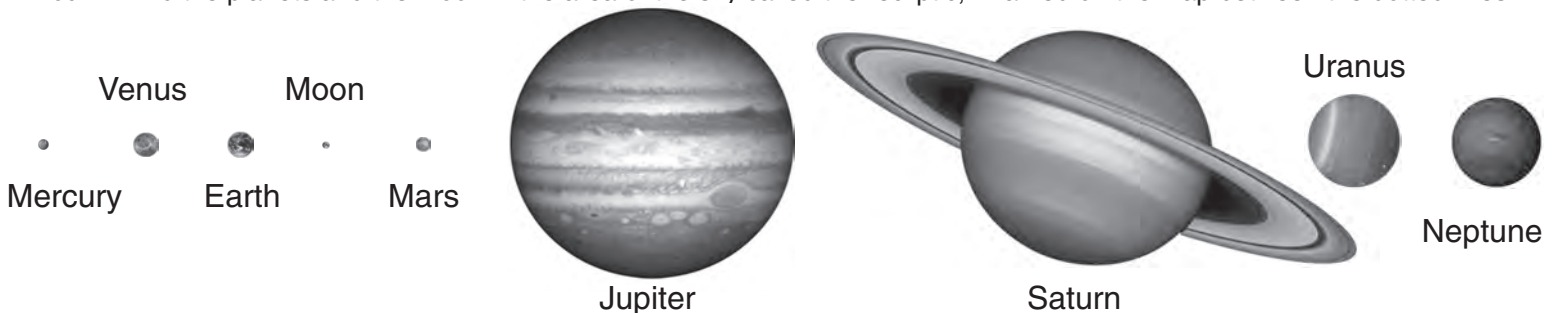
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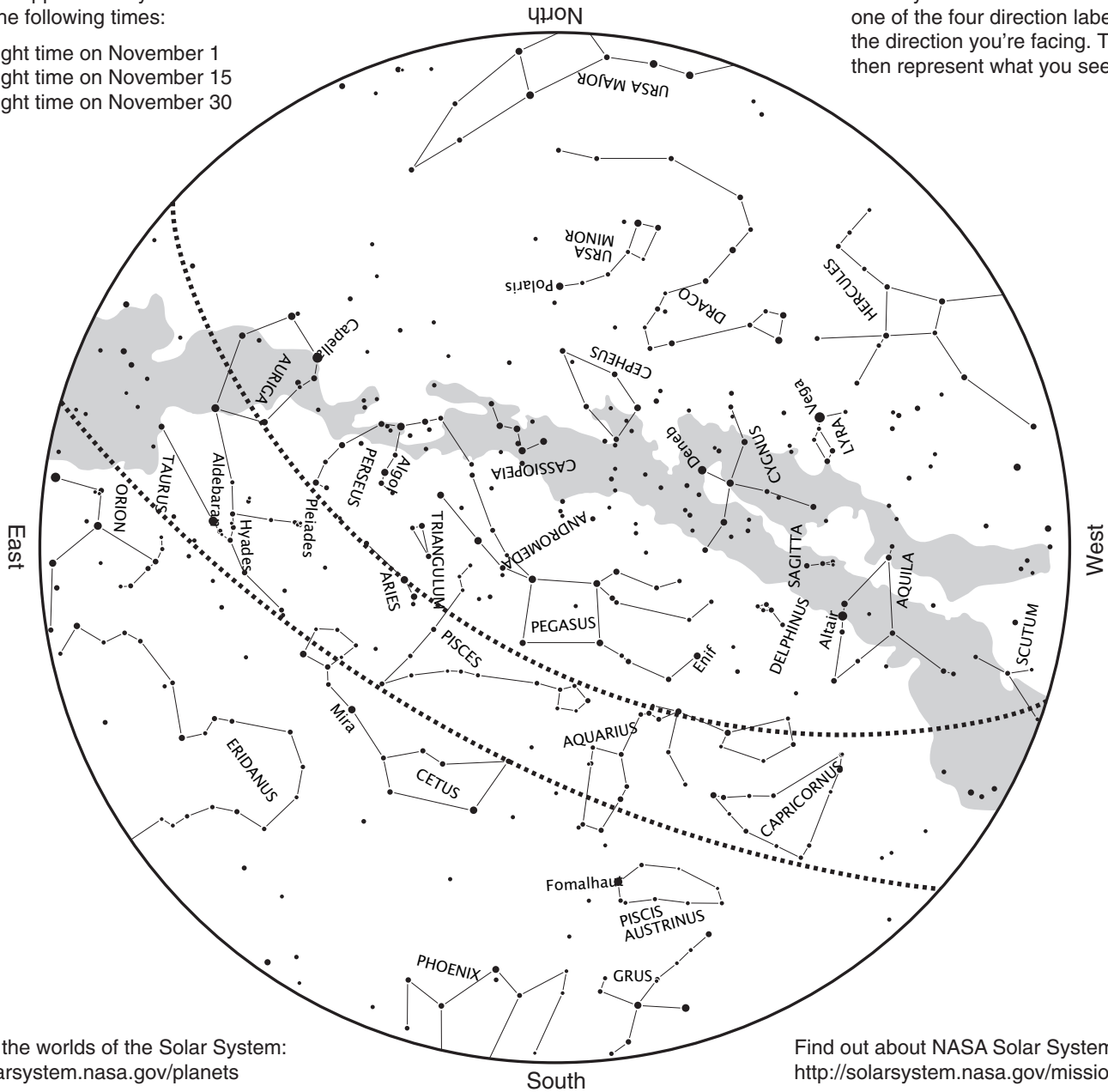


# Where are the Planets? November

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

- 9 p.m. daylight time on November 1
- 8 p.m. daylight time on November 15
- 7 p.m. daylight time on November 30

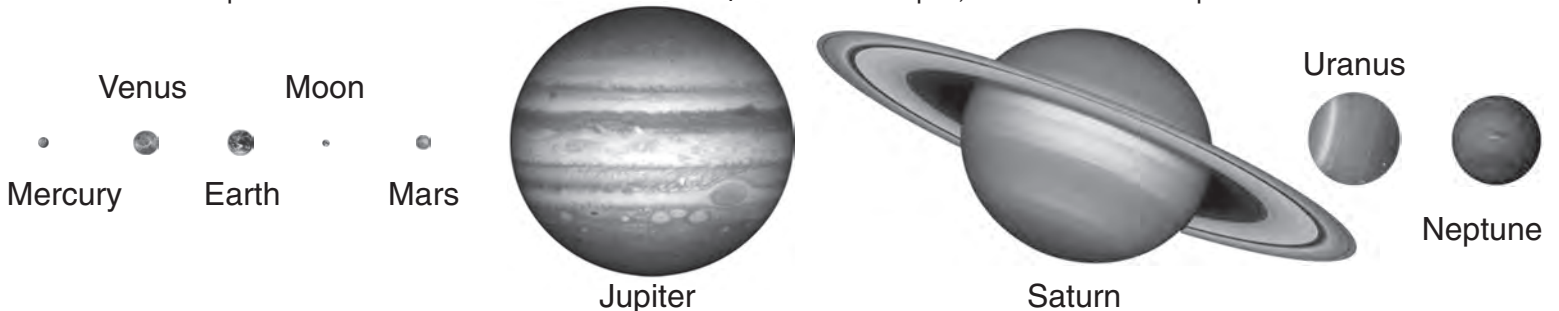
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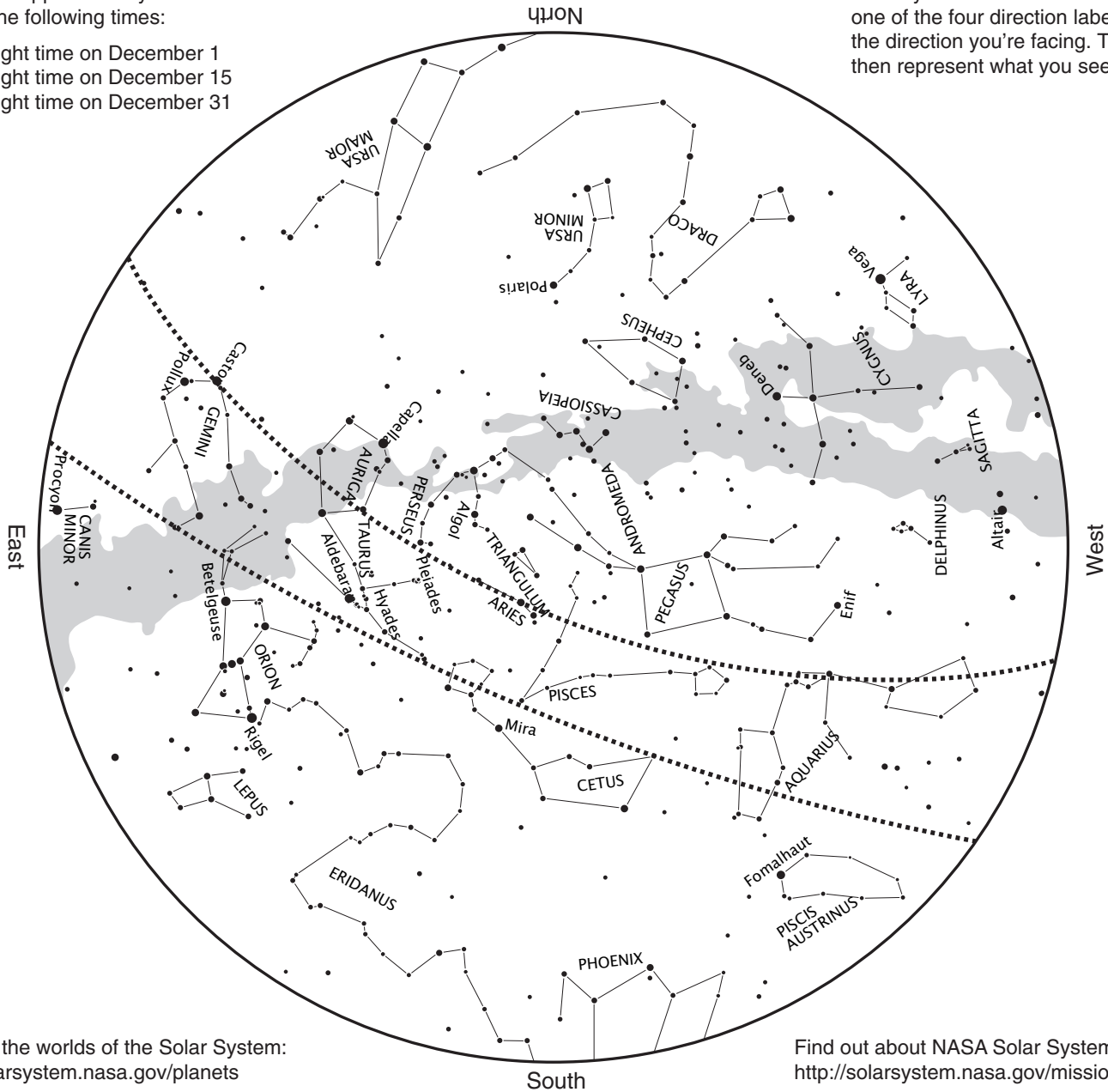


# Where are the Planets? December

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

- 9 p.m. daylight time on December 1
- 8 p.m. daylight time on December 15
- 7 p.m. daylight time on December 31

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