National Aeronautics and Space Administration

Student Reading

ABOUT CONSTELLATIONS

Look up at the sky on a clear night and you will see vast patterns of bright stars. Close your eyes and think about the shapes of these patterns. Do they remind you of people, or animals, or mythological beings such as a winged horse or a great warrior holding his sword and shield? Ancient astronomers imagined they saw people, animals, and mythological beings in the sky. They called them constellations.

Constellation Myths

Constellation myths are ancient stories about the gods, heroes, and mythological creatures (serpents, dragons, and flying horses) featured in the constellations. The Greeks and Romans created the stories for the constellations in the Northern Hemisphere, and for a few in the Southern Hemisphere that they could sometimes see, close to the horizon.

Other societies had their own mythologies for the stars. The stories were part of their religions, helping them to explain everyday events, such as the seasons. These stories usually have a hero, who was given an honorary place in the sky, as either a reward or a tribute.

Most of the constellations in the Southern Hemisphere are more modern and were identified and named in the seventeenth century, when European explorers first sailed the southern seas. They are not usually associated with myths.

Constellations and the Star Patterns They're Based On

Currently, the entire sky (Northern and Southern hemispheres) has been divided into 88 regions, each containing a constellation. A simple, geometric star pattern lies at the heart of each constellation. The stars in these patterns may appear to be close to each other, but they are often very far apart.

Generally, there is little resemblace between the star pattern and the fully illustrated object or figure that represents the constellation. For example, consider the Northern Hemisphere's winter constellation, Orion, the Hunter. The star pattern on which it is based — four bright stars at the corners of a trapezoid and three stars in a row near the center — doesn't look much like a person. The ancients used a lot of imagination when they created the constellations.

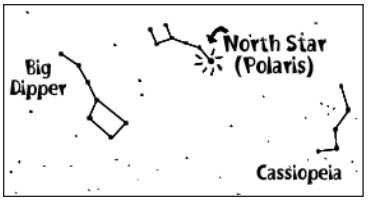
The History of Constellations

Many of our modern constellations come from the ancient Greeks, but they were not the first to "see" patterns among the stars. Historians speculate that the ancient Babylonians and Sumerians invented many of the constellations. They passed the tradition on to the ancient Egyptians and Greeks.

Arabs learned of the Greeks' writings on astronomy and translated them into Arabic. Greeks had named their stars based on the star's position in a constellation, but Arabs began naming individual stars for people. Later, the Romans translated the Arabic writings into Latin. We therefore have Arabic names for stars in Greek constellations that bear Latin names!

Original Uses for the Constellations

Ancient farmers living near the Equator, where the seasons don't vary much, may have used the stars to tell them when to plant and harvest their crops. Since some constellations are only visible at certain times of the year, their appearance can reveal what month it is. Some historians think the constellation myths were invented to help the farmers remember the constellations.

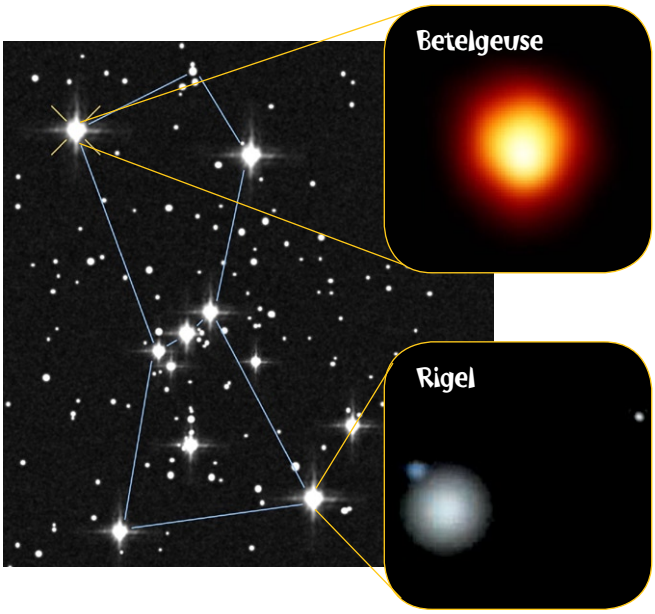


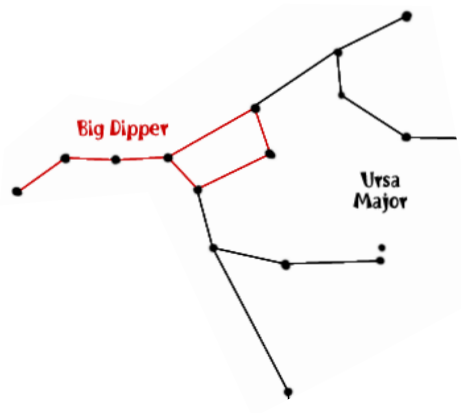
Throughout history, the stars have also been used for navigation, either across a desert, or a body of water. Travelers have historically relied on the North Star, Polaris, to mark their way. Polaris is the last star at the

end of the handle of the asterism* of the Little Dipper, in the constellation of the Little Bear. Due to Earth's rotation, the stars appear to move across the night sky. But Polaris is located above the axis on which the Earth rotates, so it doesn't change position appreciably with time.

Modern Uses for the Constellations

Constellations give modern-day sky watchers a means of keeping track of the many bright stars in the sky. By looking for groups of stars in a particular pattern, professional and amateur astronomers can locate specific stars within the group. For example, many people can pick out the trapezoidal winter star pattern known as Orion. Once they have found Orion, they can find Betelgeuse (the star in the upper left "corner" of the trapezoid formed by the bright stars) and Rigel (the star in the lower right "corner"of the same trapezoid), two of the brightest stars in this region of the sky. Constellations are also used to locate other objects, such as galaxies and nebulae (areas where gas and dust are clustered).





Constellations and the World's Cultures

Many cultures have identified star patterns, but rarely do these patterns correspond to those of other cultures. One of the patterns in the northern sky that many cultures have recognized is the asterism* called, in the U.S., the Big Dipper. In southern France, it is called a "saucepan" and in

Britain, a "plough." The Mayans called it Seven Macaw, a parrot, but the Hindus saw seven wise men. The Micmac Indians of Maritime Canada, and other North American Indians saw a bear (the part we see as the bowl of the dipper), with hunters tracking it (the handle). The runaway slaves called it the "drinking gourd" and followed it north to freedom. Therefore, the Big Dipper became a symbol of freedom. It is unusual for so many cultures to pick out the same set of stars. Perhaps it is because all seven stars are very bright.

*The term "asterism" is used here to indicate a subset of the stars in a constellation that make a separate, recognized pattern of their own. The Little Dipper is such a group of stars, found within the Little Bear, one of the 88 constellations. The stars making up the Big Dipper are another "asterism," falling within the constellation of the Great Bear.