IYA Dark Skies Script Actions and Narration
Northern Hemisphere: Apparent Magnitude
Designed for use with Stellarium version 0.9.1

Synopsis: *This script provides defines the term "apparent magnitude" and discusses the brightest objects visible at about 9 pm on March 21, 2009.*

Note: *There are several pauses built into the Stellarium script; these are marked in the narration. To progress to the next part of the script, press the "k" key.*

Suggested Narration:

Let's observe the sky, which is set for March 21, 2009, at about 9 pm. As you look around, you'll see that some objects are bigger than others. These bigger dots are representing brighter objects.

Apparent magnitude is a measure of how bright an object appears from Earth. The lower the number, the brighter the object.

The brightest celestial objects have negative values for apparent magnitude. For example, the Sun, our closest star, has an apparent magnitude of approximately − 27. The full moon has an apparent magnitude of almost -13.

The human eye is capable of seeing objects down to about magnitude 6. A sixth magnitude object is about 100 times fainter than a first magnitude object.

Most of these really bright objects you're looking at are stars.

<PAUSE>

Let's label the stars that have apparent magnitudes of 1.5 or lower. Since the brightness of these stars makes them very easy to find, all the labeled stars are in constellations. We'll discuss the labeled stars in order, from brightest to dimmest. By observing the stars with just your eyes, can you tell which of the labeled stars is the brightest?

<PAUSE>

If you chose the star Sirius, low in the south-southwest, you're correct. Sirius is in the constellation Canis Major, one of Orion's hunting dogs. Here in the northern hemisphere, we see Sirius in the winter and spring. It is the brightest star we can see at night, with a magnitude of -1.42.

<PAUSE>

Can you tell which is the second brightest star in this sky? A hint: it's close to the horizon. If you selected Arcturus low in the east-northeast, you're absolutely right. Arcturus is in the constellation Bootes, the herdsman. It has an apparent magnitude of just under zero, -0.03.

<PAUSE>

It's going to get a bit tougher to guess the order from here on out... What's the third brightest star in the current sky? Capella, high in the west, in the constellation Auriga the charioteer. Capella represents a goat held under the charioteer's arm. It has an apparent magnitude of 0.10.

<PAUSE>

Fourth brightest is the star Rigel, low in the southwest in the famous constellation of Orion the hunter. Rigel is a bluish-white supergiant star, and its name is Arabic for “foot.” Rigel is a variable star, with an average apparent magnitude of 0.20. The v in the label stands for variable.

<PAUSE>

Fifth brightest is the star Procyon, about midway between the southern horizon and the zenith. Procyon is in the constellation Canis Minor. Canis Minor is another hunting companion of Orion. Procyon has an apparent magnitude of 0.42.

<PAUSE>

Speaking of Orion, we need to go back to him to find the sixth brightest star, Betelgeuse. Betelgeuse is an Arabic name that roughly translates as “armpit of the giant.” This red giant star has an apparent magnitude of 0.47, similar to that of Procyon.

<PAUSE>

The seventh brightest star is Aldebaran, quite low in the west-southwest. Aldebaran is the bull's eye—the eye of Taurus the bull, that is. It is a red giant star with an apparent magnitude of 0.89.

<PAUSE>

Eighth brightest is Pollux, very close to the zenith. Pollux is part of the twins, Gemini. His companion star, Castor, is not quite bright enough to make our apparent magnitude cut off of 1.50. Pollux' apparent magnitude is 1.18.

<PAUSE>

Ninth and last in our list is Regulus, the little king, in the southeast part of the sky. Regulus is the brightest star in Leo the Lion, and it has an apparent magnitude of 1.38.

<PAUSE>

You may have noticed that there is one large unlabeled dot in the east-southeast part of the sky. That's obviously not a star, since it would have been labeled with the others. What is it then?

<PAUSE>

It's a planet, Saturn, in fact. Let's zoom in to take a quick look at Saturn and some of its moons.

Unlike most stars, the apparent magnitudes of planets change, since Earth and the other planets are orbiting the sun and are constantly changing position relative to each other. At this point in time, March 21, 2009 at about 9 pm, Saturn's apparent magnitude is just under 0.93. We'll include a v for variable in our label, as we did with Rigel in Orion, to help us remember that Saturn's apparent magnitude changes.

To sum up, apparent magnitude is a measure of how bright an object appears from Earth. One of the primary uses of apparent magnitude is to determine the amount of light pollution in an area's sky: the fainter the stars you can see, the less light pollution there is. This data can help astronomers argue for light pollution prevention or corrective measures.