

A Campus Observatory Image of the North America Nebula

by Fred Ringwald

Fresno State's Campus Observatory is convenient for students to use, but its sky rates 10 on the Bortle scale: "Most people don't look up." The faintest stars the unaided eye can see there are about 3rd magnitude. Nevertheless, its telescopes can get good images through an H α (pronounced "H-alpha") filter. An H α filter passes only a narrow band of wavelengths that are centered on the H α line, the scarlet wavelength at which hydrogen radiates the most light visible to the eye. City lights radiate mostly at other wavelengths, from mercury or sodium vapor in the lamps. Hydrogen is the most common element in nebulae, so H α filters improve their image contrast.

This image was taken through a 70-mm guidescope mounted piggyback on the Campus Observatory's main telescope. The guidescope was made by Vixen. With a focal length of only 400 mm, the guidescope gets a wide field of view, which makes it easier for novice students to point the telescope. With the SBIG ST-9 camera used to take this image, the field of view is 1.5° on a side.

It shows the southern end of NGC 7000, called "the North America Nebula" because of its shape. At upper right is "Florida," bounded by a dust lane corresponding to the "Gulf of Mexico"; at bottom-center is "Mexico." A bright shock front runs through the east side (on the left), which is called "the Great Wall," incongruous since that's in China!

The North America Nebula is in the constellation Cygnus, 3° east of the 1st-magnitude supergiant star Deneb. At 2° across, the nebula is visible to the unaided eye from a dark site such as Courtright Reservoir, which rates 2 on the Bortle scale. The nebula is 60 light years in diameter, and is at a distance of 1,600 light years. This image and many others are on the Campus Observatory's gallery page, at: <http://zimmer.csufresno.edu/~fringwal/gallery.html>

