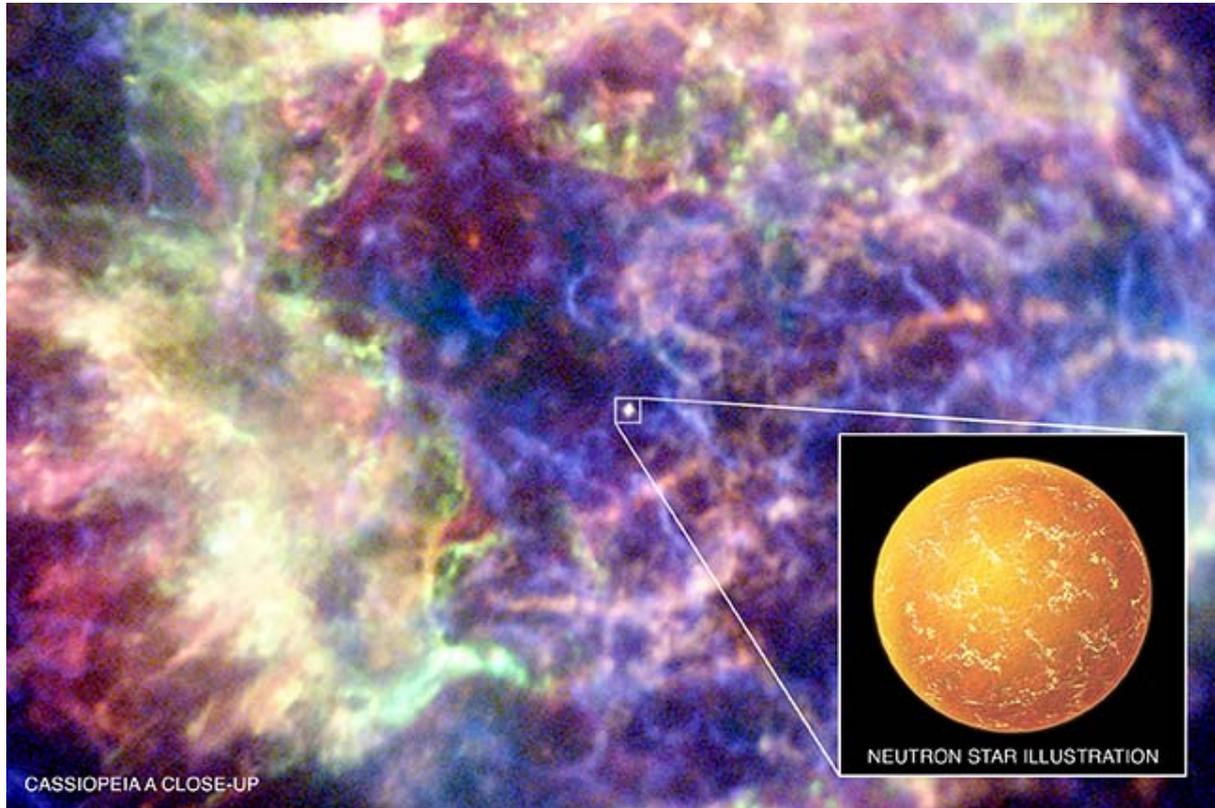




# Chandra Science Highlight

## Cassiopeia A: Carbon Atmosphere Discovered on Neutron Star



Scale: Image is 4.5 arc min across  
Chandra X-ray Observatory ACIS.

Distance Estimate: About 10 thousand light years

Chandra image of the central region of the supernova remnant Cassiopeia A. The central compact object (CCO) discovered in Chandra's first light image is identified with the small box in the center of the image. An artist's impression of the neutron star is also shown.

- A recent analysis of archival Chandra observations of the CCO showed that a model of a neutron star with a carbon atmosphere and a low magnetic field produces a good fit to the X-ray spectrum.
- The temperature of the atmosphere is  $\sim 2$  MK, and its scale height  $\sim 1$  cm.
- The inferred size of the emission region is consistent with the size of the neutron star, which could explain the absence of detectable X-ray pulsations from the source.

Reference: Ho, W. & Heinke, C. 2009, Nature, 462, 71