

A Universe of SOUND

Sonification is the process that translates data into sound, and a new project brings our high-energy Universe to listeners for the first time. Scientists are using NASA's Chandra X-ray Observatory and other instruments around the world and in space to help us experience the cosmos through sound. Whether it comes from vocal chords in our throats or the surface of the Sun, sound plays a valuable role in our understanding of the world and cosmos around us.

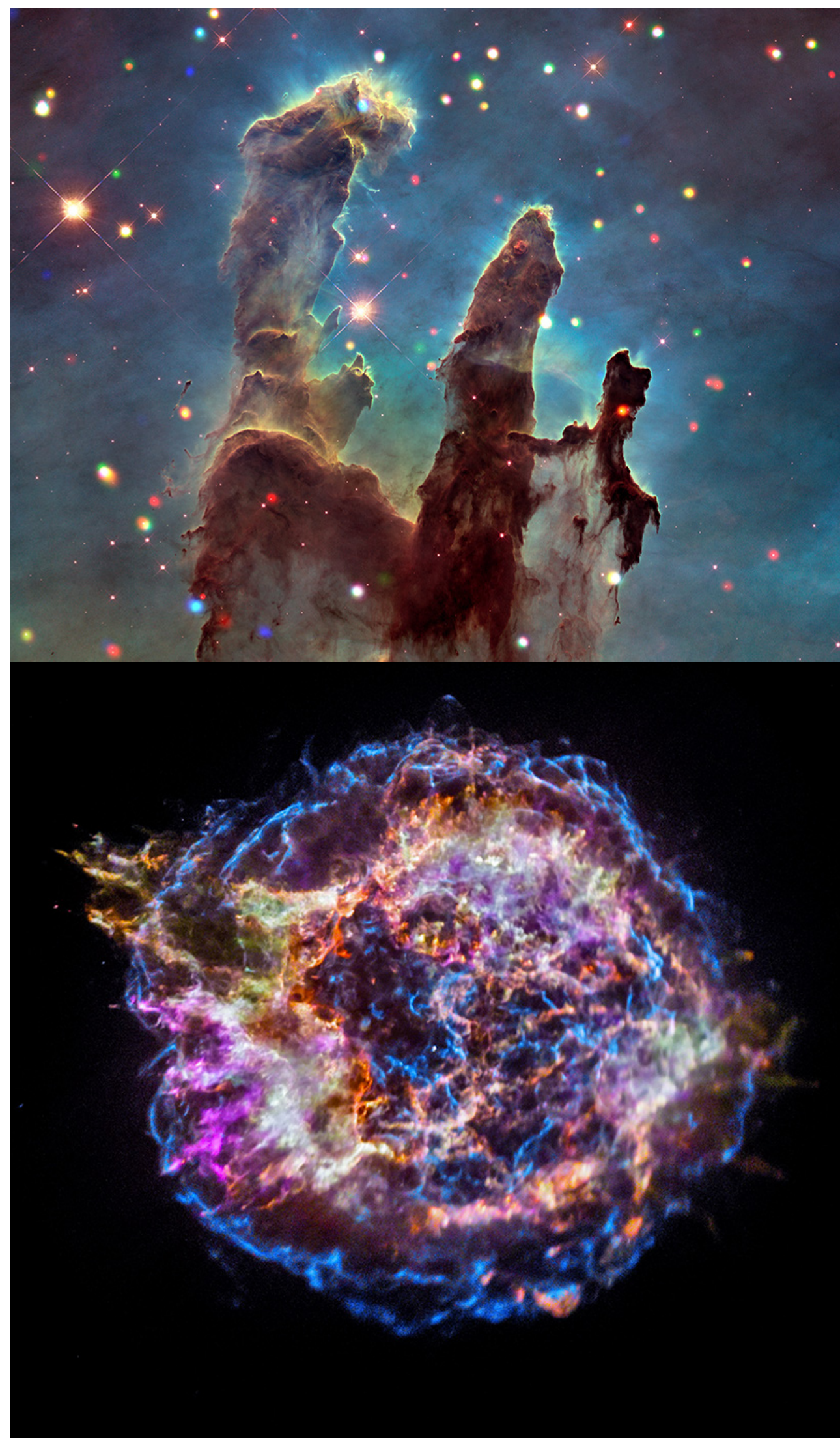
Astronomical data collected by NASA's Chandra X-ray Observatory and other telescopes are converted into sounds. These data sonifications map the data from these space-based telescopes into a form that users can hear instead of only see, embodying the data in a new form without changing the original content.

M16/Pillars of Creation Sonification

In the "Pillars of Creation" piece, the sounds are generated by moving horizontally across the image from left to right as seen in both optical and X-ray light. The vertical position of the recorded light controls the pitch, and it varies over a continuous range of pitches. Particular attention is paid to the structure of the pillars which can be heard as sweeps from low to high pitches and back. The two different "melodies" of optical and X-ray light can be enjoyed individually or simultaneously.

Cassiopeia A Sonification

This sonified piece is of the remains of a supernova called Cassiopeia A, or Cas A. In Cas A, the sounds are mapped to four elements found in the debris from the exploded star as well as other high-energy data. The distribution of silicon, sulfur, calcium, and iron are revealed moving outward from the center of the remnant, starting from the location of the neutron star, in four different directions, with intensity again controlling the volume. There is also a fifth audio path moving along the upper left jet.



To listen to
the sounds of
the universe,
scan the code.



Listen to these sonifications and others at chandra.si.edu/sound