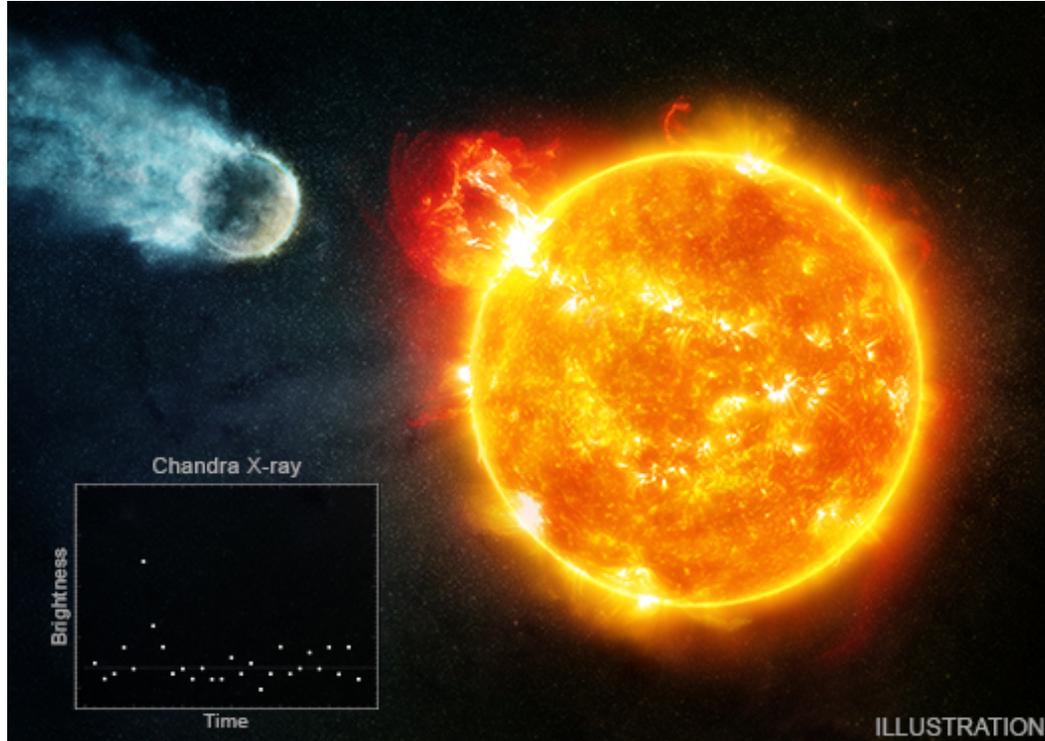




Chandra Science Highlight

Assessing The Habitability of Planets Around Old Red Dwarfs



Caption: The artist's impression shows radiation produced by a flare from a red dwarf (right) eroding the atmosphere of an orbiting, rocky planet (left). Chandra and Hubble observations of a red dwarf called Barnard's Star were performed to give new insight into how habitable planets that orbit this common type of star might be. The inset shows the X-ray brightness of Barnard's Star during a 7-hour Chandra observation. Radiation from X-ray flares like the one detected in this observation may erode the atmospheres of orbiting planets, as depicted in the illustration.

- How hospitable are red dwarf stars, the most common and long-lasting stars in our Galaxy? Researchers used Chandra and Hubble data to look at the intensity and frequency of high-energy flares from one nearby red dwarf.
- Barnard's Star is one of the closest stars to Earth, at a distance of only 6 light years, and is 10 billion years old, making it about twice the age of the Sun.
- The team found that Barnard's Star is still surprisingly active for its age. Its X-ray and ultraviolet flares are potentially destructive for the atmospheres of any planets closely orbiting it.
- If Barnard's Star is typical of its class, planets orbiting close to old red dwarfs may be less hospitable to life than previously thought.

Distance estimate: 6.0 light years

Credits: X-ray light curve: NASA/CXC/University of Colorado/K. France et al.; Illustration: NASA/CXC/M. Weiss.

Instrument: ACIS

Reference: France, K, et al., 2020, AJ, 160,237;
[arXiv:2009.01259](https://arxiv.org/abs/2009.01259).

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