

SUPERFLARES FROM YOUNG STARS MAY IMPERIL PLANETS: NASA

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The planet Proxima b orbiting the red dwarf star Proxima Centauri, the closest star to our Solar System, is seen in an undated artist's impression released by the European Southern Observatory August 24, 2016. | Photo Credit: [Reuters](#)

Violent flares from the host star may make planets orbiting it uninhabitable by affecting their atmospheres, scientists using NASA's Hubble Space Telescope have found.

Hubble is observing such stars through a large programme called HAZMAT — Habitable Zones and M dwarf Activity across Time, NASA said in a statement.

"M dwarf" is the astronomical term for a red dwarf star — the smallest, most abundant and longest-lived type of star in our galaxy, according to the study published in *The Astrophysical Journal*.

The HAZMAT programme is an ultraviolet survey of red dwarfs at three different ages: young, intermediate, and old.

Stellar flares from red dwarfs are particularly bright in ultraviolet wavelengths, compared with Sun-like stars, according to NASA.

Hubble's ultraviolet sensitivity makes the telescope very valuable for observing these flares.

The flares are believed to be powered by intense magnetic fields that get tangled by the roiling motions of the stellar atmosphere.

When the tangling gets too intense, the fields break and reconnect, unleashing tremendous amounts of energy.

The team has found that the flares from the youngest red dwarfs they surveyed — just about 40 million years old — are 100 to 1,000 times more energetic than when the stars are older.

This younger age is when terrestrial planets are forming around their stars, NASA said.

About three-quarters of the stars in our galaxy are red dwarfs.

Most of the galaxy's "habitable-zone" planets — planets orbiting their stars at a distance where temperatures are moderate enough for liquid water to exist on their surface — likely orbit red dwarfs.

In fact, the nearest star to our Sun, a red dwarf named Proxima Centauri, has an Earth-size planet in its habitable zone.

However, young red dwarfs are active stars, producing ultraviolet flares that blast out so much energy that they could influence atmospheric chemistry and possibly strip off the atmospheres of these fledgling planets.

The study examined the flare frequency of 12 young red dwarfs. The observing programme detected one of the most intense stellar flares ever observed in ultraviolet light.

Dubbed the “Hazflare,” this event was more energetic than the most powerful flare from our Sun ever recorded.

“Flares like we observed have the capacity to strip away the atmosphere from a planet. But that doesn’t necessarily mean doom and gloom for life on the planet,” said Parke Loyd from Arizona State University in the US.

“It just might be different life than we imagine. Or there might be other processes that could replenish the atmosphere of the planet. It is certainly a harsh environment, but I would hesitate to say that it is a sterile environment,” Loyd said.

“The goal of the HAZMAT programme is to help understand the habitability of planets around low-mass stars,” said Arizona State University’s Evgenya Shkolnik, the programme’s principal investigator.

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