TRENDING SCIENCE: Here comes the Sun: Closest images ever recorded capture new phenomena

Joint EU-US mission beams back the closest pictures and videos ever taken of the Sun.
The Sun has been worshipped and feared since ancient times. In recent years, it’s also becoming more understood beyond just providing our planet with light and warmth.

In February 2020, the Solar Orbiter aircraft blasted off to study our closest star up close over the next 2 years and reveal some of its secrets and those of the solar system. Built by the European Space Agency (ESA), with assistance from NASA, the probe recently flew within 77 million km of the Sun’s surface and sent back the first photos and videos that uncover extensive miniature solar flares. No other spacecraft has ever taken images of the Sun’s surface from a closer distance.

What’s behind the tiny solar flares on the Sun?

Referred to as campfires by scientists, these flares could potentially explain why the Sun’s corona (outer atmosphere) is so much hotter than its inner layers. “These are only the first images and we can already see interesting new phenomena,” Solar Orbiter Project Scientist Daniel Müller commented in an ESA press release. “We didn’t really expect such great results right from the start. We can also see how our ten scientific instruments complement each other, providing a holistic picture of the Sun and the surrounding environment.”

“The campfires are little relatives of the solar flares that we can observe from Earth, million or billion times smaller,” explained David Berghmans of the Royal Observatory of Belgium and Principal Investigator of Solar Orbiter’s Extreme Ultraviolet Imager instrument that captures high-resolution images of the lower layers of the Sun’s atmosphere. “The Sun might look quiet at the first glance, but when we look in detail, we can see those miniature flares everywhere we look.”

These campfires could be involved in the mysterious heating process that makes the Sun’s corona much hotter than its surface. It extends millions of kilometres into outer space. The physical mechanisms that heat the solar corona aren’t fully understood yet.

So close, yet so far

“We are all really excited about these first images – but this is just the beginning,” adds Müller. “Solar Orbiter has started a grand tour of the inner Solar System, and will get much closer to the Sun within less than two years. Ultimately, it will get as close as 42 million km, which is almost a quarter of the distance from Sun to Earth.”

“The first data are already demonstrating the power behind a successful
collaboration between space agencies and the usefulness of a diverse set of images in unravelling some of the Sun’s mysteries,” comments Holly Gilbert, Director of the Heliophysics Science Division at NASA Goddard Space Flight Center and Solar Orbiter Project Scientist.

Gilbert told the ‘BBC’ that she’s thrilled about what the future holds: “If we’ve already made some discoveries with just the ‘first light’ images, just imagine what we’re going to find when we get closer to the Sun, and when we get out of the ecliptic. Very exciting.”

**Keywords**

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