Ask the experts

In this issue our questions come from @spacegovuk and @spaceboffins followers on Twitter and Space Boffins Podcast followers on Facebook.

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What constellation is the Sun in and is it unique?

When asking an astronomer to describe our Sun they will say it is an ordinary yellow dwarf star that is just one of hundreds of billions of stars in our galaxy.

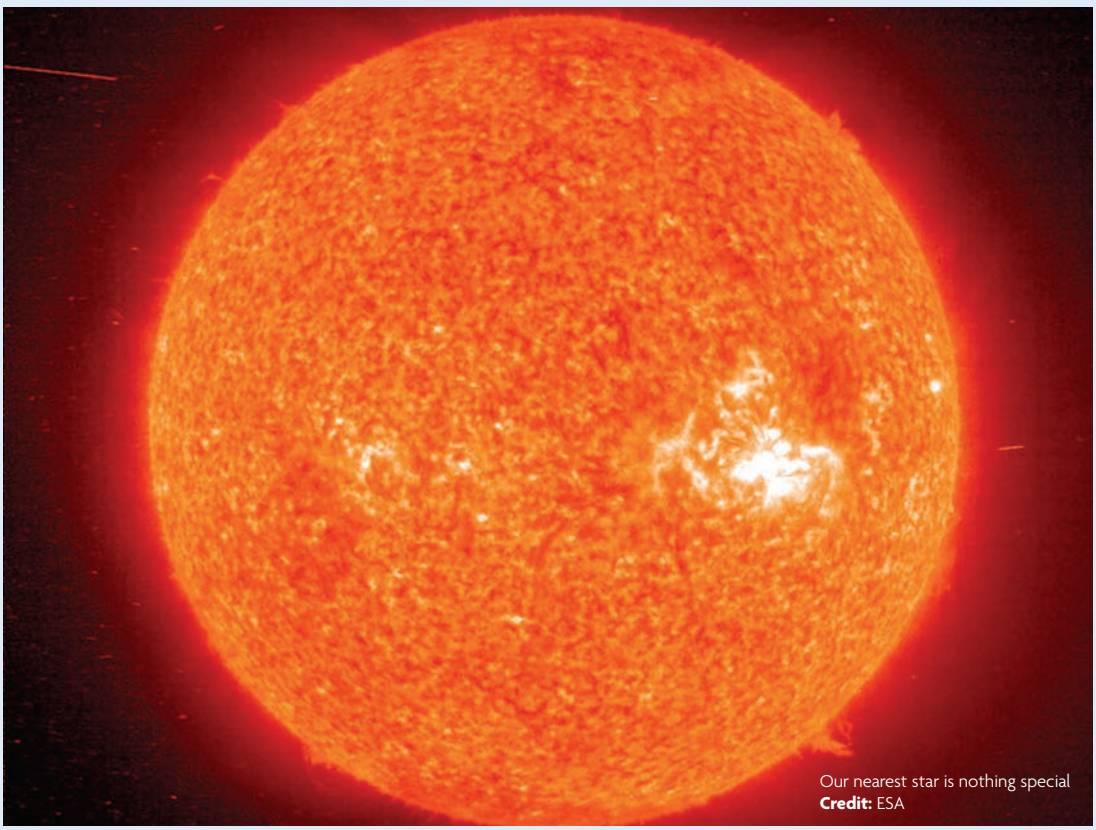
Although it is currently in the main stage of its life it is over four billion years old, has a surface temperature of 5700 Celsius and is more than a million times larger than the Earth. However, this ordinary star is a giant ball of hot gas and regularly throws out huge eruptions which race across the Solar System and can hugely impact the Earth.

It was originally thought that the Sun, and hence the Solar System, was located at the centre of the Milky Way galaxy. However, our galaxy has a spiral structure and we are in fact located near the outer edge on what is known as the Orion Arm. Despite the Sun's colossal orbital speed around the centre of the Milky Way, it still takes 230 million years to make one complete orbit.

The question of what constellation the Sun belongs to is a bit of a trick one. In fact the Sun does not belong to any constellation. Because the Earth orbits around the Sun, the Sun moves in the sky relative to the other stars. So a better question might be: what constellation does our Sun belong to today? Depending upon the time of year, the Sun passes through each of the constellations of the Zodiac. Your astrological sign is the constellation that the Sun was in on the day you were born.

Is our Sun unique or is it a 'sibling star' made of the same material as another? This is found by looking at the light coming from the star, which shows its chemical composition.

After a recent study of nearby stars we have in fact discovered that the Sun does have a non-identical twin. It has the same composition as the Sun and it appears to be moving in an orbit in the same part of space. This star is named HD 162826 and is 15% more massive than the Sun. It is fairly bright and so, with a good telescope, you may be able to find it in the constellation of Hercules.



Our nearest star is nothing special
Credit: ESA