

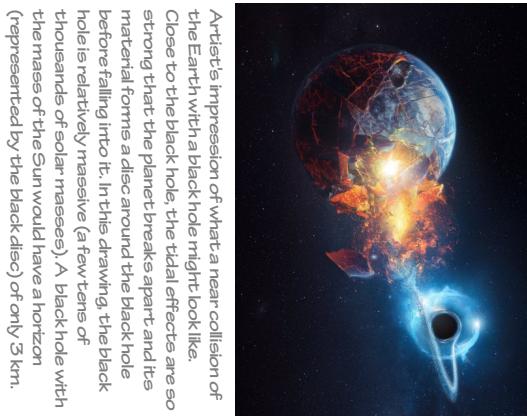


Artist's representation of the Sun at the beginning of its expansion phase as seen from the Earth, by then a scorching desert, in 5-6 billion years. It will then fill almost **the entire sky!**

trophysicists calculate the evolution of stars with great accuracy. The Sun is currently in the middle of a very stable period that will last for about 5 billion years. However, its intensity will increase by 10% over **a next billion years**, which will begin to dominate liquid water and life on the Earth.

the luminosity will increase by 10% over the **next billion years**, which will begin to eliminate liquid water and life on the Earth's surface. After this stable period, the Sun's evolution will become catastrophic. It will become a red giant and will be 100 times larger in diameter. It will encompass the planets Mercury and Venus, and the Earth will be a glowing desert.

But on a human timescale, the evolution of the Sun is not dangerous and is not the **cause of the current global warming**.

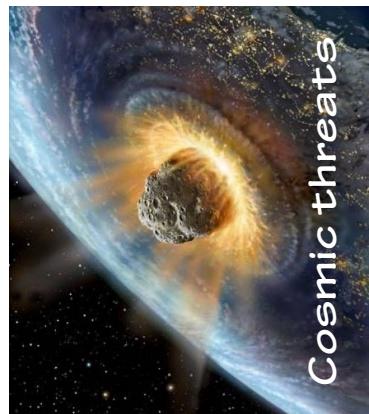


The so-called vacuum of space is not an absolute vacuum. In fact, space is permeated by a steady stream of particles of all kinds (protons, electrons, etc.) coming from other stars and galaxies. We are continually bombarded by a **shower of particles** (often secondary particles, see opposite page). When cosmic rays are very energetic, they can cause genetic mutations. This is the **most common cosmic threat** to which life on Earth has adapted.

The particles emitted by the Sun during its eruptions do not affect our bodies, but they can **disrupt** telecommunications, endanger high-altitude aircraft and cause **damage** to satellites.



The Universe in my pocket



Cosmic threats



Georges Alecian
Paris Observatory

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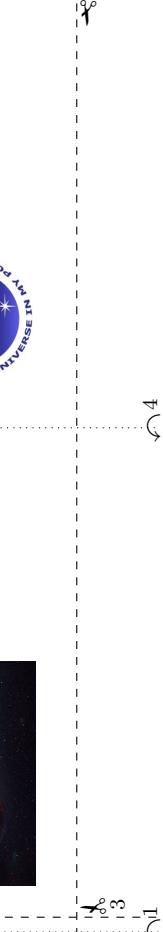
What is the most life-threatening cosmic event on Earth?

Answer on the
back

'Exotic' threats

'Exotic' threats

If an encounter with a black hole to be truly fatal, the Earth would have to **collide almost head-on** with it. This is highly unlikely, as both the Earth and the most common black holes (resulting from the collapse of a star) have very small diameters. The most likely outcome of an approaching black hole would be that the Earth would orbit the black hole at a safe distance. But even without immediate destruction, such an event would create a **major gravitational imbalance** in the Solar System. The danger would be much greater with a super-massive black hole, but there are very few of these, they are mainly in the centres of galaxies. Equally unlikely is a collision with a star, because the number of stars near the Solar System is small.



3

