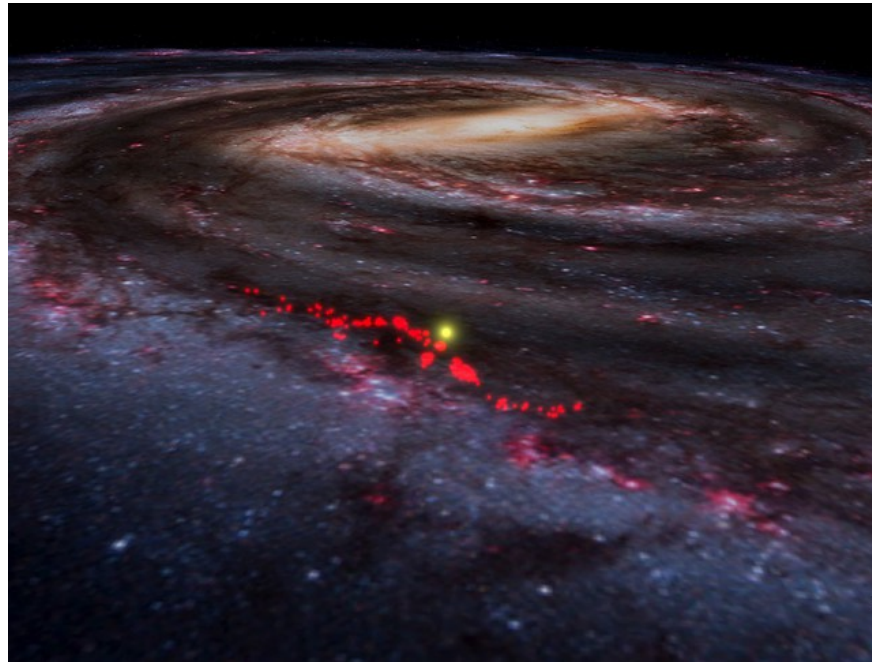


# Earth changes color after being caught in a giant cosmic wave

A megastructure called the Radcliffe Wave may have been responsible for creating a 'White Earth' 12-15 million years ago.

Writing in the scientific journal *Astronomy & Astrophysics*, a group of authors led by Professor João Alves (University of Vienna - Austria) pointed out evidence that the Earth and the entire Solar System once entered the Radcliffe Wave, a mysterious "stellar nursery" 9,000 light years long.



The Radcliffe wave is marked in red in this image depicting the Milky Way - Photo: HAVARD MAGAZINE

As our solar system orbits the Milky Way galaxy, it encounters a variety of environments, including dense regions of the interstellar medium, according to Sci-News.

These encounters may expose parts of the system to these special environments, increasing the flow of interstellar dust into Earth's atmosphere.

All of these events can significantly change the environment and climate of our planet over a period of time.

Traces of these encounters are also isotopes related to the space environment, such as iron-60.

Using data from ESA's Gaia mission and spectroscopic observations, the team pinpointed the path of the Solar System and found that a major event may have occurred: the famous Radcliffe Wave crossing.

The Radcliffe Wave is a narrow sinusoidal gas structure that includes many known star-forming cloud complexes, such as CMa, Orion, Taurus, Perseus, Cepheus, the North America Nebula, and Cygnus.

This gaseous structure, with an estimated mass of 3 million solar masses, oscillates like a wave on an ocean, and is thought to be part of the spiral structure of the Milky Way.

According to the team's calculations, Earth and the rest of the Solar System passed through the Radcliffe Wave about 18.2-11.5 million years ago, with the most likely time being between 14.8-12.4 million years ago.

This time frame fits the dramatic climatic transition of the mid-Miocene (23.03-5.33 million years ago).

It was a brutal period for all life on Earth, as the warm climate changed to a colder one, leading to the formation of the archetypal structure of the Antarctic ice sheet on a continental scale.

So this study suggests that Earth's climate — including ice ages so powerful that they left the planet's surface virtually white — was driven not only by factors from within the planet and the solar system itself, but also by cosmic forces on a larger scale.

This could help scientists unravel many mysteries in the field of paleoclimate.

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