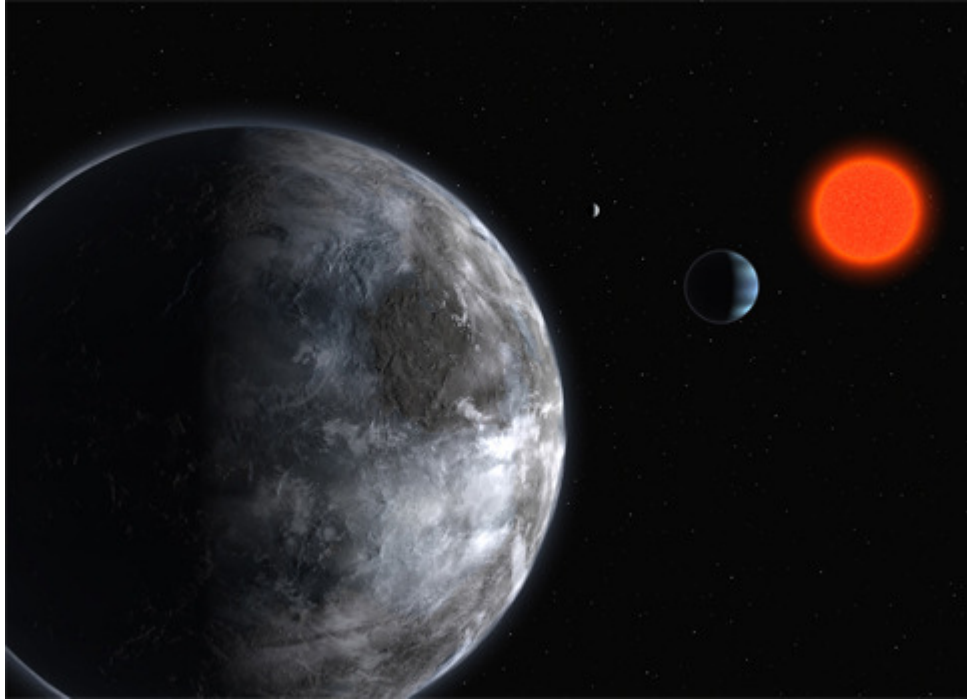


Boring may mean livelier

The Canadian space telescope MOST's observations of planetary system Gliese 581 indicates stellar stability.

Provided by the University of British Columbia



Artist's impression of the planetary system around the red dwarf Gliese 581. Using the instrument HARPS on the ESO 3.6m telescope, astronomers have uncovered 3 planets, all of relative low-mass: 5, 8 and 15 Earth masses. The five Earth-mass planet makes a full orbit around the star in 13 days, the other two in 5 and 84 days. *ESO*

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The bad news for astronomers is: The light from the planetary system Gliese 581 is boring.

The good news for any Gliesians that might live there: The light from the star Gliese 581a is boring.

Canada's space telescope, MOST, placed Gliese 581 (pronounced "Gleez-eh" 581) under a scientific stakeout for about a month and a half, after a planet that might be capable of supporting life was discovered in that system. MOST, a Canadian Space Agency mission, sensitively measured the light output from the star with two goals. First, to look for "transits" — dips in the light from the star if the planet's orbit carried it directly between Earth and the star — to measure the size of the planet. Second, to monitor the variability of the dim red dwarf star itself and check its suitability as a home star for life around it.

The MOST results, presented at the annual meeting of the Canadian Astronomical Society at the Royal Military College in Kingston, Ontario today, rule out dips in the starlight down to a level of about 0.1% that would be caused by a transiting planet roughly the size of the Earth. That doesn't mean there's no planet, just that from Earth, we don't see its orbit nearly edge-on. But it does mean we can't directly measure the size of the planet Gliese 581c, to test models of its structure. That's the disappointing news.

The encouraging news is that the star itself seems remarkably stable over the six weeks it was

monitored by MOST. The brightness of the star changed by only a few tenths of a percent over that time. This level of stability means that this red dwarf star provides a stable source of light, hence heat, to the surface of planet Gliese 581c. "The climate there should not be a wild rollercoaster ride that would make it difficult for life to get a foothold," notes MOST Mission Scientist Jaymie Matthews, a professor in the Department of Physics & Astronomy at the University of British Columbia. "It also suggests the star is quite old, and settled in its ways, so that the planets around it have been around for billions of years. We know it took about three and a half billion years for life on Earth to reach the level of complexity that we call human, so it's more encouraging for the prospects of complex life on any planet around Gliese 581 if it's been around for at least as long."

Another piece of good news is that the star doesn't show any variations that repeat every 13 days, the orbital period of the planet inferred from measurements of Doppler shifts in the star's spectrum. The signal for this planet is so subtle that it might have been produced by spots or other activity on the star's surface with a 13-day cycle. The MOST measurements show that's not the case, so it adds even more confidence to the indirect detection of the planet.

"The Gliese 581 system is only the first to be found — beyond our own Earth — that might have a liveable planet," says Matthews. With space missions like MOST, the French satellite COROT which joined MOST in orbit late last December, and the American Kepler mission due for launch in November 2008, Matthews predicts that: "Other 'Earthy' worlds will come to light in the coming months and years and some of them will have orbits that produce planetary alignments. Not the kind that excites somebody reading a horoscope but the kind that excites astronomers, because they will allow us to test our models of alien worlds. Worlds that might be homes to neighbors in our Galactic city, the Milky Way."