Distant planet judged possibly habitable

by Bend_Weekly_News_Sources

In a findÂ-ing that if conÂ-firmed could stand as a landÂ-mark in history, asÂ-troÂ-noÂ-mers have reÂ-ported disÂ-coÂ-vÂ-erÂ-ing the most Earth-like planÂ-et outÂ-side our SoÂ-lar SysÂ-tem to date: a world that may have liqÂ-uid oceans and thus life.Swiss, French and PorÂ-tuÂ-guese sciÂ-enÂ-tists found the body, esÂ-tiÂ-mated as 50 perÂ-cent widÂ-er than our Earth, orÂ-bitÂ-ing a so-called red dwarf star relÂ-aÂ-tively close to Earth. The star is thought to harÂ-bor two othÂ-er planÂ-ets alÂ-so.

Artist's imÂ-presÂ-sion of a sysÂ-tem of three planÂ-ets surÂ-roundÂ-ing the red dwarf Gliese 581. (CourÂ-teÂ-sy ESO) Artist's imÂ-presÂ-sion of a sysÂ-tem of three planÂ-ets surÂ-roundÂ-ing the red dwarf Gliese 581. (CourÂ-teÂ-sy ESO)

The arÂ-row marks the apÂ-proxÂ-iÂ-mate loÂ-caÂ-tion of the red dwarf star Gliese 581 with reÂ-spect to the conÂ-stelÂ-laÂ-tion LiÂ-bra viÂ-siÂ-ble in the southÂ-ern sky.

Artist's conÂ-cept of a red dwarf, a dim star that burns slowÂ-ly and very long. (CourÂ-teÂ-sy NASA)
The newÂ-found exoÂ-plaÂ-nÂ-etâ€”as asÂ-troÂ-noÂ-mers call planÂ-ets around stars othÂ-er than the Sunâ€”would be the smallÂ-est such body evÂ-er reÂ-ported. NoneÂ-theÂ-less, the object is esÂ-tiÂ-matÂ-ed to weigh as much as five Earths, partÂ-ly thanks to its greatÂ-er width. For the same reaÂ-son, it would have more than twice Earthâ€™s surÂ-face arÂ-ea. HisÂ-torÂ-iÂ-cally, only large exoÂ-plaÂ-nÂ-ets lend themÂ-selves to huÂ-man deÂ-tectÂ-ion, though that is changÂ-ing.OthÂ-er cuÂ-riÂ-ous feaÂ-tures of the newÂ-found planÂ-et are that gravÂ-iÂ-ty at its surÂ-face would be around twice as strong as on Earth; and its year is just 13 Earth days long, as it compÂ-letes one orÂ-bit about its sun in that time.Itâ€™s 14 times closÂ-er to its star than we are from our Sun, reÂ-searchÂ-ers said. But since its host star, the red dwarf Gliese 581, is smaller and coolÂ-er than the Sun, the planÂ-et nevÂ-ertheless would lie in its habÂ-itÂ-aÂ-ble zoneâ€”the reÂ-gion around a star with suitÂ-aÂ-ble temÂ-peÂ-rÂ-aÂ-tures for liqÂ-uid waÂ-ter. AvÂ-erÂ-age temÂ-peÂ-rÂ-aÂ-tures on this â€œsupeÂ-r-Earthâ€• lie beÂ-tween 0 and 40 deÂ-grees CelÂ-siÂ-us (32 to 104 deÂ-grees FahrenÂ-heit), â€œand waÂ-ter would thus be liqÂ-uid,â€• said StÃ©Â-phane Udry of SwitzÂ-erÂ-landâ€™s GeÂ-neÂ-va ObÂ-servÂ-aÂ-toÂ-ry, lead auÂ-thor of a paÂ-peÂ-r reÂ-portÂ-ing the reÂ-sult. â€œModÂ-els preÂ-dict that the planÂ-et should be eiÂ-ther rockÂ-yâ€”like our Earthâ€”or covÂ-ered with oceans,â€• he added.â€œLiqÂ-uid waÂ-ter is critÂ-iÂ-cal to life as we know it,â€• notÂ-ed XaÂ-viÂ-er Delfosse, a memÂ-ber of the team from GreÂ-noÂ-ble UniÂ-verÂ-siÂ-ty, France. â€œBeÂ-cause of its temÂ-peÂ-rÂ-aÂ-ture and relÂ-aÂ-tive proxÂ-imÂ-iÂ-ty, this planÂ-et will most probÂ-aÂ-bly be a very imÂ-porÂ-tant tarÂ-get of the fuÂ-ture space misÂ-sions dedÂ-iÂ-catÂ-ed to the search for extra-terrestrial life. On the treasÂ-ure map of the UniÂ-verse, one would be tempted to mark this planÂ-et with an X.â€•

The host star, Gliese 581, is among the 100 closÂ-est stars to us, lyÂ-ing 20.5 light-years away in the conÂ-stelÂ-laÂ-tion LiÂ-bra (â€œthe Scales.â€•) A light-year is the disÂ-tance light travÂ-els in a year. Gliese 581 has one third the mass of our Sun. Such small stars, called red dwarfs, are at least 50 times faintÂ-er than the Sun and are beÂ-lieved to be the most comÂ-mon stars in our galÂ-axy. Among the 100 closÂ-est stars to the Sun, 80 beÂ-long to this class.â€œRed dwarfs are ideÂ-al tarÂ-gets for the search for such planÂ-ets beÂ-cause they emit less light, and the habÂ-itÂ-aÂ-ble zone is thus much closÂ-er to them than it is around the Sun,â€• said XaÂ-viÂ-er BonÂ-fils, a co-reÂ-searcher from LisÂ-bon UniÂ-verÂ-siÂ-ty. PlanÂ-ets near a star are easÂ-iÂ-er to deÂ-tect beÂ-cause their gravÂ-iÂ-taÂ-tionÂ-al pull afÂ-fects the parÂ-ent star noÂ-ticeÂ-ably, inÂ-ducÂ-ing someÂ-thing of a wigÂ-gling moÂ-tion. Red dwarfs are alÂ-so exÂ-pected to live exÂ-traorÂ-diÂ-narÂ-ily long beÂ-cause they burn fuÂ-el slowÂ-ly. A red dwarf one-third the Sunâ€™s mass, like Gliese 581, would typÂ-iÂ-calÂ-ly shine for some 130 bilÂ-lion years, outÂ-livÂ-ing the Sun by thirÂ-teen times. That might reÂ-lieve at least one source of stress for any inÂ-habÂ-iÂ-tants of a red dwarf sysÂ-tem. We on Earth are alÂ-ready halfÂ-way through the Sunâ€™s

lifeÂ-time, though much time reÂ-mains.

Two years ago, Udry and his team found anothÂ-er planÂ-et around Gliese 581, esÂ-tiÂ-matÂ-ed to weigh as much as 15 Earthsâ€”about as much as NepÂ-tuneâ€”and orÂ-bitÂ-ing the star in 5.4 days.At the time, the asÂ-troÂ-noÂ-mers had alÂ-ready notÂ-ed hints of anothÂ-er planÂ-et, Udry and colÂ-leagues said. They thus took new meaÂ-sureÂ-ments and found the new â€œsupeÂ-r-Earth,â€• dubbed Gliese 581c, along with a likeÂ-ly third planÂ-et weighÂ-ing eight Earths and orÂ-bitÂ-ing in 84 days. The findÂ-ings have been subÂ-mitÂ-ted to the reÂ-search jourÂ-nal AsÂ-tronÂ-oÂ-my and AsÂ-tÂ-roÂ-physÂ-ics, the sciÂ-enÂ-tists said.The find was posÂ-siÂ-ble thanks to an inÂ-struÂ-ment known as a specÂ-troÂ-graph on the EuÂ-roÂ-peÂ-an SouthÂ-ern ObÂ-servÂ-aÂ-toÂ-ryâ€™s 3.6-meter telÂ-eÂ-scope at La Silla, ChilÂ-e, acÂ-cordÂ-ing to the group. The inÂ-sÂ-truÂ-ment, called the High AcÂ-cuÂ-raÂ-cy RaÂ-diÂ-al VeÂ-locÂ-iÂ-ty for PlanÂ-eÂ-tary SearchÂ-er, is touted as one of the most sucÂ-cessÂ-ful tools for deÂ-tecting exoÂ-plaÂ-nÂ-ets to date.The inÂ-struÂ-ment measÂ-ured wigÂ-gles in the starâ€™s moÂ-tion corÂ-reÂ-spondÂ-ing to veÂ-locÂ-iÂ-ty changes of just two to three meÂ-ters per secÂ-ondâ€”the speed of a brisk walk, acÂ-cordÂ-ing to the GeÂ-neÂ-va ObÂ-servÂ-aÂ-toÂ-ryâ€™s MiÂ-chel MayÂ-or, prinÂ-ciÂ-pal inÂ-vesÂ-tiÂ-gaÂ-tor for the inÂ-struÂ-ment. GivÂ-en the reÂ-sults so far, â€œEarth-mass planÂ-ets around red dwarfs are withÂ-in reachâ€• of disÂ-covÂ-ery, he preÂ-dicted.

Courtesy ESO and World Science staff

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