

Kepler-452b is older, bigger Earth cousin

On this, the 20th anniversary of the discovery that other suns do host planets, the Kepler mission has confirmed the first near-Earth-size planet in the habitable zone – or zone where liquid water can exist – around a sun-like star.

Dreamers and visionaries have long imagined finding another Earth. This week (July 23, 2015) at a NASA teleconference, scientists with the planet-finding Kepler mission took a step closer to that dream with the discovery of the first nearly Earth-sized planet orbiting in the habitable zone – or zone where liquid water can exist – of its sunlike star. The planet is has many similarities – and also some differences – to the world on which we stand. The *Astronomical Journal* has accepted the research paper reporting this finding. The discovery marks another milestone in the journey to finding another Earth.

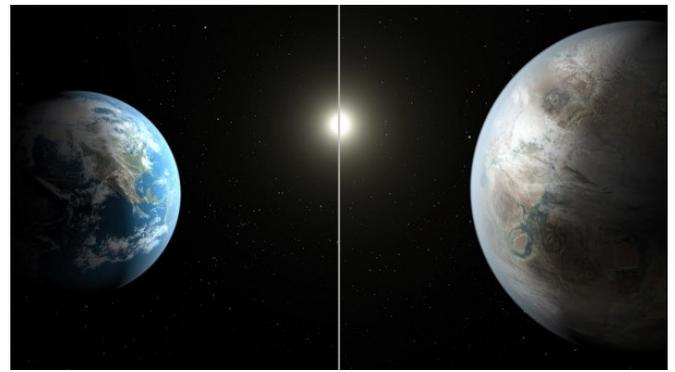
- Kepler-452b is the smallest planet to date discovered orbiting in the habitable zone of its star. Considered a super-Earth, it is 60 percent larger than our world.
- Its orbit around the sun last 385 days, only 5 percent longer than Earth's orbit.
- It's star is a G2-type, like our sun and the planet is 5 percent farther from it than Earth is from our sun.
- While its mass and composition aren't yet determined, previous research suggests that planets the size of Kepler-452b have a good chance of being rocky.
- At 6 billion years it is 1.5 bn years older than our sun.
- It has the same temperature as Earth, but appears 20 percent brighter.
- It is located 1,400 light-years away from us, in the direction of the constellation Cygnus, the Swan.

We can think of Kepler-452b as an older, bigger cousin to Earth. It's awe-inspiring to consider that this planet has spent 6 billion years in the habitable zone of its star; longer than Earth. That's substantial opportunity for life to arise, should all the necessary ingredients and conditions for life exist on this planet.

To help confirm the finding and better determine the properties of the Kepler-452 system, the team conducted ground-based observations at the University of Texas at Austin's McDonald Observatory, the Fred Lawrence Whipple Observatory on Mt. Hopkins, Arizona, and the W. M. Keck Observatory atop Mauna Kea in Hawaii.

In addition to confirming Kepler-452b, the Kepler team has increased the number of new exoplanet candidates by 521 from their analysis of observations conducted from May 2009 to May 2013, **raising the number of planet candidates detected by the Kepler mission to 4,696.** Candidates require follow-up observations and analysis to verify they are actual planets.

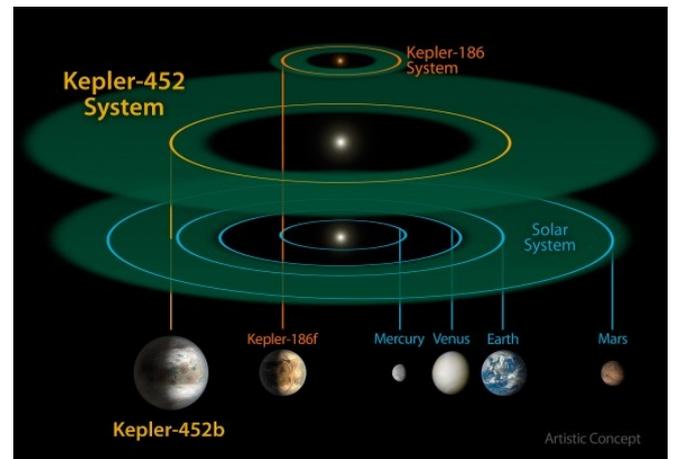
John Grunsfeld, associate administrator of NASA's Science Mission Directorate at the agency's headquarters in Washington says: This exciting result brings us one step closer to finding an Earth 2.0. Twelve of the new planet candidates have diameters between one to two times that of Earth, and orbit in their star's habitable zone. Of these, nine orbit stars that are similar to our sun. AK, from NASA Notes



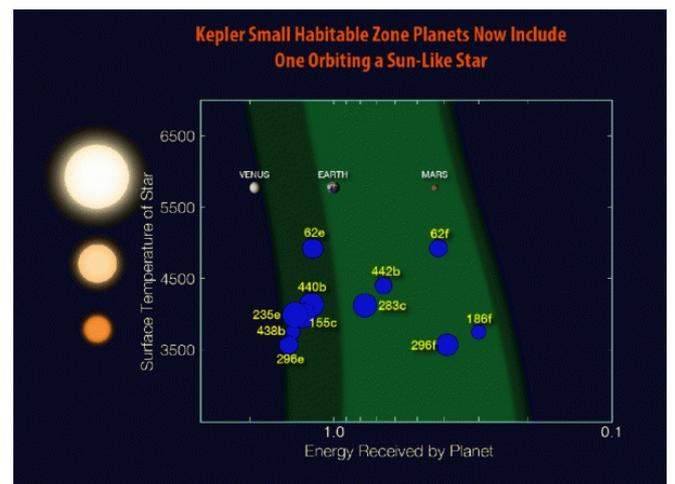
Face to face! Artist's concept of Earth (l) and Kepler 452b



Artist's concept of Earth cousin Kepler 452b



This size and scale of the Kepler-452 system compared alongside the Kepler-186 system and the solar system.



Since 2009 twelve planets less than twice the size of Earth have been discovered in the habitable zones of their stars