

Amazing Discovery: **Seven Planets Orbiting A Red Dwarf**

Mark Bergemann

Most Americans mistakenly consider their country's space agency, NASA, to be an impartial reporter of what they discover. These Americans misunderstand science.

Every scientist has preconceived assumptions which direct their science. Several recent articles in the LSI Journal have detailed how science is a biased process. NASA uses science. Because science is a biased process, NASA's scientific conclusions will also be biased. NASA imposes many god-less assumptions on their science, biasing their observations, analyses, and conclusions. This is of course no different than other scientific organizations such as the National Academy of Sciences, whose anti-creation booklets were reviewed in the [winter 2017 LSI Journal](#).

Thousands of exoplanets (planets outside our solar system) have been discovered in recent years, but a new discovery is so far unique, as NASA details later in this article.

Telescopes Dedicated to Search For Exoplanets

The University of Belgium operates telescopes in Chile and Morocco which are dedicated to finding planets outside our solar system. That telescope network is called "TRAPPIST" (TRAnsiting Planets and PlanetesImals Small Telescope).¹ In May 2016, TRAPPIST found three exoplanets orbiting a red dwarf star (more specifically, an M-dwarf star). They named that planetary system TRAPPIST-1. NASA subsequently studied that planetary system and found four more planets.

¹ http://www.trappist.ulg.ac.be/cms/c_3300885/en/trappist-portal (accessed Aug 26, 2017)

“Transiting” is an indirect method of finding exoplanets by observing temporary reductions in a star’s brightness. It is assumed these reductions in light intensity are from an orbiting planet, temporarily blocking some of the star’s light. The amount, duration, and repetition rate of these light intensity reductions can be used to calculate the assumed planet’s size and orbital characteristics. The mass for some of the TRAPPIST-1 planets was roughly estimated through calculations based on the planets’ apparent effect on each other’s orbits.

Important Discovery Reported Worldwide

This is an important discovery, and science reporters world-wide hailed it as such. TIME magazine included Michaël Gillon, lead scientist at TRAPPIST, in its 2017 list of “*The 100 Most Influential People.*” Alan Stern, leader of NASA’s New Horizons mission, writes in TIME (italics and underlines added),

Human beings have long wondered whether they are alone in the universe. Now *we are closer than ever to getting an answer.* That’s thanks in large part to the *astronomers who are searching for exoplanets—planets orbiting other stars—that could be home to life.*

Three have been most influential of late: Guillem Anglada-Escudé of the Queen Mary University of London, who last year discovered an Earth-size planet orbiting Proxima Centauri, our closest neighboring star; Michaël Gillon of the University of Liège in Belgium, who in February announced the discovery of a full solar system of seven Earth-size planets orbiting Trappist-1, another comparatively local star; and Natalie Batalha, the current lead scientist for NASA’s Kepler space telescope, who has helped find approximately 4,700 new worlds since 2009. *If life exists on the closest of these exoplanets, telescopes should be able to confirm its chemical signatures within a decade.*

There was a time when Pluto—which NASA’s New Horizons spacecraft at last explored in 2015, a mission I led—was con-

sidered the last planet. We now know there are thousands of other, possibly inhabited, planets. Perhaps later in this century or in the next, we will even develop the technology to visit them.²

On May 2, 2017, Aeon magazine published an article by Michaël Gillon, who leads the TRAPPIST team, and Amaury Triaud, an exoplanet expert from the University of Cambridge. Their article, entitled “*Dwarf planetary systems will transform the hunt for alien life*” states (italics and underlines added),

A nearby star, called TRAPPIST-1A, is orbited by seven planets similar in size and mass to Earth. All seven planets are temperate, meaning that under the right atmospheric and geologic conditions, they could sustain liquid water. Three of the planets show particular potential for habitability, receiving about as much energy from their star as the Earth receives from the Sun. Our discovery received ecstatic and gratifying news coverage around the world.

...We seek an answer to “How frequently is life found elsewhere?”

... Claiming a discovery of life will be hard. We cannot rely on the detection of a single gas but instead will need to detect several, and will need to measure their relative abundances.

... If we manage to identify the presence of life on a planet similar to those in the TRAPPIST-1 system, then we can start measuring how frequently biology emerges in the universe. We could have the first clues of extraterrestrial biology in a decade!³

² Alan Stern, TIME, Natalie Batalha, Guillem Anglada-Escudé and Michaël Gillon in *The 100 Most Influential People*, 2017 <http://time.com/collection/2017-time-100/4742707/natalie-batalha-guillem-anglada-escude-michael-gillon/> (accessed Aug 26, 2017)

³ Amaury Triaud, Michaël Gillon, Aeon, Dwarf planetary systems will trans-

Hyped Reports Stressing Watery, Habitable Planets

Unfortunately, much of the general public hearing about exoplanet discoveries will take these reports at face value, believing that Earth-like planets orbiting stable stars with life supporting atmospheres and liquid water have been found, or at least are about to be found in a few years. In reality, the possibility of Earth-like atmospheres and liquid water on any exoplanet planet is still conjecture, based on the desire of evolutionists to prove that life is common in the universe.

Journalists commonly hype scientific discoveries as being more than the scientists report, but in the TRAPPIST-1 case NASA is partly to blame. NASA has sensationalized this discovery by repeatedly publishing numerous artistic renderings (stills and video) of what these planets may look like, *assuming they have an Earth-like atmosphere, assuming they have water, and assuming their star is stable like our sun. These assumptions may eventually prove to be true, but for now they are highly speculative.*

To NASA's credit, they do use words like "imagined planets" and "artist's concept" to describe the photo-like depictions of these planets. NASA does though center their many TRAPPIST-1 articles, drawings, and videos on the potential for liquid water and life on these planets. Since NASA has no actual photos to show the public (something to which the public is accustomed), they fill the void with artwork showing Earth-like planets with an Earth-like atmosphere and liquid water. I found no artwork by NASA or any other group showing other TRAPPIST-1 possibilities, where no Earth-like atmosphere and no liquid water is present.

Seven Exoplanets Orbiting One Star

On February 22, 2017, NASA reported (*italics and underlines added*),

NASA's Spitzer Space Telescope has revealed the first known system of seven Earth-size planets around a single star. Three

form the hunt for alien life, May 2, 2017. <https://aeon.co/ideas/dwarf-planetary-systems-will-transform-the-hunt-for-alien-life> (accessed Aug 26, 2017)

Evolutionists imagine that non-living chemicals can self-assemble into a living thing. Since they think it happened once on earth (to produce all plant and animal life), they think it should be a common event which has occurred on countless planets and moons.

of these planets are firmly located in the habitable zone, the area around the parent star where a rocky planet is most likely to have liquid water. The discovery sets a new record for greatest number of habitable-zone planets found around a single star outside our solar system. All of these seven planets could have liquid water – key to life as we know it – under the right atmospheric conditions, but the chances are highest with the three in the habitable zone.

...At about 40 light-years (235 trillion miles) from Earth, the system of planets is relatively close to us, in the constellation Aquarius. Because they are located outside of our solar system, these planets are scientifically known as exoplanets. ...The new results were published Wednesday in the journal Nature,⁴ and announced at a news briefing at NASA Headquarters in Washington.

Using Spitzer data, the team precisely measured the sizes of the seven planets and developed first estimates of the masses of six of them, allowing their density to be estimated. Based on their densities, all of the TRAPPIST-1 planets are likely to be rocky. Further observations will not only help determine whether they are rich in water, but also possibly reveal wheth-

⁴ Alexandra Witze, *These seven alien worlds could help explain how planets form*, Nature, Feb 22, 2017. <http://www.nature.com/news/these-seven-alien-worlds-could-help-explain-how-planets-form-1.21512> (accessed Aug 26, 2017)

One assumption of evolutionists is that the earth is an ordinary planet, orbiting an ordinary star, in an ordinary part of the Milky Way, which is in an ordinary place in the universe.

er any could have liquid water on their surfaces. The mass of the seventh and farthest exoplanet has not yet been estimated – scientists believe it could be an icy, “snowball-like” world, but further observations are needed.

“The seven wonders of TRAPPIST-1 are the first Earth-size planets that have been found orbiting this kind of star,” said Michael Gillon, lead author of the paper and the principal investigator of the TRAPPIST exoplanet survey at the University of Liege, Belgium. “It is also the best target yet for studying the atmospheres of potentially habitable, Earth-size worlds.”

...Spitzer, Hubble, and Kepler will help astronomers plan for follow-up studies using NASA’s upcoming James Webb Space Telescope, launching in 2018. With much greater sensitivity, Webb will be able to detect the chemical fingerprints of water, methane, oxygen, ozone, and other components of a planet’s atmosphere. Webb also will analyze planets’ temperatures and surface pressures – key factors in assessing their habitability.⁵

⁵ *NASA Telescope Reveals Largest Batch of Earth-Size, Habitable-Zone Planets Around Single Star*, editor Karen Northon, NASA, Feb 22, 2017, updated Aug 4, 2017 <https://www.nasa.gov/press-release/nasa-telescope-reveals-largest-batch-of-earth-size-habitable-zone-planets-around> (accessed Aug 26, 2017)

Cover Artwork

Our LSI Journal cover shows the seven TRAPPIST-1 planets orbiting their star as envisioned by an artist. NASA describes the artwork,

This illustration shows the seven TRAPPIST-1 planets as they might look as viewed from Earth using a fictional, incredibly powerful telescope. The sizes and relative positions are correctly to scale: This is such a tiny planetary system that its sun, TRAPPIST-1, is not much bigger than our planet Jupiter, and all the planets are very close to the size of Earth. Their orbits all fall well within what, in our solar system, would be the orbital distance of our innermost planet, Mercury. With such small orbits, the TRAPPIST-1 planets complete a “year” in a matter of a few Earth days: 1.5 for the innermost planet, TRAPPIST-1b, and 20 for the outermost, TRAPPIST-1h.⁶

NASA explains the sketch on the top of page 31 which shows each planet with imagined details,

In the imagined planets shown here, TRAPPIST-1b is shown as a larger analogue to Jupiter’s moon Io. TRAPPIST-1d is depicted with a narrow band of water near the terminator, the divide between a hot, dry day and an ice-covered night side. TRAPPIST-1e and TRAPPIST-1f are both shown covered in water, but with progressively larger ice caps on the night side. TRAPPIST-1g is portrayed with an atmosphere like Neptune’s, although it is still a rocky world. TRAPPIST-1h, the farthest from the star, would be the coldest. It is portrayed here as an icy world, similar to Jupiter’s moon Europa, but the least is known about it.⁷

NASA writes about the beautiful, icy world depicted on page 32,

This artist’s concept allows us to imagine what it would be like to stand on the surface of the exoplanet TRAPPIST-1f,

⁶ *Transit Illustration of TRAPPIST-1*, NASA, Feb 22, 2017 <https://www.jpl.nasa.gov/spaceimages/details.php?id=PIA21429> (accessed Aug 26, 2017)

⁷ *TRAPPIST-1 Planet Lineup*, NASA, Feb 22, 2017. <https://www.jpl.nasa.gov/spaceimages/details.php?id=PIA21422> (accessed Aug 26, 2017)

located in the TRAPPIST-1 system in the constellation Aquarius. Because this planet is thought to be tidally locked to its star, meaning the same face of the planet is always pointed at the star, there would be a region called the terminator that perpetually divides day and night. If the night side is icy, the day side might give way to liquid water in the area where sufficient starlight hits the surface.⁸

Hoped For Water

These TRAPPIST-1 planets are too far away to be viewed from Earth. Even the star they orbit, TRAPPIST-1A, is visible only as a few bright pixels on the powerful Kepler Space Telescope.

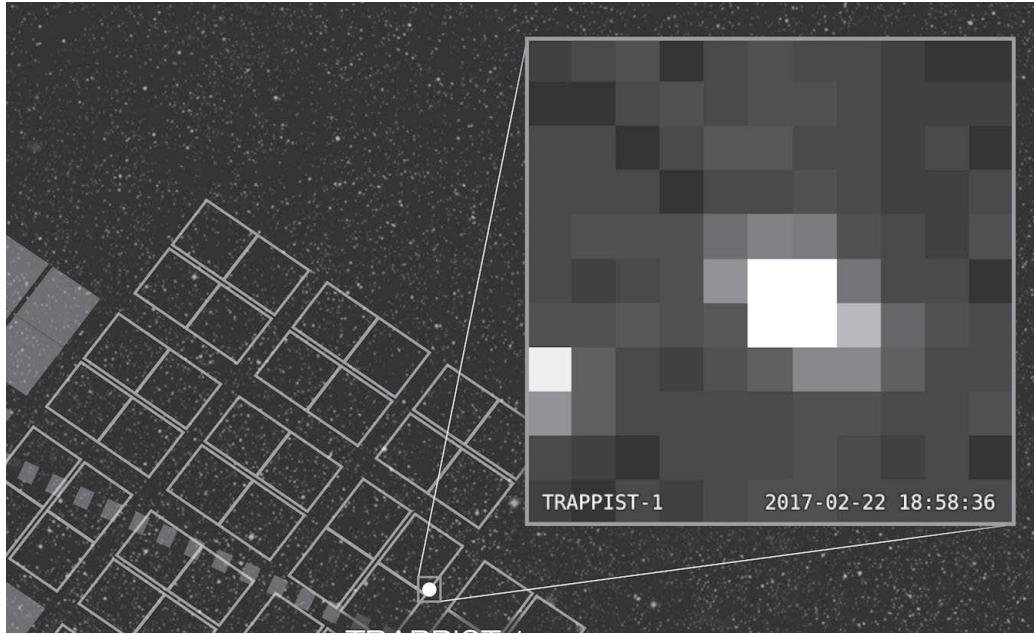
The only actual photograph of TRAPPIST-1 is that shown on page 29. The brightness reductions in these few pixels are the data used to calculate the number, size, orbit, and mass of these planets. NASA describes that image,

The image depicts the location of TRAPPIST-1, an ultra-cool dwarf star home to seven Earth-size planets, in NASA's Kepler spacecraft's field of view. The call out box shows the amount of light detected by each pixel in a small section of Kepler's onboard camera. The light collected from TRAPPIST-1 is visible at the center of the image. Not directly visible are the planets that orbit TRAPPIST-1.⁹

I think it good that NASA provides artwork like that shown on our LSI Journal cover. That depiction is a valid representation based on reasonable conclusions from indirect observations.

⁸ *Surface of TRAPPIST-1f*, NASA, Feb 22, 2017. <https://www.jpl.nasa.gov/spa-ceimages/details.php?id=PIA21423> (accessed Aug 26, 2017)

⁹ *NASA's Kepler Provides Another Peek At Ultra-cool Neighbor*, editor Michele Johnson, NASA, March 8, 2017, Updated: Aug 4, 2017. <https://www.nasa.gov/feature/ames/kepler/nasas-kepler-provides-another-peek-at-ultra-cool-neighbor> (accessed Aug 26, 2017)



TRAPPIST-1A star as seen by Kepler Space Telescope

[Credit: NASA Ames/W. Stenzel]

The artwork on pages 31-32 is different. Those drawings depict one possibility, primarily based on a hope that life is common on the universe. How many people who see these drawings realize the large difference between artwork based primarily on observations, and artwork based primarily on a hope to prove life is common in the universe?

The presence of liquid water on these planets is purely conjecture at this point, but evolutionists have a great hope that it does exist on some of these planets. Life as we know it requires liquid water. Evolutionists want to prove that life is abundant and common in the universe, so they hope that liquid water is abundant too.

Evolutionists imagine that non-living chemicals can self-assemble into a living thing. Since they think it happened once on earth (to produce all plant and animal life), they think it should be a common event which has occurred on countless planets and moons.

One assumption of evolutionists is that the earth is an ordinary planet, orbiting an ordinary star, in an ordinary part of the Milky Way galaxy, which is in an ordinary place in the universe.

Christians know for certain that the Earth is indeed very special. God reveals in Scripture that the earth was created to be the home for the crown of creation, human beings. The sun, moon, and stars were created for people also, “to separate the day from the night. They will serve as signs for festivals and for days and years.” (Genesis 1:14.)

A Major Discovery

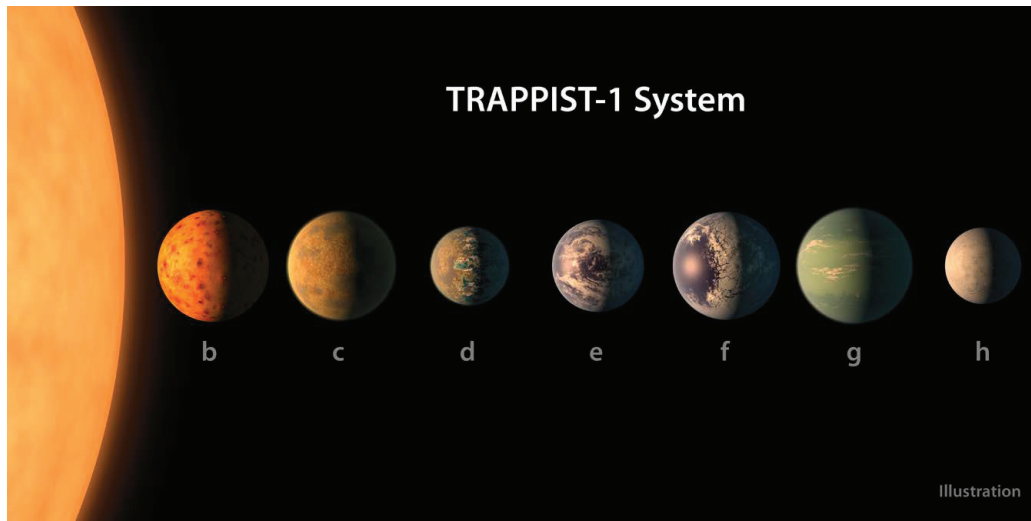
So an amazing scientific discovery has been made. Seven planets orbit a small red dwarf star close enough to Earth (40 light years) that we can study those planets. Three of these planets are at a distance from the star which may provide a planet surface temperature where water would be liquid, if (a big if) the planet has an earth-like atmosphere. The potential for water is very important to evolutionists because they desire to show that life is common in the universe, and liquid water is needed for life to exist.

Future observations, especially those of the James Webb Space Telescope (planned launch is in 2018) may determine if water is or is not present on these planets. While we wait for actual data, NASA continues to publish new articles and drawings proclaiming the possibility of life on these planets, based on their desire for that to be true.^{10, 11, 12}

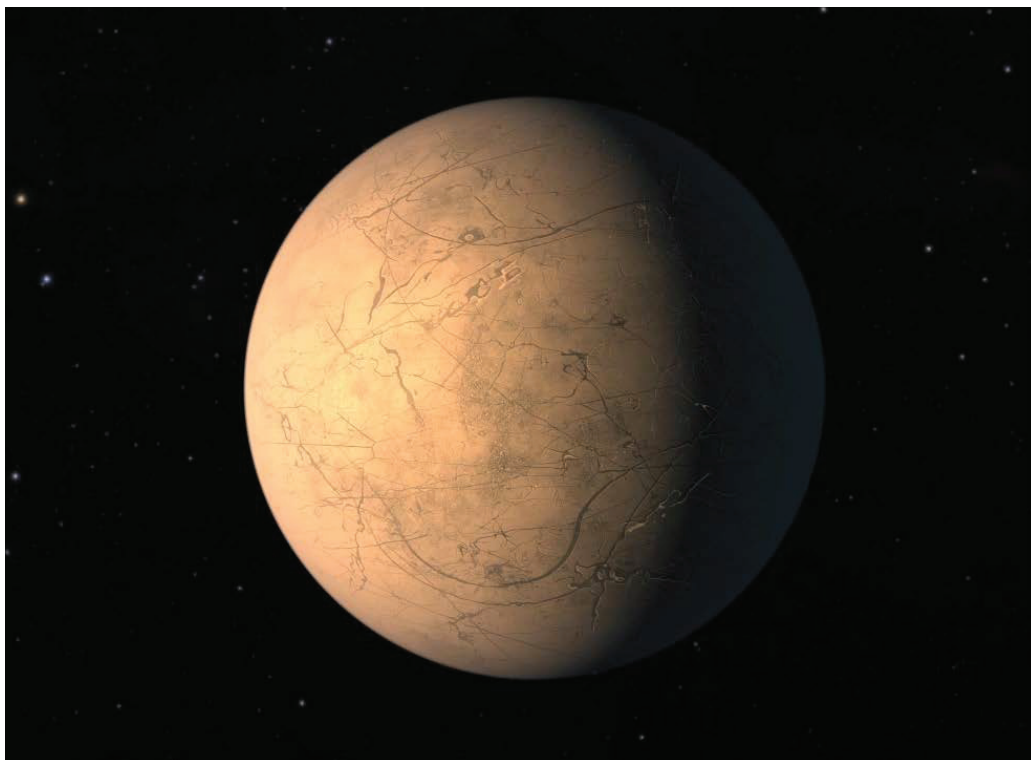
10 Elizabeth Landau, *TRAPPIST-1 is older than our solar system*, NASA’s Jet Propulsion Laboratory, August 11, 2017. <https://exoplanets.nasa.gov/news/1448/trappist-1-is-older-than-our-solar-system/> (accessed Aug 27, 2017)

11 Pat Brennan, *An image is worth a thousand worlds*, NASA’s Exoplanet Exploration Program, June 8, 2017. <https://exoplanets.nasa.gov/news/1440/an-image-is-worth-a-thousand-worlds/> (accessed Aug 27, 2017)

12 Michele Johnson, *Astronomers confirm orbital details of TRAPPIST-1h*, NASA’s Ames Research Center, May 22, 2017. <https://exoplanets.nasa.gov/news/1437/astronomers-confirm-orbital-details-of-trappist-1h/> (accessed Aug



Artwork showing imagined details of the seven exoplanets
[credit: NASA/JPL-Caltech]



Artwork showing imagined details of exoplanet TRAPPIST-1h
[credit: NASA/JPL-Caltech]

See video <https://www.jpl.nasa.gov/news/news.php?feature=6851>
(accessed Aug 26, 2017)



Imagined Water on Planet TRAPPIST-1-f

[credit: NASA/JPL-Caltech]

[continued from page 30]

Scientific Discussion

The scientific discussion has begun. This summer is seeing the battle of articles. Here are a few with contradictory claims.

- Newsweek published an article on models developed by Harvard astrophysicists, “*TRAPPIST-1 Has High Odds of Interplanetary Life, New Mathematical Model Shows.*”¹³
- Space.com published, “*Bad News For Life: TRAPPIST-1 planets’ Atmospheres May Have Been Destroyed.*” Their models suggest that the red dwarf star’s radiation has destroyed the atmosphere on the TRAPPIST-1 planets.¹⁴

27, 2017)

13 Jessica Wapner, Newsweek, June 13, 2017 <http://www.newsweek.com/trappist-1-has-high-odds-interplanetary-life-new-mathematical-model-shows-625182> (accessed Aug 25, 2017)

14 Mike Wall, Space.com, July 17, 2017. <https://www.space.com/37530-trappist-1-planets-atmospheres-stripped.html> (accessed Aug 25, 2017)