

Trips / Events

Ideas for trips and events
always welcome!

events@weymouthastronomy.co.uk

- ◆ 15 Nov BNSS—Volcanism in the Solar System—Sheri Karl
- ◆ 16 Nov CADAS—Solar Imaging—Sheri Karl
- ◆ 6 Dec WAS—Planets, Life and Panspermia—James Fradgley
- ◆ 21 Dec CADAS—Christmas Social and Members Short Talks

More events to come in
2017.

Programmes for many local
Societies will be available in
the near future. Check their
websites for more details.

If you are interested in giving
a talk or workshop, let the
organisers know. They like
to offer new titles in their
programme line-up.

WAC Upcoming Events:

- 9 Dec—Christmas Quiz Night
- 13 Jan—The Stars over Egypt—Bob Mizon
- 10 Feb—Inside Stars—James Fradgley
- 10 Mar—Time—Paul Spurr
- 7 Apr—A Life on Mars—Bud Budzynski

More to come in 2017!

Plans for informal viewing nights
will take place after the monthly
meetings, weather permitting.

Sky Watcher



WAC News—

Hot off the Press! Bob Mizon's latest book in the Patrick Moore's Practical Astronomy Series entitled 'Finding a Million-Star Hotel' has recently been released. Bob's book is a wonderful collection of recommended Dark Sky locations to help all of us who live in the ever increasing light polluted Earth to seek out places which will allow us to gaze upon the heaven's in their full glory. The book also covers information about what is 'in the sky' for novice viewers and segments on eclipses, astro-tourism and the Campaign for Dark Skies. The book can be found with your favourite retailer or direct from the CfDS at a small discount. This book is highly recommended for anyone interested in the heaven's above. Day or night!

Until next month ~SK

Is Proxima Centauri's 'Earth-like' planet actually like Earth at all?

By Ethan Siegel

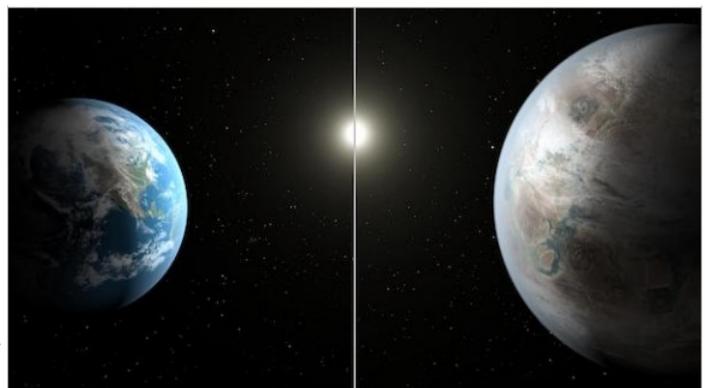
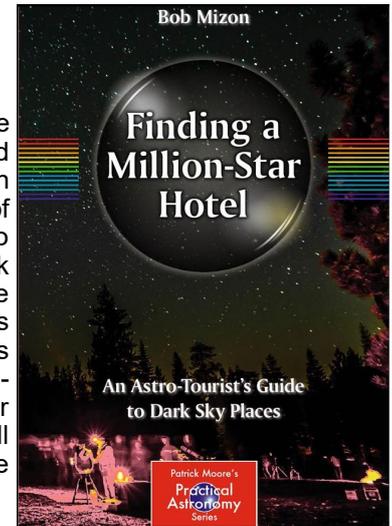
Just 25 years ago, scientists didn't know if any stars—other than our own sun, of course—had planets orbiting around them. Yet they knew with certainty that gravity from massive planets caused the sun to move around our solar system's center of mass. Therefore, they reasoned that other stars would have periodic changes to their motions if they, too, had planets.

This change in motion first led to the detection of planets around pulsars in 1991, thanks to the change in pulsar timing it caused. Then, finally, in 1995 the first exoplanet around a normal star, 51 Pegasi b, was discovered via the "stellar wobble" of its parent star. Since that time, over 3000 exoplanets have been confirmed, most of which were first discovered by NASA's Kepler mission using the transit method. These transits only work if a solar system is fortuitously aligned to our perspective; nevertheless, we now know that planets—even rocky planets at the right distance for liquid water on their surface—are quite common in the Milky Way.

On August 24, 2016, scientists announced that the stellar wobble of Proxima Centauri, the closest star to our sun, indicated the existence of an

exoplanet. At just 4.24 light years away, this planet orbits its red dwarf star in just 11 days, with a lower limit to its mass of just 1.3 Earths. If verified, this would bring the number of Earth-like planets found in their star's habitable zones up to 22, with 'Proxima b' being the closest one. Just based on what we've seen so far, if this planet is real and has 130 percent the mass of Earth, we can already infer the following:

- It receives 70 percent of the sunlight incident on Earth, giving it the right temperature for liquid water on its surface, assuming an Earth-like atmosphere.
- It should have a radius approximately 10 percent larger than our



An artist's conception of the exoplanet Kepler-452b (R), a possible candidate for Earth 2.0, as compared with Earth (L). Image credit: NASA/Ames/JPL-Caltech/T. Pyle.

'Earth-like' (continued)

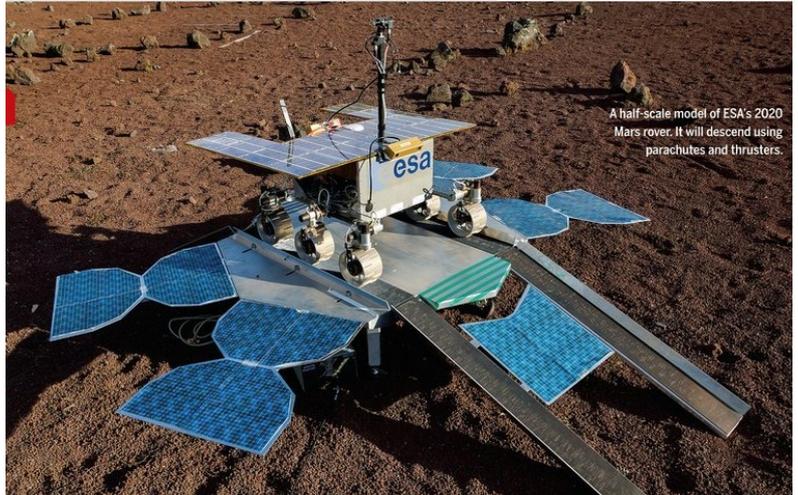
- own planet's, assuming it is made of similar elements.
- It is plausible that the planet would be tidally locked to its star, implying a permanent 'light side' and a permanent 'dark side'.
- And if so, then seasons on this world are determined by the orbit's ellipticity, not by axial tilt.

Yet the unknowns are tremendous. Proxima Centauri emits considerably less ultraviolet light than a star like the sun; can life begin without that? Solar flares and winds are much greater around this world; have they stripped away the atmosphere entirely? Is the far side permanently frozen, or do winds allow possible life there? Is the near side baked and barren, leaving only the 'ring' at the edge potentially habitable?

Proxima b is a vastly different world from Earth, and could range anywhere from actually inhabited to completely unsuitable for any form of life. As 30m-class telescopes and the next generation of space observatories come online, we just may find out!

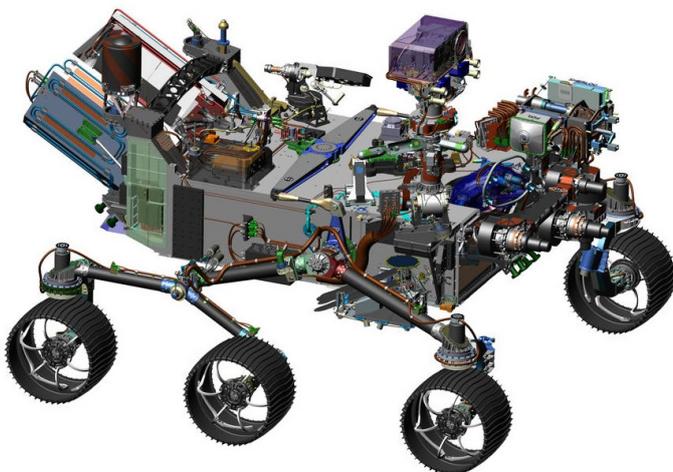
Mars Landers 2020:

Engineers at the European Space Agency (ESA) are racing to figure out what went wrong with the Schiaparelli Mars lander. On 19 October, it seemed to drop out of the sky and crash to the surface less than a minute before its planned soft landing. A diagnosis is urgent because many of the same pieces of technology will be used to get a much bigger ExoMars rover down to the surface in 2020. More than engineering is at stake. If the ExoMars 2020 rover is to fly at all, ESA must persuade its 22 member states to cover a €300 million shortfall in the €1.5 billion cost of the 2016 and 2020 phases of ExoMars. On 1-2 December, at a meeting of government ministers, ESA officials will make their case that members are not throwing good money after bad. Engineers at the European Space Agency (ESA) are racing to figure out what went wrong with the Schiaparelli Mars lander. On 19 October, it seemed to drop out of the sky and crash to the surface less than a minute before its planned soft landing. A diagnosis is urgent because many of the same pieces of technology will be used to get a much bigger ExoMars rover down to the surface in 2020. More than engineering is at stake. If the ExoMars 2020 rover is to fly at all, ESA must persuade its 22 member states to cover a €300 million shortfall in the €1.5 billion cost of the 2016 and 2020 phases of ExoMars. On 1-2 December, at a meeting of government ministers, ESA officials will make their case that members are not throwing good money after bad. Source : <http://science.sciencemag.org/content/354/6311/397>



A half-scale model of ESA's 2020 Mars rover. It will descend using parachutes and thrusters.

NASA's Next Mars Rover Progresses Toward 2020 Launch



This image is from computer-assisted-design work on the Mars 2020 rover. The design leverages many successful features of NASA's Curiosity rover, which landed on Mars in 2012, but also adds new science instruments and a sampling system to carry out new goals for the 2020 mission. Credits: NASA/JPL-Caltech

stone in NASA's [Journey to Mars](#) – to determine whether life has ever existed on Mars, and to advance our goal of sending humans to the Red Planet.”

After an extensive review process and passing a major development milestone, NASA is ready to proceed with final design and construction of its next Mars rover, currently targeted to launch in the summer of 2020 and arrive on the Red Planet in February 2021.

The Mars 2020 rover will investigate a region of Mars where the ancient environment may have been favorable for microbial life, probing the Martian rocks for evidence of past life. Throughout its investigation, it will collect samples of soil and rock and cache them on the surface for potential return to Earth by a future mission.

“The Mars 2020 rover is the first step in a potential multi-mission campaign to return carefully selected and sealed samples of Martian rocks and soil to Earth,” said Geoffrey Yoder, acting associate administrator of NASA’s Science Mission Directorate in Washington. “This mission marks a significant mile-

Source: <http://www.nasa.gov/press-release/nasas-next-mars-rover-progresses-toward-2020-launch>