



## GENERAL MEETING

Visitors Welcome

Tuesday Evening, November 15, 7:30 PM

Jefferson Shawnee Public Library  
5600 Noll Ave, Fort Wayne, IN 46806

### HI-SEAS Team

Completes 8-Month "Mars" Isolation Mission  
Plus

Introducing the Tucson Astronomy Club  
By Ron Williams

General Meetings are held the third Tuesday of each month,  
7:30pm. Check our web site for location.

## Mauna Kea Plus Tucson

**Mission Complete!** Ron will report on the Hi-Seas Mars Simulated Isolation Mission. His individual research interest, while on the HI-SEAS mission was focused on exploring the cognitive, personality and psychological characteristics of the crew and their relationship to adjustment, group dynamics and mission success.

Ron will also introduce us to the the Tucson Amateur Astronomy Association ( TAAA ), and their plans for a 40 inch telescope.

Dr Ron Williams was born and raised in Bloomington Indiana. He received his BA degrees in Psychology and Chemistry at Indiana University Bloomington in 1976. He received his MA degree in Experimental Psychology with a concentration in gerontological psychology from the University of Notre Dame and his PhD in Neuropsychology from Ball State University in Muncie, Indiana.

After the meeting you are invited to join the group that meets for continuing discussions at a restaurant to be selected at the meeting.

## Calendar Events Nov-Dec

Scheduled events for the next two months: Free public observing at Jefferson Township Park every clear Saturday for 2 hours, starting 1 hour after sunset, April - November.

### November

General Meeting Tuesday, Nov 15

Board Meeting Tuesday, Nov 22 (Note: this will be the last Board meeting of the year).

### December

General Meeting (Xmas Party) Tuesday, Dec 20

No Board Meeting in December

## Christmas Party Plans

Our annual Christmas party is scheduled for Tuesday 20 December at 6:30 p.m. (location to be determined).

This is a gala event at which many of our families attend and we socialize with one another. Mark your calendars now and plan to bring a dish of your choice to this pot-luck dinner. The club usually furnishes the meat dishes and drinks, with members bringing appetisers, vegetable or dessert dishes. We ask that you please contact Larry Clifford at 824-2655 before 22 November to tell him what you plan to bring, so that we may coordinate the offerings to present a balanced meal.

## Deep Sky Star Parties

Deep Sky observing events are scheduled for FWAS members and their guests to observe the fainter objects in the sky from a location away from city lights. These events are closed to the general public to allow members to plan observing and photography projects that will be undisturbed. Observing times are scheduled at JTP for Fridays near the new moon each month. This year the remaining date is: **Nov 25.**

## Public Star Parties

The public observing season continues through November. We need trained volunteers to run the Richard Johnston (RJ) Telescope. **If you wish to participate, with the RJ scope, with your own telescope or without a scope, contact Gene Stringer at 489-8135. to get on his volunteer list.** This is a great way to contribute to our community service.

Current events are:

**Sat Nov 26 at JTP, final public viewing for the season.**

**After this the observatory will be closed to the public until April 2017.** However, members may schedule time by contacting Gene Stringer at 489-8135.

## Star\*Quest Update

By Gene Stringer

As of this writing our contractor, Robert Koors, has completed his construction tasks. We have submitted payment  
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## Board Meeting Highlights

- The Board met on 25 Oct. in Phil Hudson's office.
- Treas reported current holdings of \$3,111 for General operations and \$38,710 for S\*Q.
- Construction of the S\*Q Observatory is nearly complete.
- The next board meeting will be on Tuesday, 22 Nov., at 7:30 p.m. in Phil Hudson's office.

### FWAS OFFICERS

President: Larry Clifford 824-2655  
Vice-President: Phil Hudson 484-7000  
Secretary: Gene Stringer 489-8135  
Treasurer: Dave Wilkins 444-3070

#### APPOINTED POSITIONS

Observatory Director: Mark Anderson  
260-387-7913  
Star\*Quest Project Manager: Gene Stringer 489-8135  
Star\*Quest Treasurer: Dave Wilkins 444-3070

### EDITORIAL STAFF

Eyepiece editor, Gene Stringer, 489-8135  
Distribution, Gene Stringer 489-8135 & Phil Hudson 484-7000

Submissions to the Eyepiece are cheerfully accepted by E-mail (preferred) or on CD or other media, or on paper. Submissions may be edited

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for his final Pay Ap 8 and await his issuing to us the Certificate of Occupancy, which will place the observatory in our keeping. His final cost of \$188,000 is significantly less than the \$194,000 of his contract bid. We are grateful to Robert for his conscientious performance of the contract.

The construction support team has installed both of the telescopes to be mounted permanently in the observatory. The 16" Richard Johnstone scope is mounted on its telescoping pier and is fully functional for public observing and astrophotography. The Harnishfegger-Crow 12.5" Newtonian has been placed on its mount, but requires significant retrofitting before it can be placed in service.

There is still much to do before the observatory is fully functional, including the following items from our Construction Support Task List:

5. Install Lamps (Alan Pareis). – Current white lights include LED lamps for the control room and dimmable floods for the viewing room and external pads. Alan is researching the current technology for red lighting for improvement over the original design.
6. Install RJ Telescope. – Completed and functional
7. Install HC Telescope - Mounted, but requires retrofit.
8. Install Floor Tiles. – Phil Hudson and Gene Stringer installed about 450 sqft. in the west wing and part of the east wing. We plan to tile the control room as well. Greg Jacobs reports that he can procure the required additional 600 tiles by December.
9. Plan & install signs.
10. Landscaping (Laura Ainslie) – The contractor has graded and seeded the site. Laura's plans will create a welcoming garden at the north entrance and other plantings on the site. The ground level around the external scope pads needs to be graded to the level of the pads to ensure stability of the step stools and chairs around the scopes.

<http://mentalfloss.com/article/80979/5-challenges-scientists-working-mars-will-face>

I will be hosting an **Observatory Support** meeting shortly for planning the additional S\*Q Project tasks in support of the observatory grand opening, projected for April of 2017.

Tasks include:

1. Recognition of donors and past members (Leader Dave Wilkins)
2. Procuring and installing observatory furniture (Leader Gene Stringer)
3. Plan, procure and install electric & electronic equipment (Leader Gene Stringer)

Many thanks to you members of the Construction Support team who have contributed your time, talent and equipment to the performance of tasks. Your efforts have ensured a timely support of the construction. Members who wish to participate on the **Observatory Support Team** should contact Gene Stringer at 489-8135.

## 5 Challenges Scientists Working on Mars Will Face

As space agencies begin planning for the future missions that will take human explorers to Mars, volunteer researchers are testing out what working in deep-space conditions will be like by living in a tiny dome on a remote volcano in Hawaii. The Hawaii Space Exploration Analog and Simulation, or HI-SEAS, is in its fourth iteration. Astrobiologist Cyprien Verseux recently shared details of his experience as one of six researchers in HI-SEAS IV for a year on his blog, and his tale makes the idea of being a pioneering outer space scientist sound way harder than it looks in the movies. Here are five things we learned about what working on Mars might be like in the future.

1. **YOU WON'T BE ABLE TO REPLACE BROKEN EQUIPMENT.** One day, Verseux broke a flask in his lab. "A cheap flask, easily replaceable, that I would have quickly forgotten about under normal condition..I will have to go without.."
2. **ELECTRICITY WILL BE HARD TO COME BY.** Resources are predictably scarce in space... "I often have to postpone experiments because we lack the power for running the centrifuge or the autoclave."
3. **IT WILL BE HARD TO FOCUS.**

... "Imagine spending months there. Because of the lack of open air and the monotony, we sometimes have to fight a tendency to slow down."

4. **YOU WILL HAVE TO IMPROVISE.**

Just because you carefully plan and budget for your project doesn't mean that everything goes as planned, Verseux cautions. "You used more tubes than expected because you had forgotten a control, you spilled a bottle of reagent, a colleague broke your glassware when dancing to the sound of his MP3 player,"... If it wasn't on the initial list of necessities, you won't be getting it delivered to Mars."

5. **YOU WON'T BE FACEBOOKING.**

"... our emails have a 20-minute delay in both directions to simulate the 4-to-24-minute delay necessary for Earth-Mars communications."

*For the full article click on the link below:*

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit [spaceplace.nasa.gov](http://spaceplace.nasa.gov) to explore space and Earth science!



## 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 per-

cent 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 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!

Looking to teach kids about exoplanet discovery? NASA Space Place explains stellar wobble and how this phenomenon can help scientists find exoplanets: <http://spaceplace.nasa.gov/barycenter/en/>



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.



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**Tuesday, November 15, 7:30 pm**

**Shawnee Public Library**  
**5600 Noll Ave, Fort Wayne, IN 46806**

**\*Program\***

**HI-SEAS Team Completes 8-Month**  
**"Mars" Isolation Mission**

**by Ron Williams**

**Saturday Night Stargazing**  
**at Jefferson Township Park**  
**every clear Saturday night**  
**starting 1 hour after sunset and**  
**continuing for 2 hours.**  
**April through November**

**November Night Sky:** 6th Daylight Savings Time ends, We have a full "Beaver" SUPERMOON on the 14th matching a closeness in January of 1948. Mars fading but still bright enough to be noticeable low in the South at Sunset, While very bright Venus and much dimmer Saturn are close in the SW separating with Saturn headed West later in the month. Leonard meteor shower peaks before dawn on the 17th. Waning crescent moon below planet Jupiter in the east at dawn on the 25th. New moon the 29th.