The Week in Amateur Space Exploration - February 27

February 27, 2015

If you follow me on Twitter, you get my tweets as soon as I get any amateur space news. Every week I summarize the reports to give you a single snapshot - in over 140 characters - of how many different ways people like you explore space.

ENABLING AMATEUR SPACE EXPLORATION

Nasa will put an Arizona State University cubesat, the Asteroid Origins Satellite, into orbit in 2017. “One of the great things about AOSAT,” professor Erik Asphaug told Yuma News Now, “is that its life cycle is comparable to the tour-of-duty of a student at ASU.” Over the course of the project more than 30 undergraduate students will help design, build, and operate the satellite. The experiment places dust and rocks inside the satellite which spins, simulating conditions on the surface of an asteroid.
What does it mean for amateurs? The $100,000 AOSAT project may seem far from amateur, but it reflects the new world of relatively low-cost space science that gives undergraduate students hands-on experience with space research. Past space missions cost hundreds of millions of dollars and took a decade or more to complete. A student could earn both undergraduate and doctoral degrees without ever seeing the mission launch. Projects like the AOSAT - which is the first of many satellite ASU plans to build - will send graduating engineers and scientists into the workforce with real world experience. Employers will soon expect their new hires to have the background that ASU's students already have.

EXPLORING DEEP SPACE

THE HUBBLE DEEP FIELD AS SEEN IN THE WORLDWIDE TELESCOPE. SOURCE: WORLDWIDE TELESCOPE

Vietnamese high school student Dang Hoang San built a community of 300 student astronomers from the ground up, reported Tuoitrnews. San built his first telescope in 7th grade, founded an astronomy club in 8th grade. Now in 10th grade, San has helped club members build a dozen telescopes for...
The Week in Amateur Space Exploration - February 27 — Small Steps to Space

Boston-area public broadcaster WGBH reported on the role of armchair astronomers in its many forms. It spoke with amateur astronomer Kevin Alton whose robotic telescope lets him search for asteroids and study variable stars.

Yale University's Debra Fischer explained the role of citizen scientists in the search for exoplanets through the Planet Hunters crowdsourcing project.

Sky&Telescope featured another tool for armchair space explorers - the WorldWide Telescope project. The feature article is only available to subscribers, but an online supplement discusses how the WWT is used for outreach and scientific research.

EXPLORING THE SOLAR SYSTEM

Two Hawaiian high schools are working with NASA on an experiment that may go to the Moon, reported Hawaii News Now. Using technology developed at the Kennedy Space Center, the students experiment will use an electric field to clear lunar dust that falls on the experiment. The sharp dust grains in the half the price of manufactured telescopes.

A biology experiment designed by a 47-year-old community college student will head into space on this week's...
lunar regolith created problems for Nasa's Apollo astronauts and would pose a challenge for future explorers. The Pacific International Space Center for Exploration Systems will help the students develop their experiment which will ride on a Google Lunar XPrize lander in a few years.

High school students at Trinity Christian Academy are searching for asteroids, reported the Dallas Morning News. They use data collected by professional observatories in Hawaii to trace the path of asteroids through the Solar System. The International Astronomical Union gave one of the asteroids they spotted provisional status as a discovery. Should it be confirmed, the IAU will list the students as the discoverers.

Meteors and falling rocket parts streaked across the United States this week, spawning hundreds of reports the American Meteor Society. More than 230 people reported a large meteor passing over Georgia and Florida early in the week. The Suwanee Democrat cited experts who think meteorites may have landed in southern Georgia. Later in the week more than 140 people reported the fireball created by a Chinese rocket as it re-entered the atmosphere and disintegrated over the western United States and Canada.
EVEN WITH ALL OF THE TECHNOLOGY AT NOAA'S DISPOSAL, SOMETIMES YOU NEED THE HUMAN EYE TO FILL IN THE GAPS. DURING SEVERE WEATHER, STORM-SPOTTERS IN NOAA'S SKYWARN PROGRAM REPORT THE GROUND TRUTH OF WHAT'S HAPPENING WHERE RADARS CAN'T SEE. CREDIT: NOAA/NASA

Ardusat is a science education program that lets students program satellites in orbit to gather data about Earth. Beehive Startups reported that Ardusat received $1,000,000M in financing to expand its operations. The money will help Ardusat to create an online platform so schools can share the data from their experiments, reported EdSurge.

Digital Globe is the power behind many non-profit organizations that use satellite imaging to make the world a better place, from fighting atrocities in Sudan to tracking oil spills in the Gulf of Mexico. NetHope will conduct a webinar March 3 to teach non-profits and NGO's how to use satellite imaging to support their causes.

In preparation for the summer thunderstorm season the National Weather Service is conducting Skywarn training sessions across the country. Skywarn coordinates more than 200,000 volunteer storm-spotters who help the NWS overcome the limits of radar technology through the power of the human eye. Meteorologist Brandi Hughes explained to TV station KETK that weather radar only lets them see what’s happening 8,000 feet above eastern Texas. Michigan’s Daily Telegram spoke with meteorologist Richard Pollman who explained that the NWS needs storm-spotters “to see what is going on below the cloud line. Spotters can tell us hail size, and when we can
see wind, we need to know how strong it is."

AMATEURS IN MICROGRAVITY

Nasa picked 19 undergraduate students to design tools for astronauts to use on an asteroid mission. The contest is part of Nasa’s Microgravity University program that gives undergraduates hands-on experience doing work for the space agency. The students will get to see their work tested by astronauts in Johnson Space Center’s Neutral Buoyancy Laboratory. Boise State University reported that its team would design a tool to grab samples from the surface of an asteroid.

7th grade students at Colleton County Middle School were part of the Student Spaceflight Experiment Program’s Mission 6. The students' research studied microgravity’s effect on spoiled milk, but their experience was more challenging than they expected. The explosion of Orbital Science’s Antares launch vehicle destroyed all of the Mission 6 experiments last year. Last minute scrambling by the students, SpaceX, Nanoracks, and Nasa sent replacement experiments to the space station in January and brought them back this month. "It’s been an amazing adventure and an experience we will
never forget,” Megan DeWitt told Colleton Today.

The SSEP’s Mission 7 will launch more experiments this spring. High school students in Minnesota are preparing to study the effect of microgravity on frog embryos’ development, reported the Northland News Center. Radio station WDDE reported that more than 1,300 students in Delaware participated in the SSEP. The Caravel Academy will study the effect of microgravity on fruit fly larvae while Caesar Rodney High School will investigate how well an enzyme breaks down hydrogen peroxide.

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MAKING SPACESHIPS
World View, the company that plans to offer tourist balloon flights into near space, conducted the first-ever test of a wing-shaped parachute from 30 kilometers. Tagging along for the ride were experiments built by students at Montana State University. The students tested high-definition video links and a radiation-resistant computer, reported the Fairfield Sun-Times.

The volunteers at California Near Space Program launched their 22nd high-altitude balloon mission on Monday. By Friday it had crossed the Atlantic, passed over the UK and France, and crossed into Spain before powering down for the night. Forecasts expect the balloon to shift direction over North Africa and head towards Greece and Turkey. Amateur radio enthusiasts help the CNSP track the balloon during its round-the-world journey.

Mark Conner  
@N9XTN

#CNSP22 now over western FR, perhaps in range of srn Italy/Greece #hamradio ops tomorrow?  @K6RPT
Two lads from Essex read about near space ballooning and decided “to give it a go”, reported the Brentwood Gazette. With a little Raspberry Pi, a few GoPro cameras, the Essex Space Agency will send its Project Helium Tears into the stratosphere this spring. "It is good fun. It beats just going to a pub all the time."

Southern rocketeers will gather for Grits - Georgia Rockets In The Sky - this weekend. The FAA granted a waiver for model rocket launches as high as 20,000 feet. The Valdosta Daily Times reported that schools from across Berrien County have built more than 140 rockets to launch at the event.

The Register highlighted a more ambitious rocket project - the Boston University Rocket Propulsion Group’s Starscraper. BurpG hit the amateur space headlines earlier this year when they crowdfunded $17,000 for their suborbital rocket project. It will be the first amateur hybrid rocket to climb past the Kármán line 100 kilometers above Earth’s surface. Monthly tests of its engine will lead up to the planned July launch from Nevada’s Black Rock Desert.
MARS ONE MO! MARS ONE CAN PI'

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