

## PSI's Faith Vilas Pilots a Seaplane Across Lake Michigan

On July 1, 2013, PSI Senior Scientist Faith Vilas successfully made a water landing near Chicago's Navy Pier, recreating the flight her grandfather and pioneer aviator Logan A. (Jack) Vilas made on July 1, 1913, to become the first person to fly an airplane across Lake Michigan. Faith made the flight to commemorate the 100<sup>th</sup> anniversary of her grandfather's unprecedented feat.

Faith flew a Cessna 185 seaplane from Southwest Regional Airport in St. Joseph/Benton Harbor, Mich., to the Navy Pier in Chicago, Ill.

"I am so glad to complete this journey successfully on the 100<sup>th</sup> anniversary of my grandfather's landing – at that time, the longest flight over water in aviation history," she said.



Faith explained that landing a seaplane is tricky: They stop in very short distances, need calm waters, and if a pontoon digs into the water, flipping the aircraft is a distinct possibility. She spent many hours with a flight instructor in the seaplane to learn the precise gentle pressure on the control stick and correct nose-up angle for a safe water landing.



"This is the culmination of years of work on the part of admirers of Jack's accomplishment, and it's great to complete this effort on behalf of family and friends, and especially in honor of my grandfather, Jack Vilas."

The 64-mile Lake Michigan flight, accomplished under windy conditions, marks the successful end of two years of training and preparation for Faith, whose future aviation goals are aimed even higher.

She is eager to go up into space as part of PSI's Atsa Suborbital Observatory project. Atsa, which means "eagle" in the Navajo language, will see scientists and students operate a telescope while aboard a reusable spacecraft, XCOR Aerospace's Lynx. Faith is a founder and Project Scientist on the Atsa program.

Atsa will provide low-cost, space-based observations above the limiting atmosphere of Earth, while avoiding some operational constraints of satellite telescope systems such as the inability to observe objects close to the Sun.

"It will be fantastic to fly and use the Atsa in suborbital space," she said. "Open human spaceflight is our future."

For more information about this exciting project, visit our website - [www.psi.edu](http://www.psi.edu) and click on Atsa Suborbital Observatory.

July 2013 (above) PSI Senior Scientist Faith Vilas after her successful seaplane landing. Photos above: Greg Keith Porter Imagery

July 1913 (at right) Faith's grandfather Jack Vilas makes his ground-breaking seaplane flight.



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PSI members at the retreat, 1<sup>st</sup> row (l-r): Gil Esquerdo, Elaine Owens, Candace Kohl, Jennifer Grier, Miriam Riner, Susanne Douglas, Lucille Le Corre, Vishnu Reddy. 2<sup>nd</sup> row: Mark V. Sykes, Karly Pitman, Kelly Yoder, Deborah Domingue Lorin, Bruce Barraclough, Dave Acklam, Elizabeth Adams, Susan Benecchi, Dianne Janis. 3<sup>rd</sup> row: Jeffrey Morgenthaler, Melissa Lane, Pasquale Tricarico, Chris Holmberg, Alice Baldrige, Amanda Hendrix, Steve Kortenkamp, David O'Brien, Daniel Berman, Carol Neese, Cyrena Goodrich, Beatrice Mueller. 4<sup>th</sup> row: Tom Prettyman, Luke Sollitt, Jesse Stone, Tommy Grav, Joe Spitale, Jian-Yang Li, Victoria Klocko, Kimberley Kuhlman, Hanna Sizemore, Bill Feldman. 5<sup>th</sup> row: Julie Rathbun, Robert Reedy, Yuki Yamashita, Kathi Gardner, Emily Joseph, Mary Chapman. 6<sup>th</sup> row: Stu Weidenschilling, David Crown, Les Bleamaster, Bill Hartmann, Nalin Samarasinha, Rose Early, Chuck Wood, Alan Fischer, Ed Tedesco. Back row: Gavin Nelson, Terrill Yuhas, Nader Haghighipour, Eric Palmer, Jules Goldspiel, Jim McElwaine, Al Anzaldua, Larry Lebofsky, Bob Nelson, Jim Rice, Dave Vaniman, Bruce Barnett, Asmin Pathare, Marc Fries with his son Wyatt, and J.P. Kirby. (Photo: Gil Esquerdo and Jesse Stone)

In mid-August, PSI's ninth annual retreat was held at the historic Westward Look Wyndham Grand Resort in Tucson, where 80 PSI scientists and staff from 15 states and the U.K. enjoyed three days of meetings and gatherings.

The agenda included cutting-edge science presentations by PSI researchers who shared their work, which, in turn, infuse our education and public outreach programs.



At the retreat banquet, PSI Senior Scientist Stu Weidenschilling (right) was surprised with an impressive gift commemorating his 35 years with the Institute. (Photo: Alan Fischer)

The retreat banquet held at the gracious Arizona Inn was attended by 130 PSI staff and guests and, in what has become a PSI banquet custom, there were a few surprises. Senior Scientist Stu Weidenschilling earned an impressive bottle of Scotch to commemorate his 35 years here and Research Scientist Daniel C. Berman received a plaque in appreciation of his 15 years at PSI.

Fall 2013

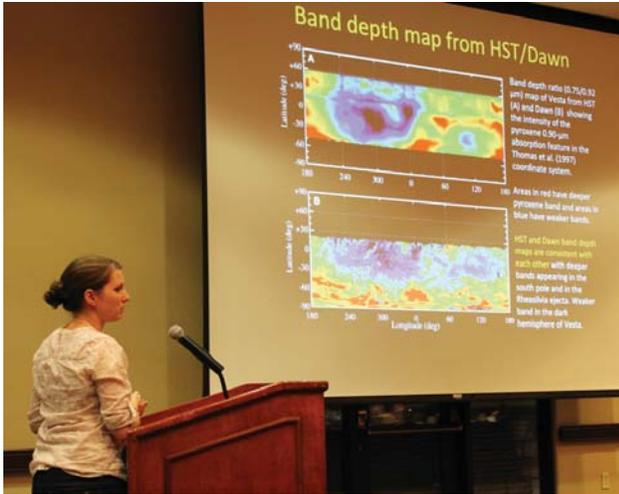
PSI Senior Scientists Melissa Lane and Susan Benecchi were presented with certificates recognizing their work as co-editors of the weekly PEN, the Planetary Exploration Newsletter. Senior Scientists Les Bleamaster, Mary Bourke (not in attendance), Research Associate Frank Chuang (not in attendance), Lead Software Developer Rose Early, Research Scientist Asmin Pathare, and CEO and Director Mark Sykes were each given engraved captain's chairs marking their 10-year anniversaries at PSI.

In addition to interesting presentations and the banquet, the retreat included breakout sessions, a rooftop soirée, and educational field trips. It was another successful retreat and we look forward to seeing everyone again next year!

The complete retreat agenda is available on our website, [www.psi.edu](http://www.psi.edu), under About PSI.

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	Chris Holmberg, <i>Editor and Writer</i> Alan Fischer, <i>Writer and Photographer</i>
<i>Special thanks to Gil Esquerdo, Dianne Janis, Emily Joseph, Victoria Klocko, Carol Neese, and Elaine Owens</i>	

## PSI 2013 Retreat Photo Gallery



PSI Research Scientist Lucille Le Corre recently joined PSI. Her talk at the retreat compared Dawn, Hubble Space Telescope, and ground-based investigations of the asteroid Vesta.

Scientists new to PSI are offered the opportunity to present their science research at the annual retreat. Below are some of the newest members of the Institute giving their talks.



PSI Research Scientist Vishnu Reddy, in his first-time at retreat, presented research on the composition and possible origin of the recent Russian Chelyabinsk meteorite.



Senior Scientist James Rice, also new to PSI, presented a talk on the Martian rover Opportunity's arrival at Solander Point.



PSI Research Scientist Miriam Riner, at her first PSI retreat, discussed her research on discoveries made from multispectral images of Mercury.



At the retreat banquet, Director Mark Sykes (left) awards the engraved chairs behind him to (l-r) Rose Early, Les Bleamaster, Asmin Pathare, and himself for their 10-years-at-PSI anniversaries. (Photo: Alan Fischer)



PSI Associate Research Scientist Hanna Sizemore gave a talk about Martian ground ice. (See Hanna's introduction to PSI on the next page.)

More retreat photos on page 6

## Introducing PSI Scientist Hanna Sizemore



This summer Hanna Sizemore joined PSI in the position of Associate Research Scientist. Her research focuses on the behavior of water in the current Martian climate and she is particularly interested in periglacial processes and the behavior of shallowly buried ground ice. Many of her publications explore how local

characteristics of Mars' surface interact with global climate to produce decimeter-to-meter-scale structures in subsurface ice.

She likes to think that all of Mars research can be boiled down to four basic questions: 1) How much water did Mars get when it formed? 2) How much water does Mars have today? 3) How and why did Mars transition from its former "wet" condition to its present "dry" condition? 4) Were conditions on Mars ever conducive to the development of life?

She is mainly concerned with question #2: what water is on Mars now and what is it doing? Right now Mars is a frozen desert and most of its water is frozen in the ground. Ice in the shallow regolith (lunar soil) can exchange with atmospheric water vapor by a process called vapor diffusion. Understanding the details of how that exchange happens—and understanding the physical structure of the buried ice inside the regolith—can give us insight into the recent climate history of Mars and give us clues about where to look for habitable environments on Mars today.

Her current research projects focus on the development of ice lenses and frost heave in the Martian regolith. Hanna approaches questions from multiple angles so she is working to improve our theoretical understanding of thin-film transport in the regolith. She is also collaborating on a project at Southwest Research Institute to test ice lens theory in the laboratory.

Hanna grew up in rural West Virginia and says it's a place where you can see the Milky Way most nights even with your porch lights on. Perhaps because she was surrounded by awesome dark skies, she was always interested in space science. She saw Halley's comet through binoculars when she was six years old; her bedroom walls were always papered with pictures of the Moon and the Martian valley networks; she read all of Carl Sagan's books in middle school; and in high school she started doing research with a mentor at a local observatory. She received her B.A. (2002) in Physics from Smith College and her M.S. (2004) and Ph.D. (2008) in Astrophysics and Planetary Science from the University of Colorado. After earning her Ph.D., she worked as a postdoc on the Phoenix mission and at NASA Ames Research Center as a NASA Postdoctoral Program Fellow.

Hanna left Ames after the birth of her twin sons and returned to West Virginia where she formed a consulting company and continued to do research on a part-time basis as an adjunct at the National Radio Astronomy Observatory. Besides doing research and wrangling babies, she also serves on the local Board of Education. In her (rare!) free time she likes to read, knit, and figure skate.

We are delighted to welcome Hanna to PSI!

## Planetary Scientist David O'Brien Bikes Across the U.S.



In May, David starts his journey from the Pacific Ocean in San Francisco.

Idaho and Wyoming to Grand Teton and Yellowstone National Parks. From there he spent some time exploring the rest of Wyoming and the Black Hills and Badlands of South Dakota, rode east towards the Great Lakes, took a small detour into Ontario, Canada, and crossed into New York around Niagara Falls. He stopped in his hometown near Syracuse, NY, then continued on through Vermont and New Hampshire to reach the Atlantic coast just outside of Portsmouth, NH, exactly 75 days after leaving San Francisco.

PSI Research Scientist David O'Brien took a break from work this summer for a solo bicycle tour across the United States.

Starting in San Francisco on May 18, he rode over the Sierra Nevada mountains and across the high desert of Nevada, then through Utah,

While David is an avid cyclist, this was the first time he's done a self-supported tour, carrying everything he needed along the way. "I love traveling, biking, and camping, so last year I decided that a solo bike tour would be my next big adventure," he said. "I've generally found that I enjoy big challenges more than small ones, so I decided to just jump right in and do a full cross-country tour and see how it goes." In the end, he says, it was a great experience. "I visited some amazing places, met lots of friendly people along the way, and saw the country from a perspective that most people never get."



Riding through Grand Teton National Park in Wyoming.



David reached the Atlantic coast on July 31<sup>st</sup>. Photos: David O'Brien

You can read David's account of his travels at <http://www.cyclosaurus.net/blog/topics/cc-2013>

## Director's Note

It has been a quite a summer. Our scientists are involved with almost every active planetary mission NASA is flying. People are extremely busy one year after the Curiosity rover landed on Mars and got to work in Gale crater. Other missions like MESSENGER and Cassini are beaming back volumes of fascinating data that continue to amaze.

But, our scientists are also amazing. Our grant records for the past several years show that at a time when the competition for research grants is fierce, PSI scientists on average are 50% more successful than the national average. Also, despite news reports that women's salaries in astronomy are (after normalizing for other factors) 20-30% less than their male counterparts at universities, women at PSI tend to have higher salaries than men. Another fun fact is that because we are a distributed institute, now supporting scientists in 20 states and 10 other countries, we offer a solution to the "two-body problem" (where someone in a working couple sacrifices their career or relationship if their partner needs to relocate). This is typically thought of as a "woman's issue," but at PSI it turns out that it is primarily our male scientists who are both preserving their careers while following their spouse or significant other. Kind of a Lake Wobegon of science?

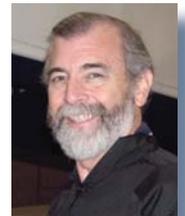
Outside of work, our scientists are often exceptional in ways people might find surprising. After months of preparation, David O'Brien rode his bicycle across the United States from coast to coast, and Faith Vilas became certified to fly a seaplane across Lake Michigan on the 100<sup>th</sup> anniversary of her grandfather being the first person to do so. We tend to break stereotypes (and the occasional mold).

Summer also means the annual PSI Retreat—in August, when Tucson is more distinctive. It is great to get together with everyone, make new connections, hear new voices, and explore collaborative opportunities. We are a forward-looking place in a forward-looking business.

PSIced tea made a return at the reception before our annual banquet, and some were brave enough to try it and found it surprisingly good! The banquet is also an opportunity for us to honor our staff for their contributions to the Institute and our community. This last included Melissa Lane and Susan Benecchi for several years each of putting out the weekly Planetary Exploration Newsletter (a PSI service to the planetary community). Stu Weidenschilling was recognized for his 35 years with the Institute and Dan Berman for his 15 years. A number of others were given their commemorative captain's chairs for ten years of service at PSI. We also celebrated our growing families (literally). It was great to see a small crop of infants at our event!

Of course, I can take some pride from the closing event of the retreat. We were out in a thicket of wilderness (OK, near a tennis court), hunting meteorites generously supplied and planted by Marvin and Kitty Killgore. With instruction from the Killgores and our recent alumnus Marc Fries about how to find meteorites, I dove into the bush and interrogated the stone-rich ground. After a couple of hours, I found one!

Mark V. Sykes  
September 2013



## PSI Staff Awards...

**William K. Hartmann**— PSI Senior Scientist and Co-Founder William K. Hartmann was presented with the Shoemaker Distinguished Lunar Scientist Award, given each year to a scientist who has significantly contributed to the field of lunar science throughout their scientific career.



*Bill Hartmann wearing the Shoemaker Distinguished Lunar Scientist medal.*

The award was presented to Bill by the new Solar System Exploration Research Virtual Institute (SSERVI) — formerly the NASA Lunar Science Institute — at the 2013 Virtual Lunar Science Forum, held July 16-18 from NASA Ames Research Center. More than 300 people attended the virtual event.

"In view of his many fundamental and far-reaching breakthroughs in lunar science such as his discovery of multi-ring impact basins—including Orientale basin — Dr. Hartmann is exceptionally deserving of this medal," said Yvonne Pendleton, director of SSERVI.

Bill said, "It's an honor just to be mentioned in the same sentence as Gene Shoemaker, who did so much to increase our understanding of asteroid impacts and craters like Arizona's Meteor Crater."

**William C. Feldman**— PSI Senior Scientist William C. Feldman was named 2013 W.M. Keck Institute for Space Studies Distinguished Visiting Scholar (DVS) at the California Institute of Technology in association with the study on "New Approaches to Lunar Ice Detection and Mapping."

**Catherine L. Johnson**— PSI Senior Scientist Catherine Louise Johnson was named to the America Geophysical Union's 2013 Class of Fellows. This prestigious award honors those who have made exceptional contributions to Earth and space sciences.

Catherine was nominated for a broad spectrum of geophysical research covering Mercury to Mars, including studying planetary magnetism on Mercury, Earth and the Moon. She is currently a Co-Investigator on NASA's InSight mission that will place a single geophysical lander on Mars to study its deep interior, a Co-Investigator on the OSIRIS REX mission that will map asteroid Bennu and return a sample from its surface, and a Participating Scientist on the Mercury MESSENGER mission. Catherine is the third PSI Senior Scientist named an AGU Fellow. Stuart J. Weidenschilling was honored in 1994 and William C. Feldman in 1996.

## ...And News

**Frank C. Chuang**— PSI's newest baby was born to PSI Research Associate and Software Specialist Frank Chuang and his wife Kang Li. Their second daughter, Erika Liyue Chuang, was born on July 29<sup>th</sup>, weighing 5.9 lbs. *Congratulations to you all!*

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### Photos from the Annual Retreat

(More retreat photos on pages 2-3.)



At the retreat banquet, PSI CEO and Director Mark Sykes presents appreciation certificates to Senior Scientist Melissa Lane (left) and Associate Research Scientist Susan Benecchi for co-editing the weekly PEN, Planetary Exploration Newsletter. (Mark is the editor of the PEN.)



Before the banquet (above), PSI Senior Scientist Jeff Morgenthaler chats with Board of Trustee Vice Chair Candace Kohl.



At the annual retreat in Tucson, newly-minted PSI Associate Research Scientist Elizabeth Adams spots a meteorite during the educational field trip led by Marvin Killgore (left) of the Southwest Meteorite Laboratory.



Dan Berman, PSI Research Scientist, receives a plaque from Director Mark Sykes in appreciation of his 15 years at PSI. (Photos by Alan Fischer)