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PSF NEWS

Planetary Studies Foundation

MEMBER SPOTLIGHT

Meet PSF member, Dr. Betty Hull and her passions for traveling and theatre. Read more on page 4 & 5...

Interested in the Asteroid belt? David Kahn explains this topic in his Astronomy 101 article on page 6.

Upcoming Events

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RECON MISSION TO ANTARCTICA

By: Colonel (IL) James N. Pritzker (Retired)

I recently had the privilege of participating in a joint Russian Arctic & Antarctic Research Institute (AARI)/NASA scientific mission to Antarctica which took place at the Russian Scientific Station of Novolazervskaya, Shirmacher Oasis and Lake Untersee. This Recon Mission took place 4 February thru 14 February 2008. The team met in Cape Town, South Africa, and was transported to Antarctica by the Artic Logistics Center International (ALCI) The Recon Team consisted of Dr. Dale Anderson (Carl Sagan Institute), Dr. Valery Galchenko (Winogradsky Institute), Mr. Richard Hoover (NASA Marshall Space Flight Center), Mr. Art Mordtvedt (Alaska Wilderness Inc.) and Colonel (IL) J.N. Pritzker (Retired) of the Tawani Foundation.

This expedition was the recon mission for a larger expedition to follow sometime in late 2008. The Full Up Expedition in November will consist of 14-15 people including the members of the Recon Team plus other notable research such as PSF's own Dr. Paul Sipiera, Dr. Birgit Sattler (University of Innsbruck ,Austria), Dr. Chris McKay (NASA Ames Research Center), Dr. Michael Storrie Lombardi (Kinohi Institute), Dr. Asim Bej (University of Alabama Birmingham), 3 other recognized Russian researchers and two teachers from the Chicago area – a high school and junior college teacher.

February 2008 Team members (left to right) Art Mortvedt, Dr. Dale Anderson, Richard Hoover, Dr. Valery Galchenko, Colonel (IL) James N. Pritzker (Retired)

I should note that our mission was made feasible by the strong support of the AARI for our research goals and objectives and for our team. Dr. Valery Lukin, the Deputy Director General of the AARI was our key champion and facilitated our Recon Mission that provided the team with critical insights into what research we could conduct and where in Antarctica. This is a very harsh region and it takes an incredible network of people to enable research and exploration, especially at remote lakes far removed from the host nation's science centers.

Story Continued on Page 7

THANK YOU TO ALL OF OUR END-OF-THE-YEAR DONORS

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We Appreciate All Of Your Support

PRESIDENT'S MESSAGE

On February 8th The Planetary Studies Foundation marked the 19th anniversary of its existence. Although February 8, 1989 marks the official date that appears on our charter, the actual founding of our organization took place late in the Fall of 1988. Five visionaries: Mary Becker, David Lauerman, Ray Moehrlin, Meyer Rudoff, and myself sat down at a kitchen table and shared a dream of building a planetarium and science education complex that would rival many of the world's great educational institutions. We were filled with enthusiasm and confidence that we could turn our dreams into reality. Several times over the past nineteen years we came very close to obtaining the required funds, but it always seemed to come down to bad timing and we could not close the deal. Yet, we never lost sight of our original goals and kept pressing forward. PSF grew in many different ways and it always seemed that many new and interesting opportunities were presenting themselves to us. In early 1990, it became very clear to us that our focus was turning toward meteorite studies. Through our association with Dr. Ed Olsen of the Field Museum in Chicago and meteorite collector Jim DuPont of Watchung, New Jersey, the PSF began to make its mark. At the time of his passing in 1991, Jim DuPont had accumulated the world's largest private collection of meteorites. We were honored when the DuPont family asked members of the PSF to help inventory and secure the collection. In 1995, Mrs. Violetta J. DuPont graciously donated the entire collection to the PSF for the future use and benefit of science. At that moment, PSF assumed the role of curator and guardian of Jim Dupont's legacy. Since then PSF has not only protected the collection, but has increased its holdings from the original 1008 meteorites to over 1700 recognized specimens. Today, PSF has evolved into an internationally recognized meteorite research institution, which has sponsored three meteorite recovery expeditions to Antarctica and provides financial support through grants to both university students and senior researchers.

Opportunity has always been a friend to the PSF. A chance 1998 meeting with NASA astronaut Owen K. Garriott opened the door to Antarctica for us. It was Owen's desire to see Antarctica and to be a part of a scientific team that led to the 1998 expedition. Two more Antarctic (2000, 2002) expeditions would follow and see our scientific goals expand from meteorite recovery to the study of extremophile life-forms. Research partners now include NASA's Marshall Spaceflight Center and the University of Innsbruck – Austria. Activities such as these could not been possible without the generous support of PSF members like James N. Pritzker and William J. Gruber. Both individuals know the value of education and scientific research, and they are not afraid to step-up and fill the financial void when the need arises. PSF is also grateful to the many other individuals, too numerous to name in this article, who give of their time and resources. Without their continued support we could not achieve our current level of success. A sincere thanks to all of you!

So what do I see for the future of PSF? Our organization is currently in transition. Your PSF Executive Board met in April to discuss many new and interesting opportunities. Very soon we hope to be able to report to you on some extremely important news about decisions that will position PSF extremely well for the foreseeable future. Your patience will be rewarded.

In the last *PSF NEWSLETTER* I promised you some exciting news about our 20th anniversary celebration dinner, which was scheduled for September 20, 2008. It was to be our "kick-off" event for a yearlong celebration. Unfortunately, several logistical problems have arisen and we cannot keep this date. The dinner committee was planning on a change of venue to downtown Chicago and we just could not make it happen within the requirements of our membership. Fortunately, we were able to re-schedule our featured speaker astronaut Charlie Duke and our additional surprise celebrity guests. The **new date will be** close to our traditional time period in March, specifically **March 21, 2009**. The **venue will be** at our usual place, the **Poplar Creek Country Club** in Hoffman Estates. I can definitely promise you a night to remember and you will want to mark your calendars right now!

Paul P. Sipiera

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- CONGRATULATIONS TO **ANDREA M. COSENTINO** ON HER NEW POSITION WITH THE INVESTMENT FIRM OF HORIZON CASH MANAGEMENT IN DOWNTOWN CHICAGO. ALTHOUGH ANDREA WILL BE LEAVING HER FULL-TIME POSITION WITH PSF, SHE WILL CONTINUE AS OUR NEWSLETTER EDITOR AND VOLUNTEER "EVERYTHING" PERSON. GOOD LUCK!
- PSF MEMBERS **ART AND DAMARIS MORTVEDT**, **JIM PRITZKER**, AND **PAUL SIPIERA** WERE IN NEW YORK CITY TO HELP CELEBRATE **BIRGIT SATTLER'S** BIG NIGHT AT THE 2008 *WINGS WOMEN OF DISCOVERY* AWARD DINNER ON MARCH 5TH. IT WAS NICE TO SEE HER FATHER, **FRANZ SATTLER,** ACCOMPANY HER TO THE EVENT.
- IT WAS BACK TO THE ICE FOR PSF MEMBERS **RICHARD HOOVER**, **ART MORTVEDT**, AND **JIM PRITZKER** AS THEY TRAVELED THROUGH CAPE TOWN, SOUTH AFRICA IN ROUTE TO ANTARCTICA. THEIR TWO WEEK RECONNASSIANCE MISSION WAS IN PREPARATION FOR AN EXPANDED NASA-RUSSIAN EXPEDITION TO BE CONDUCTED LATER THIS YEAR.

MEMBER SPOTLIGHT: Dr. Betty Hull, Ph.D.

Betty was born in Upper Darby, Pennsylvania, in 1937, and lived in suburban Philadelphia, in various small towns in southern New Jersey, till nearly the end of World War II. Transplanted to the midst of a good-sized city (Milwaukee), she experienced the difference between the East coast and the Midwest in a number of ways, most importantly, perhaps in the speech patterns, pronunciation, and vocabulary differences in various parts of the country, which ultimately led her to value language and culture and led her to her Ph.D., as well as her wanderlust, which, with her husband of almost twenty-four years, science-fiction writer Frederik Pohl, has taken her to all but four of the United States and about seventy countries.

Q. Where did you go to college and what did you study? What motivated you to achieve your doctorate degree?

A. After five years as a teenager in Park Forest, Illinois (a multi-racial town, one of the first post-war planned communities, which drew residents from all over our country), I began my college career in 1954 at Illinois State University, and although I dropped out after one year to get married and have two children, I was encouraged by the chairman of the English Department to change my major from Home Economics to Literature. After my divorce, when I returned to higher education in 1963, I finished my second year at Wilbur Wright branch of Chicago City Colleges (earning an A.A. and graduating with straight A's) and transferred to Northwestern University's Evening Divisions, where I was inducted into Alpha Sigma Lambda and graduated with honors in English and American Literature. This led to a teaching assistantship at Loyola University of Chicago, and my M.A. and Ph.D.

Q. What is your current profession and what inspired you into that career?

A. Beginning in 1971, I taught at Harper College for thirty years as a full-time faculty member and then for five more as an adjunct, before retiring completely at the end of 2006. During that time, I taught freshman composition, creative writing, business writing, and various literature courses, including women in American literature, science fiction, and drama. I also introduced and chaired the high school writing competition for a number of years, initiated and directed the Honors Program for ten years. In 1997 I was selected as the Distinguished Faculty of Harper College and gave a speech at the graduation ceremonies. I sometimes think there is a gene for teaching: teachers and engineers seem to run in my family. I remember playing "school" and teaching my dollies (mostly arithmetic) when other little girls were playing "house." My grandmother was a teacher before she married, my daughter Barbara is a teacher, and my grandson Eric (still in high school now) shows interest in majoring in education.

Q. Which other careers would you have liked to attempt besides the one you have now?

A. I worked my way through college as a travel agent, and have continued to travel ever since. I've led a few excursions over the years, but I don't think I'd like to do it full-time because it's extremely stressful. Another passion of mine is theater, and I am a total play junkie, seeing thirty or forty a year. For a while after I (partially) retired, I reviewed local theater for a weekly suburban newspaper, but my real secret aspiration is to be an actress, playing character roles. Since my daughter-in-law is a Hollywood casting director, maybe one day I'll get a chance, even at this late date.

Q. What is one of your most memorable achievements and what makes it special?

A. Probably the most memorable honor I've achieved is the Alumni Award for Service to my Profession from Northwestern University in 1995, for having served as president of the Science Fiction Research Association and North American secretary of World SF, among other activities. They invited me to a weekend of special activities at Northwestern, culminating in an awards ceremony to rival the Oscars. This experience led to my having the courage to run for Congress in 1996, as the Democratic candidate in the 8th District, against a thirty-year incumbent. A number of my former students have gone on to run for public office, and I believe I helped them muster the courage to stand up when they see bad public policy.

Q. How did you become involved with the PSF?

A. Paul Sipiera was teaching Astronomy for the Honors Program. He is certainly an irresistible force! My daughter is also an amateur astronomer, and the whole family is interested in outer space.

Q. Which area of science interests you the most?

A. It's hard to pick just one. My background in studying nutrition has led me into biochemistry. My father was a chemical engineer and research chemist, so I've always been immersed in chemistry and I became fascinated with brain research when he developed Parkinson's Disease. My grandfather was an electrical engineer, my uncle a mechanical engineer (a Ph.D. who spent his career in the U.S. Patent Office), and my niece is a civil and mechanical engineer (working on ecological issues). If anything, I favor geology, meteorology, and earth sciences—my husband and I love visiting volcanoes, caves, hot springs, great rifts, excavations of ancient ruins, etc. We've been to the Galapagos and down to the Antarctic and last summer we cruised up into the Polar Ice Cap, 81.3 degrees latitude. Fred was a World War II weatherman. I've never understood why some people in the humanities claim to be uninterested in science. Science is very human and machinery and technology do not exist without people.

Q. Do you have any hobbies or special interests?

A. I love to read, both fiction and non-fiction, and I feel lucky to have had a career that allowed me to get "paid to play"—that is, to read fine books and discuss them with intelligent people. I'm also involved in the League of Women Voters (past president of the Palatine chapter, currently serving on the Juvenile Justice Committee of the Cook County LWV) and the Third Municipal District of the Circuit Court of Cook County Family Violence Council.

Q. Where is your favorite place to travel?

A. London—where I lived and taught for a semester in 1988. It's always worth a re-visit for the theater and I sometimes see seven plays there in the West End in seven days. Fred and I still think of the Marble Arch area as "our neighborhood."

Q. If there was one personal story that you never get sick of telling, what would it be?

Betty (right) with one of her good friends.

A. On my third trip to China, in 1991, my husband and I attended a meeting for Science Fiction Professionals at Chengdu, Sichuan Province, with about thirty other non-Chinese and 300 Chinese from all over that huge country. I knew that non-Chinese were identified by a small silk rose pin that we were asked to wear on our lapels, so that when photographers wanted to take their pictures, they could push the foreigners to the front. However, I didn't pay too much attention to the color of the roses, other than to note that some were red and some pink.

But one of the other guests approached me in the middle of the third day of the five-day conference and said, "Oh, you're a red rose person. I'm a pink." In all innocence I agreed. She then said, "Red rose people are treated specially." I protested, of course, that all those wearing roses were pushed to the front when pictures were taken, but for the next few days, till the end of the meeting, I paid more attention, and to my utter surprise, although we were all pushed to the front, I observed that indeed some of us were "more equal than others" and we were in the direct center of the picture. This experience made me aware of how easy it is for people of privilege to take their advantages for granted and has made me more tolerant of white males who don't seem to realize that in our culture they have privileges that they hardly notice.

Q. Where do you see yourself in ten years?

A. When I was 49 I had a fatal heart attack and had to be resuscitated—jump-started with the paddles, like you see on TV. If I live to be 81, I hope to still be strong and healthy enough to travel and see some of the places I haven't yet been to. On my A list: India.

Q. What is one thing you wish people knew about you?

A. I'm rotten with names. I seldom forget faces, but am often at a loss for the name to go with the vivid memory of a person. I only hope that most people won't take my character flaw personally.

Q. Do you have any exciting plans for 2008?

A. So far, we are planning to attend the Eaton Conference in Riverside, California in May, the Campbell Conference/SFRA Annual Meeting in Lawrence, Kansas, in July, and the World Science Fiction Convention in Denver in August, as well as a science fiction convention in Florida in the fall. We're expecting our second great grandchild in June, so perhaps we'll visit Toronto some time soon too. And maybe we'll find a cruise to somewhere interesting before the year is out.

Q. What is the best advice you ever received, or what is a motto you live by?

A. My mother always said, "Slow and steady wins the race." That advice got me through a lot of years of school. In her later years, I talked to my mother almost every morning on the phone and always told her, "Getting old is not for sissies." It always made her laugh.

As a motto to live by: I tried to teach my students that in order to improve they had to change: things can't get better by staying the same. Although change can be for the worse, we have to take risks to make our world better, and change will certainly happen whether we do anything or not. I'm glad to see that **all** of the presidential candidates are talking about change as being desirable, not as something to be automatically feared.

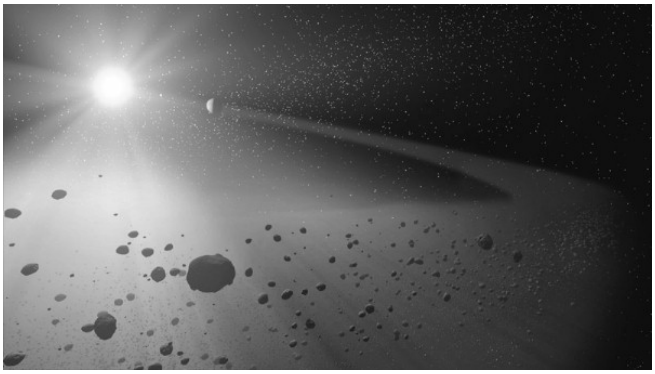
Q. What advice would you give to our young readers?

A. Make definite plans (or you'll never get anywhere), but hang loose. Considering the mostly unanticipated changes that have occurred in my lifetime, I expect a lot more in the next fifty years. Let Serendipity take you where you haven't yet imagined.

Thank You Betty!

Astronomy 101 by David Kahn

What is…the Asteroid Belt*?*



The asteroid belt is an area of the solar system that is found between the orbits of Mars and Jupiter. Within this belt are millions of irregularly-shaped rocks called asteroids, or sometimes, minor planets. Currently, hundreds of thousands of asteroids are known and have been cataloged, with more than two hundred of them known to be larger than 100 kilometers in diameter. However, despite what Hollywood would like you to believe, the asteroid belt is mostly empty space. In fact, these rocks are spread out over such a large area that it would be almost impossible to hit an asteroid without actually aiming for it. Through the years, NASA has sent many spacecraft safely through the asteroid belt without incident.

The total mass of the asteroid belt is estimated to be about 3×10^{21} kilograms, which sounds like a lot, but in reality is just four percent of the Moon's mass. More than half that mass is made up of the four largest objects found there: Ceres, 4 Vesta, 2 Pallas, and 10 Hygiea. All four of these asteroids have diameters of more than 400 kilometers. Further, Ceres, the only asteroid designated a dwarf planet, is about 950 kilometers in diameter. The rest of the asteroids vary from miles across to boulder size, all the way down to the size of dust particles.

The asteroid belt formed during the formation of the solar system. While most of the planets formed through the process of accretion, the area between Mars and Jupiter was found to be quite hostile to accretion due to giant Jupiter's enormous gravitational forces. Instead of the rocks sticking together during accretion and forming another planet, Jupiter's gravity caused the collisions to become too violent and the protoplanet instead shattered. Some of those shattered rocks eventually found their way into the inner solar system, leading to meteorite impacts with those inner planets. As a result, over billions of years, most of the asteroid belt's mass has been lost. Even today, an asteroid's stable orbit can be disrupted if it comes under the strong gravitational tug of Jupiter. As these asteroids are knocked around, collisions with other asteroids often occur.

Some of the rocks that have been launched out of the asteroid belt can eventually find their way to Earth. It is estimated that of the 30,000 meteorites found on Earth so far, more than 99.8 percent are believed to have come from the asteroid belt. A study by joint US-Czech team has suggested that in its past, asteroid 298 Baptistina sustained a collision that sent a number of large fragments into the inner solar system, some of which reached Earth. The violent impacts of these asteroids are believed to have created both the Tycho crater on the Moon and the Chicxulub crater in Mexico. The Chicxulub crater is believed to be the remains of a massive impact that triggered the extinction of the dinosaurs 65 million years ago.

In order to learn more about asteroids, and in turn the formation of our solar system, NASA has developed the Dawn mission. The Dawn spacecraft will explore several asteroids in order to gather evidence of the formation and evolution of the solar system. Dawn's mission objective is to gather data as it orbits around the two most massive asteroids, 4 Vesta and Ceres. The Dawn spacecraft will be the first to orbit an asteroid from the main asteroid belt, as well as the first spacecraft to orbit two extraterrestrial, non-planetary bodies. The Dawn spacecraft lifted off on September 27, 2007 and headed towards 4 Vesta, where it will rendezvous in August, 2011. The Dawn spacecraft will study 4 Vesta for nine months before leaving for Ceres, which it will catch and orbit in February, 2015. The entire mission will last eight years, carrying the 1,212-kilogram craft almost 5 billion kilometers. A significant distance to be sure, but certainly a worthwhile trip if it unlocks the secrets of our solar system's origin.

Continued from Cover

The February 2008 expedition was an opportunity to assess and validate the team's preliminary planning for the full up mission, move some essential supplies and equipment, establish contact and initial coordination with our Russian colleagues both in Cape Town and in Antarctica, and to test some key gear and equipment. The overall research focus of both the Recon Mission and the Full Up expedition is the study of micro organisms and extremophiles in the fresh lakes in the Queen Maud Land area of Antarctica, as well as in Lake Untersee, one of the most unusual lakes in the world since it has extremely high ph levels and produces significant quantities of methane.

It is the latter lake that is the focal point for the overall mission. In addition to the Russian station, many other nations have science centers in the area including Germany, Japan, Finland, Sweden, Norway and India. One of the stations visited by the Recon Team was Maitre, the Antarctic study center for India which is northeast of the Russian station that hosted our team. Both the Indian and Russian scientists we met at their respective stations proved to be hospitable hosts and very capable scientists who are well equipped and knowledgeable to deal with the challenges of operating on the Antarctic continent. It is truly an international community and to walk across the ice is to follow in the foot prints of explorers and researchers from across the world. Antarctica is a great source of knowledge about the history of the planet we live on and the diversity of its life forms. Both the Recon Mission and the Full Up Expedition that are being funded by the Tawani Foundation represent both the spirit and intent of the Antarctic Treaty and the Treaty Organization which governs Antarctica - a land without national sovereignty and the challenges of working with many different agencies of many nations to make the work possible.

Bassler 67 used by the Recon Team

An unidentified rock found at the landing field

It is difficult to mention all the agencies involved and so if I miss a few there is no intent to slight any of them but just for starters this expedition includes: NASA, the Von Braun Center for Science & Innovation, the Russian Arctic and Antarctic Research Institute, the National Science Foundation, the Winogradsky Institute, the Carl Sagan Center, the universities of Innsbruck and Alabama Birmingham, The Planetary Sciences Foundation, as well as the South African Company ACLI located in Cape Town that oversees the actual logistical coordination. Finally, we need to pay special thanks to the Tawani Foundation of Chicago, Illinois, the sponsor of the mission and a great advocate of research and education. Tawani is a not for profit corporation and private foundation.

Indian Antarctic Station Maitre

Soviet Army tank chassis

From my vantage point. One of the highlights of the Recon Mission and our overall science goals was the ability to conduct a recon flight to the Lake Untersee Region. Lake Untersee is about a one hour flight from Novo Station in a Basler 67 airplane (modified DC3/C47) or 120 km by land. The team ventured to Lake Untersee for an initial assessment of the proposed field site for the main expedition. Upon landing on the ice, the team traveled the final 3 kilometers by snowmobile. A key conclusion reached by the team that it was feasible to do research at the Lake on an extended basis and that there were field sites that could support the mission. One of the key decisions to be made at the team meeting in April in Vienna is how we will support the team at Lake Untersee and how many members of the team will be deployed there versus at the Novo Station site. As we discovered on the Recon Mission, you can also do excellent science in the lakes of the Novo Station. One of our researchers has already identified one new microorganism from the mission and another new bacteria might also be announced soon. If you are interested in microorganisms, extremophiles and bacteria, Antarctica is a phenomenal "living" laboratory.

Most importantly, during the Recon Mission we established very positive relations with our Russian colleagues and other contacts. The Recon team will link up with members of the Full Expedition in Vienna Austria at the end of April 2008 for final coordination and planning. Based on the success of the Recon mission there is every confidence and expectation for success in the full mission. So stayed tune, the best is yet to come and we have a great international team ready to be deployed – as evidenced by our patch that proudly labels the Tawani Foundation, AARI, NASA, the Russian Academy of Sciences, and PSF as sponsors of this mission.

NASA Launches Airborne Study of Arctic Atmosphere, Air Pollution

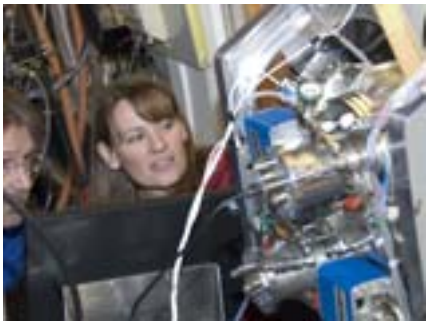
Kathryn Hansen
NASA's Goddard Space Flight Center

Courtesy of NASA

The recent decline of Arctic sea ice is one indication that this region is undergoing significant environmental changes related to climate warming. To investigate the atmosphere's role in this climate-sensitive region, NASA and its partners have begun the most extensive field campaign ever to study the chemistry of the Arctic's lower atmosphere.

The Arctic Research of the Composition of the Troposphere from Aircraft and Satellites (ARCTAS) field campaign is poised to help scientists identify how air pollution contributes to climate changes in the Arctic.

The campaign begins this week in Fairbanks, Alaska. Three NASA research aircraft -- the DC-8, P-3 and B-200 -- will serve as airborne laboratories for the next three weeks, carrying instruments to measure air pollution gases and aerosols and solar radiation. Of particular interest is the formation of the springtime "arctic haze," which is fueled by sunlight causing chemical reactions of pollutants accumulated over the winter from long-range transport from lower latitudes.



Chris Cantrell and Becky Anderson of the National Center for Atmospheric Research, Boulder, Colo., assess an instrument's operation on NASA's DC-8 aircraft during preparations for the ARCTAS field campaign.
Credit: NASA

"It's important that we go to the Arctic to understand the atmospheric contribution to warming in a place that's rapidly changing," says Jim Crawford, manager of the Tropospheric Chemistry Program at NASA Headquarters, Washington. "We are in a position to provide the most complete characterization to date for a region that is seldom observed but critical to understanding climate change."

"The Arctic is a poster child of global change, and we don't understand the processes that are driving that rapid change," says Daniel Jacob, an ARCTAS project scientist at Harvard University, Cambridge, Mass. "We need to understand it better, and that's why we're going."

The wealth of data collected will also improve computer models used to study global atmospheric chemistry and climate. This will ultimately provide scientists with a better idea of how pollutants are transported to and around the Arctic and their impact on the environment and climate.

"We haven't looked at pollution transport in a comprehensive fashion," says Hanwant Singh, an ARCTAS project scientist at NASA Ames Research Center, Moffett Field, Calif. "We can see arctic haze coming in, but we don't know its composition or how it got there. One goal of ARCTAS is to provide a comprehensive understanding of the aerosol composition, chemistry, and climate effects in the Arctic region."

The new aircraft observations will also help researchers interpret data from NASA satellites orbiting over the Arctic, such as Aura, Terra, and Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO). Interpreting satellite data can be difficult in the Arctic due to extensive cloud cover, bright reflective surfaces due to snow and ice, and cold surface temperatures. For example, it's difficult for researchers to look at satellite data and distinguish between light reflected by clouds and light reflected from white ice cover.

"NASA has invested a lot of resources in satellites that can be of value for diagnosing effects of climate change," Jacob says. "Satellites orbit over poles with good coverage and good opportunity, but you really need to have aircraft observations supporting those to make good interpretations of what satellites are telling you," he said.

The new airborne view of the Arctic atmosphere combined with satellite data will provide scientists with a better understanding of the atmospheric side of the climate question. "We're interested in data that will help models better characterize the current state of the atmosphere – to set a benchmark for them so we can gain confidence in their ability to predict future warming in the Arctic," Crawford says.

A second phase of the ARCTAS campaign takes place this summer from Cold Lake in Alberta, Canada, where flights will focus on measurements of emissions from forest fires. Researchers want to know how the impact of naturally occurring fires in the region compares to the pollution associated with human activity at lower latitudes. Understanding the relative influence of each is important to predictions of the Arctic's future climate.

Kid's Corner: Jami Kahn

Written by: Paula Sipiera

Jami Kahn is 12 years old and one of PSF's youngest members. Jami is in seventh grade and lives with her mom and dad in Wheeling, Illinois. Jami is very smart and very unique from most children her age. Her favorite subject in school is Language Arts because she really likes her teacher for that class. They get to learn about history and current events and their effects on today's society and then get to write about it. Jami is fascinated by the Universe and really enjoys learning about science too.

Jami with Dr. Birgit Sattler

Jami with her Dad and Paul Sipiera

Jami is a busy young lady. Some of her hobbies include running cross-country, writing for the school newspaper, playing the viola, reading and re-reading books, dancing and most of spending time with her family and friends. She is very interested in computers and in her spare time she likes to organize her computer. When she is bored she enjoys writing short stories, she is always trying to improve her writing skills.

When Jami grows up she is interested in becoming a professional writer. Writing is one of her finer talents and she would make a very good one! "There is just something that really thrills me about being able to make up whatever sort of realities you want, and being able to get your feelings out and speak your mind" says Jami. Some writing occupations that interest her are becoming a journalist, magazine editor or a novelist. Currently she practices almost every day on her writing. She even asks her friends to critique her writing so she can get different perspectives.

Jami has been involved with the PSF since she was very young. Along with her Dad, (PSF member and Astronomy 101 writer) David Kahn, they construct model rockets, watch space shuttle launches on television and stargaze on clear nights. The two of them also attend every PSF dinner each year, where there is always a special donation to our silent auction from Jami herself. She loves to hear the astronaut lectures along with taking a photograph with them. The first dinner she went to was when astronaut Edgar Mitchell was speaking. It was her favorite dinner because she was so excited it was her first one. She liked getting dressed up and staying out late, which was really different from her normal routine. Plus she got to talk to Dr. Mitchell and ask him questions about space. I asked Jami if she had any advice for young people like us. She said "When you have a goal that seems a little out of reach, don't get discouraged and take small steps that will help you reach that goal. Don't let anyone tell you that aren't good enough or you aren't capable because if you want it strongly enough, you can accomplish anything."

Jami with astronaut Al Worden

PACK YOUR GO BAG

Fact: Climate change is predicted to displace millions of people by 2050.

Objective: Prepare a backpack with the essentials needed to keep you alive for three days. (That's about how long it usually takes relief services to become operational after a disaster.)

1. **First-aid kit**
2. **Important documents** (ID, map, emergency contacts, insurance policies)
3. **Three-day supply of nonperishable food**
4. **Water: at least one gallon per person, per day**
5. **Special medications**
6. **Extra pair of contacts or glasses**
7. **Radio and flashlight** (The Red Cross store sells a crank-up model with AM/FM, NOAA weather, flashlight, siren and built in cell phone charger)
8. **Waterproof matches or lighter**
9. **Tools: can opener, pocketknife, pliers to turn off gas and water**
10. **Toothbrush, towelettes**
11. **Cash: small bills and quarters for pay phones**
12. **Credit cards**
13. **Emergency whistle**

WATER CONTAMINATION: HOW TO PROPERLY DISPOSE MEDICINE

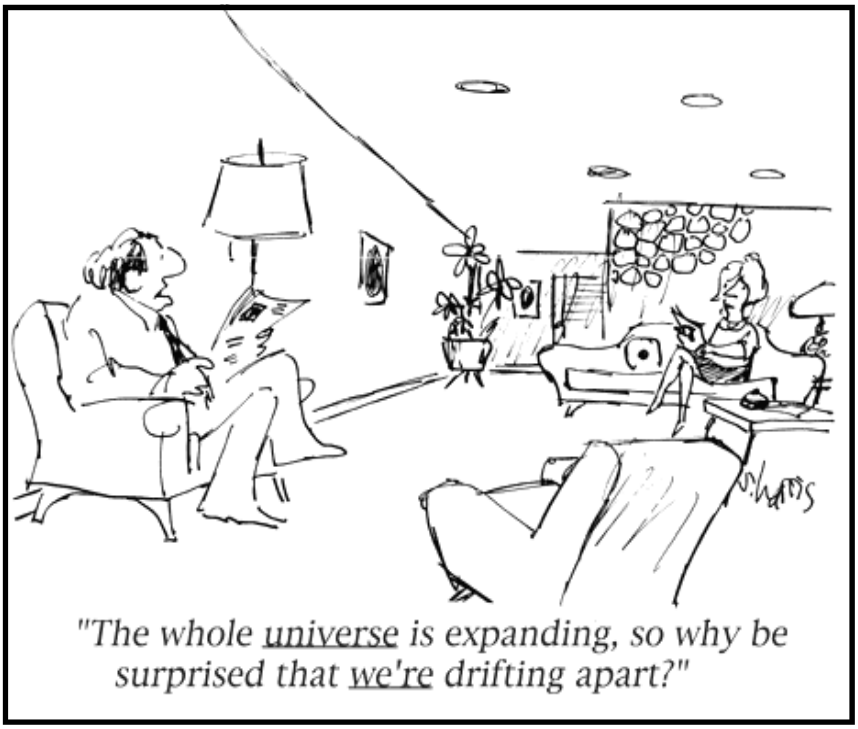
Within the past month, an array of harmful prescription medications have been found in water supplies affecting over 40 million Americans. Medicines that tested positive in the water included anti-depressants, antibiotics, mood stabilizers and sex hormones. Wastewater treatment plants insist the treatment process removes a large quantity of toxic substances, but the health impacts of even small consumptions are unpredictable. A representative from the U.S. Environmental Protective Agency stated "Our bodies may shrug off a relatively big one-time dose, yet suffer from a smaller amount delivered continuously over a half century, perhaps subtly stirring allergies or nerve damage. Pregnant women and the elderly would be much more sensitive." The most important thing to keeping water safe is to not flush unused or expired prescription drugs down the toilet. **Here are a few tips to properly dispose medication:**

1. **Remove drugs from original containers. This will prevent identity theft and help to ensure the medicine does not end up in the wrong hands.**

2. **Mix drugs with undesirable refuse like cat litter or coffee grinds. Place into a plastic bag and make sure it ends up in a trash can.**

3. **Take drugs to a pharmacy for proper disposal. Most community pharmacies have waste programs set up to ensure prescription drugs end up in the right place.**

4. **Never, Never, NEVER flush prescription drugs down the toilet. Unless stated directly on the bottle, medicine should never go down the toilet. It contaminates the water and poses numerous health risks.**



Cartoon courtesy of www.sciencecartoonsplus.com

Are you interested in listening to more than just music on your MP3 player? There are a lot of free science podcasts with really interesting topics!

www.nasa.gov/multimedia/podcasting/index.html

http://feeds.feedburner.com/earthsky/clearvoices

www.astronomycast.com/

www.sciencemag.org/about/podcast.dtl

SPACE FACTS...*Test your knowledge!*

1. **Any free-moving liquid in outer space will form itself into a sphere, be cause of its _____ _____.**
2. **The largest volcano in our solar system is _____ _____. It is located on planet Mars and is 370 miles (595 km) across and rises 15 miles (24 km).**
3. **Britain has only launched one satellite, its name is _____ _____.**
4. **Astronaut Neil Armstrong first stepped on the moon with which foot?**
5. **The first man-made satellite sent into space was called _____.**
6. **Venus is the only planet to rotate _____.**
7. **Who was the first woman to travel to space?**
8. **One day on Pluto is approximately the same length as one _____ on Earth.**
9. **The coldest temperature recorded on Earth was in _____, _____ on July 21, 1983.**
10. **How many satellites does Mars have?**

1. surface tension 2. Olympus Mons 3. Black Arrow 4. Left 5. Sputnik 6. Clockwise 7. Valentina Tereshkova, from Russia 8. Week 9. Vostek, Antarctica 10. Phobos and Deimos

UPCOMING EVENTS

Saturday, April 19 (1:00 p.m. - 3:00 p.m.) @ Lizzadro Museum

"Create a Gem Tree" In honor of Earth Day the Geological Society of DesPlaines Valley will teach participants how to create a small tree using gemstones and wire. This popular program has limited space available, make reservations at 630.833.1616

Wednesday April 23 (6:00 p.m.) @ University of Chicago's International House **FREE ADMISSION**

Science matters. Whether it involves medical breakthroughs, a greater understanding of climate change, or the origin of our species, science constantly provides new insights into the universe and humankind's place within it. The Field Museum's DNA Science Salon will bring these insights to Chicago. *www.fieldmuseum.org*

Sunday, May 4 (1:00 p.m. - 4:00 p.m.) @ Lizzadro Museum **FREE ADMISSION**

"Stone Sculpting Demonstration" Master craftsman Walter Arnold sculpts limestone and marble into intricate works of art. Learn the tools and techniques and see how a stone creation emerges. This is a live demonstration. *www.lizzadromuseum.org*

Opens May 8 @ Museum of Science & Industry

"Smart Home: Green + Wired" the museum is building a three story "green" home in its backyard to show case the ways, big and small, that people can make eco-friendly living a part of their lives—and to highlight unique home technologies for the 21st century. *www.msichicago.org*

Saturday, May 10 (1:00 p.m. - 4:00 p.m.) @ Adler Planetarium

National Astronomy Day at the Adler Planetarium! Enjoy free giveaways from Astronomy Magazine, live demonstrations of a working solar car, tour the Doane Observatory, view the Sun through safe, solar telescopes and learn about the solar spectrum. *www.adlerplanetarium.org*

Sunday, May 18 (1:00 p.m. - 5:00 p.m.) @ Lizzadro Museum **FREE ADMISSION**

"Museum Day In Elmhurst" Ride the trolley and see all four Museums including the Elmhurst Art Museum, the Elmhurst Historical Museum, the Theatre Historical Society and the Lizzadro Museum! Participate in activities and view exhibits at each museum. *www.lizzadromuseum.org*

Sunday, May 25 (5:00 p.m. - 8:00 p.m.) @ Adler Planetarium

Phoenix arrives at Mars! NASA's next major Mars mission arrives on Memorial Day weekend. Come and watch the event on NASA-TV with the Adler staff on hand to answers your questions. *www.adlerplanetarium.org*

EXPLORE THE WEB: INTERNET SITES & LINKS

Adler Planetarium	www.adlerplanetarium.org
Air & Space Museums	www.aero.com/museums/museums.htm
Astronomy for Students	www.nasa.gov/audience/forstudents/index.html
Challenger Learning Center	www.challenger.org
Cosmology	map.gsfc.nasa.gov/universe/
European Space Agency	www.esa.int
Explore Science	www.exploratorium.edu
Geology & Earth Sciences 101	www.geology.com
Jet Propulsion Laboratory	www.jpl.nasa.gov
Kids/Teachers Games, Lessons & Links	www.sciencenetlinks.com
Make a Space Day	www.spaceday.com
Martian Geology Overview	www.lukew.com/marsgeo
NASA News & Events	www.nasa.gov/newsinfo
Planetary Studies Foundation	www.planets.org
Smithsonian National Air & Space Museum	www.nasm.si.edu
Space News and Links	www.space.com
Space Shuttle (Kennedy Space Center)	science.ksc.nasa.gov/
University of Arizona Astronomy & Space Programs	www.as.arizona.edu