



FREQUENT FLYER

American Institute of Aeronautics and Astronautics
Northern Ohio Section

Newsletter - December 2015

23rd Annual Young Astronaut Day Inspires Next Generation of Scientists and Engineers

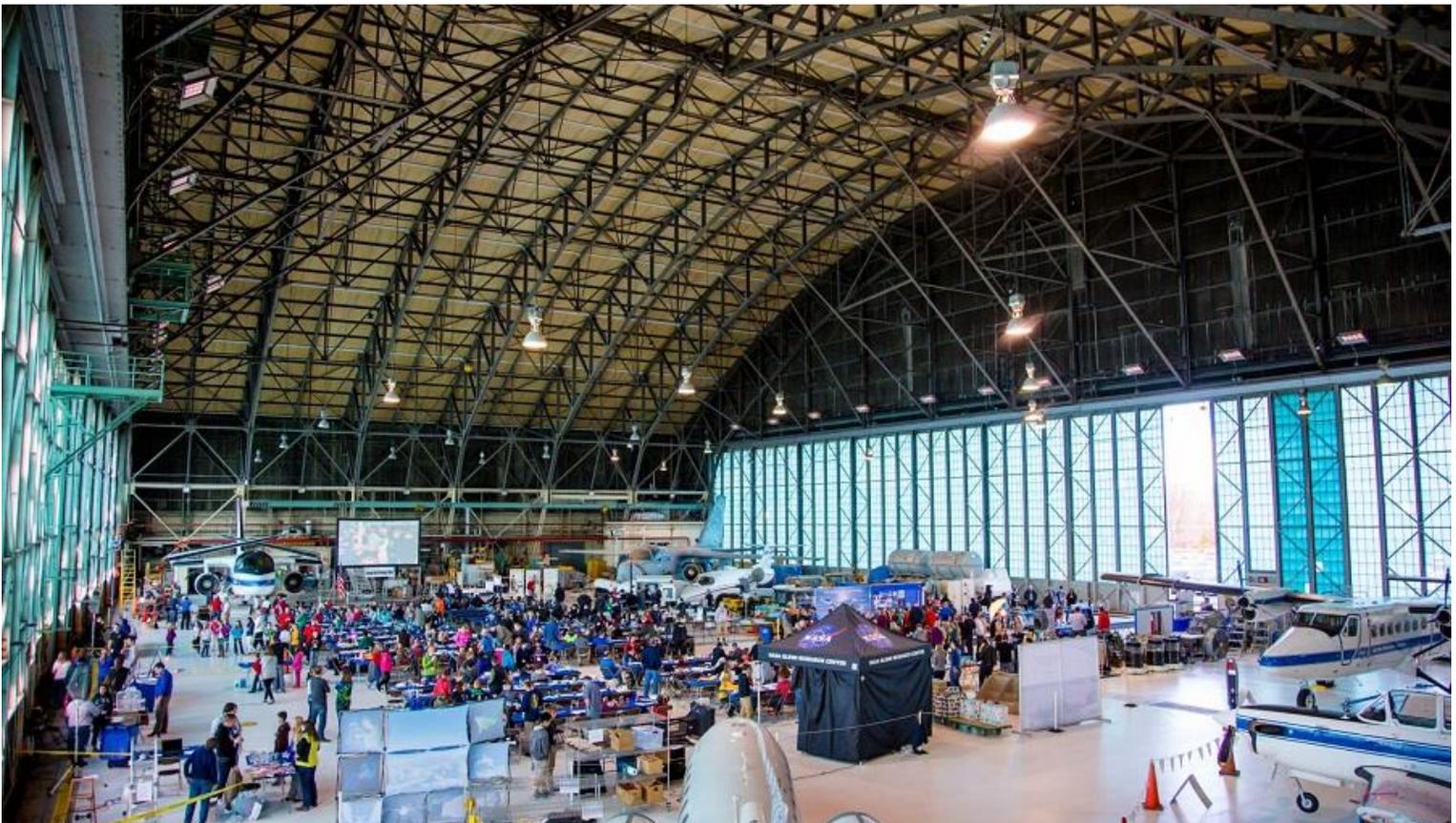
The Young Astronaut Day outreach event continued its 23 year legacy at NASA Glenn Research Center (GRC) on November 7, 2015. Over 350 students (grades 1st through 12th) gathered in the NASA GRC hangar to compete in a variety of hands-on engineering challenges which were developed and conducted by volunteers from NASA GRC, Cleveland State University, the Case Western Reserve University Robotics Team, and the Cleveland Government Engaged Leaders.

This year's astronaut guest speaker was GRC's own Deputy Center Director Janet Kavandi, who kicked off the event with an excellent talk highlighting the importance of teamwork and her experience as an astronaut.

To celebrate the 100th NACA anniversary, all eight of this year's activities were aeronautics themed: building a



NASA GRC Deputy Director and astronaut, Janet L. Kavandi, gave an inspirational keynote speech to kick off the day's events.



Over 350 students and more than 70 volunteers gathered in the NASA Glenn Research Center hangar for the 23rd Annual Young Astronaut Day.

cantilevered wing truss structure to withstand weight, designing a drag parachute and testing in a wind tunnel, constructing a Lego paper airplane launcher, building a shock absorbing system for landing gear, designing a noise reducing wall liner for aircraft engines, building custom gliders for maximum distance, designing a high lift airfoil, and designing water rockets.

This year's event was co-sponsored by the Exploration Systems Project Office, the Northern Ohio Section of the American Institute of Aeronautics and Astronautics, and the TFOME Contractor Team of HX5 Sierra, Jacobs and MSM. Planning and organization was led by Co-Coordinator, Ashlie Flegel (NOS member) and Julie Kleinhenz (NOS Chair for STEM K-12). More than 70 volunteers from across NASA, industry, and academia made this event possible.

A gallery of photos taken at the event may be found at:

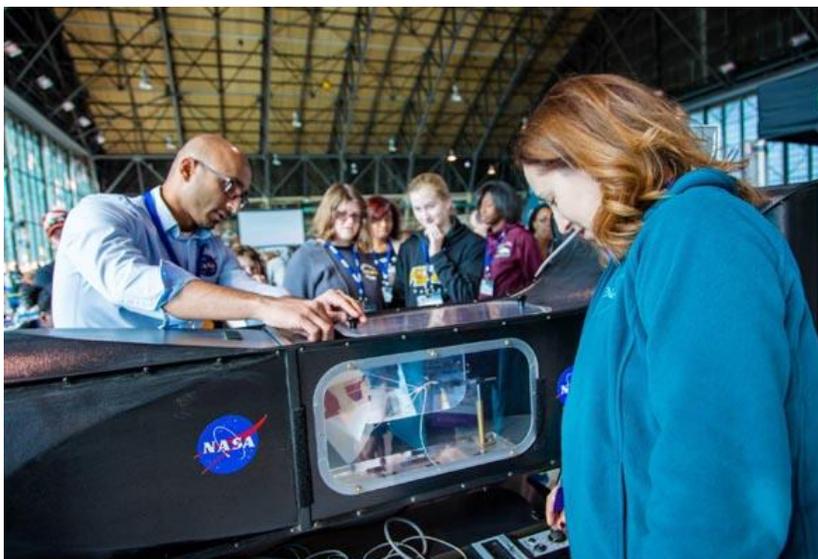
[Young Astronaut Day 2015 Photos \(Facebook\)](#)

For the 9th consecutive year, YAD teamed up with Herschman Architects to incorporate a community service activity, known as "Canstruction." The students used 1500 cans of food to construct a replica of the NASA GRC hangar inside the NASA GRC hangar! Afterwards, the cans were donated to the Cleveland Food Bank.



The Young Astronaut Day participants were captivated by Janet Kavandi's talk highlighting the importance of teamwork and her experience as an astronaut.





Landis Talks Ohio Connection to Mars Exploration at the Premiere of *The Martian*

On September 21st and 29th, NASA scientist and AIAA NOS Awards & Honors Chair, Geoffrey Landis, provided opening remarks prior to advance screenings of the motion picture "The Martian". Geoff discussed the real-life efforts by NASA to explore Mars and the many contributions that NASA Glenn Research Center has made towards these missions. The packed theater was heavily represented by NASA personnel and an informational booth was set up in the theater lobby to highlight NASA Glenn's connection to Mars exploration.



Geoffrey Landis speaking at an advance screening of *The Martian*.



Geoffrey Landis poses with the Opportunity Rover model at the Jet Propulsion Laboratory.

Introduction to *The Martian*

Geoffrey A. Landis

This film is science fiction. Science fiction is the literature of our dreams and of our hopes, and sometimes of our nightmares. It tells about the possible and gives us a vision of what we can do if we chose to. This movie is fiction, but at NASA we are working as hard as we can to turn it into a reality. We are working at turning the technology from dreams into realities.

I have been one of the scientists working with the Mars Exploration Rovers for over ten years. We have been rolling around and exploring the surface of Mars—we have indeed proved that it is possible to roll around and explore the surface of Mars—and learning about the ancient environment of Mars. We've discovered that Mars was once a planet that was much more hospitable to life.

Many of the technologies used for the mission to Mars in the movie are technologies that we are working on at NASA Glenn Research Center. NASA Glenn isn't the NASA Center that you hear about in the news; we don't launch rockets from Cleveland and we're not the center to which they call when they say "Houston we have a problem." We develop new technologies for future missions, both for aviation and space, that will allow exploration farther out into the solar system—including technologies for Mars. I've worked on the Mars rovers and I'll be quite excited to see the rover in the film—a rover that is a bit more capable than the robotic rovers, Spirit and Opportunity, with which I worked.

One of the technologies I have worked on is developing solar panels for use on Mars, and understanding the operation of solar panels on the surface of Mars, particularly looking at the effects of the deposition of Martian dust onto the panels on Mars. I'm thrilled to see that solar panels on Mars are featured in the movie.

We also work on radioisotope power systems for space, developing a highly efficient technology called Radioisotope Stirling Power Source, which is also mentioned in the movie. And, of course, the technology for generating oxygen and rocket fuel on Mars is critical to operation of the Mars mission in the movie; this is another technology we've worked on at NASA Glenn, and there will be an experiment to demonstrate exactly this technology that will launch on the next rover mission NASA is sending to Mars, the Mars 2020 rover.

This is a movie about things going wrong, and about people solving problems. We hope that a real mission to Mars won't have quite as many problems as this one, but daring the unknown is what we do. Taking risks is necessary to exploring, and to pushing the frontiers.

Solving problems, taking risks, and exploring the frontiers. That's what we do.

AIAA NOS Members Receive Silver Snoopy Awards for Space Work

Two AIAA NOS members employed at NASA Glenn Research Center were recognized with NASA's prestigious Silver Snoopy award for outstanding performance and professional dedication to human spaceflight safety or mission success. Glenn's Deputy Director Janet Kavandi joined astronaut Andrew Morgan in presenting the awards during a ceremony at the center on November 2, 2015.

NASA's Astronaut Office awards the Silver Snoopy pin annually to no more than one percent of NASA's eligible workforce members. The NOS recipients of this award are:

Edmond Wong, NOS Communications Chair, works in the Intelligent Control and Autonomy Branch. He was recognized for contributions to the Space Launch System (SLS) Program as the Sensor Data Qualification and Consolidation Team lead and lead developer of computer algorithms that validate flight-critical sensors for safe operation of core stage and booster stage subsystems.

Scott E. Darpel, NOS Member, works in the Program and Project Assurance Division. He was recognized for dedication and technical excellence in safety and mission assurance leadership to ensure risk reduction of Glenn flight hardware and software for space station research and human research projects.

AIAA Northern Ohio Section Pilots Mentoring Program

The AIAA Northern Ohio Section is supporting a pilot AIAA mentoring program that was developed over the course of a year with members of NOS and the AIAA Young Professionals committee. Although this program will be the third attempt at an AIAA mentoring program, it will be the first effort at the local level with an emphasis on in-person interactions. The goal of the mentoring program is to help provide guidance to the AIAA student members as they navigate the transition to professional members. This will provide an opportunity for more senior AIAA professional members to give back and support the development of the future aerospace workforce.

In the pilot program, there are six mentee-mentor matches that represent participants from Cleveland State, Case Western, Kent State, and the University of Akron. A kickoff event was held on October 27th, at Cleveland State University. The AIAA mentoring program coordinator, Stephen Brock, was in attendance and provided an overview of the program and expected outcomes. In addition, Mr. Brock was able to meet with NOS leadership and some of the AIAA college chapters. This pilot is an exciting new program and if successful could turn into a regular service that the NOS will provide to its membership.



NOS members Edmond Wong (left) and Scott Darpel (second from the left) are among the Silver Snoopy recipients for 2015. The awards were presented by astronaut Andrew Morgan (third from the left), and NASA GRC Deputy Director and former astronaut Janet Kavandi (fifth from the right).

Distinguished Lecture with Ken Davidian on Market Assessment of the Commercial Space Industry

Ken Davidian, NASA Lewis Research Center alumnus, and current Director of Research and Program Manager for the FAA Center of Excellence for Commercial Space Transportation, “geeked out” to a small but rapt group of NOS members on November 19th.

The event began with members getting the opportunity to connect or reconnect with each other and with Ken over refreshments. Subsequently, Mr. Davidian, whose main focus is market analysis for commercial space in both his professional and academic careers, gave an enthusiastic overview of both the historic and possible market models for the burgeoning commercial space industry. Mr. Davidian put the current status of the commercial space industry in historic perspective. Specifically, he posited that the current industry is not past the innovation stage of development, in which the actual supply and demand dynamics are still being defined. He also outlined several possible tools, some of which he has personally applied, that could be used to assess various segments of the commercial space industry.

Audience questions and post-lecture discussions kept Ken and many of the attendees happily chatting for almost an hour after the lecture was over. Questions ranged from market analysis assumptions to the potential market areas in which Ohio industries could play a role.



Ken Davidian, Director of Research at the FAA Office of Commercial Space Transportation, provided an overview of both the historic and possible market models for the burgeoning commercial space industry.



Tokars Talks NASA's Water Quality Efforts at Native American Heritage Month Event

At a NASA Glenn Research Center event to observe Native American Heritage Month on November 12th, Roger Tokars, NOS Young Professionals Chair, gave a talk on Ohio's water issues and Glenn's on-going efforts to monitor the Lake Erie Algae Bloom. He was joined by Christina Mokhtarzadeh, a supervisory Hydrologist at the Bureau of Indian Affairs who leads the Native American Water Corps Program.



Roger Tokars, discussed efforts to monitor the Lake Erie Algae Bloom.

NASA GRC has been involved with Harmful Algal Bloom (HAB) monitoring over Lake Erie for the past several years. Working with several external research partners including NOAA, EPA, NRL, and several Great Lakes universities, NASA has been working to provide HAB information by remote sensing and water sampling. This information provides early warning to ensure proper water treatment, shutoff avoidance, and improved remote sensing algorithms.



Roger Tokars (right) was joined onstage by Christina Mokhtarzadeh (center), supervisory Hydrologist at the Bureau of Indian Affairs, to answer audience questions.

Expertise Involvement Sought for AIAA Undergraduate Team Space Transportation Design Competition

The Cleveland State University Student Chapter of AIAA has started a design team to compete in the AIAA Undergraduate Team Space Transportation Design Competition in the spring of 2016. The purpose of this design project is to create a proposal for a Mars Sample Return System. The project will focus on key components that include the design of the interplanetary transfer vehicle and Mars descent/ascent vehicles with a specific emphasis on the propulsion, thermal and power systems. A complete guide to the requirements may be found at:

www.aiaa.org/UndergradTeamSpaceTransportDesignComp/

The deadline for the 50 page proposal is May 16, 2016. The team is currently looking for any engineers or scientists in the northern Ohio area with expertise in propulsion, orbital mechanics, or rocket design for assistance. Involvement could entail anything from a one-time meeting to serving as a resource for technical questions as the project develops. The team meets every Saturday from 9:00 AM-12:00 noon at Cleveland State University. Please contact Team Lead Erin Tesny (erin.tesny@gmail.com) if interested.

Young Professionals End-of-Summer Picnic

The 2015 AIAA Young Professionals End of Summer picnic on October 10th was a success. There were 10 to 15 NOS members in attendance to enjoy the festivities on a beautiful day. Other guests included the NASA Developing Professionals Club, various NASA employees and their families. NOS member Dan Raible hosted the event at his residence. The picnic included social events, music, smoked BBQ ribs, bonfire, brisket and chili over the fire, fresh brewed beer on tap, games, water rocket launches, and more! The end of the night culminated with a giant bonfire.



Members of AIAA NOS and guests enjoyed good food, music and activities at the AIAA Young Professionals End of Summer picnic.

Northern Ohio Section Officers and Council Members

Officers

James Gilland	<i>Chair</i>	440-962-3142	james.h.gilland@nasa.gov
Peggy Cornell	<i>Vice Chair</i>	216-433-2748	peggy.a.cornell@nasa.gov
Jonathan Litt	<i>Secretary</i>	216-433-3748	jonathan.s.litt@nasa.gov
Christine Pastor-Barsi	<i>Treasurer</i>	216-433-3867	christine.m.pastor@nasa.gov
Kevin Melcher	<i>Past Chair</i>	216-433-3743	kjmelcher@nasa.gov

Council Members

Edmond Wong	<i>Communications</i>	216-433-8917	edmond.wong@nasa.gov
Geoffrey A. Landis	<i>Honors & Awards</i>	216-443-2238	geoffrey.a.landis@nasa.gov
Jeff Csank	<i>Membership</i>	216-433-3479	jeffrey.t.csank@nasa.gov
Amber A. Abbott-Hearn	<i>Public Policy</i>	216-433-8440	abbotta@zin-tech.com
Julie Kleinhenz	<i>STEM K-12</i>	216-433-5383	julie.e.kleinhenz@nasa.gov
Al Juhasz	<i>Technical</i>	216-433-6134	albert.j.juhasz@nasa.gov
Joe Connolly	<i>University</i>	216-433-8728	joseph.w.connolly@nasa.gov
Roger Tokars	<i>Young Professionals (and Vice-Treasurer)</i>	216-433-8771	roger.p.tokars@nasa.gov
Jason Wolf	<i>Student Branch Representative(CSU)</i>	216-659-3534	jwolf320@gmail.com



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