

INNOVATIONS IN FLIGHT



2015

Wisconsin Space Grant Consortium and
Experimental Aircraft Association Present:

The Twenty-Fifth Annual WISCONSIN SPACE CONFERENCE

EAA AirVenture Museum
Oshkosh, Wisconsin

Friday, August 14, 2015

WSGC Presentation Schedule

August 14, 2015

7:30-8:15am **Registration & Continental Breakfast** **(Lobby & Founders Wing)**

8:15-8:30am **Welcome & Introductions** **(Founders Wing)**

Christine Thompson: Program Manager, WSGC; Carthage College

Kevin Crosby: Director, WSGC; Dean, Division of Natural and Social Sciences, Carthage College

Mike LeDocq: Chair, WSGC Advisory Council; Natural Science Department Head and Physics Instructor, Western Technical College

Session 1: Plenary Speaker (Founders Wing)

8:30-9:15am **Moderator: Bret Steffen,** Director of Education, EAA

John Monnet: President and Founder, Sonex Aircraft LLC

Session 2: NASA Partnerships (Founders Wing)

Moderator: TBD

9:15-9:30am **HUNCH: Matt Heer,** *NAVi3: Stabilizing and Controlling a GoPro Camera with Gyroscopes in Microgravity*; Physics & Engineering; Teacher, Platteville High School

9:30-9:45am **USIP: Tessa Rundle, Kevin LeCaptain, Benjamin Tillema,** *Microgravity Propellant Gauging Using Experimental Modal Analysis*; Physics; Undergraduates, Carthage College

9:45-10:00am **X-HAB: Nicole Przybyla,** *Design of Carbon-fiber/FDM Spacecraft Structural Fabrication System (SSFS)*; Engineering & Applied Sciences; Undergraduate, UW-Milwaukee

10:00-10:15am **Senior Design: Justin Collins, Stephen Skibinski,** *Thermal Energy Management on Enceladus*; Mechanical Engineering; Undergraduates, Milwaukee School of Engineering

10:15-10:20am **FNL Video: Chris Thompson,** Carthage College

Session 3A: Student Research

(Founders Wing)

Moderator: Lindsay McHenry, WSGC Associate Director, Undergraduate Scholarships and Graduate Fellowships; Associate Professor of Geosciences, UW-Milwaukee

10:30-10:45am **Stephanie Bradshaw**, *Thunderstorm Electrification*; Physics & Astronomy; Undergraduate, Carthage College

10:45-11:00am **Christopher Christopherson**, *Observing Nebulosities*; Physics & Astronomy; Undergraduate, UW-Oshkosh

11:00-11:15am **Jordan Zimmerman**, *Riveting Hammer Vibration and Nerve Damage*; Biomedical Engineering & Cell Biology; Undergraduate, Marquette University/Medical College of Wisconsin

11:15-11:30am **Trent Cybela**, *Developments in Fire Suppression on Orbit*, Mechanical Engineering; Undergraduate, UW-Platteville

11:30-11:45am **Aaron Olson**, *Recent Progress in Lunar Helium-3 Extraction Research*; Engineering Physics; Graduate, UW-Madison

Session 3B: K-12 General Outreach

(Batten)

Moderator: Karen Broitzman, Aviation Education Program Manager, Wisconsin Department of Transportation

10:30-10:45am **Barbara Bielec**, *Wild Weather! & Biotechnology: Basics – BTC Institute Outreach*; K-12; Program Director, BTC Institute

10:45-11:00am **Susan Kelly**, *NASA Astronaut at Middle School 2016 Summer Science Camps at UW-La Crosse*; Mathematics; Professor, UW-La Crosse

11:00-11:15am **John Heasley**, *Driftless Dark Skies: STEM Careers for Rural Students*; Environmental Education; Space Science Educator, Kickapoo Valley Reserve

11:15-11:30am **Chris Janssen**, *Space Simulator Engaging Youth for Leadership and Engineering Skills*; Planetarium; Director, Wausau School Planetarium

11:30-11:45am **Thomas Consi**, *Learning Spacecraft Engineering with Underwater Vehicles*; Freshwater Sciences; Assistant Professor, UW-Milwaukee

Lunch

(Founders Wing)

11:45-12:45pm

Lunch

11:45-12:45pm

Individual Awardee Photos

Session 4: Academic and Industry Research

(Founders Wing)

Moderator: Gubbi Sudhakaran, WSGC Associate Director, Research Infrastructure; Chair of Physics Department, UW-La Crosse

12:45-1:00pm

Seth King, *Effects of Gamma Irradiation on ZnO*; Physics; Associate Professor, UW-La Crosse

1:00-1:15pm

Robert Benjamin, *Variable Stars of the Galactic Disk*; Physics; Professor, UW-Milwaukee

1:15-1:30pm

Brian Kragh, Rachel Post, Nathaniel Lee, Stephen Janke, *Exploring Drone Capabilities for Academic Research*; Natural Science Division; Undergraduates, Carthage College

1:30-1:45pm

Taviare Hawkins, *Microtubule Mechanics in the Presence of Lattice Defects*; Physics; Assistant Professor, UW-La Crosse

1:45-2:00pm

Todd Triechel, *Astronaut Crew LED Lighting & Human Factor Effects*; Senior Systems Engineer, Orbital Technologies Corporation

2:00-2:15pm

Eric Compas, *Investigating the Use of Low-Cost UAVs for Low-Altitude, High-Temporal Resolution Aerial Photography for Natural Resource Research and Teaching*; Geography, Geology, and Environmental Science; Assistant Professor, UW-Whitewater

2:15-2:30pm

Lindsay McHenry, *Developing Impact Cratering Labs for an Online Introductory Planetary Geology Course*; Geosciences; Associate Professor, UW-Milwaukee

2:30-2:45pm

Robert Ragan, *Predicting Equilibria in 1-d Collisionless Gravitational Systems*; Physics; Professor, UW-La Crosse

Session 5: WSGC Posters & Networking

(Fergus Plaza)

2:45-3:45pm

Poster Session; Refreshments in Hallway

3:30pm - Group Photo in Eagle

Moderator: Michael LeDocq

Ryan Manske, *Using Radio Frequencies to Spatially Track ID Tags*; Natural Sciences; Science Teacher, East Troy High School

Evan Dowling, *Can Dark Matter Halos Change Shape?*; Physics; Undergraduate, UW-La Crosse

Zachary Dercks, Matthew Arnoldussen, *Asteroid Attachment*; Mechanical Engineering; Undergraduates, Milwaukee School of Engineering

Andrew Eagon, *The Circulatory System of the Milky Way Galaxy*; Astronomy; Undergraduate, UW-Whitewater

RockSat-C Team: Amelia Gear, Tessa Rundle, Jordan Rice, Justin Barhite: *Normal Field Instability of Ferrofluid in Microgravity*; Physics; Undergraduates, Carthage College

Sarah Martens – *Star Forming Rates and HI Gas Content in Galaxy Groups*; Astronomy & Physics; Undergraduate, UW-Madison

2015 Elijah High Altitude Balloon Program Launch Team:

Alana Tirimacco; Mechanical Engineering, MSOE

Jordan Petrie; Mechanical Engineering, MSOE

Danny Ochoa; Mechanical Engineering, MSOE

Jadee Kellogg; Physics, Ripon College

Henri LeMieux – *Massive Stellar Content of the Cygnus Superbubble*; Physics and Astronomy; Undergraduate, UW-Oshkosh

Stephen Dornbos – *Early Life on Land: Evaluating the Biogenicity of Mesoproterozoic Fluvial-Lacustrine Stromatolites*; Geosciences; Associate Professor, UW-Milwaukee

Session 6: WSGC Team Projects

(Founders Wing)

Moderator: Bill Farrow, WSGC Associate Director, Student Satellite Initiatives;
Assistant Professor, Milwaukee School of Engineering

3:45-4:00pm

Collegiate Rocket Launch: First Place – Non-Engineering Division – Team Red Hawk Rocketry; Undergraduate Students, Ripon College

Jadee Kellogg
Akash Sen
Paul Ninneman
James Ihrcke

4:00-4:15pm

Collegiate Rocket Launch: First Place – Engineering Division – Team Whoosh Generator; Undergraduate Student, Milwaukee School of Engineering

Represented by Eric Johnson

4:15-4:30pm

Midwest High-Powered Rocket Launch: Third Place – Engineering Division – Team Pioneer Rocketry; Undergraduate Student, UW-Platteville

Represented by Jake Ellenberger

4:30-4:45pm

Elijah Balloon Payload Team; Mechanical Engineering

Benjamin Jensen, Milwaukee School of Engineering
Kai Swanson, Milwaukee School of Engineering
Taylor Davitz, Milwaukee School of Engineering
Woodrow Walker, Milwaukee School of Engineering
Nate Klassen, UW-Whitewater
Scott Frazier, UW-Milwaukee

4:45-5:00pm

Tethered Aerostat Program; NASA STEM Persistence Grant

Amy Jozwiak, College of Menominee Nation
Marilyn Madosh, College of Menominee Nation
Larry Madden, College of Menominee Nation
Jesse Banick, UW-Fox Valley
Kathryn Lentz, UW-Fox Valley
Jeshanah Zolkowski, UW-Fox Valley
Travis Haugstad, Western Technical College
Joel Nielsen, Western Technical College

Awards Ceremony

(Founders Wing)

5:00-5:25pm

Award Presentation

Chris Thompson – EmCee

Kevin Crosby – Award Presenter

Mike LeDocq – Award Presenter

Student Programs – Presenters

Lindsay McHenry – Undergraduate Scholarship

Gubbi Sudhakran – Undergraduate Research

William Farrow – Student Satellite Programs

Dan Hawk – Tethered Aerostat Program

Robert Morrow – Aerospace Internships

Lindsay McHenry – Graduate & Professional Programs

Non-Student Programs – Presenters

Karen Broitzman – Aerospace Outreach Program

Nicole Wiessinger/Michael LeDocq – Special Initiatives Program

Gubbi Sudhakran – Research Infrastructure Program

Michael LeDocq – Higher Education Incentives

Robert Morrow – Aerospace Industry Program

5:25pm

Closing Remarks – Kevin Crosby

WSGC Evening Schedule

August 14 2015

5:30pm	Reception	(The Voyager)
6:30pm	Welcome – Chris Thompson	(Founders Wing)
7:30pm	Plenary Speaker: Introductions: Kevin Crosby Dr. R. Aileen Yingst; <i>Innovations in Spaceflight: Three Years with Curiosity on Mars</i> , Senior Scientist, Planetary Science Institute; Participating Scientist, Mars Exploration Rover Mission; Deputy Principal Investigator, Mars Handlens Imager instrument on Mars rover Curiosity	
8:20pm	Closing Remarks – Kevin Crosby	

WSGC Workshop Schedule

August 15, 2015

9:00-9:10am	Welcome and Introductions	(Vetti)
	Dan Choffnes , Carthage College, Workshop Leader William Farrow , Milwaukee School of Engineering Aaron Olson , UW-Madison Madeline Klothe , UW-Madison	
9:10-9:20am	Dan Choffnes: <i>Overview of Workshop Themes</i>	
9:20-9:30am	Dan Choffnes: <i>Intentionality and Serendipity in the Careers of Scientists and Engineers</i>	
9:30-9:45am	Bill Farrow: <i>Developing and Articulating Career Goals</i>	
9:45-9:55am	Aaron Olson: <i>Career Path and Advice</i>	
9:55-10:05am	Morning Break	
10:05-10:15am	Making Connections <ul style="list-style-type: none">- Networking with Academic Faculty & Staff- Reaching out to WSGC Institutional Representatives- Courting Potential Internship Sponsors & Graduate Supervisors	
10:15-10:45am	The Statement of Purpose <ul style="list-style-type: none">- Role of Personal Statement/Declaration of Goals in Career (Scholarships, Graduate School)- Common Myths about the Personal Statement- Mock Review of Sample Personal Statements	
10:45-10:55am	Maddie Kothe: <i>Career Path & Advice</i>	
10:55-11:00am	Wrap Up and Conclude	

MORNING KEYNOTE SPEAKER | JOHN MONNETT

President and Founder, Sonex Aircraft LLC

We are honored to have John Monnett, Founder and President of Sonex Aircraft LLC, as our Event Keynote Speaker. John, a multi-thousand hour private pilot with both glider and float plane ratings and an A&P Mechanic, has many de-signs to his credit including the Sonerai sport aircraft series, Monerai sailplane, Moni motorglider, Monex racer, along

with numerous other homebuilt aircraft. John has over 40 years of homebuilt aircraft and restoration experience along with extensive engine development and testing experience. John was inducted into the EAA Homebuilder's Hall of Fame in 2001 and his designs are on display in the Udvar-Hazy National Air & Space Museum and the EAA AirVenture Museum



EVENING KEYNOTE SPEAKER | Dr. R. Aileen Yingst

Dr. R. Aileen Yingst is a Senior Scientist at the Planetary Science Institute, a research institution headquartered in Tucson, AZ. She is a Participating Scientist on the Mars Exploration Rover Mission and Deputy Principal Investigator for the Mars Handlens Imager instrument on the Mars Science Laboratory rover Curiosity. Other missions that Dr. Yingst has worked on include Dawn at Vesta, Mars Pathfinder, Mars Polar Lander, and Galileo. Dr. Yingst also served as Director of the Wisconsin Space Grant Consortium for 14 years.



Dr. Yingst received her AB from Dartmouth College in Physics and Astronomy, and her M.Sc. and Ph.D. in Geological Sciences from Brown University.

STUDENT PROGRAMS

Undergraduate Research (UGR)

Dr. Laurel Salton Clark Memorial Graduate & Professional Fellowship (LSC)
WSGC Graduate & Professional Research Fellowship (GPP)

Application Deadline: February 1, 2016
Award Announcement: April 1, 2016

Undergraduate Scholarship

Two-year Academic Institutions

Application Deadline: September 30, 2015
Award Announcement: December 1, 2015

Industry Internship Program (IIP)

Application Opportunity: February 1 – 26, 2016
Award Announcements: Determined by Industry Partners

TEAM PROGRAMS

Collegiate Rocket Launch (CRL)

Notice of Intent (NOI) to compete due:
Application Deadline: September 30, 2015
Selection Announcement: October 9, 2015
Launch Competition: April 23, 2016 (TBC)

High-Altitude Balloon Program - Elijah

Launch Internship (EBL)
Work period April 1, 2016 – May 15, 2017
Payload Internship (EBP)
Work period May 15, 2016 – August 15, 2016
Application Deadline: February 26, 2016
Award Announcements: April 15, 2016

Tethered Aerostat Program

Western Technical College, UW-Fox Valley, College of Menominee Nation
Lead Student Internship, Affiliate Student Internship
Work Period September 19, 2015 – September 18, 2016
Application Deadline: September 30, 2015
Award Announcements: October 30, 2015

ACADEMIC & INDUSTRY PROGRAMS

Aerospace Outreach Program (AOP)

Special Initiatives Program (SIP)
Application Deadline: October 16, 2015
Award Announcements: December 7, 2015

Higher Education Incentives (HEI)

Research Infrastructure Program (RIP)
Application Deadline: December 10, 2015
Award Announcements: March 1, 2016

Industry Internship Program (IIP)

Application Deadline: November 16, 2015
Award Announcements: February 1, 2016