A³IR Summer Research Academy

Presented by

Robertson Safety Institute

Prescott, Arizona - June 22 - 26, 2015

EXCITING OPPORTUNITY FOR EDUCATORS & STUDENTS

- “Refresher” training sessions in Statistics, Methods, & Research Presentation
- Hands-On Training from Introductory to Advanced Levels
- Statistics and Methods Workshops—get up-to-date on statistics software, research strategies, and teaching approaches

One-on-One Guidance Opportunities In:

- Qualitative and Quantitative Statistical Software Use (SPSS, NVivo, etc)
- SEM and Bayesian analysis techniques
- Advanced Regression & Factor Analysis applications
- Research Design
- Human Subjects Protocols (IRB)
- Mentoring Student Research

For more info or to register:

Snap the QR code or go to: Prescott.erau.edu/Robertson-safety-institute

Robertson Safety Institute
3700 Willow Creek Road
Prescott, AZ 86301-3720

E-Mail: prrsi@erau.edu
Phone: (928) 777-6960
**FULL SCHEDULE**
*Lead Sponsorship provided by the Arizona Commerce Authority*

**THURSDAY, JANUARY 15** *(All events this day held at Hilton)*

6:00 a.m. -9:00 a.m.  Complimentary Breakfast at Each Hotel, On Your Own

9:00 a.m. -5:30 p.m.  Early Registration  

10:00 a.m. -Noon  
Open round table discussion, Optional Pre-Session, Complimentary (RSVP)  

“Research and Scholarship: An Interactive Discussion with Journal Editors and More”  
*Chair: David Ison with John Mott, Brent Bowen, Nanette Scarpellini-Metz & Mary Fink*

• “Faculty Research Throughput: Building the Research Resume”  
  David Ison (#1079)

• “Evaluating the Value of Aviation Research: An Inquiry into Journal Impact Factor”  
  David Ison (#1080)

Noon -1:00 p.m.  Deli Buffet Lunch for Pre-Session Registrants,  

Industry Advisory Board Members & Robertson Safety Institute Registrants  

*sponsored by David Robertson, Trustee Embry-Riddle Aeronautical University*

1:00 p.m. -5:00 p.m.  Robertson Safety Institute Workshop *(advance registration and payment required)*  

“Investigations in Support of Safety Management Systems (SMS)”  
*Welcome led by David Robertson and Erin Bowen*

*Workshop Co-Sponsored by the University of South Australia and led by University of*  
*South Australia SMS Instructors Stewart Schreckengast & Douglas Drury*

1:00 p.m. -5:00 p.m.  Industry Advisory Board (Embry-Riddle Prescott Campus) *(Invitation Only)*  

*Sponsored by ERAU Corporate Relations*

5:30 p.m. -6:00 p.m.  Exhibitor Setup

5:30 p.m. -8:00 p.m.  Registration for Conference and Opening Reception  

**Session I – Industry Sponsored Opening Reception** *(Hearty hors doeuvres)*  

Exhibitor and Sponsor Partners Poster Display or Visuals  
*Host: ERAU Corporate Relations, Lisa Kollar*  
*Chair: Merrie Heath*

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**Key Legend:**
- UCC - Hilton University Conf Center
- HAC - Hilton Hacienda Conf Rooms
- CACTUS – Holiday Inn Cactus Conf Room
- Peer Review Section
- WiFi Holiday Inn: 011215
- Presenting
- DRURY: Drury Inn across the street
- WiFi Hilton: Aircon
FRIDAY, JANUARY 16

6:00 a.m. - 8:30 a.m.  Complimentary Breakfast at Each Hotel, On Your Own

7:00 a.m. - 7:30 a.m.  Volunteer and Staff Logistics Meeting  
Chair: Dawn Marcuse  
UCC FOYER

7:30 a.m. - 8:15 a.m.  Exhibitor Setup  
UCC

7:30 a.m. - 5:30 p.m.  Registration and Help Desk  
UCC FOYER

8:30 a.m. - 8:45 a.m.  Session II-A – Opening Address/Welcome  
UCC 1-4  
Sponsored by: Talon Systems

A²IR Con 2015 Program Chair: David Worrells; Moderator: John Mott
Brent Bowen & Frank Ayers

8:45 a.m. - 9:45 a.m.  Session II-B – Interactive Discussion with the Audience on the State of Global Security and Safety  
UCC 1-4

Moderator: John Mott
Panel: Dr. Harry Robertson, Hon. Robert Sumwalt, Vahid Motevalli & Richard Bloom

9:45 a.m. - 10:15 a.m.  Session III – Break with Exhibitors and Sponsor Posters  
UCC 1-4  
Sponsored by FRASCA International

Chair: Lisa Kollar

10:15 a.m. - 11:45 a.m.  Concurrent Sessions

Session IV - ☀️ Unmanned Aerial Systems I  
HAC 1-3

Chair: David Thirtyacre and Co-Chair: Kent Anderson

- “UAS Avionics for the NAS” Ken Varga (#1142)
- “Aptitude Test for Remotely Piloted Aircraft Pilots in Korea” Kangseok Lee (#1072)
- “Aerial Information Assurance: The Strategic Safety and Privacy Benefits of a Secure Unmanned Aerial System” Donna A. Dulo (#1166)
- “Using ETOPS Methodology to Obtain System-wide FAA Approval for UAS in the NAS” Brian Bixler (#1123)
- “Embracing Uncertainty and Complexity: Defining leadership in the age of UAS” Edward Knab, Eric Anderson (#1102)
- “Unmanned Aerial Systems and Airport Master Plans” David Worrells (#1141)

Session V - ☀️ Aviation & Airport Safety/Training  
UCC 4

Chair: Peter Dittmer

- “Danger in the Training Gap” William Korner (#1143)
- “Danger Zone: The Mid-Air” Gordon Jiroux (#1147)
- “Examining Breakdowns in Pilot Monitoring of the Aircraft Flight Path” Hon. Robert Sumwalt (#1071)
Session VI – Debate: Academia and Industry Solutions for Implementing the ATP/CTP Course

Moderator: Juan Merkt, ERAU Prescott

Airlines
Ameriflight: Brian Lander
Envoy: Nick Brice
Horizon Air: LaMar Haugaard and Bill Thomson
Mesa: Kevin Wilson and Ken Mayfield
Skywest: Jeremy Michalek

Universities
Arizona State University: Mary Niemczyk
ERAU, Prescott: Jerry Kidrick
Purdue University: John Mott

Training Academy
Flight Safety International: Randy Annett

Airline Association
ALPA: Jacob Clymo

Noon -1:30 p.m.
Session VII – Buffet Lunch with Exhibits/Sponsor Announcements in Exhibit Hall
Sponsored by: ERAU Marketing and Enrollment Management

Moderator: John Mott

1:30 p.m. -3:00 p.m. Concurrent Sessions

Session VIII – Unmanned Aerial Systems II – Safety, Standards, Human Factors & ARFF Applications

Chair: Vahid Motevalli

• “Unmanned Aerial System Use in Airport Rescue & Fire Fighting” David Ison, Brent Terwilliger, Dennis Vincenzi & Todd Smith (#1078)
• “Insights into UAS Accidents & Incidents” Robert Joslin (#1084)
• “Human Factors Considerations in Autonomous Lethal Unmanned Aerial Systems” Kristine Kiernan (#1116)
### Session IX – Safety/Accident Investigation

**Chair:** Hon. Robert Sumwalt

- “Solving an Age-Old Debate: What Really Controls Altitude and Airspeed?”  
  Juan Merkt (#1144)
- “Use of Virtual Environments for Simulation of Accident Investigation”  
  Scott Burgess, Kat Moran (#1077)
- “Airline Humanitarian Assistance in the Aftermath of an Air Disaster”  
  Ken Jenkins (#1093)
- “Analysis of Aircraft Accident Data via Weather Indexing”  
  Thomas Long, D. Blake Stringer, Raymond Weber, Shawn A. Pruchnicki, Seth Young, Matt Romero, Brian Neff, Alexander Flock, & Steve Wall (#1100)
- “Analysis of Aviation Mishaps Exhibiting Human Error as the Primary Root Cause”  
  Thomas Stein (#1085)

### Session X – “What Happened to MH 370? and Safety 2014 Year in Review”

**Chair:** Bill Waldock, Co-Chair: Mike Canders

Open discussion with the participants.
Come and share your theories with one of the leading experts and media consultants.
- “2014- What We Learned”  
  Bill Waldock
- “No Official Comments Today, but When?”  
  Hon. Robert Sumwalt
- “The Australian Response”  
  Douglas Drury
- “The News and Speculation from Eur-Asia”  
  Hatice Kucukonal
- “Thoughts from a Safety Professional’s Perspective”  
  David Robertson

### Session XI – Emergency Preparedness and Fire Science

**Chair:** James Schultz

- “Runway Centerline Deviation”  
  Charles Toth, Zoltan Koppanyi, Shawn A. Pruchnicki, Seth Young and Matt Romero (#1099)
- “Asiana Tragedy Creates Opportunity for Collaborative ARFF Research”  
  Rene Herron & M.K. Gorman (#1075)
  John Griffith, Donna Roberts & Ronald Wakeham (#1074)
- “Recordkeeping for FAA Compliance for 139 and ARFF”  
  Lorena de Rodriguez (#1087)
- “Third Party Airport Crash Risk Model for Non-Towered Airports”  
  Christian Salmon (#1179)
- “Examination of General Aviation Airport Performance”  
  Christopher Lyons (#1180)
3:00 p.m. - 3:30 p.m.  
**Session XII – Break with Exhibitors/Sponsor Posters**  
_UCC_  
Sponsored by: David Robertson, Trustee Embry-Riddle Aeronautical University  
Chair: Merrie Heath

3:30 p.m. - 5:00 p.m.  
Concurrent Sessions

**Session XIII – Safety Systems**  
_CACTUS_  
Chair: Nanette Scarpellini-Metz  
- “SMS & MROs” Stewart Schreckengast, Douglas Drury (#1103)  
- “Airport SMS Software Analysis” Shawn Pruchnicki, Seth Young, Michael Robertson, Brian Strempkowski and Yamini Gowda. (#1101)  
- “The Implementation of SMS in Maintenance Operations” Daniel Siao (#1137)  
- “Post-Secondary Academic Safety Programs, and the Need for a Practicum in Training” Timothy Holt (#1119)

**Session XIV – UAS & Cyber: Leadership for the Future**  
_HAC 1-3_  
Chair: Robert Mansfield, Brig. Gen, USAF (Ret.)  

**Session XV – Human Factors, Aviation Psychology and Safety**  
_UCC 4_  
Chair: Erin Bowen  
- “System Wide Trust: The Contagion Effect from Automation to Human” Rian Mehta, Stephen Rice, Scott Winter & Korhan Oyman (#1068)  
- “Evaluating New Hire Pilot Attitude and Behavior with Probationary Assessments” Arianna Hoffmann (#1126)  
- “Managing Human Factor” Susan K. Archer (#1151)
### Session XVI – Aerospace/Aviation Technology and Applications

**Chair: Mary O'Reilly**

- “Use of Data from the International Space Station and Automated Interplanetary Spacecraft for Initializing and Running NASA Community Coordinated Heliosphere Model in the Space Weather Classroom” *Dorothea Ivanova* (#1094)
- “Development of a robust two-component balance for wind tunnel investigation of wingsuit aerodynamics” *Timothy Sestak* (#1153)
- “Technological Advancements in Night Vision Flight” *Dawn Groh* (#1154)
- “The Maturing Promise of Electric Flight” *Bob Moser* (#1155)
- “Collegiate Private Pilot Ground School and Tablet Technology Integration” *P.M. Dittmer and Mark Sherman* (#1164)

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<td>5:00 p.m.</td>
<td>Alumni Reception Sign-In</td>
<td>UCC Foyer</td>
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<td>5:00 p.m.</td>
<td>Faculty and Graduate Student Poster Setup</td>
<td>UCC</td>
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#### Session XVII – Faculty & Graduate Student Poster Presentations

**Chair: David Ison  Co-Chair: Mary Fink**

**Discussants/Judges: All A³IR Con Attendees**

SEE PROGRAM INSERT

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| 5:30 p.m. -8:00 p.m. | ERAU Alumni Association Sponsored Reception  
*(Hearty hors doeuvres/cash bar)* | UCC          |

**Chair: Michelle Day**

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### SATURDAY, JANUARY 17

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**Chair: Dawn Marcuse**

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<tr>
<td>8:00 a.m.</td>
<td>UGR Bus Departs Prescott, AZ <em>(Breakfast sponsored by Sodexo)</em></td>
<td>Hazy Library</td>
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**Chair: Anne Boettcher  Co-chair: Akos Delnecky, Student Lead: Krystal Megha**

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<td>Registration &amp; Help Desk</td>
<td>UCC Foyer</td>
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<tr>
<td>8:00 a.m. -3:00 p.m.</td>
<td>UAS Demo Ready Room</td>
<td>UCC 2</td>
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8:30 a.m. -10:15 a.m.  Concurrent Sessions

**Session XVIII - Aviation Curriculum, Faculty Research & Instruction**  UCC 4

*Chair: Robin Sobotta*

- “Low Fidelity Flight Simulation in Collegiate Aviation” Vladimir Risukhin (#1083)
- “Can True Course Simulations Reduce the Cost of Pilot Training?” Ray Bedard (#1156)
- “Microcontrollers in the Aviation Classroom” Padraig Houlahan (#1133)
- “Regional Airlines Early Career Pilot Attributes Study” Stewart Schreckengast (#1150)
- “Examining the Organizational Dynamics of Successful Secondary Aviation/Aerospace Education Programs” Susan K. Archer (#1152)
- “Differences in Student Attitudes Towards Faculty Between Online and Brick & Mortar Aviation Institutions” Peter Dittmer (#1163)

**Session XIX - Cyber Security, Human Security & Global Intelligence Security**  UCC 3

*Chair: Matt Romero*

- “Cyber Security and the Internet of Things” Jon Haass (#1121)
- “The Value of Professional Security Industry Certifications” Daniel Benny (#1131)
- “Use of UAS in Proxy Warfare” Ty Groh (#1125)
- “UAS Threats in Sport Venues” Ty Groh, Tom Foley (#1124)

**Session XX - Aerospace Technology & Meteorological Science**  HAC 1

*Chair: Royce Ann Martin*

- “Global Weather” Tom Sieland (#1160)
- “Application of Meteorology Observations from Technology Advanced Aircraft (TAA) to Support Flight Training Operations and Regional Forecasting” Weather Data Access via ADS-B” Erica Diels, Melanie Wetzel, Mark Sinclair, Curtis James & Jennah Perry (#1158)
- “Turbulence Estimation from Aircraft and Sounding Data” Mark Sinclair, Erica Diels & Melanie Wetzel (#1115)
- “Aviation Security Impacts of Meteorological and Climatic Disruption” Melanie Wetzel (#1136)
- “Unlocking the Mysteries of Flight: From the Top Down” Juan Merkt (#1145)
**Session XXI – Global Concerns in Aviation Diversity, Inclusion and World Concerns**

Chair: Patti Clark

- “Women in Aviation: Have We Reached Our Ceiling Yet?” Patti Clark, Gloria Wilson, & Linda Weiland (#1086)
- “Assessing the Commercial Aviation Impact of the Year 2000 Open Skies Agreements Between the United States and African Countries with Longstanding Flights” Micah Walala and Tyler B. Spence (#1165)
- “Analyzing the Importance of Aviation Diversity and Inclusion” Linda Weiland (#1132)
- “Examining Operator Training for Mitigation of Negative Consequences of Cockpit Automation” James Weaver (#1095)

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**HIGH SCHOOL – Special Track for Invited High School Students and Faculty**

Moderator Tim Holt

Presented by Embry-Riddle Prescott Admissions

**10:00 a.m. - 10:30 a.m.**
High School Registration (PC Admissions)  
DRURY Lobby

**10:30 a.m. - 11:00 a.m.**

**Session XXII – High School Student, Career, Networking**  
DRURY

Chair: Tim Holt and Co-Chair: Sara Bofferding

- “Welcome” Sara Bofferding
- “The Importance of UGR” Jackie Luedtke
- “UGR Example” Michelle Bennett

**11:15 a.m. - 11:30 a.m.**
Transition from Drury to Hilton UCC

**11:30 a.m. - 1:00 p.m.**

**Session XXIII – Lunch and Poster Session Competition**  
UCC

Sponsored by Prescott Admissions

Host: Becca Rother

**1:00 p.m. - 1:15 p.m.**

**Session XXIV – Aerial Robotics Demo II** (High School & Media)  
UCC Patio

Chair: Vince Pujalte and Co-Chair: Andrew Grant

**1:15 p.m. - 1:30 p.m.**
Transition from Hilton UCC to Drury

**1:30 p.m. - 2:00 p.m.**

**Session XXV – High School Session Finale**  
DRURY

Co-Chairs: Sara Bofferding & Tim Holt

- “Fast Start Briefer” Jerry Kidrick & Juan Merkt
- UAV Distribution
A³IR UNDERGRADUATE RESEARCH EXTRAVAGANZA 2015
Moderator Scott Burgess
Presented by ERAU Worldwide

10:15 a.m. -11:00 a.m.  Undergrad Poster Presentation Setup  UCC
   Chair: Scott Burgess

10:15 a.m. -11:00 a.m.  Break and Networking Opportunity  UCC
   Sponsored by ERAU Marketing and Enrollment Management

11:00 a.m. -11:15 a.m.  Session XXVI – Aerial Robotics Demo I for A³IR CON Participants & Media  UCC Patio
   Chair: Vince Pujalte and Co-Chair: Andrew Grant

11:30 a.m. -1:00 p.m.  Session XXVII – UGR Opening:
   Scott Burgess: Sponsor Announcements / Instructions  UCC
   Introduction by Hon. Robert Sumwalt, Member National Transportation Safety Board

11:30 a.m. -1:00 p.m.  Session XXVIII – Undergraduate Research I - Student Poster Presentations  UCC
   Session and Prizes Presented by Embry-Riddle Worldwide
   Chairs: Anne Boettcher and Kelly George
   Discussants/Judges: All A³IR Con Attendees
   SEE PROGRAM INSERT

11:30 a.m. -1:00 p.m.  Session XXIX – Lunch and Poster Session Competition  UCC
   Sponsored by ERAU - Prescott Admissions
   Host: Becca Rother

1:00 p.m. -1:15 p.m.  Session XXX – Aerial Robotics Demo II  UCC Outdoor Area
   (High School & Media)
   Chair: Vince Pujalte and Co-Chair: Andrew Grant

1:30 p.m. -2:00 p.m.  Session XXXI – Meet the UAS Demo Team and See UAVs Up Close  UCC
   Chair: Vince Pujalte and Co-Chair: Andrew Grant
1:30 p.m. - 1:50 p.m.   Concurrent Sessions

**Session XXXII – Block I Discovering Undergraduate Research Across Academia**

**Research Roundtables; A**  
Global Security, Cyber Intelligence, Systems Safety including Fire, Law Enforcement, Emergency Response  
Chair: Jon Haass  
Discussants: Ron Wakeham, Daniel Benny, M.K. Gorman

**Research Roundtables; B**  
UAS, Maintenance, Military, Space  
Chair: Ty Groh  
Discussants: Vince Pujalte, Patti Clark, Linda Weiland, Sarah Nilsson

**Research Roundtables; C**  
Human Factors, CRM, Aviation Psychology, Accident Investigation, Aviation Safety, Fractional Ownership and Business, Corporate and General Aviation  
Chair: Kat Moran  
Discussants: Nanette Scarpellini-Metz, Scott Burgess, David Ison

2:00 p.m. - 2:50 p.m.   Concurrent Sessions

**Session XXXIII – Block II Applying Undergraduate Research in our Disciplines**

**Research Roundtables; D**  
Global Security, Cyber Intelligence, Systems Safety including Fire, Law Enforcement, Emergency Response  
Chair: Jon Haass  
Discussants: Ron Wakeham, Daniel Benny, M.K. Gorman

**Research Roundtables; E**  
UAS, Maintenance, Military, Space  
Chair: Ty Groh  
Discussants: Patti Clark, Linda Weiland

**Research Roundtables; F**  
Human Factors, CRM, Aviation Psychology, Accident Investigation, Aviation Safety, Fractional Ownership and Business, Corporate and General Aviation  
Chair: Kat Moran  
Discussants: David Ison, Scott Burgess
1:00 p.m. - 6:00 p.m.  Desserts, Snacks & Drinks  Sponsored by Talon Systems  UCC 1-4

3:00 p.m. - 5:00 p.m.  Session XXXIV - AOPA Air Safety Institute Seminar for General Public with FAA WINGS Credit (*FREE* - RSVP Required)  UCC 1-4

AOPA Post-Crash Survivability Presentation  
(Local Alumni, Undergrad and High School attendees welcome, limited to 180 seats)  
Chair: Brian Roggow

5:00 p.m.  Bus Departs Hilton for Prescott (snacks and water bottles provided)  UCC FOYER

5:00 p.m. - 6:00 p.m.  Session XXXV – A³IR CON STAFF MEETING  UCC 1-4

Chairs: Nanette Scarpellini-Metz, David Worrells, Mary Fink

6:00 p.m.  On-Your-Own for Evening

SUNDAY, JANUARY 18

6:00 a.m. - 9:30 a.m.  Complimentary Breakfast at Each Hotel, On Your Own

9:30 a.m. - Noon  Session XXXVI – A³IR CON  HAC

Chairs: Mary Fink, Nanette Scarpellini-Metz, David Worrells, Scott Burgess

Attending and contributing will result in co-authorship.

*The communiqué document will be Peer Reviewed prior to publication in the 2015 Proceedings.

Noon - 5:00 p.m.  Session XXXVII – Cultural excursions as directed by hotel staff: Museums, golf, tennis, hiking, shopping, casinos, etc.

Chairs: Hilton Desk Staff

6:00 p.m.  On-Your-Own for Evening

*Inserts containing information not final at printing will be available in the final program online and in the proceedings

Thank you to the Arizona Commerce Authority for serving as overall presenting sponsor of A³IR Con 2015.
Aviation, Aeronautics, Aerospace International Research Conference

How RSI Can Help You:

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To learn more visit our website:
Prescott.erau.edu/Robertson-safety-institute
E-mail: prrsi@erau.edu
Tel: (928) 777-6960

Make plans to return to Arizona in 2016!

Location TBA
Want to be in the know when we unveil the location for A3IR 2016? Send an email request to praircon@erau.edu to be added to our mailing list.

Save the Dates:
2016 A³IR Conference
January 14-17

Presented by ERAU-Prescott, AZ in support of global scholarship & research
The Master of Science in Safety Science (MSSS) program qualifies students for

⇒ specialized positions in a rapidly growing, highly paid and exciting field, and
⇒ provides job placement assistance upon graduation.

Safety is a critical part of aviation, manufacturing and industrial design. This program provides the knowledge and skills necessary to practice occupational health and safety programs in any workplace. Students can concentrate on safety in an aviation environment or a more general occupational safety.
Thank you for the following individuals and companies for supporting our 2015 A³IR Conference!

PRESENTING SPONSOR FOR 2015

SPONSORS

David Robertson, Trustee Embry-Riddle Aeronautical University

EXHIBITORS

Door Prizes provided by the following: