

Section Web Site: [www.saearizona.org](http://www.saearizona.org) - Sign up for your newsletter on our website.

## HIGHLIGHTS...

- |                          |                            |                             |
|--------------------------|----------------------------|-----------------------------|
| - Global Warming         | - Global Warming continued | - 2007 Formula SAE Event    |
| - Message from the Chair | - Section Officer Nominees | - Presentation Champion     |
| - Recap of April Meeting |                            | - Maps for Meeting Location |

Dinner Presentation...

## Global Warming by Anthony J. Brazel

At this month's meeting, ASU Climatology Professor Anthony Brazel will speak on the topic of global warming. Specific subjects may include the mechanism of global warming, science and evidence regarding the significance of the problem, the probability of potential results to the environment, and potential effects on the transportation industry, such as what technological changes may be coming in the future and whether current proposals like the Kyoto Protocol are adequate or helpful.

A major environmental concern that faces the world today is that human activities that release various substances into the atmosphere are causing the average temperature on the surface of the Earth to rise. Further, concerns exist that substances that have already been released into the atmosphere will continue to cause temperatures to increase for a long time, and that melting of polar ice caps will reduce the amount of sunlight that is reflected into space causing additional heating of the surface of the Earth. Concerns exist that melting ice will cause increases in sea levels and resulting loss of low-lying land surfaces, and that climate change will cause draught in certain areas, increases in extreme weather such as hurricanes, reduced crop yields in many areas, species extinctions, and changes in oceanic circulation patterns, among other things. It is also feared that unanticipated consequences from dramatic climate change may result. Although concerns about global warming have existed for many years, recent studies appear to agree that average temperatures on the Earth have increased in recent decades, and that glaciers and ice near the poles has been melting.

The sun is what warms the Earth, and gasses in the atmosphere help to warm the Earth by allowing the relatively short wave-length rays from the sun to penetrate to the surface of the earth more easily than the relatively long wave-

length rays that are radiated by the surface of the Earth. This phenomena is called the greenhouse effect, and is believed to be caused by certain substances in the Earth's atmosphere such as water vapor, carbon dioxide, and methane. Ice core studies have shown that levels of carbon dioxide and methane in the Earth's atmosphere have increased in recent decades, and these increases correspond in pattern to increases in average temperature. When fossil fuels are burned, this results in the production of carbon dioxide, which is released into the atmosphere. Essentially, carbon that has long been trapped within the Earth in the form of coal or oil, where it does not contribute to the greenhouse effect, is bonded with oxygen to form carbon dioxide and released into the atmosphere where

Article continued on Page 2

### ANTHONY J. BRAZEL

Professor Brazel is Acting Director of School of Geographical Sciences at ASU, has been an Assistant, Associate, and Full Professor, Department of Geography, ASU, 1974-present, and from 1979 to 1989 was Director, Laboratory of Climatology at ASU. Professor Brazel's professional activities include Climate Committee Representative, CAPLTER, LTER National Climate Committee; Member, American Meteorological Society Committee on Aerobiology and Biometeorology; Representative, Aerobiology and Biometeorology Committee to the Board on Urban Environments of the American Meteorological Society. Member, Board on Urban Environments, American Meteorological Society, 2003-2007. Member, University Corporation for Atmospheric Research (UCAR) Membership Committee, 2001-2004. His current research interests include interactions of atmospheric processes with the physical environment, particularly in desert areas, mountain regions, and in urban environments. Current research focuses on: the role of synoptic scale processes in explaining local scale air quality, aeolian processes and flow regimes; climatology and micro-scale processes of climate in canyon-like environments; climate change and the role of urban landscapes in altering meso- to local-scale climatic processes; high mountain radiation regimes and energy budget processes.

DATE	TIME	LOCATION	COST	With Dinner	Presentation Only
May 17	Social	- 6:00 pm	<b>Hilton Phoenix Airport</b>	Members - \$22	\$10
	Dinner	- 6:30 pm	2435 S. 47th St, Phoenix-85034	Guests - \$27	\$10
	Presentation	- 7:30 pm	480.894.1600	Students - \$10	no charge
<b>RSVP by 10:00am Tuesday May 15.</b>			<b>Call Donna Biehl: 602.364.7456</b>		

## Message from the Chair

We had a smaller than normal attendance at our April meeting, partially due to an overlap with SAE Congress, but I'd like to thank Dino Cerchie and his wife for joining us at the April Meeting. It was amazing to hear the details surrounding work Boeing's completed for unmanned vehicles. Not only was it informative, but it was comforting to hear the various safety precautions that are put in place to protect test pilots, employees and the public. Perhaps in the future a technology similar to this can be adapted to automobiles?



Dave Vasquez, Section Chair

I'd also like to thank Cathleen Gary for helping coordinate this event. Cathleen had heard good things about Dino and the presentation and suggested the topic to the board. Dino was a great speaker and told us a few amusing stories regarding the test flights. I'm sure the people that attended were glad you suggested that topic - I know I was!

The ASU student section joined us and provided an update on their Formula SAE vehicle. They are making great progress and it looks promising that they will make it to the FSAE West event in California. SAE is looking for volunteers to help with this event so if you have some time off, consider helping out for a day at the event. Considering each school abides by the same set of rules, it's exciting to see the variety of creative designs, especially for the schools that have a limited budget.

Speaking of budgets, Max E. Rumbaugh, Jr. donated funds to the ASU student section. Max heard that we were unable to give the full amount of funding to the students and was able to make up the difference. Max has a generous heart and I know the students are appreciative of support.

With only one meeting left before our summer break, I hope you're able to join us for the last dinner presentation. Allan Watts has been working hard to coordinate this presentation and I'm really looking forward to it. It seems as though a day doesn't go by where I see an article or program on global warming and its affects.

In closing, the board will be working through the summer to coordinate next year's dinner meetings. Everyone is welcome and encouraged to attend the board meetings -- we appreciate any feedback you can provide. Don't hesitate to contact us if you have an idea for a dinner meeting or would like to attend one of our board meetings.

Dave Vasquez, Section Chair

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## Recap of April Meeting

by Cathleen Gary

At last month's meeting, we were honored to have Dino Cerchie, the Program Manager of the Unmanned Little

Bird (ULB) program at the Boeing Company, located in Mesa, Arizona. Dino explained to us how the Unmanned Aerial Vehicle (UAV) works and that this system can actually be installed into different types of aircraft. The



Dave Vasquez and Dino Cerchie

testing that Boeing had performed was on the A/MH-6M helicopter, also referred to as the "Little Bird." From what I gathered from the presentation, in very basic terms the UAV system is similar to an auto-pilot that can be manned from the ground or even another aircraft.

As noted within Dino's presentation, the ULB is suited for re-supply; communications relay using large, heavy packages; surveillance and reconnaissance; downed pilot recovery, and the delivery of weapons.

There are many advantages to this system to other similar systems out there:

- 1) This system can be switched from UAV to pilot operated at a flick of a switch, even while it's flying.
- 2) It is light weight and easy to install.
- 3) The system works in parallel to the helicopter's standard operations rather in lieu of.
- 4) The system can be manned from either the ground or the air, i.e., another helicopter.
- 5) Low cost.
- 6) Proven safety through multiple testing in various situations.
- 7) Can be retrofitted onto most existing rotorcraft.

One disadvantage that I noted was that:

- 1) The system uses radio frequencies to control it from which can be intercepted.

There is much confidence in the advancement of the Unmanned Little Bird that other types of uses are being explored such as an Unmanned Medivac helicopter which could transport 2 or more injured back to safety without putting a pilot in harms way.

This was a very interesting presentation and we were very excited that Dino was able to speak with us. Thanks Dino for coming to present this very unique program to us!

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## Global Warming continued

it is believed to contribute to the greenhouse effect.

As a result of fears over the potential effects of global warming, and concerns that human activities that release substances such as carbon dioxide into the atmosphere are causing global warming, efforts have been undertaken to reduce the consumption of fossil fuels, among other changes in human activity. The Kyoto protocol was negotiated

between many countries in the world to reduce greenhouse gas emissions, but the Kyoto protocol did not place limits on certain third world countries, such as China, that contribute greatly to the emission of greenhouse gasses, and the United States decided after the negotiation of the agreement not to sign it. However, many states and cities within the United States are taking action to reduce the emissions of greenhouse gasses, and it is a distinct possibility that action will be taken in the future on many levels of government to reduce fossil fuel consumption.

Most of the transportation systems in use today burn fossil fuels as a source of energy, including automobiles, aircraft, and ships. Farming equipment, construction equipment, mining equipment, and rail roads also predominantly consume fossil fuels, and electricity supplied to many other forms of transportation such as people movers, electric vehicles, electric trains, subways, and street cars, is produced in a large part by coal-fired power plants. Thus, action taken to reduce fossil fuel consumption or greenhouse gas emissions is likely to have profound effects on the transportation systems that are utilized today and upon the transportation industry. These effects may have negative consequences for many companies, but may also provide opportunities for companies that are in a position to provide transportation solutions that reduce or eliminate the consumption of fossil fuels while competing favorably with other alternatives. The presentation by Professor Brazel at our May meeting promises to provide insight on these issues concerning global warming and climate change.

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### SAE AZ Section Officer Nominations

The following are the nominees for the SAE AZ Officer positions:

- Chairman -- Bill Gest
- Vice Chairman -- Joshua Rudin
- Secretary -- Mike Kremer
- Treasurer -- Larry Wilson
- ANC Delegate -- Derek Logan
- First Alternate to the ANC -- Jeff Brown
- Second Alternate to the ANC -- John Lester
- Newsletter Editor -- Robert Riley

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### 2007 Formula SAE West Event

The Formula SAE® (FSAE) competition is for SAE student members to conceive, design, fabricate, and compete with small formula-style racing cars. The restrictions on the car frame and engine are limited so that the knowledge, creativity, and imagination of the students are challenged. The cars are built with a team effort over a period of about one year and are taken to the annual competition for judging and comparison with approximately 120 other vehicles from colleges and universities throughout the world. The end result is

a great experience for young engineers in a meaningful engineering project as well as the opportunity of working in a dedicated team effort.

The FSAE competition was traditionally held in Michigan, but due to the increased participation/interest and to make the event more accessible to students, an additional competition in California is offered. Student teams that were not able to compete in the Michigan competition are given the first preference for entry and additional spots are allowed to be filled by teams that have already competed.

SAE is currently looking for volunteers to help work the event. For more information on volunteer opportunities, please e-mail to [brn01@hotmail.com](mailto:brn01@hotmail.com), call Brad Nelson at (310) 245-0139 or visit the announcement area at <http://www.saeaz.org>.

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### Presentation Champion by Derek Logan

Have you been thinking of joining the Board, but don't want to commit an entire year? Or maybe you'd like to help out, but only for one presentation?!

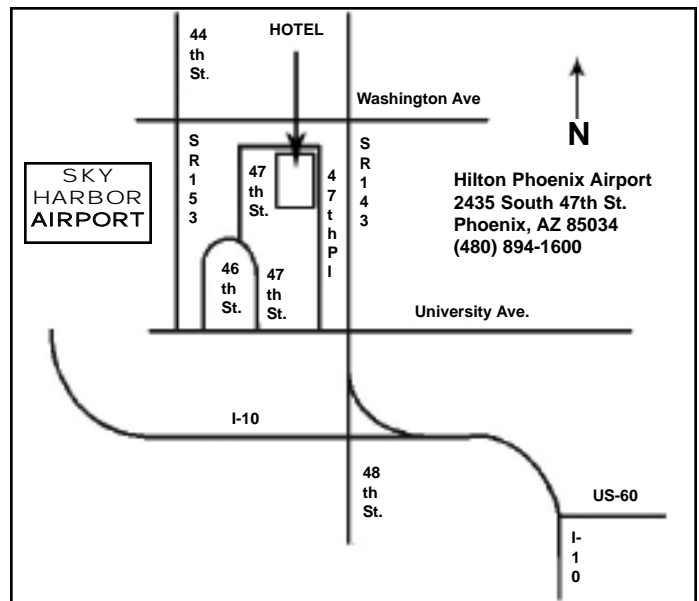
Well, we have just the ticket for you! We are introducing a new position of "Presentation Champion". For just one meeting you will help out by introducing the speaker and providing a brief article about the presentation afterward. This is a great way to get involved without a long-term commitment. It is also a great opportunity to get to meet one of our highly-knowledgeable presenters.

You can do it as often as you like; just sign up for whichever presentation is still available.

Note: This opportunity is open to all SAE members including Student members. Call 602-616-8180 or email [info@saeaz.org](mailto:info@saeaz.org) to sign up.

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### \*\*\* Meeting Location \*\*\*



**THE UNIVERSITY OF ARIZONA ANNOUNCES:**

**The 33rd Annual Reliability Testing Institute** provides coverage of how to implement and manage the Design-for-Reliability process through testing, to implement an integrated Reliability & Maintainability Engineering management strategy, learn a practical approach to attain the high Reliability goals demanded nowadays, to improve our worldwide competitive posture by creating more Reliable products through thorough testing, to determine the useful life of our products, and more. Dr. Dimitri B. Kececioglu and 10 speakers from 10 sponsoring industries will take part in expertly covering the subject matter of this Institute. For more information, please the contact information below.

**The 45th Reliability Engineering and Management Institute** provides all engineers, particularly Reliability Managers and Engineers, Product Assurance Managers and Engineers in government and Industry, with a working knowledge of Reliability Engineering Theory and Practice, Mechanical Reliability Prediction, Reliability Testing and Demonstration, and more. Dr. Dimitri B. Kececioglu and 10 speakers from 15 sponsoring industries will take part in expertly covering the subject matter of this Institute. For more information, please the contact information below.

THE 33rd ANNUAL APPLIED RELIABILITY TESTING INSTITUTE  
May 7-10, 2007

THE 45th ANNUAL RELIABILITY ENGINEERING  
AND MANAGEMENT INSTITUTE  
November 12-15, 2007

Clarion Hotel, Tucson Airport  
6801 S. Tucson Blvd.  
Tucson, Arizona 85706  
520-746-3932 or 800-526-0550

Registration Fee: \$1500      Proceedings Cost: \$50

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**ARIZONA-NEVADA SECTION:  
Meeting Schedule**

May 17 - Global Warming

----- SUMMER HIATUS -----

Information on upcoming meetings will be available in the  
September Newsletter.

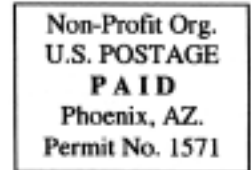
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