



American Meteorological Society Wright Memorial Chapter

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Members discuss the new chapter poster before the feasting commences.

The talk Dr. Randall presented is part of an "in press" article in the publication *Journal of Geophysical Research*. The paper summarizes research done by Dr. Randall when he was attending the University of Arizona.

Minutes from 10 January 2008 Meeting

AMS Wright Memorial Chapter meeting of 10 January 2008
Meeting of Chapter with Dr. Steve Fiorino, President.
Milano's Restaurant (North), Dayton, OH 45414

TechFest 2008

TechFest 2008 is 16-17 February 2008. We are looking for volunteers to support the festivities. John Turnbull said he will set up a link on our website (<http://www.ametsoc.org/chapters/wrightmem/index.html>) to a list where you can volunteer. We are also looking for easy repeatable experiments for demonstrations at TechFest. Please send all ideas to our TechFest coordinator, Allison Schauer.

Minority Scholarship Evaluation



As a chapter, we have volunteered to evaluate AMS minority scholarship applications. Allison Schauer is coordinating the effort, so get in touch with her if you are interested.

Chapter Poster

We reviewed a couple of designs for the chapter poster that is going to be displayed at the Annual AMS Conference in New Orleans later in the month.

Satellite Calibration Corrections and Implications for Space Surveillance and Climate Change presented by Dr. Robb Randall

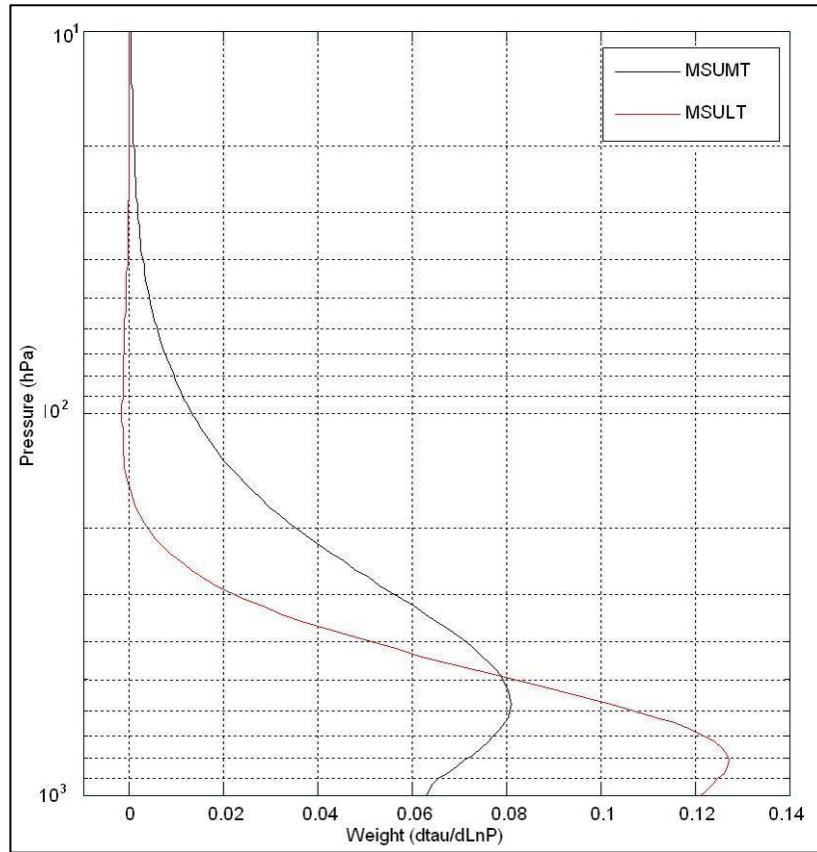
Much of the information on Climate Change has come from temperature trends derived from satellite data. This data comes from the Microwave Sounding Units (MSU) aboard the Polar Orbiting Earth Satellites. Understanding what goes into these temperature measurements can lead to a better understanding of some of the debates on climate change.

To start with, climate models indicate that the troposphere should warm 1.3 times faster than the surface. However some studies using satellite information have indicated that the troposphere is not warming faster than the surface.

In 2004, a study was conducted using raw MSU data. The new findings agreed with theory of troposphere warming faster than surface. This finding continued the debate, and so entered the USCCSP (US Climate Change

Weighting functions for MSU Channel 2 and additional channel (created using combination of Channel 2 at different view angles). Figure provided by Dr. Randall

Science Program) study in 2006. The USCCSP study concluded that the troposphere is warming faster than the surface, but quantifying the difference in the satellite (MSU) era remains troublesome.



The MSU Channel 2 senses emission from oxygen near 60GHz frequency. Unfortunately, the radiance value (brightness temperature) is from the entire depth of the atmosphere, and not just information for a particular level, although a majority of the reading comes from the 600-500 mb pressure level. An

additional channel was created by using a linear combination of Channel 2 at different view angles (see figure). This channel was created to eliminate stratospheric contamination in the temperature time series.

Dr. Robb Randall of the Air Force Institute of Technology is gaining some notoriety in the Climate Change Blogosphere based on one of his upcoming papers in the Journal of Geophysical Research. <http://www.worldclimaterreport.com/index.php/2008/01/08/musings-on-satellite-temperatures/#more-298>

Raw MSU data from several satellites have to be stitched together to create a time series. In order to do this, the raw data needs to be corrected due to systematic biases and drifts. The MSU calibrates itself by viewing cold space and also a warm target on board, however the hot target temperature drifts over time. Each satellite also has its own biases. The two groups, University of Alabama in Huntsville (UAH) and the Remote Sensing System (RSS), used different methods to correct for these non-climatic changes.

The primary cause of the differences between UAH and RSS's lower tropospheric temperature trends is the diurnal correction applied to the raw data. This correction is necessary as the satellites drifted away from their local equatorial crossing time, causing a trend by sensing the earth at a different time of the day. Dr. Randall's work compared the two group's data using shorter trend periods during the longer time series. His research documents the difficulty in accurately quantifying satellite-derived tropospheric temperature trends without first characterizing temporal changes in the diurnal cycle profile.

A technique has also been explored (Zau et al, 2006, J Geo Res) that post-launch calibrates the MSU so that the diurnal correction is not necessary. This technique uses simultaneous nadir overpass (SNO) events from two satellites. These events only happen at high latitudes (poleward of 60°). The current technique calculates a correction coefficient from these SNO events and then applies the correction coefficient to rest of the global ocean data in order to minimize diurnal influence. Dr. Randall believes further research is required to explore the diurnal cycle contribution to this data.

The implications of Dr. Randall's findings lead to a lively debate among club members.

He intends to pursue this line of study using some of the modeling and simulations codes developed at the Air Force Institute of Technology.



In conclusion, temporal changes in trend profiles (e.g. diurnal cycle) must be categorized properly for climate change studies and high altitude/satellite calibration possibilities. As hyperspectral and ultraspectral sensors are becoming used more, a comprehensive understanding of temporal changes in any trend profile (i.e. temperature, pollution, and turbulence) will be necessary to properly characterize the atmosphere across the entire spectrum.

Forecast Contest

John Turnbull, our webmaster and forecast contest runner, has set up another forecasting challenge for January. See the end of the newsletter for details.

Club Financials

Dues for the Wright-Memorial chapter are \$10 annually. Dues paying members are given the right to run and vote in chapter elections and participate in other chapter decisions. Dues were collected from members.

Calendar of Upcoming Events

January

20-24 January 2008 – 88th AMS Annual Meeting, New Orleans, LA
<http://www.ametsoc.org/meet/annual/index.html>

February

16-17 February 2008 – TechFest 2008 – Sinclair Ponitz Center, Dayton OH.
<http://ascdayton.org/TechFest2008/>

April

April 2008 – 12th Annual Severe Weather Symposium, The Ohio State University.
<http://geog-www.sbs.ohio-state.edu/metclub/>

From the National AMS

88th AMS Annual Meeting

To register online see <http://www.ametsoc.org/meet/annual/registrationandrates.html>

If you are interested in joining the National AMS, check out the applications for National Membership at: <http://www.ametsoc.org/memb/apps/index.html>

Membership in the National AMS is not required for membership in the Wright Memorial Chapter

REGISTRATION DEADLINE REMINDER

The early registration deadline (and rates) have passed, but online registrations will be accepted right up to the week of the meeting (22 January 2008).

NAMED SYMPOSIA

The 88th Annual Meeting features two named symposia. We will have the First AMS Conference on International Cooperation in the Atmospheric and Related Sciences and Services: A symposium honoring Richard E. Hallgren. This symposium is scheduled for part of Monday, 21 January and will go into the morning of Tuesday, 22 January. The symposium honors former AMS President and Executive Director Dr. Richard E. Hallgren for his leadership in fostering international cooperation over nearly five decades. The program will be a combination of invited lectures and panel discussions, reviewing past successes and lessons learned in international cooperation; current status and outstanding issues; and a look at how future international cooperation may be enhanced. A luncheon in Hallgren's honor will be held on Monday, 21 January, all are invited to attend. The Hallgren luncheon ticket is not included in the conference registration package and must be purchased separately. Attendees may purchase tickets when preregistering for the meeting, a very limited number of tickets will be available to purchase on-site.

On Thursday, we will have a symposium in honor of the late Professor Peter V. Hobbs, widely known for his pioneering research in cloud and aerosol physics. The Symposium will identify current and emerging problems in cloud and aerosol physics and will include invited presentations highlighting the broad and significant contributions of Peter Hobbs during his distinguished career, and invited lectures on current and emerging research topics in cloud and aerosol physics. The Symposia will also include a luncheon, all are welcome to attend. The Hobb's luncheon ticket is not included in the conference registration package and must be purchased separately. Attendees may purchase tickets when registering, both before the conference and on site at the registration desk until 12:00 p.m. on Monday, 21 January.

SIXTH USERS FORM ON WEATHER AND CLIMATE IMPACTS

The Sixth AMS Users Forum will be held on Tuesday, 22 January. The Forum will provide an opportunity for AMS members to hear from a variety of distinguished invited speakers representing several Gulf Coast industries including offshore drilling operations, natural gas, exploration, emergency management, and public health that are dependent on weather and climate information to support their operations. This is an excellent opportunity for attendees to; a) learn how industry uses weather and climate information, b) hear about industry's needs and unmet needs for weather information, c) learn about recent successes and failures in the use of products, and d) discuss various aspects of products and services as they relate to end users and decision makers. The discussion will focus on how weather impacts business continuity and how these industries incorporate weather and climate information into their operations.

HURRICANE HUNTERS COMING TO ANNUAL MEETING

Attendees at the 2008 AMS Annual Meeting in New Orleans will have the unique opportunity to view one of the NOAA Hurricane Hunter aircraft and

meet the aircrew members who fly the planes into some of nature's most destructive storms. Each year, the aircraft fly into developing storms to take measurements and observations that are critical to the numerical models and hurricane track and intensity predictions. These aircraft are a distinctive example of how research is applied directly into operations for the benefit of society, the theme of this year's Annual Meeting. The NOAA aircraft will be at the Lakefront Airport in New Orleans at the Million Air Fixed Base Operation on Monday, 21 January, 11:00 A.M.–3:00 P.M. The AMS is providing busing from the Convention Center to the Lakefront airport for \$10. A ticket must be purchased at the time of registration.

Forecast Contest

January Forecast Contest

The January thaw has come and gone, and winter will remain for a few more months

Your job is to correctly predict the total number of hours below 32 F and the total snowfall for the period of 20-31 January 2008 for WPAFB, Ohio

Send you predictions to John Turnbull (799 Spinning Rd. Dayton OH 45431) or via email to john.turnbull@wpafb.af.mil by **17 January 2008**.

Shutterbugs – Submit your latest and greatest weather shots to our newsletter! Send them via e-mail to:
mary.bedrick@wpafb.af.mil

AMS – Wright Memorial Chapter

President:
Steve Fiorino
Steven.fiorino@afit.edu

Vice President:
Allison Schauer
Allison.schauer@wpafb.af.mil

Secretary:
Paul Gehred
Paul_a_gehred@hotmail.com

Treasurer:
Karen Kowalewsky
kjkowal@verizon.net

Web Master:
John Turnbull
John.turnbull@wpafb.af.mil

Newsletter Editor
Mary Bedrick
Mary.bedrick@wpafb.af.mil

We're on the Web!

www.ametsoc.org/chapters/wrightmem/index.html

Picture of the Month



Photograph by Mary Bedrick. Opposing Kelvin-Helmholtz waves at different levels, 19 December 2006, Beaver creek, OH