

S'COOL BREEZE



Student's Cloud Observations On-Line

Volume 2 , Issue 3

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Teamwork



Teamwork is required to get the job done. The CERES Experiment has a team behind it working hard on their piece of the climate puzzle. The question, "What is the effect of clouds on the earth's climate?" will not be answered by an individual scientist with vast atmospheric knowledge and experience. It will require a team with each member fulfilling a strategic role.

The international CERES Science Team includes scientists from NASA, NOAA, U.S. universities, France, and Belgium. The team is organized into working groups to focus on five specific aspects of the measurement and analysis problem. These working groups include Instrument, Cloud Properties, Top-of-Atmosphere Radiative Flux, Surface and Atmospheric Radiation Budget, and Temporal Interpolation and Spatial Averaging. Together, the CERES team plays a vital role in the scientific understanding of the influence of clouds on the Earth's climate. <http://asd-www.larc.nasa.gov/ceres/ASDceres.html>

The S'COOL team will begin to highlight some of the CERES team members on-line to provide a glimpse of their backgrounds and roles. To accomplish this we will be posting profiles of these team members under the "Meet the Team" link on the S'COOL web page. Let's not forget the important role you and your students play on the S'COOL team. Participant observations are an important part of the CERES data validation effort. You will find teamwork is a part of most endeavors... play your part well.

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S'COOL AMBASSADORS

On July 20, 2001, a new team of S'COOL teachers was sent out as ambassadors ready to share their new knowledge and skills with students and teachers throughout the world. These teachers were charged with the task of presenting the S'COOL Project to other teachers in their local or regional areas. We have already heard reports of some great presentations delivered in local districts. These ambassadors will represent the project well. They will reach into areas

beyond the continental USA including Hawaii and two Department of Defense schools in Korea and Bahrain.

As a part of the third annual Summer S'COOL Workshop these teachers were guests at the NASA Langley Research Center in Hampton, VA during the week of July 16-20. The launching of a weather balloon on the first day not only positioned our heads for observing clouds but challenged us to consider the vertical profile



(Continued on page 2)

S'COOL Ambassadors *(continued from page 1)*

of the atmosphere. In spite of all the volunteers for a trip into the sky, the "unmanned" radiosonde collected some great data. Ken Rutledge, a scientist with COVE (CERES Ocean Validation Experiment), and his instrument team also arranged to have some radiometers placed outside our workshop site collecting longwave and shortwave radiation measurements; bringing the CERES instrument a little closer to home. This same instrumentation is mounted on the OV-10 airplane used in the CLAMS (Chesapeake Lighthouse & Aircraft Measurements for Satellites) field campaign during the week of the workshop. Data collected during this field campaign will be used for CERES validation.



S'COOL Workshop participants in front of the OV-10 airplane as it prepares for its next CLAMS mission.

Our daily cloud observations were surrounded by a full schedule. The many practical hands on activities helped provide a 'big picture' view of atmospheric research. All of the CERES team speakers did an excellent job presenting teachers with background information and current research on global climate change. Each teacher returned from the workshop with plenty of resources and excitement to share as they begin to collect ground truth data from their school locations.

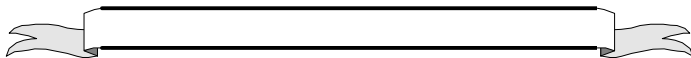
You just may identify one of these S'COOL Ambassadors sporting one of our new S'COOL polos at your next teacher convention! ♦

S'COOL was privileged to have **Amanda Falcone**, a student at Trinity University, San Antonio, Texas join us once again this summer to work with data comparisons. We appreciate all that she has brought to the team. Read about the Satellite Data Comparison Reports: <http://asd-www.larc.nasa.gov/SCOOOL/satsaw.html>

A FIRST FOR S'COOL!



The Chinese-American Oceanic and Atmospheric Association successfully hosted "COAA S'COOL Student Summer Camp, 2001" the week of July 9-13, 2001 at the University of Maryland. This student S'COOL Team included 25 students -17 from the Taipei First Girl's (TFG) High School (Active S'COOL Participants from Taiwan) and 8 from the local area and other states, along with two teachers from Taiwan. Both Lin Chambers and Doug Stoddard enjoyed the opportunity of working with these students during the "S'COOL Day".

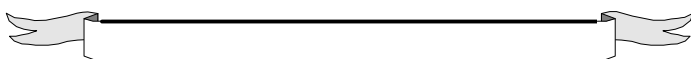


NASA Langley Research Center Honor Awards

S'COOL received a GROUP ACHIEVEMENT AWARD for outstanding contributions to the success of the CERES S'COOL educational outreach project.

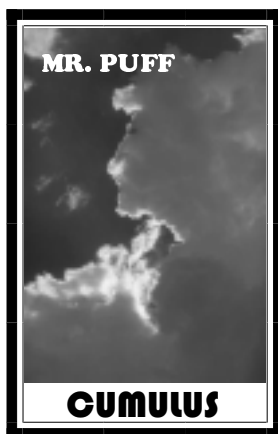
Way to Go TEAM!

Our very own **Dave Young** received an EXCEPTIONAL SCIENTIFIC ACHIEVEMENT MEDAL in recognition of outstanding scientific contributions in advancing the understanding of Earth's Radiation Budget and its impact on global climate.



A SKY TEAMING WITH CLOUDS

Meet the **CLOUD TEAM**— One of the first requirements for observing and reporting clouds is to be able to identify the various cloud types. This seems to be more intimidating to S'COOL teachers than for the students themselves. There are many ways to teach cloud types and you will find lessons and resources below that have been helpful to S'COOL participants. Try the following activity as a creative way to hook your students into learning about clouds. Challenge your students to create a set of **CLOUD TEAM TRADING CARDS**. Each card would depict a certain exemplary cloud within a cloud type and its stats. On the front of the card, require a clear picture and title. On the back, record cloud type stats such as the important features or characteristics that distinguish that cloud type.



Description: A dense white, fluffy flat-based water cloud with multiple rounded tops and a well defined outline.
Ave. Level: Low base, 1km
Symbol: Cu
Visual Opacity: opaque
Surface Cover: 0-50%
Association: fair weather

Bio: My career began one warm day over the Pacific Ocean. Though some have confused my type with cotton balls, cauliflower or sheep, I can assure you I am composed of a line of pure water droplets. My base marks the condensation level quite clearly.
Favorite Website:
<http://pals.agron.iastate.edu/carlson/>

One of a Pack of 12

The example above is to get the creative juices going. Feel free to have fun with this. Set your criteria and then let your students amaze you with their creative pack.



CLOUD IDENTIFICATION

For S'COOL you must be able to identify the Cloud Type in order to determine the Cloud Height. ➡

S'COOL CLOUD SITE:

<http://asd-www.larc.nasa.gov/SCOOL/cldtype.html>

OTHER CLOUD SITES:

<http://www.pnr-rpn.ec.gc.ca/air/cloudchart/aj00s00.en.html>

<http://www.met.hu/cloudalbum/cloud.htm>

<http://www.cloudman.com/index.htm>

<http://vortex.plymouth.edu/clouds.html>

(Cloud Quiz) <http://www.ncdc.noaa.gov/jmdocs/clouds.html>

CLOUD LESSONS:

http://asd-www.larc.nasa.gov/SCOOL/lesson_plans/Identify_Clouds.html

http://asd-www.larc.nasa.gov/SCOOL/lesson_plans/altlab.html

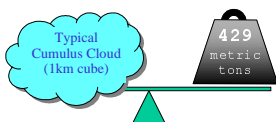
BOOKS:

The Cloud Book, Tomie de Paola, 1975

Clouds of the World, Richard Scorer, 1972

Did you know a typical cumulus cloud weighs 429 metric tons? _____ pounds

So just how can a cloud float in the air?



<http://www.shorstmeyer.com/wx/faqs/float/float.html>

HIGH

(Above 6 km)
 _____ ft

cirrus
cirrocumulus
cirrostratus
contrails

MID

(2km - 6km)
 _____ ft - _____ ft

altostratus
altocumulus

LOW

(Base below 2 km)
 _____ feet

stratocumulus
cumulus
stratus
cumulonimbus
nimbostratus
fog

EVEN INSTRUMENTS TEAM UP



TRMM satellite carrying the CERES instrument along with four other instruments on this tropical rainfall mission.

High above the clouds is a team of satellites: TRMM and two EOS Satellites Terra and Aqua (soon to be launched). Each spacecraft carries a set of instruments from various nations working simultaneously to collect valuable global data. View their websites to discover how even instruments team up in monitoring the Earth's climate.

TRMM <http://trmm.gsfc.nasa.gov/>

TERRA <http://terra.nasa.gov/>

AQUA <http://eos-pm.gsfc.nasa.gov/>



Teacher Corner

Join us again in collecting Sun-Earth Data September 22-28, 2001.

Let us know if your e-mail or postal address has changed over the summer.

Remember when making Overpass requests Daylight Saving Time ends October 28 - in the USA.



New arrival! Coming October 2001!
The Spanish S'COOL Poster

Over 900 schools are registered with S'COOL across the globe in 56 countries.

Complete list: <http://scool.larc.nasa.gov/cgi-bin/regprint.cgi>

Stories and student work from your classroom are always welcome.

Thank you for your continued participation!

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Upcoming Events

CERES Science Team Meeting

September 18-20, 2001

Brussels, Belgium

VAST Conference, October 19-20, 2001

Richmond, VA USA

National Rural Education Assoc. Convention,

October 24-27, 2001 Albuquerque, NM USA

CAP/CC/USSF Regional Teacher Conference,,,

Cocoa Beach, FL Nov. 27-28, 2001

Sun-Earth Data Collection

September 22– 28, 2001

Intensive Observation Period (IOP)

October 15-19, 2001

Aqua Launch, 2002

For more information contact us by:

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WHAT TEACHERS ARE SAYING ABOUT S'COOL!

“Students truly feel like they are scientists working for NASA. They were nervous to enter their first observation. ... They are turned on to science! Thank you for giving them this opportunity.”

Teacher comment from EDCATS Survey 2001