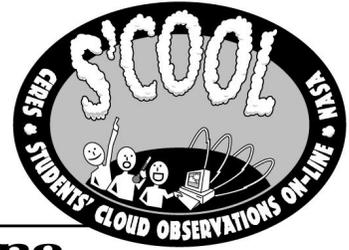




# S'COOL BREEZE



Student's Cloud Observations On-Line

Volume 1, Issue 7

December 1999

## Home Schools Do Their Part

*Connor Fournier, 11, a student of Fournier Home School,  
Monroe, Virginia, USA, submitted the following poem.*

### The Sky and Clouds

When you look at the sky,  
Nice and blue up so high,

When a cloud goes floating along,  
You hear the wind, singing it's song.

You man think Stratus is a Pain  
Coming along, dropping a ton of rain,

But it helps to nourish our Earth  
And to supply firewood for our hearth.

When some Cirrus seems  
To flee,  
Beautiful, right for me.

In the night, that comes too soon,  
You can see clouds illuminated by the moon.

## The Scientific Value of S'COOL Observations, Part II

*David F. Young CERES Scientist in the Radiation and  
Aerosols Branch, NASA, Langley Research Center,  
Hampton, Virginia.*

In the last newsletter we discussed the reasons why the data provided by the students participating in the S'COOL are valuable to CERES scientists. In this article we will show the first example of a comparison between student observations and the cloud properties derived from satellite data.

Since the S'COOL Project began in January, 1997, students have recorded over 2500 cloud observations. During this time, our satellite instruments have been actively collecting raw data over the S'COOL sites. The CERES Science Team has also been working hard developing methods for turning these data into useful cloud information. Until now, we have only been able to produce our satellite cloud observations for limited time periods and geographical areas. However, with the upcoming launch of the next two CERES instruments aboard the Terra satellite, the CERES team is now ready to begin producing daily cloud measurements over the S'COOL sites to match with the student observations.

Although our current number of satellite observations is limited we can still gain insights by comparing our data with the S'COOL data. If we search our database for all cases where a satellite observation and a student observation are within 15 minutes of each other and in the same geographic location, we find 45 such cases. There are several parameters that we can compare, but

*continued on page 2*

## INSIDE THIS ISSUE

- 1 Home School
- 1 Scientific Value or S'COOL Observations II
- 2 Teacher of the Year
- 2 Teacher Corner
- 3 Does Air Have Weight?

Scientific Value (continued from page 1)

The easiest to understand is cloud amount. We have asked for observations of cloud amount in 4 broad categories: clear (CL), partly cloudy (PC), mostly cloudy (MC), and overcast (OV). The simplest way of displaying how well the 2 sets of observations agree is in the form of a table.

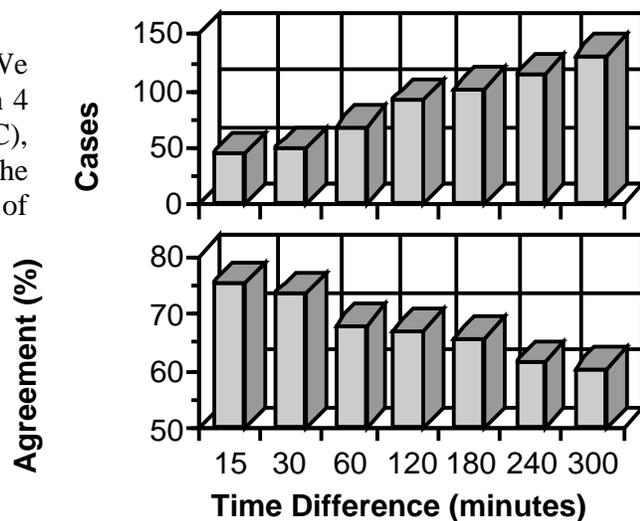
		S'COOL Students			
		CL	PC	MC	OV
C E R E S	CL	13	1	0	0
	PC	4	6	0	1
	MC	2	0	9	2
	OV	0	1	0	6

This table shows a count of how often each cloud category was reported. For instance, the number 13 in the upper leftmost box indicates that there were 13 cases where both the students and CERES reported clear skies. The box below that indicates that there were four other cases, where the students reported clear skies when CERES reported partly cloudy conditions. The gray boxes along the diagonal of the table represent the cases when the students and CERES were in perfect agreement. Out of the 45 cases, 34 (or 76%) are in these boxes, which suggests that in the majority of cases, we are doing very well. Also note that there are no examples of either CERES or the students reporting clear while the other reported overcast.

The above example shows the results when we restrict our comparison to observations taken within 15 minutes. What happens if we expand the allowable time difference? The results are shown in the chart in the next column.

The top graph shows that as the time difference increases from 15 minutes to 5 hours, the number of cases grows from 45 to 140. However, the bottom graph shows that while we are gaining more data, the percentage of student observations that agree with CERES drops from 76% to 61%.

This emphasizes the importance of taking Observations as the satellite passes overhead. The



changeable nature of clouds requires that observations be made simultaneously. Even with the limited number of cases that we have, the S'COOL observations that we have studied so far have been of sufficient quality to demonstrate this important concept.

We have shown that even our limited first CERES/S'COOL comparison can be used to derive interesting information. We would like to thank the teachers and students who have worked hard to produce the initial S'COOL data. With the launch of the Terra satellite, we are entering an exciting new phase of the S'COOL Project where the satellite data will be produced automatically. This will provide a significant increase in the number of CERES/S'COOL matches and will enable students to perform their own comparison studies to help us in our efforts. ■

### Teacher Corner

◀ In 1999 NASA's S'COOL Project has been represented by the S'COOL team at 2 state conferences, 6 national conferences, 2 international conferences, and 14 workshops and classroom visits at home and abroad. Teachers from Spain, France and Argentina have also made presentations in various settings. Thanks to all.

## CONGRATULATIONS

### TEACHER OF THE YEAR

Margaret Holtschlag is one of our S'COOL teachers at Murphy Elementary School, Haslett, Michigan, USA. She has just recently been named Teacher of the Year by her colleagues. Congratulations Margaret for a job well done. You will be hearing more from Margaret in the near future through the S'COOL website.

### TRY THIS

#### DOES AIR HAVE WEIGHT?

##### MATERIALS:

2 SMALL LATEX BALLOONS      TAPE

2 15 CM PIECES OF STRING

30.5 CM RULER

PIECE OF NOTEBOOK PAPER

##### DIRECTIONS

Attach a balloon to each end of a ruler, being careful to use exactly the same lengths of string or tape to attach each balloon. Suspend the ruler on a string at approximately the 15-cm mark to create a balance. With tape, attach the top of the string to a wall about eye level. Tape the notebook paper to the wall behind the ruler. Put a pencil mark on the paper above and below each end of the ruler to mark its beginning position. Remove one of the balloons and blow into it, inflating it as much as possible. Tie and reattach the balloon with the same piece of string. Gently pull the string suspending the ruler away from the wall, allowing the ruler to readjust. Carefully release the string and check the ruler's new position. Mark the paper with the pencil again.

##### CONCLUSIONS

1. Does the ruler still balance?
2. Does one balloon now weigh more than the other?
3. What does this tell you about air?

S'COOL now has 388 sites enrolled in 32 countries



Students at Fournier Home School, Lynchburg, Virginia, USA, check out S'COOL's website.



Students from McClellan Home School, Florence, South Carolina, USA, compare observations with S'COOL poster.

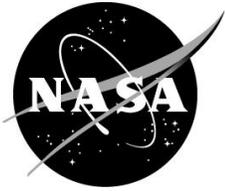


Carolyn Green and Noemi Cabrera, S'COOL teacher in Argentina meet at EWOC Conference in Australia.

### Did You Know?

The satellite Terra was named by students. It is scheduled to be launched December, 1999.

NASA Langley Research Center  
ATT: S'COOL Project  
Mail Stop 420  
Hampton, VA 23681-2199



### **Upcoming events**

S'COOL Presentations at  
Regional NSTA Conferences in  
Tulsa, Oklahoma and Reno, Nevada  
And AGU in San Francisco, California

USA

Terra Launch December, 1999

For more information contact us by:  
S'COOL Project  
Mail Stop 420  
NASA Langley Research Center  
Hampton, VA 23681-2199  
Phone: (757) 864-5682  
FAX: (757) 864-7996  
E-mail: [scool@larc.nasa.gov](mailto:scool@larc.nasa.gov)  
<http://asd-www.larc.nasa.gov/SCOOL/>  
Carolyn Green, editor  
Stephanie Weckmann, French  
translator