



The CloudSat Downlink

NASA Club Inspires Indian Students

Students explore clouds, environment, and poetry in Punjab, India

The NASA Club in action, getting that important all-sky cloud observation



Students at Paragon Senior Secondary School in Mohali, Punjab, India have their heads in the clouds as part of their ongoing involvement with CloudSat and the CEN.

Students participate in CEN observations as a part of their "NASA Club", a group that has met outside of school time to discuss NASA, CloudSat and GLOBE for nearly 2 years. In January 2008, they presented

much of what they have learned to other students, parents, and faculty as a part of Annual Day celebrations. And CloudSat data helps them with their compulsory environmental science classes too!

Perhaps the best part is how inspired NASA club students are. One student, Navneet Kaur, was even inspired to verse, penning the poem shown below. We hope it inspires all of you to think about ways in which CloudSat and

Welcome to Our FIRST ISSUE!

This is the first issue of the CloudSat Education Network newsletter, *The CloudSat Downlink!*

We'll be using this quarterly newsletter to let you know what's happening with CloudSat and the CEN, let you know about new resources, highlight achievements of our CEN Schools, and much more!

But as with any new service, we want to make sure that we're providing you with what you need from us. So, please email ellistd@oneonta.edu and let us know what

you want to see in your newsletter. And look for new features as we grow together.

-Dr. Todd Ellis, Editor



science can inspire you and your school in creative ways too, involving even more students who might not be otherwise!

A POEM ABOUT CLOUDSAT, BY NAVNEET KAUR, MOHALI, PUNJAB, INDIA

Joining NASA's CloudSat project
To me is like an act;
Here I gain knowledge about clouds
which makes me feel proud
When I heard about the A-Train,
I got much knowledge to gain;
CEN gives me such an inspiration,
that, to be a scientist becomes my
ambition,

Whenever I see the sky,
I always get the feeling to fly;
To work with NASA was my desire
This school has completed it by going
higher;
Books give us knowledge vast,
But clouds soar our thoughts fast;
CloudSat inspired us to work in an
exhibition,

Which proved quite successful in its
intention;
The scientists of this project are like our
teachers,
Who are in fact this project's creators;
Full of science and of art,
This project has truly won my heart.



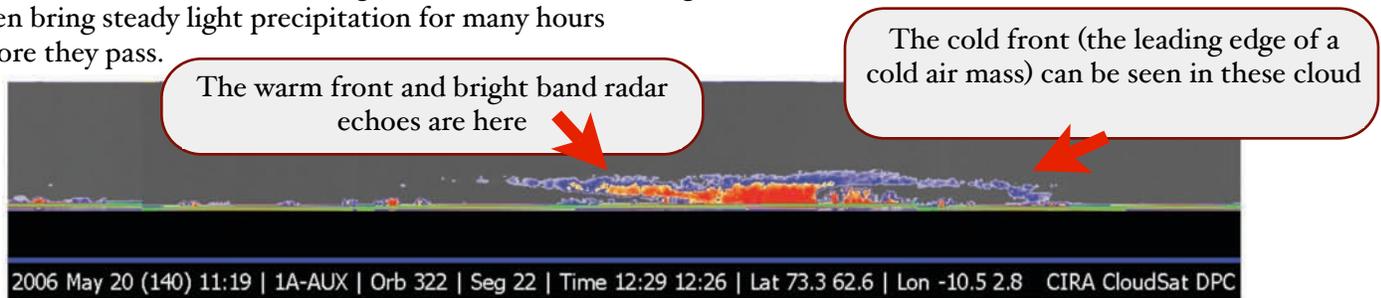
LOUDSAT REVEALS A MID-LATITUDE CYCLONE WITH ITS FIRST EVER IMAGE

When CloudSat was first turned on (20 May 2006), something amazing happened! The first radar signals revealed the structure of one of the most common features of the mid-latitudes – the frontal structure of a mid-latitude low pressure system!

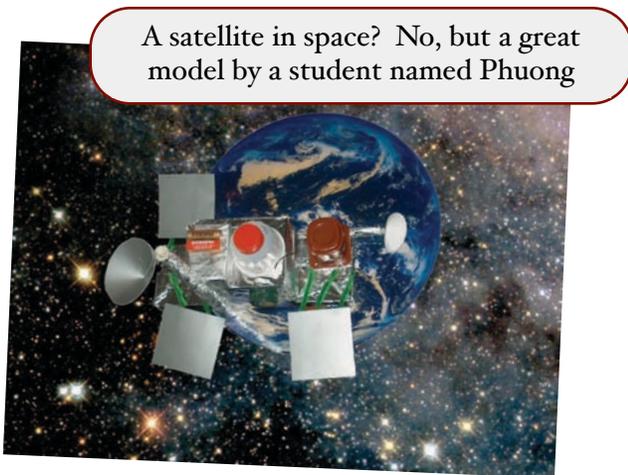
Mid-latitude cyclones are one of the most important features of the weather for anyone not living in the tropics. These centers of low pressure are associated with the boundaries between air masses, or large regions of air with similar temperature and humidity content. These boundaries, called fronts (named after the battlegrounds between two armies, since they were first studied during World War I), which are usually associated with precipitation like rain and snow as well as temperature changes. Cold fronts, which are the leading edge of cold air masses, often bring stormy weather and warm fronts, which are the edges of cold air that is retreating at the surface, often bring steady light precipitation for many hours before they pass.

What makes this first image ever captured by CloudSat so amazing is that for the first time scientists could study the vertical structure of clouds from space. If you look at the image below, you will see the convective rain storms underneath cirrus clouds that no other satellite ever saw before, as well as the long thin slope of the warm front marked by clouds sloping up from the ground that have deep red radar echoes. These echoes, which are called the radar brightband, indicate where frozen precipitation (ice and snow) are melting to form rain. When ice is coated by water as it melts, it reflects more radar energy and that is why it looks so “bright” in the radar image.

So, the next time you see a low pressure center on a weather map along with its associated fronts, remember that CloudSat showed scientists something never before seen with its very first images!



REALLY COOL SATELLITE MODELS YOU CAN MAKE AT HOME!



Research Science students in grades 7-12 make models that have all of the important parts a satellite needs, including instruments, solar arrays, antennae, and more, out of common household materials. (No kits or toys allowed!)

And the best parts? They look great and you can make some too! Roland’s website – <http://dewey.westallsc.vic.edu.au/research/satellite-models/satellite-models.htm> – contains instructions on what you need to make an authentic satellite model. And if you take a picture and put it on a starry background, like his students have, it looks really great!

At Westall Secondary College in Melbourne, Australia, students are getting hands-on about learning about the importance of satellites. Roland Gesthuizen and his

We’d love you to send us your pictures, along with any other ideas you come up with to think about CloudSat and satellite in general. And remember, be creative!



LOUDSAT AND THE CEN TO BE FEATURED AT NEXT GLOBE MEETING IN CANADA

We're very excited to let you know about an upcoming opportunity to showcase the work your students are doing with CloudSat and the CEN.

At the 13th Annual GLOBE Conference, which will be held in Calgary, Canada on 2-7 August 2009, the CEN wants to feature some of the great work that all of our students have been doing using CEN and GLOBE data. And we're here to help!

We are interested in helping coordinate research between CEN schools, providing poster templates, and providing scientific support to you, our member schools. All we need is for you and your students to let us know what it is you'd like to study and what you need from us.

So start brainstorming ideas for studies that you and your students are interested in studying, and let us know so we can help you find other CEN partners and get you the information you need to succeed.

The best part is, of course, that the best projects will be featured at the upcoming GLOBE conference. We'll be able to showcase your research, and maybe even provide the best project team a chance to attend the conference.

So send us your students' ideas at ellistd@oneonta.edu, and let us help you put their heads in the clouds.



See you at the next GLOBE Annual Conference

2-7 August 2009

13th Annual GLOBE Conference in Calgary, Alberta, Canada

CloudSat will have a major presence at this conference and we'll be showing off our partnerships with our friends in Canada. Be sure to check us out! More details will be available in upcoming issues.

Newsletter Contributors

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BOOK REVIEW: HOW WE KNOW WHAT WE KNOW ABOUT CLIMATE CHANGE BY LYNNE CHERRY AND GARY BRASSCH

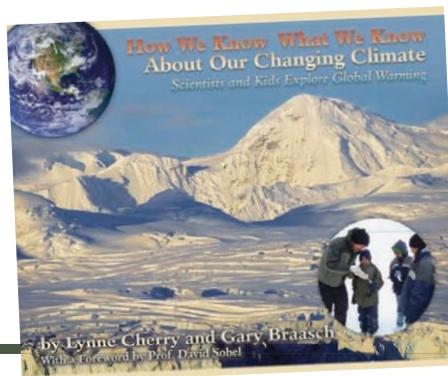
By Deanna TeBockhorst

What could be a depressing, strident or fearful book is instead empowering and hopeful. Here is the science behind the headlines; evidence from flowers, butterflies, birds, frogs, trees, glaciers and much more, gathered by scientists from all over the world, sometimes with assistance from young 'citizen scientists,' also presenting what can be done to learn about climate change and to take action to make a difference.

To assist educators in meeting the challenge of teaching this important topic, A Teacher's Guide to How We Know What

We Know About Our Changing Climate by Carol L. Malnor, is also available. The website for this book has additional and updated resources from the authors: www.howwewknowclimatechange.com

The book is published by Dawn Publications and the ISBN is 978-1-58469-1093-7.





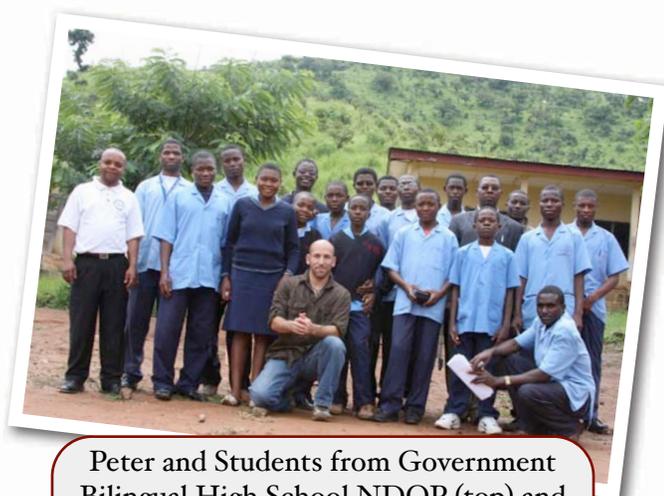
HIGH PERFORMING CEN SCHOOLS IN CAMEROON SHINE

By Peter Falcon

Recently I had the distinct pleasure of visiting two high performing schools in the African country of Cameroon. Cameroon is a very beautiful country, its people are very nice and hospitable, always smiling and waving hello. Cameroon is often referred to as “little Africa” because it displays all five of Africa’s climates and vegetation (mountains, desert, coast, rainforest and savannas). But the beautiful scenery wasn’t what prompted my visit to Cameroon, what brought me here was the emergence of two outstanding schools in our beloved CloudSat Education Network (CEN). Government Bilingual high School

NDOP led by Mr. George Afong, and Lycée Technique Industriel et Commercial led by Miss. Grace Ngouffo have worked extremely hard to motivate students and encourage them to collect Cloudsat observations on a consistent basis. Both schools were deserving of a special visit by members of the CloudSat outreach team. Now I can’t promise we’ll visit every school in our network, but if you become a high performing school what we call our “star schools” (going out making those measurements and cloud

observations on a consistent basis, uploading them to our database), we will definitely notice! And a reward just may be in store for you!



Peter and Students from Government Bilingual High School NDOP (top) and Lucé Technique Industriel et Commercial (bottom)

CEN RESOURCES: WE’RE HERE FOR YOU!

We want to make sure that you have everything you need to succeed as a member school of the CloudSat Education Network. So, we thought it would be a good idea to start with a short guided tour of what’s available at the CloudSat website: <http://cloudsat.atmos.colostate.edu>.

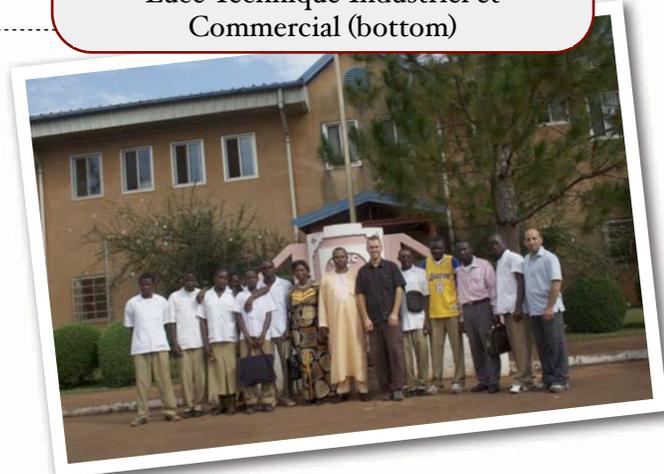
As always, on the front page you’ll find the latest news, including the latest and greatest CloudSat observation of some cool new weather phenomenon. As in the News section, you can scroll back through many of the greatest hits that CloudSat has observed.

Cloud Art has several paintings created by Dr. Graeme Stephens, the principal investigator of CloudSat, along with some resources describing the art and

how it ties in with science.

But most important is the Education link, which includes regularly updated resources about clouds, satellites, CloudSat and much more. You can even see posters created by other CEN schools and get ideas for your own research. We will even give you blank PowerPoint templates that we’ve developed!

Most of all, we’re always looking for new ways to help you. To that end, if there is something you want to know more about, or something you’d like to see, let us know. Email us at ellistd@oneonta.edu and let us



know what you’d like to see. And stay tuned as we develop new ideas and resources. We’re looking into starting discussion groups, blogs, creating miniature lesson plans using CloudSat data and more. And keep reading the newsletter and checking out the CloudSat home page for announcements about these new resources. Maybe you’ll even find your suggestion there!