



# CERES EDUCATION AND OUTREACH OVERVIEW



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CERES Science Team Meeting  
May 5<sup>th</sup>, 2015  
NASA Langley Research Center

# Science Communications and Education

## Education & Outreach Team

Lin Chambers, Lead  
Ann Martin, Evaluator

### Education Projects

**The Students' Cloud  
Observations On-Line  
(S'COOL) Project**  
Sarah Crecelius  
Tina Rogerson

**GLOBE at Langley**  
Jessica Taylor  
Margaret Pippin  
Lin Chambers

**MY NASA DATA**  
Preston Lewis  
Tina Harte  
Dan Oostra  
Penny Oots

### Mission E/PO

**CERES**  
Lin Chambers

**CALIPSO**  
Jessica Taylor

**SAGE III on ISS**  
Kristyn Damadeo

**TEMPO**  
Margaret Pippin

**DISCOVER-AQ**  
Amber Richards  
Lin Chambers

## Communications Team

Denise Lineberry

Jay Madigan  
Aimee Amin  
Tim Marvel

*\* Additional Support from Translators (Camelia Deller) and ASDC Personnel (Brian Bresina, Chris Jones, Karen Brown)*

# Education And Public Outreach; Science Directorate NASA Langley Research Center

The Science Directorate at NASA Langley Research Center provides many opportunities to involve students, faculty, researchers, and the citizen science community in real world science.

The SD EPO Team...

- Collaborates with the education community to bring authentic Earth science practices and real-world data into the classroom.
- Provides the public with unique NASA experiences, engaging activities, and advanced technology.
- Provides products developed and reviewed by science and education experts.

*Our goals include inspiring the next generation of Science, Technology, Engineering and Mathematics (STEM) professionals and improving STEM literacy by providing innovative participation pathways for educators, students, and the public.*

**For further information on any of our Projects or Missions, listed to the right, or to contact us please visit the Science Directorate Education and Public Outreach Website, <http://science-edu.larc.nasa.gov/>**



MY NASA DATA



Student Cloud Observations On-Line



The GLOBE Program



Long-term Engagement in Authentic Research at NASA



CALIPSO



Discover-AQ



SAGE III on the International Space Station

# NASA Cooperative Agreement Notice: Science Mission Directorate Science Education

- Time of Change
- NASA Science Mission Directorate Science Education Cooperative Agreement Notice (CAN)
- Increase the overall coherence of the SMD science education program leading to more effective, sustainable, and efficient utilization of SMD science discoveries and learning experiences and to meet overall SMD science education objectives .
- Enable NASA scientists and engineers to engage more effectively with learners of all ages.
- Moving away from mission-by-mission products and services and towards aggregating efforts into science-based disciplines aligned with SMD Divisions.
- At a top level, SMD science education objectives are:
  - Enable STEM education
  - Improve U.S. scientific literacy
  - Advance National education goals
  - Leverage efforts through partnerships

# MY NASA DATA

The screenshot shows the MY NASA DATA website interface. At the top, there is a red banner with the text "New Data Available in the Live Access Server!" and a link to "Explore". Below this is a social media sharing bar with icons for Like (265), Tweet (74), Pin it, and Share (68). The NASA logo and "NATIONAL AERONAUTICS AND SPACE ADMINISTRATION" are also present. The main header features the "MY NASA DATA" logo and a tagline: "Mentoring and inquiry using NASA Data on Atmospheric and earth science for Teachers and Amateurs". A navigation menu on the left includes links for Home, Explore DATA (LAS), Lesson Plans, Data Sources, MND Advisory Board, Science Glossary, MND Team Page, Mission, Mission Support, Earth Systems Poster, EM Spectrum Diagram, Latitude/Longitude Finder, Global Climate Change, and Observe Your World. The main content area has a search bar and a large banner with categories: Educators, Students, Citizen Scientists, Researchers, and Using My NASA Data. Below the banner is a section titled "Over 200 Data Sets that will fit into any Science Classroom!" with a search prompt "Don't see what you're looking for? Suggest a parameter". To the right of this section is a box for "Earth System Digital Poster 2005-2013 Data Access Animations Activities". At the bottom, there are four buttons: Photos, Connect, Apps, and Contact.

- CERES Data Visualizations/Animations
- Multitude of charts, plots and graphs can be generated using a wide variety of constraints.
- Supporting activities and lesson plans.
- Providing Earth Science data from of 35 NASA Missions, satellite instruments, satellites, and research programs.
- Web based.

# MY NASA DATA

## NOTABLE METRICS

As of March, 2015...

- MND attracts almost 29,000 users every month.
- Since January 2010, we've had 1.8 million page views and have attracted 717,570 users to the site.
- Web Visitors from all 50 states & DC.
- Total page views of MND lesson plans (Dec 2014-Mar. 2015) is 15,443, 27% lead to data viewing.

# MY NASA DATA RELATED REFERENCES

Chambers, L. H., Alston, E. J., Phelps, C. S., Moore, S. W., Diones, D. D., Oots, P. C., & Mims III, F. M. (2008). The MY NASA DATA project. *Bulletin of the American Meteorological Society*, 89(4), 437-442. <http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-89-4-437>

Lewis, P., Oostra, D., Crecelius, S., & Chambers, L. H. (2012, August). MY NASA DATA: An Earth Science Data Visualization Tool for the Classroom. In *Connecting People to Science: A National Conference on Science Education and Public Outreach* (Vol. 457, p. 89).

Wavelength's Analytics:

- 6 of the Top 10 resources visited are related to Earth science.
- Of top-50 resources, 4 were S'COOL and 4 were MY NASA DATA, plus the CERES Earth's Energy Budget resource.

Since initiation in 2004, This project grew steadily through the 5-year funding period, reaching nearly **11,000 distinct users with 250,000 web hits per month by 2008**. MY NASA DATA has continued over the last 5 years with minimal sustained funding from NASA (\$135k per year). During this time, the number of data products and lesson plans available has increased substantially and **usage has more than doubled since 2008**. A new metric we are monitoring indicates how many other websites link to a site. For the MY NASA DATA website, there are nearly 60,000 backlinks.

<http://mynasadata.larc.nasa.gov/>

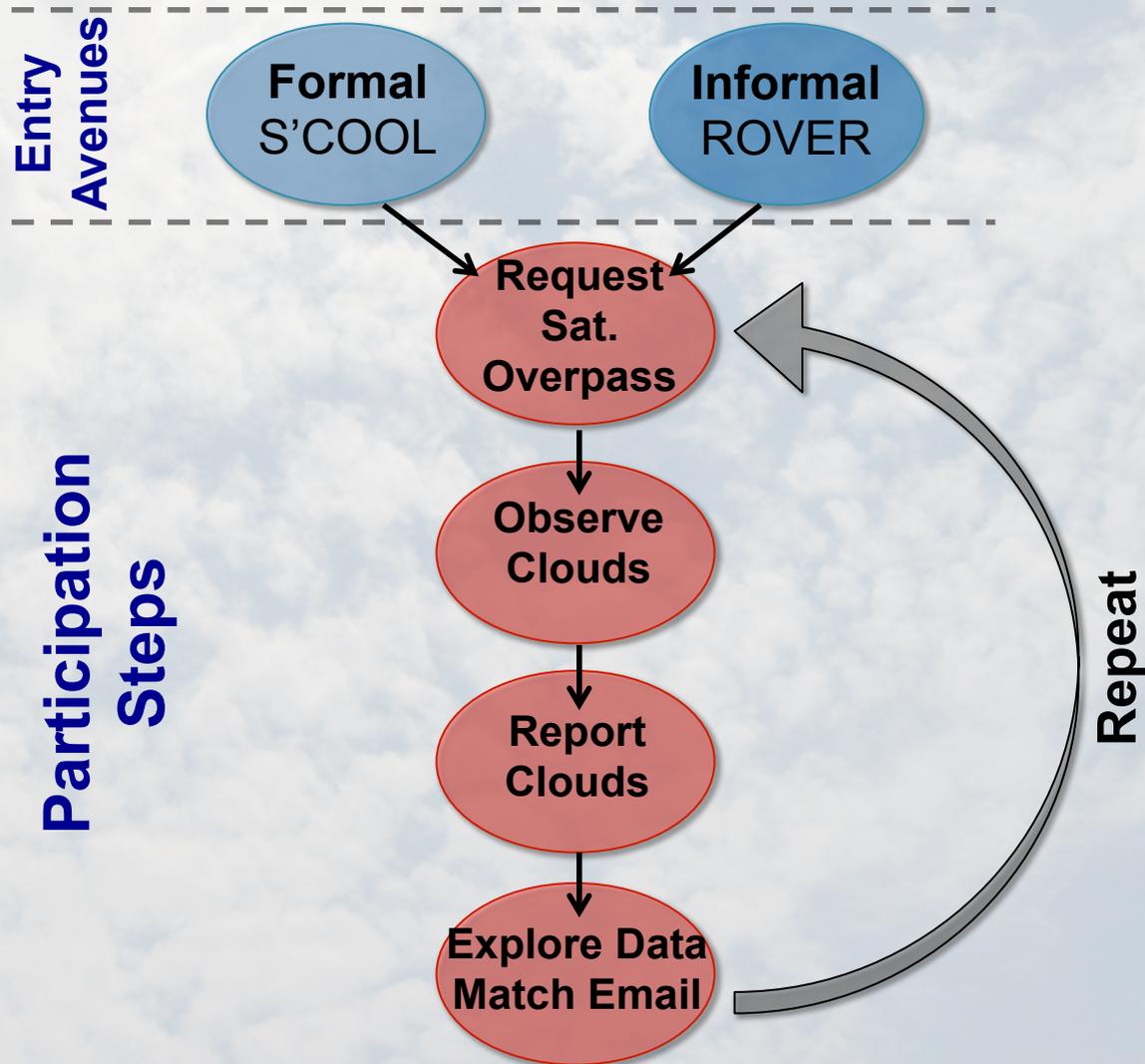


# CERES S'COOL PROJECT

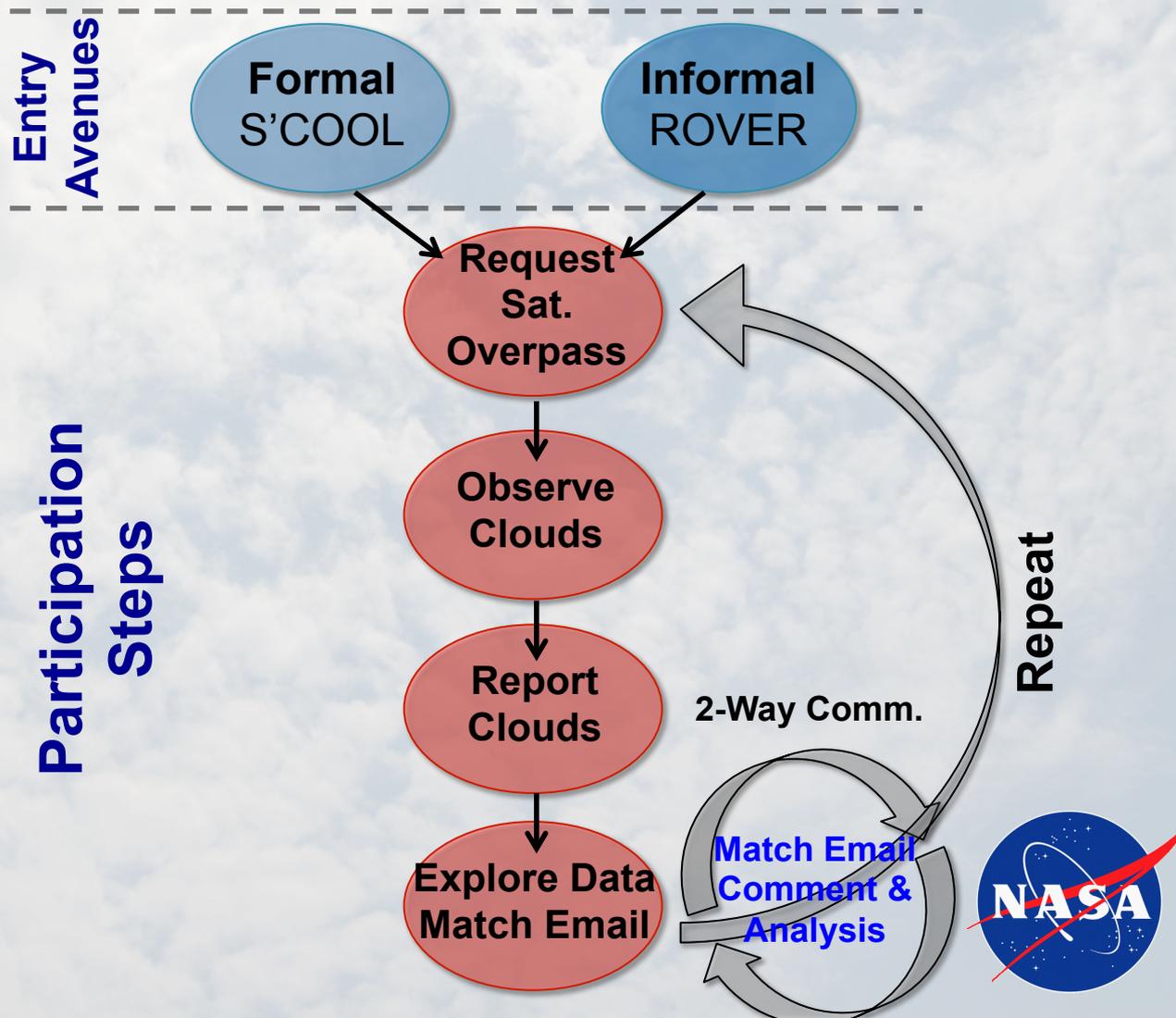
## Students' Cloud Observations On-Line

- Global Science Engagement
- Integration through generations of NASA missions, Radiation Budget Instruments
- A simple way to involve K-12 students and interested parties in authentic science.
- A source of validation data for the CERES cloud retrievals.
- Web based.

# Process



# Process (cont.)



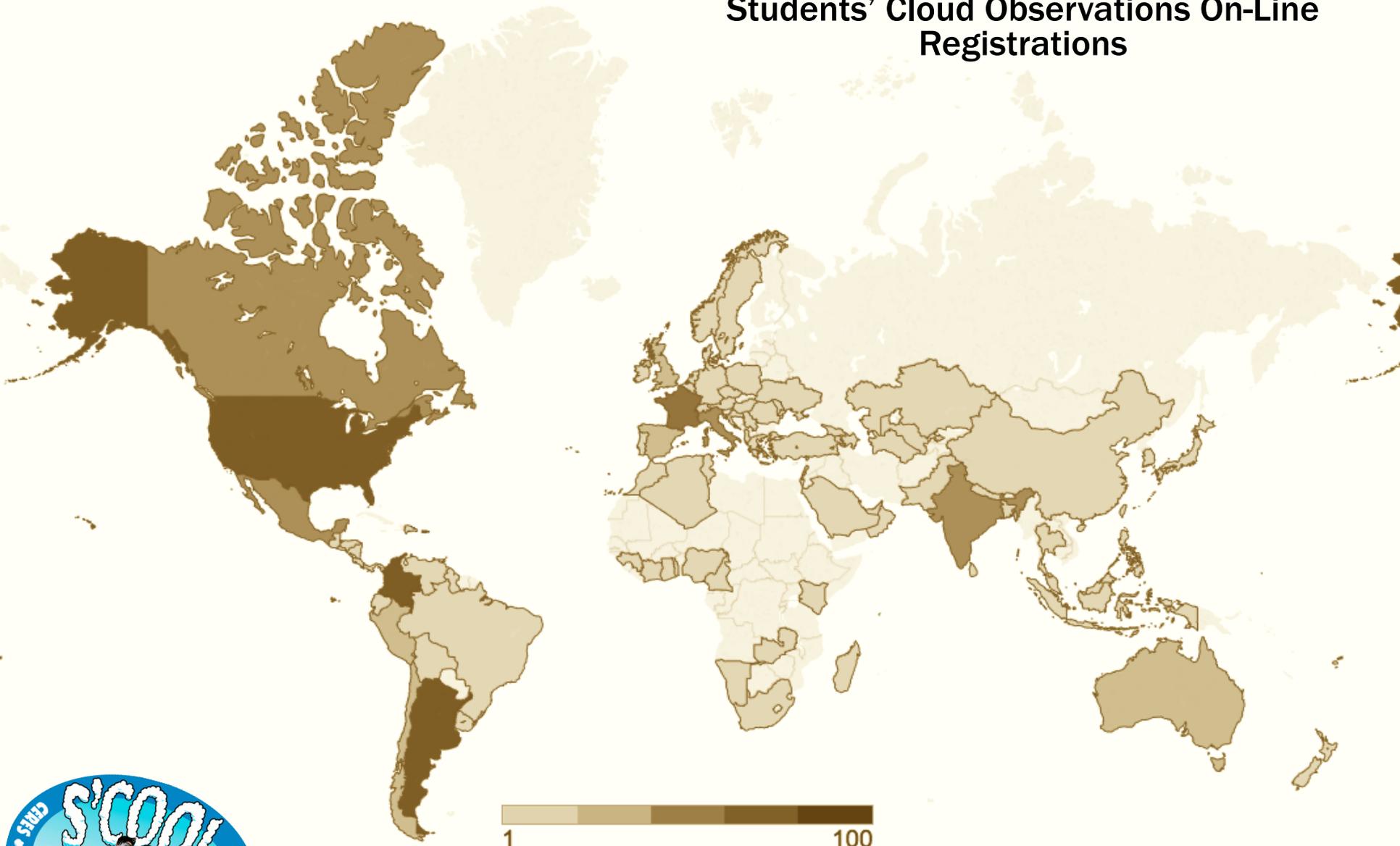
# Process Engages Science Objectives & Individual Learning Initiatives

Phillips et. al, 2014

- Documenting range shifts
- Identifying potential mismatches
- Identifying venerable species
- Health planning
- Anticipating affects of water sources
- **Observation/Data Collection/Analysis**
- **CERES**
  - Continuation of Earth Science data collection
  - Increased accuracy od current data estimates
  - First long-term estimates of atmosphere in relation to radiative fluxes
  - Provide cloud property estimates that are consistent with radiative fluxes from surface to TOA.
- Engage critical thinking
  - **Compare data from two sources**
- Science learning and skill acquisition
  - **Observation of clouds/Earth system**
  - **Discipline of collecting/recording data**
  - **Using math to combine multiple individual observations**
  - **Engagement with the science process**
- Environmental stewardship
  - **Starting with basic awareness**
- Interest, efficacy
- Citizen empowerment

# CERES S'COOL PROJECT

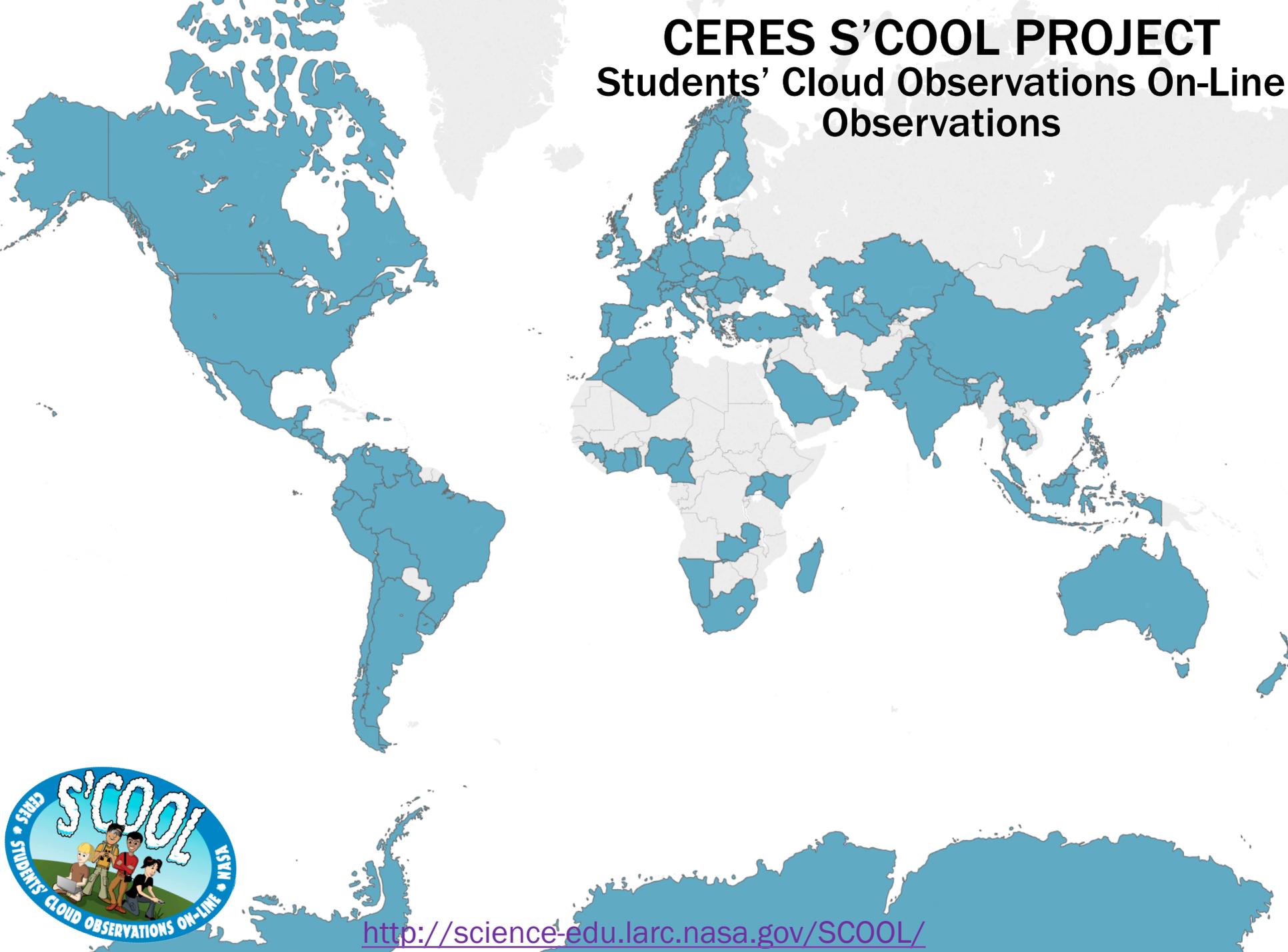
## Students' Cloud Observations On-Line Registrations



<http://science-edu.larc.nasa.gov/SCOOL/>

# CERES S'COOL PROJECT

## Students' Cloud Observations On-Line Observations



<http://science-edu.larc.nasa.gov/SCOOL/>



# CERES S'COOL PROJECT

## Students' Cloud Observations On-Line Website

### S'COOL

#### Audience Overview

Jun 1, 2010 - Apr 21, 2015

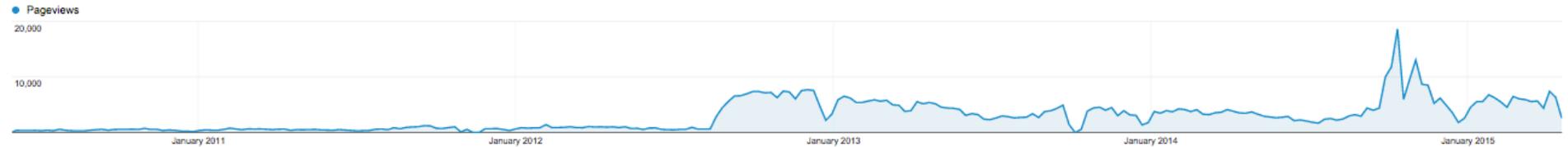
Email Export - Add to Dashboard Shortcut

All Sessions 100.00%  + Add Segment

#### Overview

Pageviews vs. Select a metric

Hourly Day Week Month



Sessions 329,886	Users 250,356	Pageviews 719,129	Pages / Session 2.18	Avg. Session Duration 00:02:05	Bounce Rate 67.04%	% New Sessions 75.88%
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### ROVER

#### Audience Overview

Aug 1, 2012 - Apr 21, 2015

Email Export - Add to Dashboard Shortcut

All Sessions 100.00%  + Add Segment

#### Overview

Sessions vs. Select a metric

Hourly Day Week Month



Sessions 10,318	Users 7,161	Pageviews 16,359	Pages / Session 1.59	Avg. Session Duration 00:01:46	Bounce Rate 72.12%	% New Sessions 69.01%
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# CERES S'COOL PROJECT

## Students' Cloud Observations On-Line

### *Additional Accomplishments:*

**S'COOL E/PO Metrics:** SSAI Staff, tasked on the S'COOL Project, have contributed over 100 OEPM (Agency Metrics, 2011-current) logged activities including, but not limited to, 53 posters/presentations/workshops at local, state, and national conferences, 6 Science Team Education and Public Outreach Reports, and 20 Public Outreach Events.

**S'COOL Website Redesign:** October 2014, SSAI Staff successfully completed the redesign of the S'COOL website and database infrastructure, the first complete update since S'COOL's beginnings in 1997. The redesign efforts updated content and provided a relevant and intuitive website, supporting NASA's "Earth Right Now" communication/citizen science campaign (#SkyScience) and the CERES mission. The process also included the development of an updated participant registration database and input form, a task that has improved the efficiency of the S'COOL project immensely (registration has doubled from fall 2013 to fall 2014).

**Citizen Science Contributions:** With over 1,000 Citizen Science Participants (ROVERS, individuals of the public observing clouds from non-permanent locations) around the world, The S'COOL Project and NASA LaRC's SD E/PO and communications teams, in collaboration with the Earth Right Now Campaign and JPL's Communications Team, led 2014 Earth Science Week events through generation and support of #SkyScience. #SkyScience was a campaign featuring world wide Citizen Science involvement around NASA's research of Earth's atmosphere and clouds.

**Collaborations in the E/PO Field (SciGirls):** The S'COOL Project was featured on the Emmy Award winning PBS SciGirls Program. SSAI staff facilitated the production crew's visit as well as provided science content consultation for the episode on clouds, weather, and the CERES S'COOL Project. A strong partnership has grown from the experience. SSAI has continued to collaborate with PBS through conference sessions, publications, and have organized a public viewing party, celebrating the release of the S'COOL SciGirls episode, April 2015.



# CERES S'COOL PROJECT

## Students' Cloud Observations On-Line

### **Earthzine**

Crecelius, S.A., Chambers, L.H., Coleman, T., Rogerson, T., Lewis, P.M. "NASA CERES S'COOL Project: Understanding clouds and how they affect our weather and climate." *Earthzine*. n.p.. 7 Jan. 2013. Web. 26 March 2015.

<http://earthzine.org/2013/01/07/nasa-ceres-scool-project-understanding-clouds-and-how-they-affect-our-weather-and-climate/>

### **BAMS**

The CERES S'COOL Project

Lin H. Chambers, David F. Young, P. Kay Costulis, Pauline T. Detweiler, Joyce D. Fischer, Roberto Sepulveda, Douglas B. Stoddard, Amanda Falcone

Bulletin of the American Meteorological Society

Volume 84, Issue 6 (June 2003) pp. 759-765

doi: <http://dx.doi.org/10.1175/BAMS-84-6-759>

### **Recent/Applicable**

- Crecelius, S.A., Chambers, L.H., Rogerson, T., "NASA ROVER, tackling citizen science with grand challenges and everyday problems." Citizen Science 2015. Citizen Science Association. San Jose Convention Center, San Jose, CA. February 11-12, 2015. <http://f1000.com/posters/browse/summary/1097692>
- Crecelius, S.A., Chambers, L.H., Rogerson, T., " S'COOL ROVER, Citizen Science Cloud Observations Promoting Individual Learning and NASA CERES Science Objectives." 10<sup>th</sup> Anniversary of the POLICY/SOCIETY Symposium. AMS Fall Meeting. Jan. 2015.
- Crecelius, S.A., Chambers, L.H., Harte, T., Lewis, P.M., "The CRESE S'COOL Project, Dynamic NASA Earth Science Education and Public Outreach for Formal and Informal Audiences." Best Practices in Meaningful and Authentic Science Outreach to Formal and Informal Audiences. 2014 AGU Fall Meeting. Dec. 2014.
- Chambers, L.H., Crecelius, S.A., EQCDS vs. SSF Data Analysis, NASA Cloud Team Meeting. May, 2010.

<http://science-edu.larc.nasa.gov/SCOOOL/>

# Educational Materials

- S'COOL Website:  
<http://scool.larc.nasa.gov/>
- Lesson Plans:  
<http://scool.larc.nasa.gov/cgi-bin/lessonplan.cgi>
- Teacher Resources:  
<http://science-edu.larc.nasa.gov/SCOOL/ForTeachers-resources.php>
- Report Form:  
<http://science-edu.larc.nasa.gov/SCOOL/pdf/forme-ol.pdf>
- Cloud Teller:  
[http://scool.larc.nasa.gov/lesson\\_plans/SCOOL\\_Cloud\\_Teller3\\_small.pdf](http://scool.larc.nasa.gov/lesson_plans/SCOOL_Cloud_Teller3_small.pdf)
- Cloud ID Chart:  
[http://science-edu.larc.nasa.gov/SCOOL/Cloud\\_ID.php](http://science-edu.larc.nasa.gov/SCOOL/Cloud_ID.php)
- To register:  
<http://science-edu.larc.nasa.gov/SCOOL/register/>

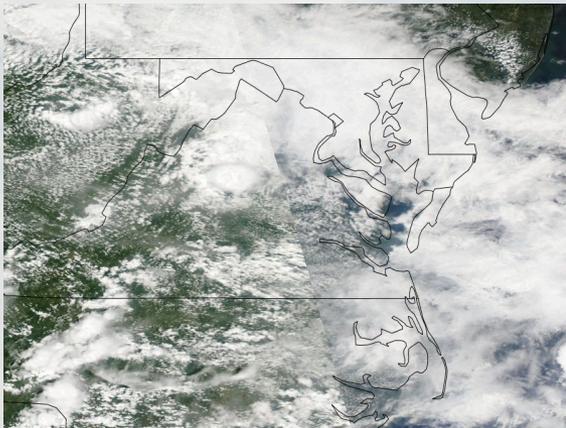
1/20/12

S'COOL Lesson Plans

The collage features several overlapping educational materials from the S'COOL website:

- Lesson Plan Page:** Shows the NASA logo, "National Aeronautics and Space Administration", and a search bar. It includes a sidebar with navigation links like "HOME", "FOR TEACHERS", and "National Standards".
- Report Form:** Titled "Students' Cloud Observations On-Line REPORT FORM". It includes fields for "Observer", "Date (ex. 2/20/12)", and "Local Time". A blue banner reads: "Use your Cloud Teller to practice vocabulary, learn different cloud types, and help with CERES S'COOL cloud observations." Below this, it states: "Clouds are an important part of our planet. Clouds affect our over long-term climate. So we need to know more about them." It lists links for "What to Observe", "Observation Tips and Cloud Chart", "Print a Ground Observer Manual", and "Register your class".
- S'COOL Cloud Identification Chart:** A vertical chart showing cloud types categorized by altitude. The y-axis is labeled "Altitude of Cloud Base" with markers at 1 km, 2 km, 3 km, 4 km, 5 km, and 6 km. The categories are "High" (6-10 km), "Mid" (2-6 km), and "Low" (0-2 km). Cloud types shown include Cirrus, Cirrostratus, Altostratus, and Stratocumulus. The chart is titled "CERES CLOUDS AND THE EARTH'S RADIANT ENERGY SYSTEM".
- Cloud Teller Interface:** A series of numbered questions (1-5) about cloud observations. Question 1 asks about "Total Clouds" and "Sky Visibility". Question 2 asks "What do you see in the sky?" with options for "High Level Clouds", "Mid Level Clouds", "Low Level Clouds", and "Ground Measurements". Question 3 asks "What do you see in the sky?" with options for "High Level Clouds", "Mid Level Clouds", "Low Level Clouds", and "Ground Measurements". Question 4 asks "What do you see in the sky?" with options for "High Level Clouds", "Mid Level Clouds", "Low Level Clouds", and "Ground Measurements". Question 5 asks "What do you observe?" with options for "High Level Clouds", "Mid Level Clouds", "Low Level Clouds", and "Ground Measurements".

# Current Application Opportunities



School Name		Latitude	Longitude	City	State	Country
Chartiers-Houston Jr./Sr. High School		40.231429	-80.215645	Houston	PA	USA

Ground Observation: 129287				Aqua Satellite					
Date: 2014-12-25		Local Time: 13:48	Universal Time: 18:48	Date: 2014-12-25		Universal Time: 18:51:00			
Opacity	Cloud Cover	Type	Visualization		Altitude (km)	Opacity	Cloud Cover	Phase Temp(K)	
Total Ground Cloud Cover: Overcast (>90%)				Total Aqua Cloud Cover: 98.78 %					
H I G H									
M I D									
L O W	Opaque	Overcast (>90%)	Nimbostratus			1.63	Opaque 18.53	Overcast (>90%) 98.78	mixed 265.31
Sky Visibility : 		View Corresponding Satellite Data		View Corresponding MODIS Satellite Images					
Sky Color :		<ul style="list-style-type: none"> <li>Cloudsat Quick Look</li> <li>Cloudsat Tutorial</li> </ul>		<ul style="list-style-type: none"> <li> Aqua Rapid Response</li> <li> <b>New!</b> NASA Worldview Aqua</li> </ul>					
<b>Surface Observations</b> Snow/ice: No Standing Water: Yes Muddy: Yes Dry Ground: No Leaves on Trees: No Raining/Snowing?: Yes				* Worldview does not work with Internet Explorer S'COOL NASA Worldview Tutorial S'COOL MODIS Rapid Response Guide					
Comments: No comments provided by participant.									

In 2015 NASA Langley Scientists will utilize the CERES S'COOL Program's data to compare and validate cloud retrieval analysis algorithms .

# Mentoring a Summer Intern, 2015

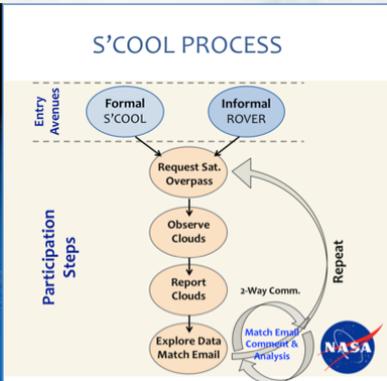
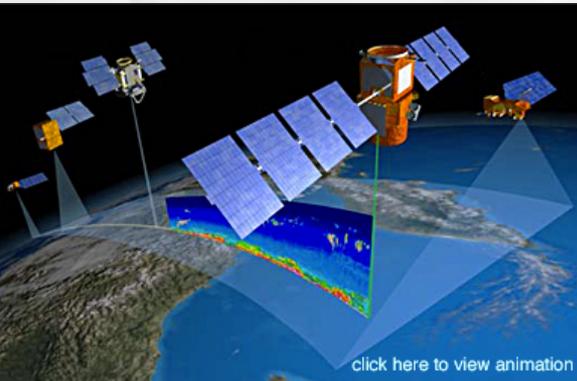


## Verification of Satellite-Derived Cloud Properties Using Cloud Observations From Students and the General Public

Kristopher Bedka will be assisting a student summer intern to perform detailed quantitative comparisons of S'COOL cloud observations and cloud properties derived from satellite-based cloud observations from the MODIS instrument. MODIS data can be used to retrieve cloud properties such as cloud height, thickness, and temperature but the accuracy of these retrievals is often difficult to determine due to a lack of ground-truth observations of clouds. The intern will use S'COOL cloud observations to estimate the accuracy of this satellite-based cloud information.

Expected Outcome: New processes for utilizing data collected by citizen scientists!

# S'COOL/CALIPSO Intensive Observation Campaign



Ground Observations - 117188				Aqua Satellite			
Date: 2013-05-28	Local Time: 13:42:00	Universal Time: 18:42:00	Altitude: 701	Date: 2013-05-28	Universal Time: 18:42:00	Altitude: 701	Phase: Terminator
Opacity	Cloud Cover	Type	Visualization	Opacity	Cloud Cover	Phase	Temp(K)
Total Ground Cloud Cover: Overcast (100%)				Total Aqua Cloud Cover: 89.88 %			
H	Clear (0-10%)	Convective		11:31	Transparent	Overcast (100%)	292.38
H	Broken (30-60%)	Altostratus					
L	Overcast (10-20%)	Stratocumulus					

Surface Conditions: No

Shallow Water: No

Windy: No

City Ground: Yes

Lake or Tree: Yes

Raining or Snowing: No

View Corresponding Satellite Data

- Real CALIPSO Data
- IPCO Tutorial

View Corresponding #0000 Satellite Image

Real NASA WorldView

IPCO Tutorial

Cloudlet Tutorial

Need Observation Help?



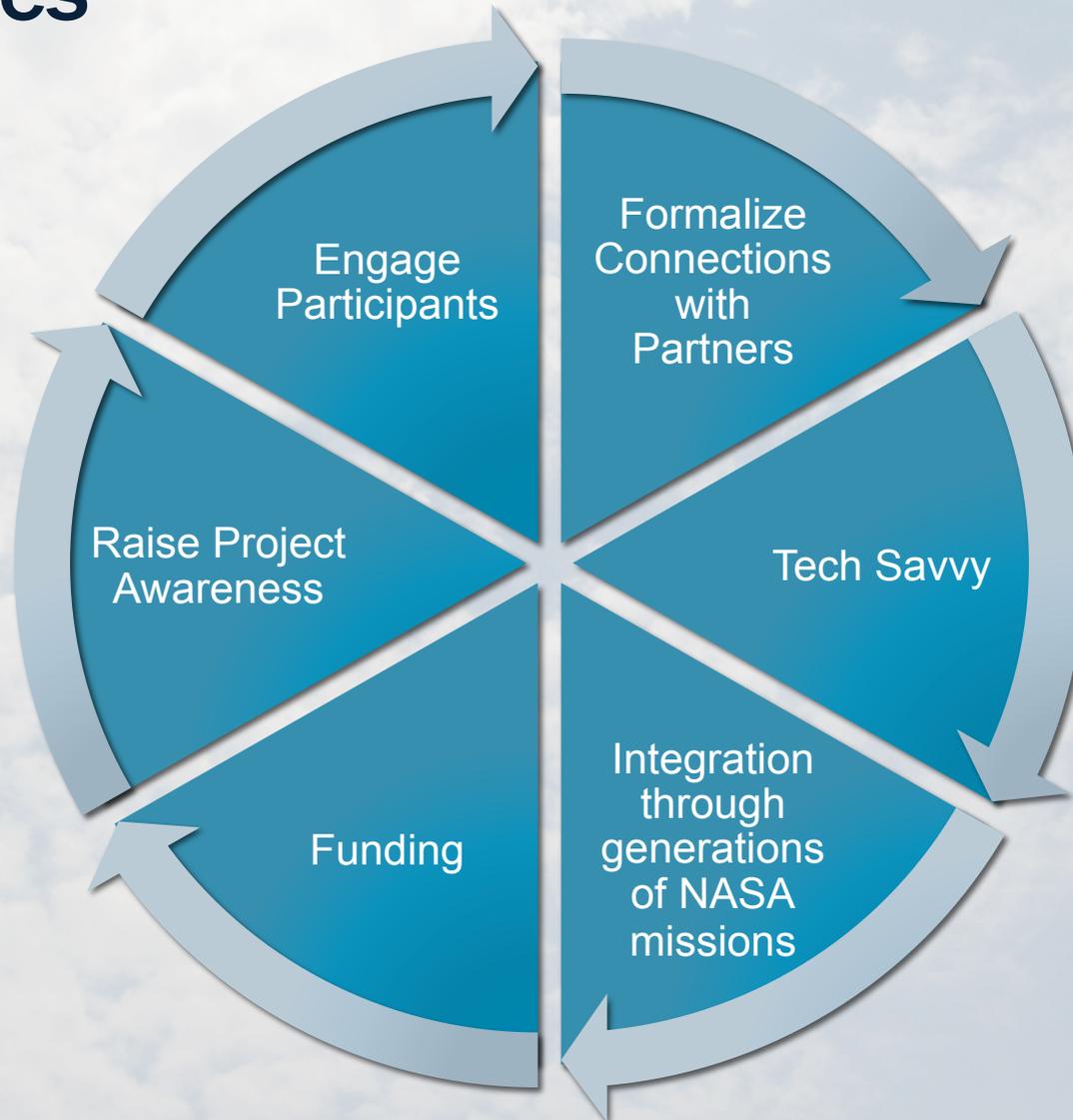
NASA Scientists would like to compare Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation ([CALIPSO](#)) satellite data and your ground cloud observations to better understand the roles clouds and aerosols play in regulating Earth's weather, but they need more ground observations that match to CALIPSO. That's where YOU can help!

Based on the predicted orbit of CALIPSO, the S'COOL team is asking participants located under its path to make S'COOL observations when the satellite passes over, as often as possible, even during night time overpasses. To participate in the CALIPSO Intensive Observation Campaign, observers will follow the same S'COOL process, matching to the CALIPSO Satellite.

<https://mydasdata.larc.nasa.gov/oyw/join-nasas-students-cloud-observations-on-line-scool-project-in-the-calipso-intensive-observation-campaign/>

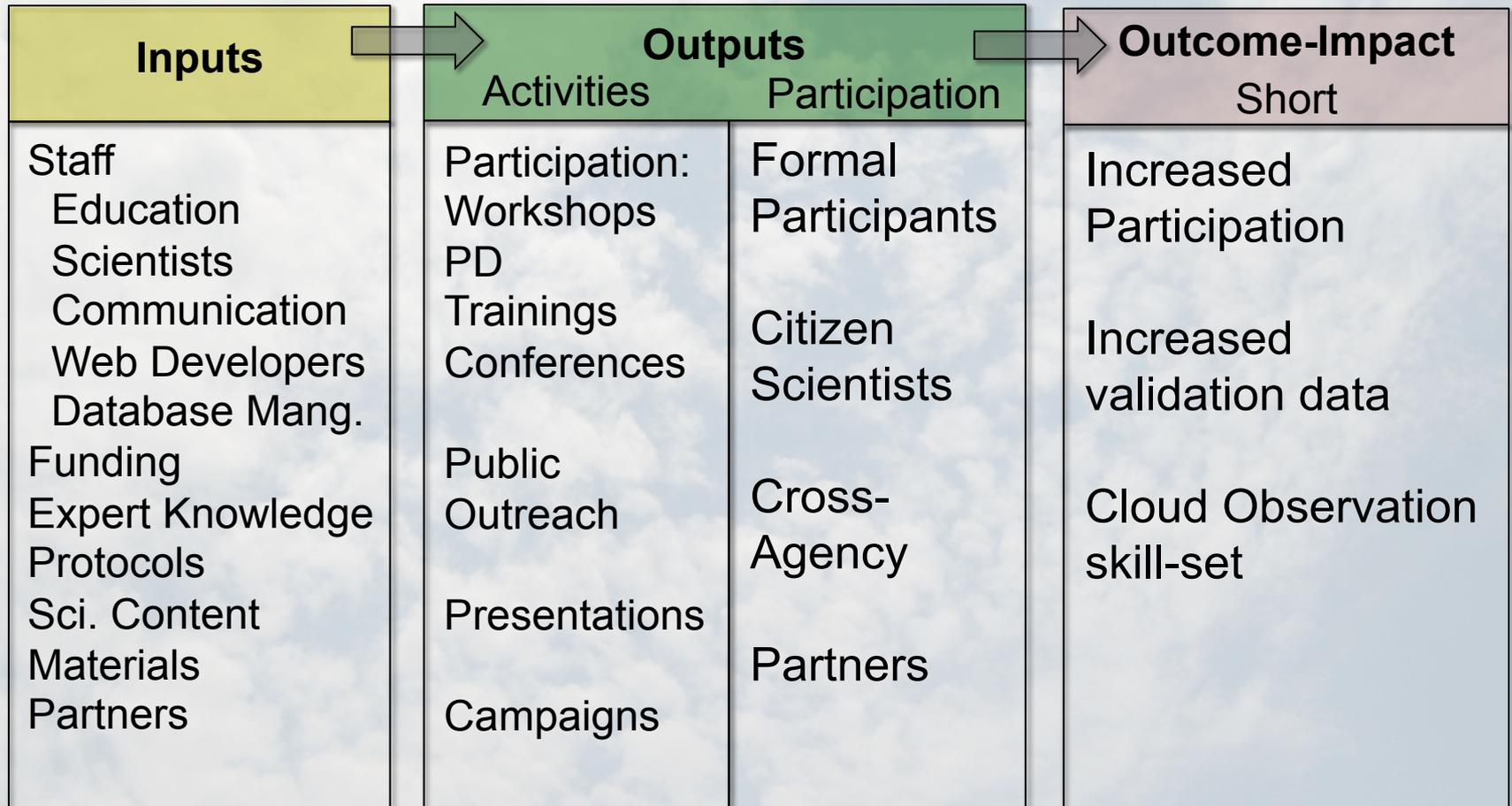


# Future Opportunities tied with Outreach Strategies



# S'COOL Logic Model

*GOAL: Increase available ground truth data for validation of cloud retrievals and increase participation in authentic science experiences*



*Our goals include inspiring the next generation of Science, Technology, Engineering and Mathematics (STEM) professionals and improving STEM literacy by providing innovative participation pathways for educators, students, and the public.*

# S'COOL/MND Outreach: Ambassadors, Conferences, Workshops



Upcoming:

NSTA Regional Conference, Philadelphia:  
S'COOL and MND Nov. 12-14, 2015

VAST 2015 Annual PDI, Chantilly:  
SD E/PO Nov. 19-21, 2015

ASTC 2015 Annual Conference, Montreal:  
Oct. 16-19, 2015

AAAS 2016 Annual Meeting, Washington D.C.:  
Feb 11-15, 2016

MY NASA DATA, Advisory Board School Visit,  
New Kent: May 13<sup>th</sup>, 2015

Tabb Elementary Career Fair, Yorktown: May  
29<sup>th</sup>, 2015

CNU STEM Day, Newport News:  
May 30<sup>th</sup>, 2015

Wallops Open House:  
June, 27<sup>th</sup>, 2015



# Upcoming Collaborations

## SciGirls

- SkyGirls
- Dance of the Dozen Clouds
- Eyes in the Skies
- How high is the Sky
- Deleted Scenes



<http://pbskids.org/scigirls/videos/earth-beyond?select=47624166-a7d0-49e9-bfc3-57f9f4c734cd>

## GLOBE





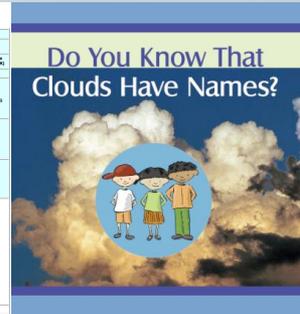
### The GLOBE Program Science Data Entry

The GLOBE mobile app allows GLOBE users to perform data entry on a large number of GLOBE science protocols. To use this app, you will need a GLOBE account.

I have a GLOBE account:

JOIN GLOBE | CONTACT GLOBE

Observed	Local Time	Universal Time	Cloud Cover	Cloud Type	Cloud Height	Phase
2015-04-14	18:00	18:00	100%	Altostratus	1000-1500	100%



# Showcase

- SD Key Activates
- LaRC SD All Hands
- NASA HQ SMD Earth Nuggets

# PBS SciGirls episode featuring the CERES S'COOL Project



*Dr. Lin Chambers reviewing weather balloon data with SciGirls*



*Dr. Travis Knepp launching a weather balloon with SciGirls*



*Dr. Yolanda Roberts, selected as the SciGirls Science Mentor*

*SciGirls*, PBS Kids TV show, aims to spark girls' (8-12) curiosity in STEM

- Has reached over **14 million** girls, educators, and families – **most widely accessed** girls' STEM program available
- 2011 & 2013 nominated in 3 Daytime Emmy Awards categories including **Best Children's Series**
- 2011: **Won Emmy Award for New Approaches**

NASA LaRC hosted 5-person *SciGirls* crew and cast of 3 girls (Age 14) Monday, June 23rd, 2014.

Dr. Roberts highlighted her work and NASA LaRC through the following collaborations:

- Greg Mekkes (8ft Wind Tunnel): Hands-on IR camera demonstration about infrared and visible radiation
- Dr. Travis Knepp: Weather balloon launch and atmospheric profile data analysis
- Dr. Lin Chambers: Discussion of S'COOL Observations relevance in science research
- David Mercer and Dave Brewer (Structures & Materials): Inflatable Habitat tour
- VA Air and Space Center: Provision of 12 ft. column to showcase the cast girls' final project

Science Directorate staff Yolanda Roberts, Lin Chambers, and Sarah Crecelius provided science content for the episode on clouds, weather, and S'COOL. This episode is set to air in early 2015.



*SciGirls observing the clouds for the S'COOL Project*

# NASA LaRC/PBS Viewing Party



Season 3 featuring Citizen Science premieres April 2015.  
SkyGirls, can be seen online @ <http://pbskids.org/scigirls/videos>.

In June 2014, the PBS SciGirls Program taped an episode featuring 3 local middle school girls and NASA LaRC mentor Dr. Yolanda Roberts as they participated in the CERES S'COOL Project.

To celebrate the premiere of the episode, titled SkyGirls, the **CERES S'COOL Project** hosted a viewing party (April 12<sup>th</sup>, 2015).

The event took place at the Virginia Air and Space Center where **over 70 attendees** watched the **S'COOL episode on the IMAX screen** and explored girls in **STEM, NASA Earth Science, and NASA opportunities for students**. Exhibits and collaborations included:

- *PBS SciGirls*
- *NASA LaRC Office of Education and student opportunities (DEVELOP)*
- *LaRC Science Directorate E/PO (MY NASA DATA, SAGE III on ISS, CERES S'COOL, and CALIPSO)*
- *Women in STEM/NASA LaRC Women's Informal Network*

Notable Guests:

- *LaRC Acting Deputy Center Director, Clayton Turner*
- *LaRC Science Directorate, Director David Young*

Sarah Crecelius, SSAI/ NASA LaRC  
[Sarah.a.crecelius@nasa.gov](mailto:Sarah.a.crecelius@nasa.gov)



April 13<sup>th</sup>, 2015

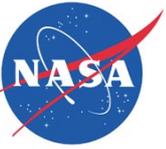
# MY NASA Data Teacher Advisory Board



MY NASA DATA has been working closely with an advisory board of elementary, middle, and high school Master Teachers. These Master Teachers are using their classroom experience and expertise to help improve and drive forward the MY NASA DATA project. We thank them for their help and for their commitment to MY NASA DATA! Learn more about each of our Master Teachers, below.

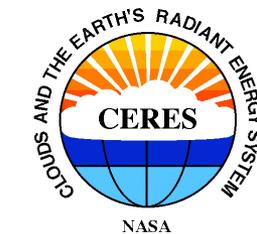
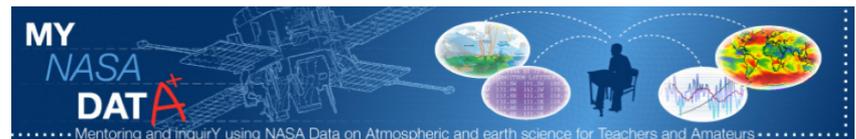
<http://mynasadata.larc.nasa.gov/my-nasa-data-advisory-board/>.

# LaRC Science Directorate at Community STEM Day



Preston Lewis, Dan Oostra, and Sarah Crecelius, staffed two **Earth Science NASA booths for Community STEM Day** at Christopher Newport University in Newport News, VA on May 31st, 2014.

**The booths featured CERES with the Students' Cloud Observations On-Line (S'COOL) Project and more than 180 Earth Science Data sets through the Live Access Server data visualization tool and the MY NASA DATA Project. Over 1,500 visitors, families, and students** participated in hands-on activities and web applications at each booth and received educational material related to each project and Science Directorate missions.





# Students' Cloud Observations On-Line Project Celebrates Earth Day with Global Selfies

Hampton, VA NASA LaRC  
April 22<sup>nd</sup>, 2014

S'COOL team joined the SMD Earth Right Now campaign to Celebrate Earth Day 2014 with a "where are you on Earth?" Selfie. The following CERES S'COOL participants from **around the world** sent in and posted S'COOL selfies that were featured on Observe Your World, the LaRC SD Education and Public Outreach Blog.

- Club Científico Crecelius , in San Miguel de Tucuman, Argentina
- Instituto Patria Bosques , in Mexico
- Our Lady of Perpetual Help Catholic School, in Germantown TN, USA
- Woodrow Wilson High School, in Portsmouth, VA, USA
- Liceo Alberto del Canto, in Arteaga, Mexico



Picture S'COOL Team



# S'COOL Presentation for Office of Education STEM Mania Series.

Hampton, VA NASA LaRC  
March, 2014

LaRC Science Directorate Education and Public Outreach (E/PO) Team presented the CERES S'COOL Project as part of the Education Office's NASA STEM Mania series, March 11th, 2014. Six schools (**150 students, international registered to connect to the webcast through NASA's Digital Learning Network**). The presentation was also streamed live and available to the public. Science Directorate E/PO highlighted how students can observe and report cloud data to help CERES validation, focusing on cloud types and related weather patterns.



Picture from Student in Argentina listening to LIVE Stream

# NASA LaRC Science Directorate E/PO at Homeschool Appreciation Day



Above: Carmen Maldonado, with SAGE III/ISS, Engineer a Satellite Activity



Above: Sarah Crecelius, with the CERES S'COOL Project, making cloud charts

Education and Public Outreach staff and volunteers participated in the Virginia Air and Space Center's Homeschool Appreciation Day, Wednesday, September 17<sup>th</sup>, 2014 in Hampton, Va.

More than **1,000 participants** explored Earth science through NASA Langley Research Center's missions and projects...

- SAGE III/ISS: designing satellites and instrument payloads around limitations, such as weight, to help monitor the Earth's vital signs
- CERES S'COOL Project: assisting the S'COOL team with LIVE cloud observations and making cloud charts to take home to assist in understanding how clouds effect our weather and climate

*Staffers include: Kristyn Damadeo, Carmen Maldonado, Tina Harte, Preston Lewis, and Sarah Crecelius*

# GLOBE at LaRC Elementary Storybook Training

## Richmond Public City Schools

November 4<sup>th</sup>, 2014



Above: Sarah Crecelius, with the CERES S'COOL Project, making cloud charts



Above: Sarah Crecelius, with the CERES S'COOL Project, making cloud charts



Above: Sarah Crecelius, with the CERES S'COOL Project, making cloud charts

GLOBE Partner, NASA Langley Research Center, collaborated with Richmond City Public Schools to provide professional development and certification for elementary science teachers focused on implementing GLOBE Elementary Storybooks in the classroom. **170 Participants** walked through classroom activities and implementation strategies in relation to the GLOBE Elementary Storybook assigned to their specific grade:

- *K-1 Discoveries at Willow Creek,*
- *Second Grade: The Mystery of the Missing Hummingbirds,*
- *Third Grade: The Scoop on Soils*
- *Forth Grade: Do You Know That Clouds Have Names?*
- *Fifth Grade: All About Earth*

Staffers included: Tina Harte, Kristyn Damadeo, and Sarah Crecelius



# #SkyScience Campaign



Above: Dr. Lin Chambers, Kristyn Damadeo, and Sarah Crecelius on the ESW SkyScience NASA Chat.



Above: Cloud Photo, #SkyScience From India off of Sky Science Facebook Page.



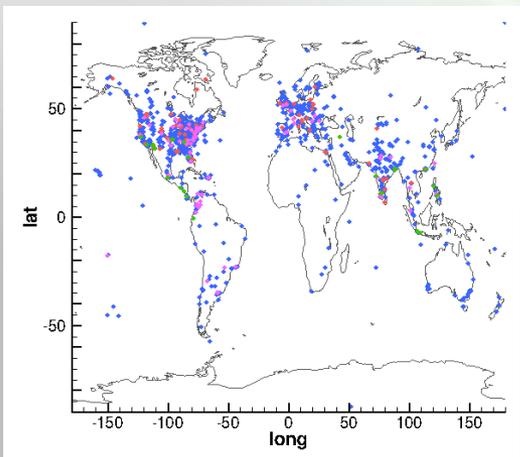
Above: S'COOL SkyScience Observation, satellite overcast image (left), matching ground overcast image (right).



NASA LaRC SD E/PO and communications teams, in collaboration with the Earth Right Now Campaign and JPL Team, supported Earth Science Week events through generation and support of #SkyScience. A campaign featuring world wide Citizen Science involvement around NASA's research of Earth's atmosphere and clouds.

Participants participated in the following ways:

- CERES S'COOL Cloud Observations (over 1100 observations and 104 photos submitted)
- SAGE III on ISS SkyArt (128 photos)
- Posting cloud pictures to social media platforms under the # SkyScience
- SkyScience NASA Chat (20 participants, 6 NASA moderators, 40 questions, participants from U.S. And Argentina)
- SkyScience Facebook Group



Above: SkyScience Participants from around the world requested overpass schedules (blue dots), reported cloud observations (pink), and sent in cloud photos.

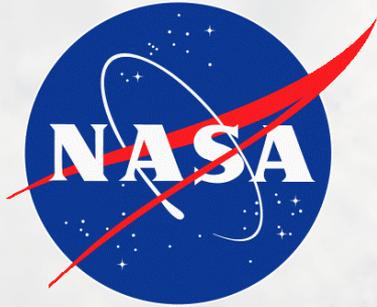


Above: #SkyScience Sharables

**How to Participate:**  
It's easy to participate in #SkyScience. Just follow steps 1 - 4 below to join in the fun! You may also meet other participants in the #SkyScience Facebook event and Google+ event.

- 1 Find your satellite overpass**  
Cloud observations submitted through the S'COOL project help NASA scientists validate satellite data, so you will want to schedule your observations when a NASA satellite is passing overhead.  
Three NASA satellites pass over most every location on Earth every day. Terra flies over in the morning, generally between 10 am and noon. Aqua and Suomi NPP pass over in the afternoon, generally between 1 and 3 pm.  
Click here to find your satellite overpass times.
- 2 Observe your clouds**  
Download both the Cloud Observation Report and Cloud Identification Chart below and be prepared for your satellite overpass. You'll want to have a pen or pencil handy too. At the appointed satellite overpass time (within +/- 15 minutes), head outside and simply look up. Use the Cloud Identification Chart to help you make accurate observations of low, mid and high-level clouds. Don't forget to report any airplane contrails you see, as these are clouds too!  
• Cloud Observation Report (English, Spanish, French)  
• Cloud Identification Chart (English, Spanish, French)
- 3 Report your data online**  
Stumped on a cloud type? There's more help here: Online Cloud Chart and Observation Tips.  
After your sky observation, you'll need to report your data through the S'COOL website. Approximately a week later, you'll receive a report via email with the satellite data and images taken from space on the same day and time as your observations.  
Click here to report your cloud observations.
- 4 Share your photos as sky art**  
We'd love to hear about your #SkyScience experience too! Snap a photo of sky art (i.e. clouds, weather, sunrises and sunsets, moonrises and moonsets etc.) and share it with us.  
• Twitter or Instagram using the hashtag #SkyScience.  
• Facebook Sky Art Photo group.  
• Facebook or Google+ events pages.

# Thank *YOU!*



Any Questions? Please email the Team at  
[scool@lists.nasa.gov](mailto:scool@lists.nasa.gov) or [sdepo@lists.nasa.gov](mailto:sdepo@lists.nasa.gov)  
[sarah.a.crecelius@nasa.gov](mailto:sarah.a.crecelius@nasa.gov)