The background features a large, colorful nebula in shades of blue, purple, and orange, set against a dark space filled with stars. Two satellite-like spacecraft are visible: one in the upper left and another in the lower right.

STScI'S OFFICE OF EDUCATION AND PUBLIC OUTREACH

Jason Kalirai, JWST Project Scientist, STScI

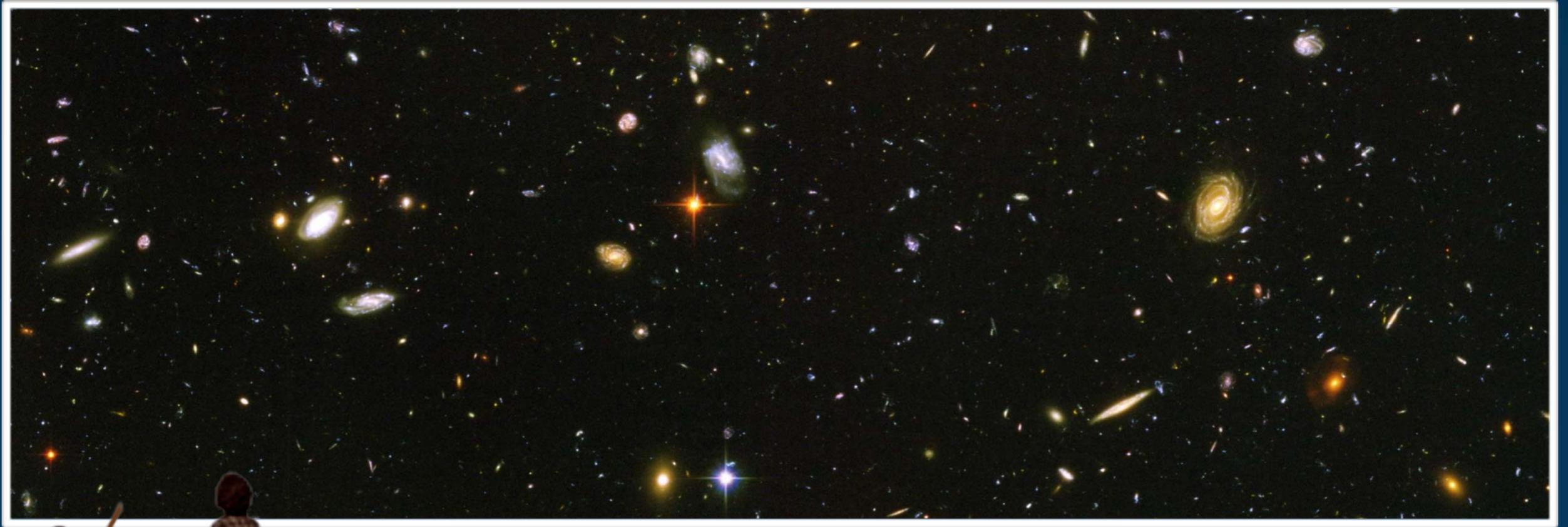
Hussein Jirdeh, Head of Communications and Public Outreach, STScI

Kathryn Flanagan, Deputy Director, STScI

Video can be viewed at:

http://youtu.be/a6O1_XfxEAA

ASTRONOMY: A STEM GATEWAY



Astronomy

1. Kids have **a natural affinity for the night sky**
2. Seeking answers to the mysteries of the Universe embodies STEM
Addressing **scientific** challenges on the grandest scales, with unprecedented **engineering** tools built on innovative **technology**, understanding concepts by pushing **mathematical** extremes

SPACE TELESCOPE SCIENCE INSTITUTE

- Science operation for the **Hubble Space Telescope**
- Science & mission operations for the **James Webb Space Telescope**



- We enable **world-class scientific research**
 - ★ 100 active research scientists.
 - ★ Professional **educators** as well as **scientists** are an integral part of **Office of Public Outreach**.

Where does STScI fit in NASA?

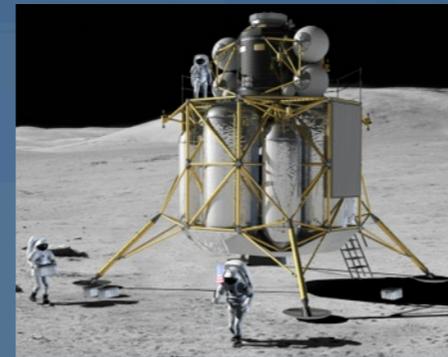
Offices of
Communications
& Education



4 Mission
Directorates



Aeronautics Research

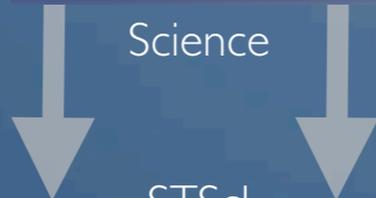


Human Exploration

10 Field Centers



Science



STScI



Space Technology

NASA advances its goals through a wide-range of partners

Public Impact after SM4

Hubble in the News

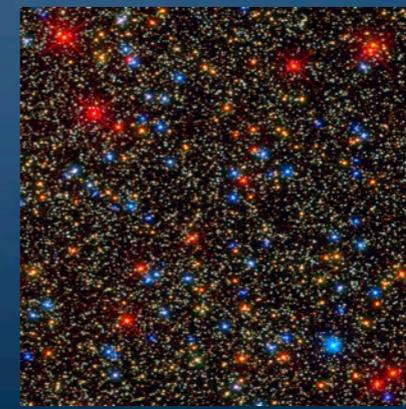
Number of impressions = Number of stories x circulation



Public Impact after SM4

Hubble in the News

Number of impressions = Number of stories x circulation



Public Impact after SM4

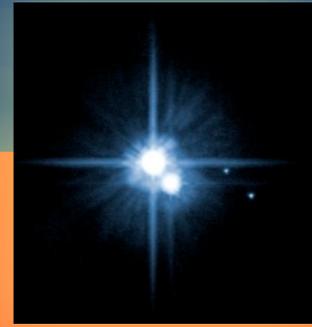
Hubble in the News

Number of impressions = Number of stories x circulation

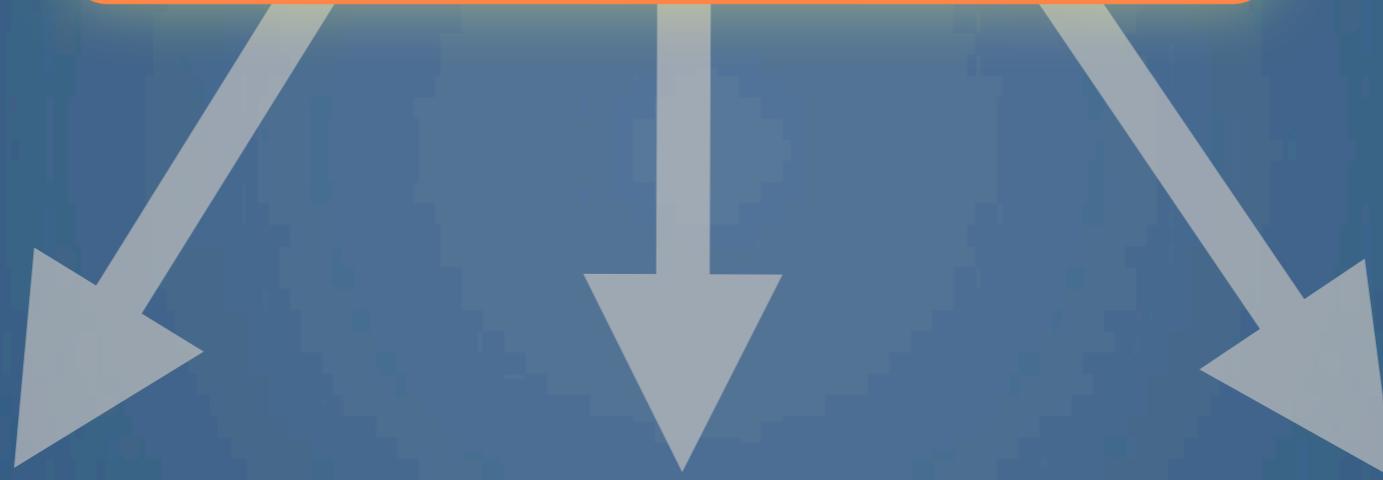


Science is the new Space Frontier

News of Discoveries Reaches Students



Science Discovery

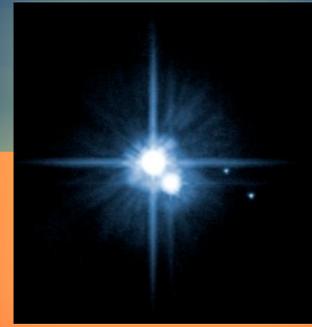


News

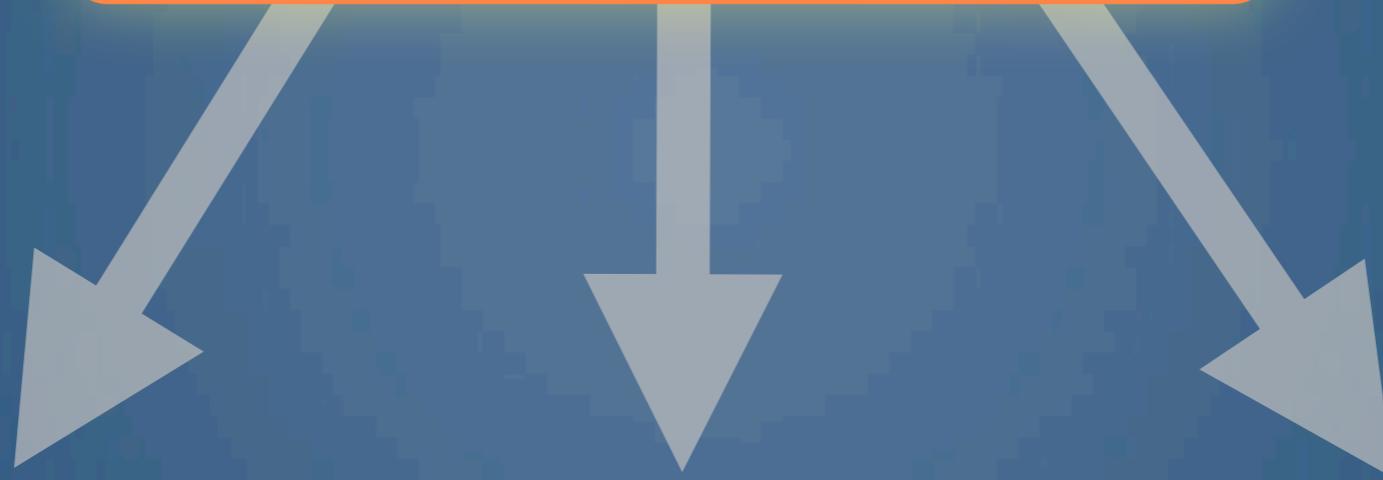
Education
Formal
Informal

Public
Outreach

News of Discoveries Reaches Students



Science Discovery



News

STEM Pipeline
K-12 Edu
Undergrad
Graduate
Postdocs

Public
Outreach

NEWS AND PUBLIC AFFAIRS

News of Hubble's discoveries

For 2012:

- 28 News Releases
- 3,261 online articles with total circulation ~ **4 billion***
- The average news release is exposed to **135 million potential readers**



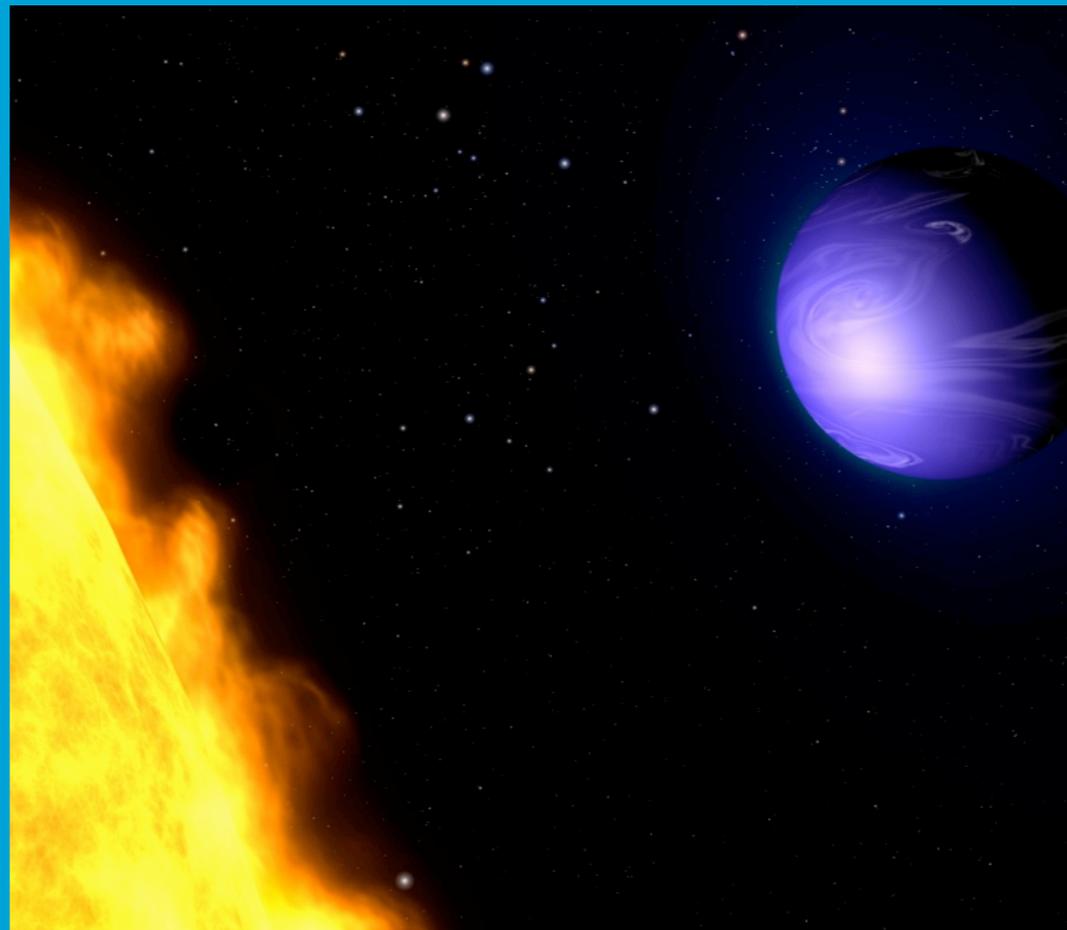
* Meltwater News

NEWS AND PUBLIC AFFAIRS

News of Hubble's discoveries

For 2012:

- 28 News Releases
- 3,261 online articles with total circulation ~ **4 billion***
- The average news release is exposed to **135 million potential readers**



Extrasolar Planet HD 189733b

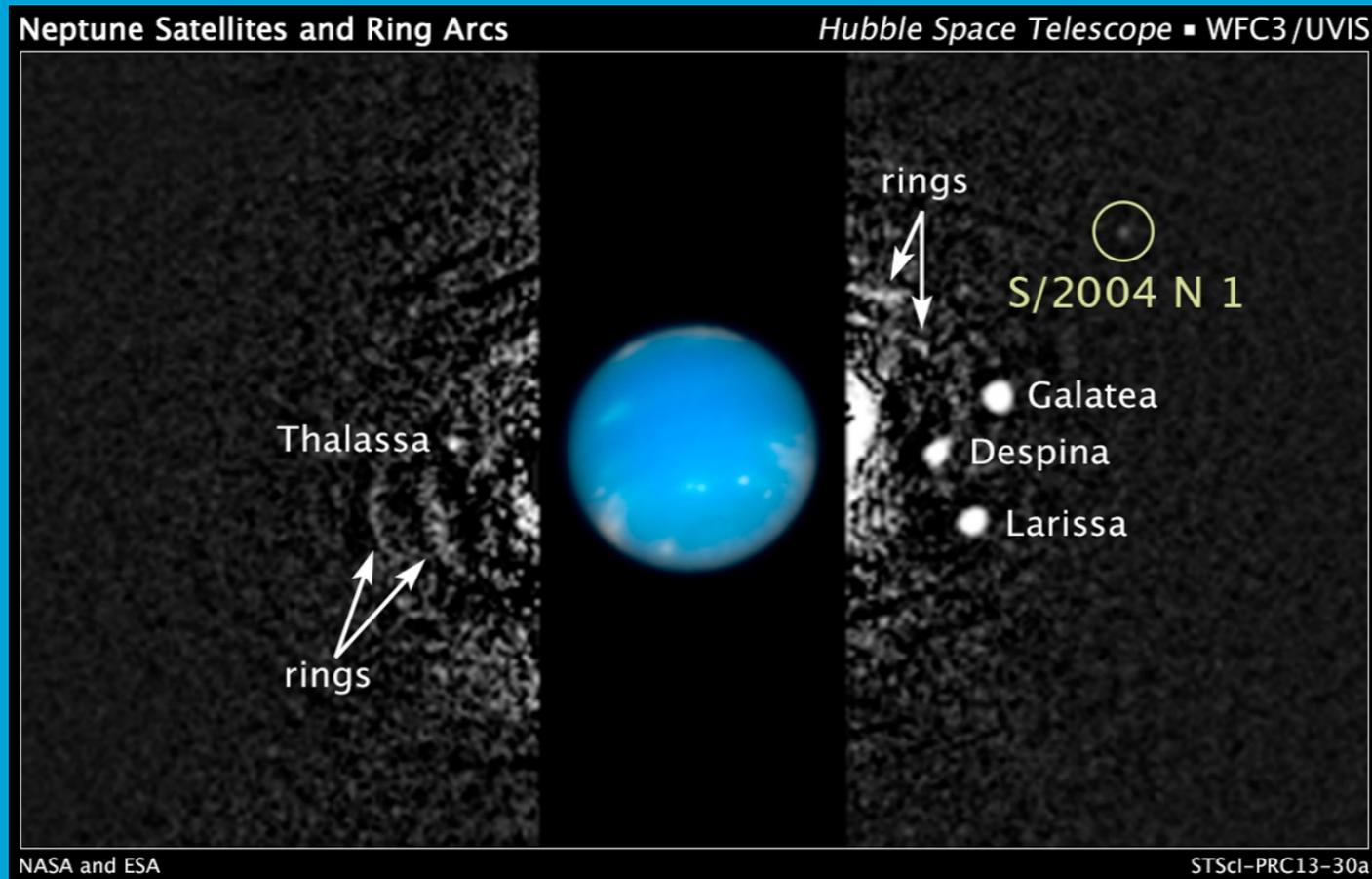
* Meltwater News

NEWS AND PUBLIC AFFAIRS

News of Hubble's discoveries

For 2012:

- 28 News Releases
- 3,261 online articles with total circulation ~ **4 billion***
- The average news release is exposed to **135 million potential readers**



Hubble Finds New Neptune Moon

* Meltwater News

NEWS AND PUBLIC AFFAIRS

News of Hubble's discoveries

For 2012:

- 28 News Releases
- 3,261 online articles with total circulation ~ **4 billion***
- The average news release is exposed to **135 million potential readers**



Comet ISON

* Meltwater News

ONLINE OUTREACH

- **2 million** visits/month
- **150 million** hits/month
- Inbox Astronomy
~**40,000** subscribers
- **160** questions/month
- **HubbleSite is 10%**
of NASA's online traffic



HUBBLESITE  

Home NewsCenter Gallery Hubble Discoveries Hubble Telescope Explore Astronomy Education & Museums Reference Desk The Future: Webb Telescope

HUBBLE'S UNIVERSE unfiltered

with Dr. Frank Summers
The wonders of the universe, explained for you!

[GO TO THE PAGE](#)

iBooks are here!
Available on the  **iBookstore**
[GET THE IBOOKS](#)

HubbleSite App
Available on the  **App Store**

A CURIOUS MIND
For more science musings
[READ THE BLOG](#)
(external link)

Gallery

Spectacular pictures of stars, galaxies, nebulae and more. Catch the best of Hubble's extensive portfolio.

Explore Gallery:

- [Picture Album](#)
- [Wallpaper](#)
- [Astronomy Printshop](#)
- [Behind the Pictures](#)

Get Involved!

Explore opportunities to collaborate with experts, contribute your time and talents, or just have fun.

- [Hubble Hangouts](#)
- [Citizen Science](#)
- [Hubble Image Processors](#)

Hubble in Action

The Discoveries

Hubble's scientific achievements

- [Extrasolar Planets](#)
- [Dark energy](#)
- [Hubble Deep Field](#)

The Telescope

How it operates and what it can do

- [Hubble Essentials](#)
- [Servicing Missions](#)
- [Nuts and Bolts](#)

NewsCenter

Latest news

[Hubble Finds Dead Stars 'Polluted' with Planet Debris](#)

Want more?
[Visit the archive.](#)

Webb Telescope

- [Behind the Webb](#) (video podcast)
- [Technology at the Extremes](#)

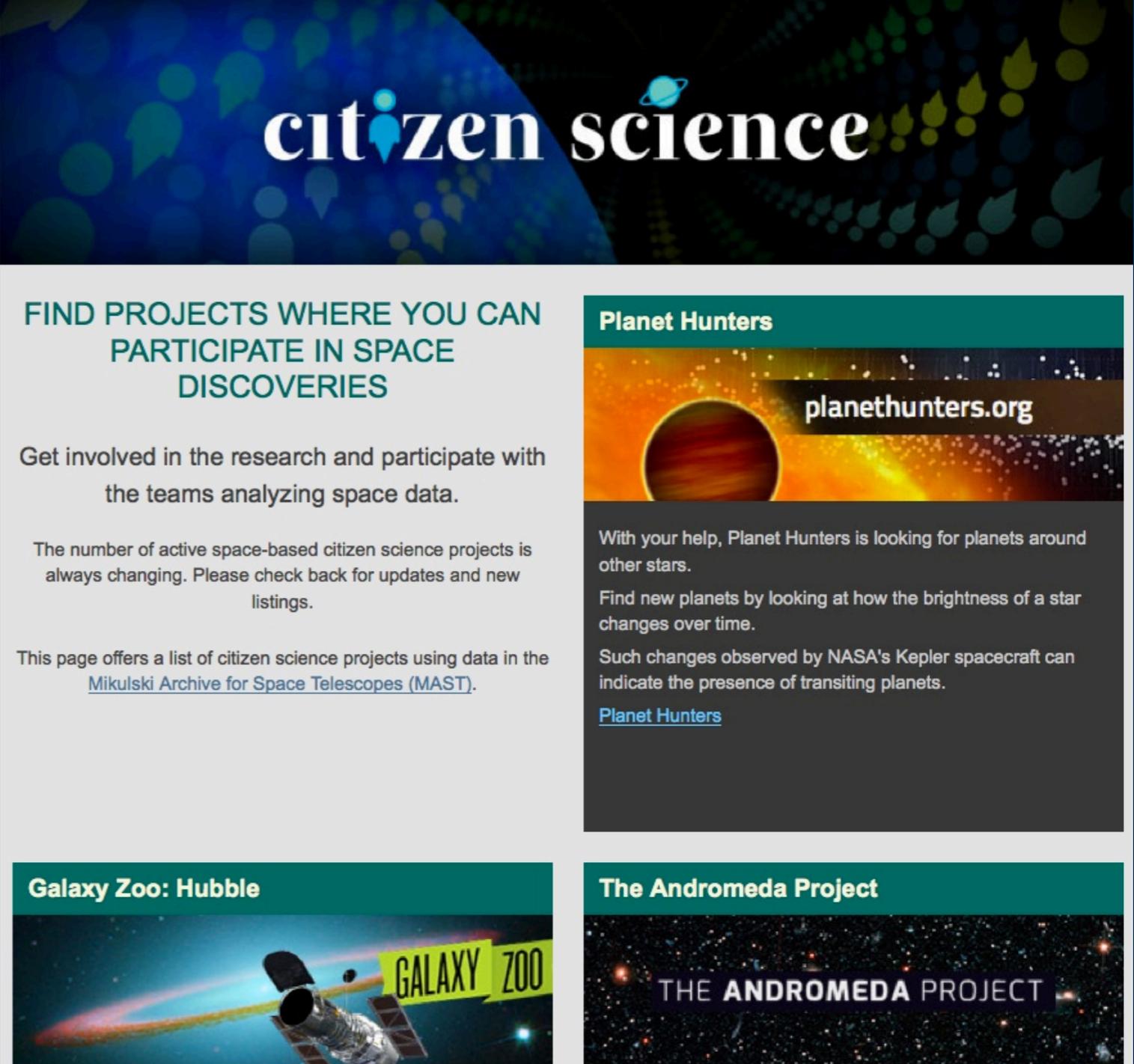
The Webb Space Telescope, Hubble's successor, will see in infrared, the light emitted by the farthest objects we can detect. Learn about Webb, its technology, and the science it will reveal.

EDUCATORS

Get the latest astronomy tools for your classroom. Visit our sister-site, [Amazing Space](#).

ONLINE OUTREACH

- **2 million** visits/month
- **150 million** hits/month
- Inbox Astronomy
~**40,000** subscribers
- **160** questions/month
- **HubbleSite is 10%**
of NASA's online
traffic



The screenshot shows the Citizen Science website interface. At the top, the 'citizen science' logo is displayed against a dark blue background with a planet and stars. Below the logo, a section titled 'FIND PROJECTS WHERE YOU CAN PARTICIPATE IN SPACE DISCOVERIES' is visible. This section includes a sub-header 'Planet Hunters' with a corresponding banner image of a planet and the website 'planethunters.org'. The main text in this section describes the project: 'Get involved in the research and participate with the teams analyzing space data.' It also mentions that the number of active space-based citizen science projects is always changing and provides a link to the 'Mikulski Archive for Space Telescopes (MAST)'. Below this, there are two more project banners: 'Galaxy Zoo: Hubble' with an image of the Hubble Space Telescope and 'The Andromeda Project' with an image of the Andromeda galaxy.

citizen science

FIND PROJECTS WHERE YOU CAN PARTICIPATE IN SPACE DISCOVERIES

Get involved in the research and participate with the teams analyzing space data.

The number of active space-based citizen science projects is always changing. Please check back for updates and new listings.

This page offers a list of citizen science projects using data in the [Mikulski Archive for Space Telescopes \(MAST\)](#).

Planet Hunters
planethunters.org

With your help, Planet Hunters is looking for planets around other stars.

Find new planets by looking at how the brightness of a star changes over time.

Such changes observed by NASA's Kepler spacecraft can indicate the presence of transiting planets.

[Planet Hunters](#)

Galaxy Zoo: Hubble

The Andromeda Project
THE ANDROMEDA PROJECT

ONLINE OUTREACH

- **2 million** visits/month
- **150 million** hits/month
- Inbox Astronomy
~**40,000** subscribers
- **160** questions/month
- HubbleSite is **10%**
of NASA's online
traffic



HUBBLESITE NASA

Home NewsCenter Gallery Hubble Discoveries Hubble Telescope Explore Astronomy Education & Museums Reference Desk The Future: Webb Telescope

HUBBLE'S UNIVERSE unfiltered

with Dr. Frank Summers
The wonders of the universe, explained for you!

GO TO THE PAGE

iBooks are here!
Available on the iBookstore
GET THE IBOOKS

HubbleSite App
Available on the App Store

A CURIOUS MIND
For more science musings
READ THE BLOG (external link)

Gallery
Spectacular pictures of stars, galaxies, nebulae and more. Catch the best of Hubble's extensive portfolio.

Explore Gallery:

- [Picture Album](#)
- [Wallpaper](#)
- [Astronomy Printshop](#)
- [Behind the Pictures](#)

Get Involved!

Explore opportunities to collaborate with experts, contribute your time and talents, or just have fun.

- [Hubble Hangouts](#)
- [Citizen Science](#)
- [Hubble Image Processors](#)

Hubble in Action

The Discoveries
Hubble's scientific achievements

- [Extrasolar Planets](#)
- [Dark energy](#)
- [Hubble Deep Field](#)

The Telescope
How it operates and what it can do

- [Hubble Essentials](#)
- [Servicing Missions](#)
- [Nuts and Bolts](#)

NewsCenter
Latest news
[Hubble Finds Dead Stars 'Polluted' with Planet Debris](#)

Want more?
Visit the archive.

Webb Telescope

- [Behind the Webb](#) (video podcast)
- [Technology at the Extremes](#)

The Webb Space Telescope, Hubble's successor, will see in infrared, the light emitted by the farthest objects we can detect. Learn about Webb, its technology, and the science it will reveal.

EDUCATORS
Get the latest astronomy tools for your classroom. Visit our sister-site, [Amazing Space](#).

ONLINE OUTREACH

- **2 million** visits/month
- **150 million** hits/month
- Inbox Astronomy
~**40,000** subscribers
- **160** questions/month
- **HubbleSite is 10%**
of NASA's online
traffic

Education & MUSEUMS

iBooks are here!



Available on the
iBookstore

GET THE IBOOKS ▶

Hand-Held Hubble ▶▶



Need a
SCIENCE FAIR
idea?

Create your own
scale model of
the Hubble Space Telescope!

Bring the marvels of the universe to your classroom or audience. Our sister sites provide a multitude of resources for use in schools, museums, science centers and planetariums.

AMAZING SPACE ▶▶

resources for teachers and students

The Amazing Space Web site draws on revelations from the Hubble Space Telescope to create materials and online products that teachers can use to reach students in grades K-12. Students can use the site to research homework assignments, project ideas and more.

Online Explorations: Web-based activities that tackle topics from comets to black holes. Construct a galaxy, plan a NASA mission, learn the history of the telescope, and more.

The Star Witness News: This newspaper brings you the latest from the Hubble Space Telescope with easy-to-understand language, graphics and illustrations.

Teaching Tools: A complete listing of all Amazing Space's activities, along with descriptions, related materials, and directions for using them in the classroom.



HUBBLESOURCE ▶▶

resources for museums and planetariums

Find Hubble-themed exhibits, video, images, film and expertise for museums, planetariums, science centers or similar venues.

ViewSpace: Transform a corner of your exhibit hall into an ever-changing kaleidoscope of astronomy presentations. Learn about our internet-fed, self-updating exhibit, ViewSpace.



STScI EDUCATION PROGRAM

We bring the universe to the formal and informal education communities, and engage educators and students in the adventure of scientific discovery.



Standards-based Curriculum Support Tools
(online, hardcopy, and mobile platform)



Professional Development



Student Activities



Exhibits and Standards-based Exhibit Support Materials



Interns Externs



Education Community Support & Community Events

Unique Content, Educator-Scientist Teams, Research-based, Evaluation (internal/external), Partnerships, Diversity

Affinity for Astronomy

Astronomy and Hubble embody STEM

Science on a grand scale

Technology in telescopes

Engineering marvels as tools

Mathematical extremes

Middle-School Target

“If educators don’t capture students’ interest and enthusiasm in science by grade 7, students may never find their way back to science.”



STScI Strategy

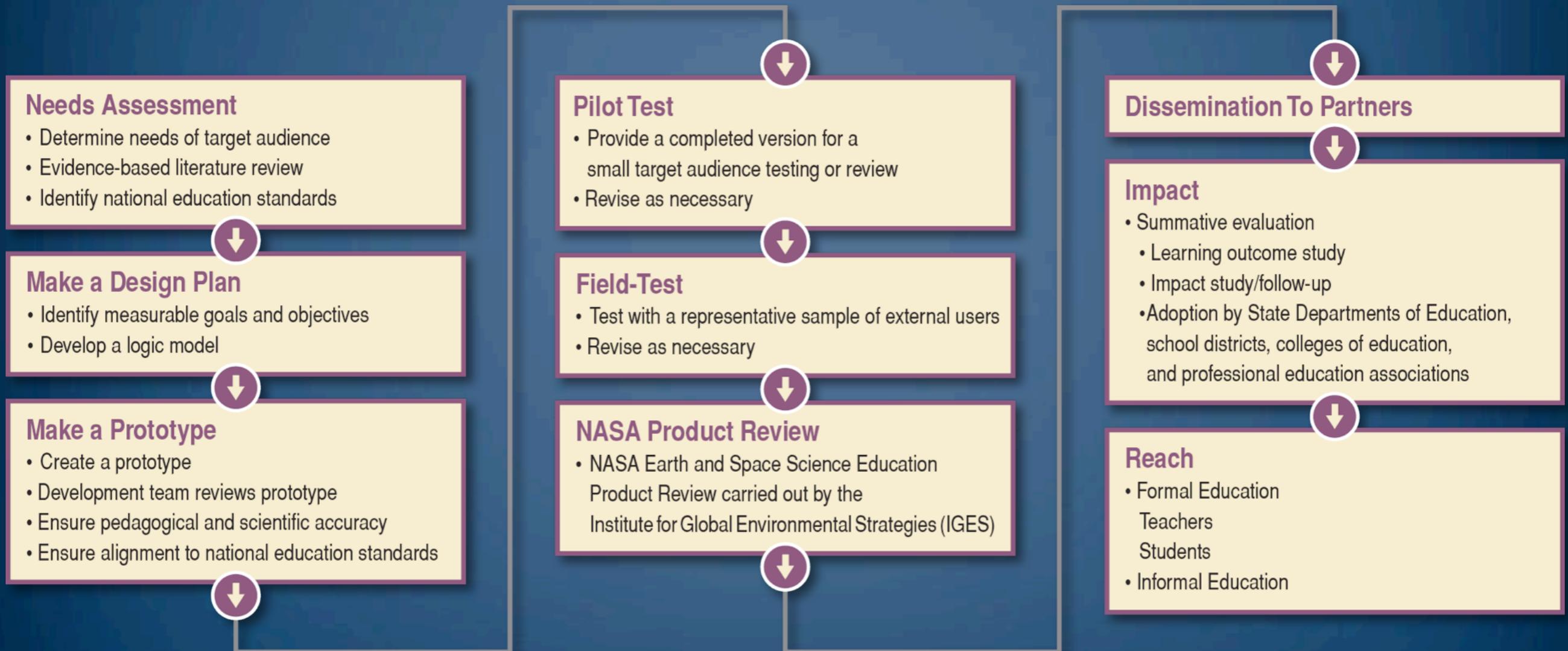
- Scientist-Educator partnership
- Rigorous development and evaluation model to produce products of high quality and impact
- Leveraging strategies to extend reach
 - Strategic partnerships
 - Master Teachers
 - Online access

US STEM Education Goal



100,000 excellent STEM teachers
1 million new STEM graduates

Every product is standards-based, field-tested and evaluated for impact



EXAMPLES OF STRATEGIC PARTNERSHIPS AND REACH

(How a small team serves a *BIG COUNTRY*)

ORGANIZATIONS

Space Grant Consortia

Learning.com

WorldWide Telescope

American Library Association

National Federation of the Blind

Night Sky Network

Spitz Digital Institute

Maryland Science Center

The After-School Institute

TEXTBOOKS / CURRICULUM

Houghton Mifflin

Lawrence Hall of Science

NSTA SciGuides

Brooks/Cole

McGraw-Hill

Harcourt

Scholastic

Open Court

MacMillan

Baltimore County Curriculum

& Star Lab Program

UNIVERSITIES

Johns Hopkins University

Morgan State University

University of Texas at Austin

University of Chicago

Georgia State University

California State University,

Sacramento

Penn State University

Virginia Tech University

Immaculata University

STATE DEPTS. OF EDUCATION

Ohio, Texas, Utah, South Carolina,

Colorado, Hawaii, California

Adopted in 27 states, but used in all 50.

Diversity

Morgan State

Baltimore City After School Institute

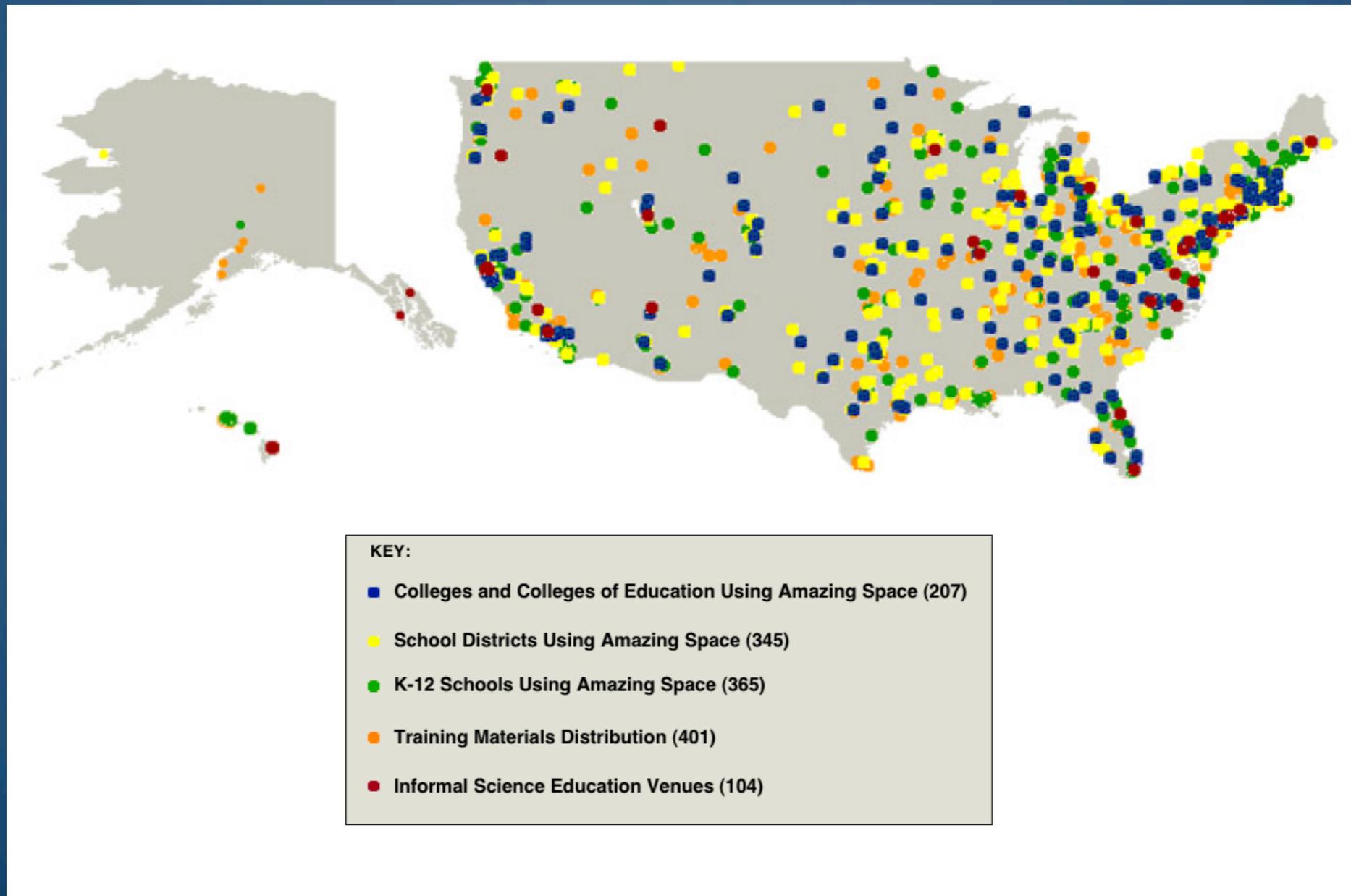
Women's Collaborative Project

Tactile Astro

STEMcx

ONGOING IMPACT STUDIES

Ongoing education impact study at 1400 venues - a small subset of users - confirms our materials are useful and effective



SUMMARY OF STScI METRICS

FORMAL EDUCATION—½ million teachers, 6 million students per year at a cost of 25¢ per student per year

STScI Formal Education	Metric	Leverage
K-12 students: Direct Interactions	2,000	
K-12 Teachers: Direct Interactions	1,100	Through Master Teachers, a further 55,000 teachers and 1.7 million students reached
K-12 engaged *	6.7 million	Materials used in all 50 states , integrated into programs of more than half the U.S. state departments of education
K-12 teachers engaged	520,000	STScI's Amazing Space website is integrated into Ohio's required pre-service educator training program, reaching over 20,000 educators.

*McREL conducted a learning outcome study showing that students using STScI's Planet Impact would score 13 percentile points higher than a control group on a standardized test.

INFORMAL EDUCATION (e.g., museums, libraries) – 9 million people per year

STScI Informal Education	Metric	Measurement Example
Participants/Observers	9 million	Preliminary result by Cornerstone Evaluation Associates LLC of library program measured ~30% increase in astronomy book check out rates

SUMMARY OF STScI METRICS

PUBLIC OUTREACH – 24 million people per year

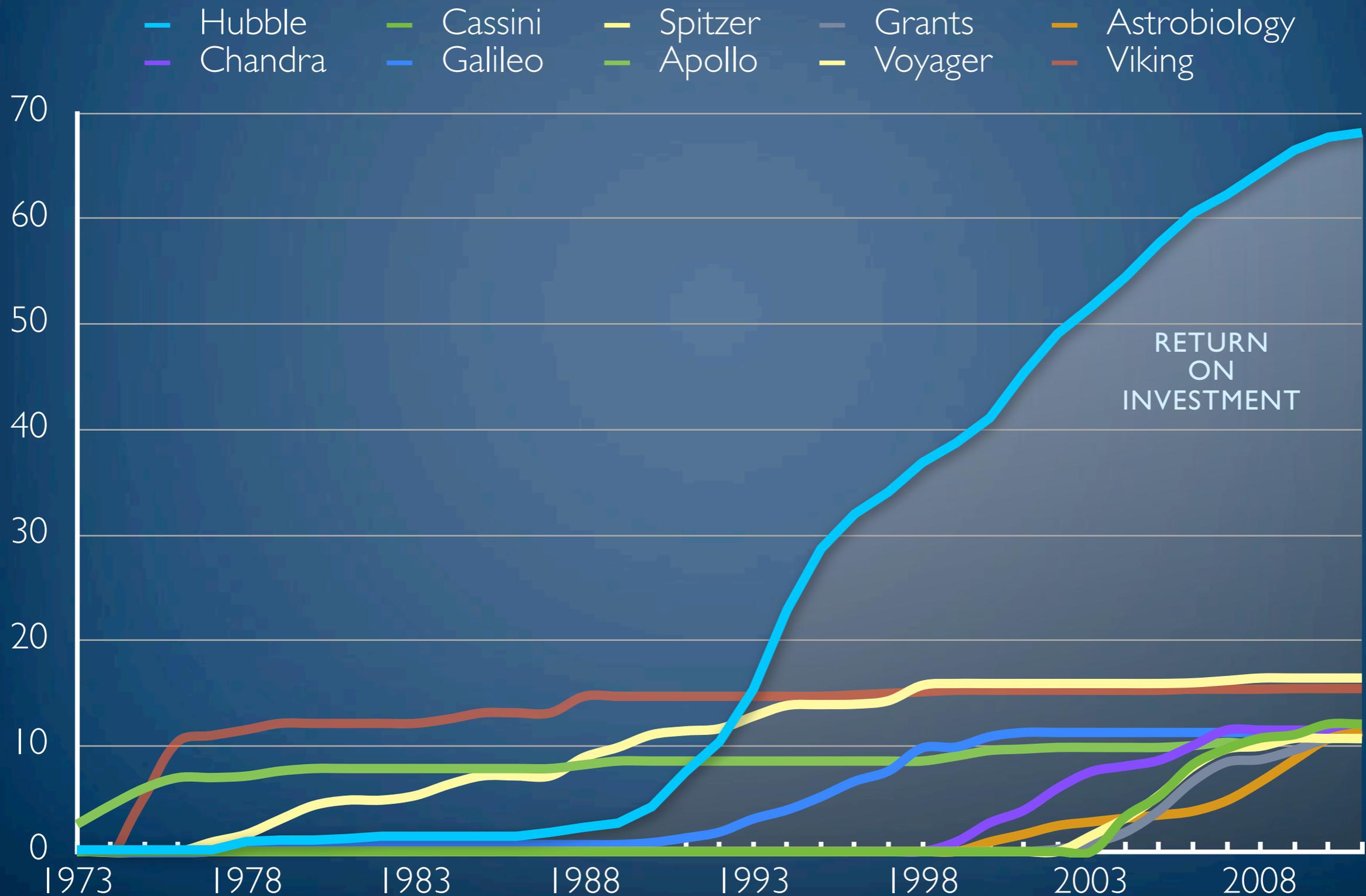
STScI Public Outreach	Metric	Measurement Example
Outreach: Direct Interactions	46,000	
Outreach	24 million	HubbleSite receives 2 million visits per month (10% of NASA's online traffic)

NEWS – over 100 million potential readers every two weeks

STScI NEWS	Metric	Reach metric	Circulation
Outreach: Direct Interactions	28 per year	Average circulation per release	140 million
Outreach	3,300 per year	Total circulation per year	3.8 billion

Public Impact: 1973- 2010 “Davidson” metric

NASA contributions to worldwide scientific discovery and technological achievement



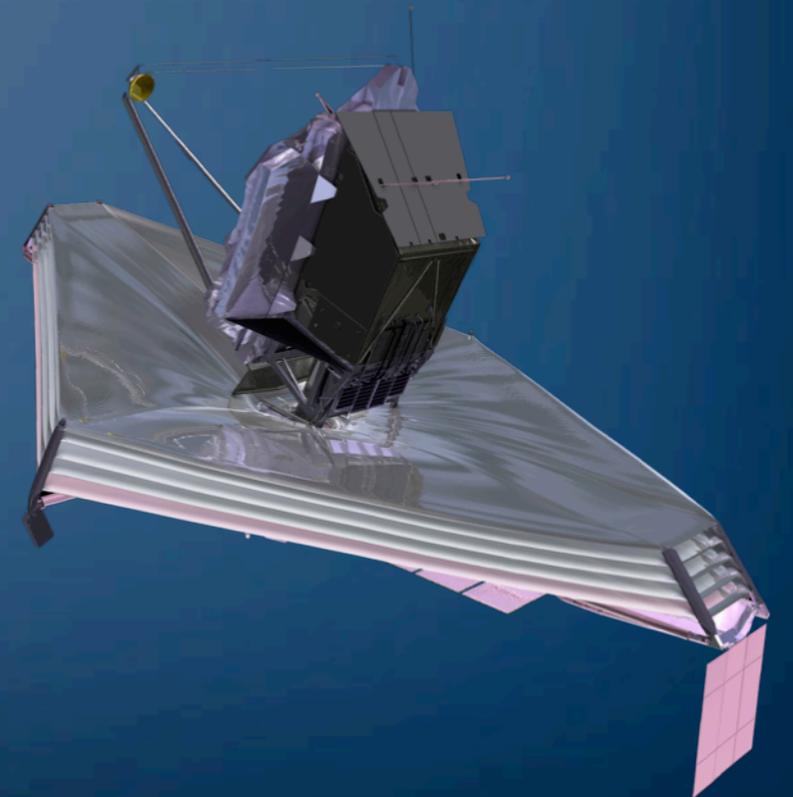
JWST IS STEM

a bold **S**cientific vision signifying US leadership in space

innovations to achieve 10 new **T**echnologies

challenges embraced and achieved by 1000 **E**ngineers

unprecedented **M**athematical prescriptions for success



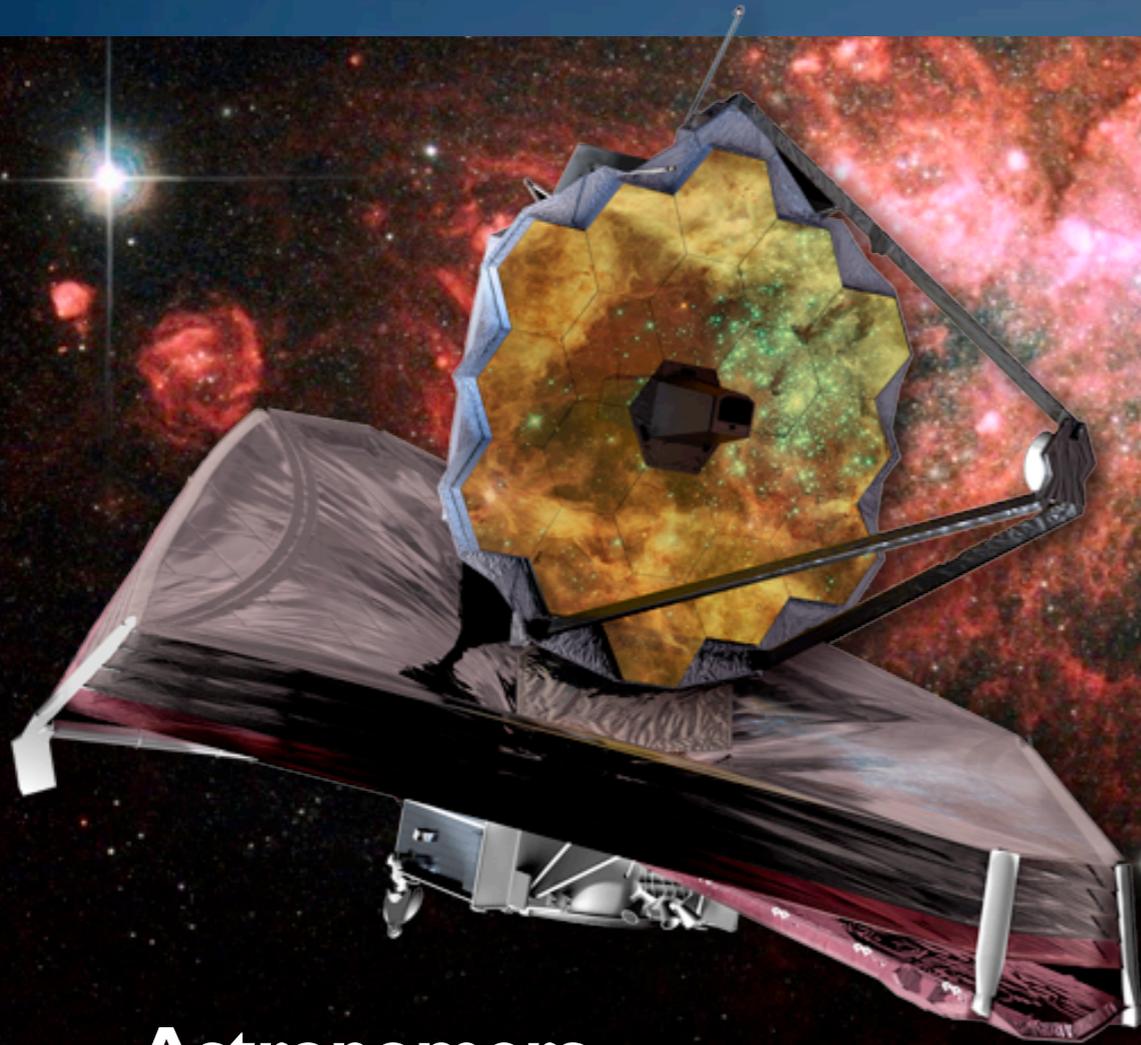
JWST & STEM

On the Brink of a Remarkable Opportunity for NASA



JWST & STEM

On the Brink of a Remarkable Opportunity for NASA



Astronomers

1. The End of the Dark Ages
2. The Assembly and Evolution of Galaxies
3. The Birth of Stars and Planets
4. The Origins of Life



Public

1. How did the Universe form?
2. How did we get here?
3. Is our Solar System unique?
4. Are we alone?

JWST AT SXSW

15,000 visitors in 3 days – 40+ media stories



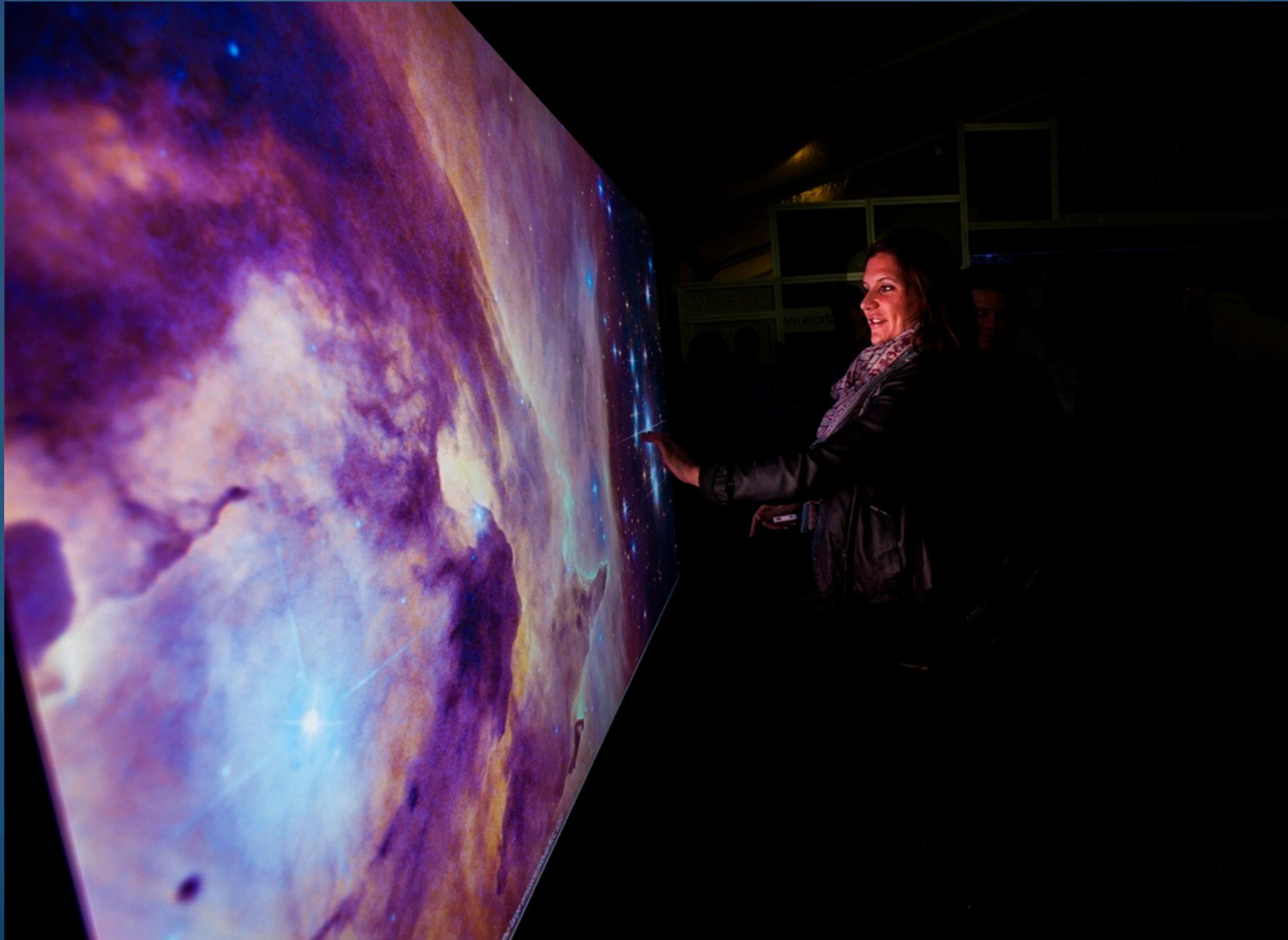
JWST AT SXSW

15,000 visitors in 3 days – 40+ media stories



JWST AT SXSW

15,000 visitors in 3 days – 40+ media stories



JWST AT SXSW

15,000 visitors in 3 days – 40+ media stories



JWST AT SXSW

15,000 visitors in 3 days – 40+ media stories



JWST AT SXSW

15,000 visitors in 3 days – 40+ media stories

The screenshot shows the homepage of the Committee on Science website. At the top, there is a navigation bar with the URL 'science.house.gov' and a search bar. Below the navigation bar is a large banner featuring a portrait of Lamar Smith, Chairman, and the text 'COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY'. The banner also includes a search bar and a 'Search' button. Below the banner is a red navigation bar with the following links: 'About', 'Hearings & Legislation', 'News', 'Subcommittees', 'Initiatives', and 'Contact Us'. The main content area features a news article titled 'Congressman Smith Tours James Webb Space Telescope Display at SXSW'. The article has a 'Read More »' button and a pagination system with five numbered links (1, 2, 3, 4, 5), where the third link is highlighted. To the right of the article is a large image of Congressman Smith smiling, with a honeycomb pattern in the background.

Welcome to Committee on Science – U.S. House of Representatives | Committee on Science – U.S. House of Representatives

science.house.gov

NASA – Budg...ce Reports CostcoAtticFan Jason Kalirai...oogle sites) SXSW Innovation Personal WFIRST/Euclid JWST STScI Tools HouseRepair...andscaping ScienceTimeActivities Banking/Bills/Retirement Popu

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

Lamar Smith
Chairman

About Hearings & Legislation News Subcommittees Initiatives Contact Us

Congressman Smith Tours James Webb Space Telescope Display at SXSW

Read More »

1 2 3 4 5

JWST AT SXSW

15,000 visitors in 3 days – 40+ media stories

The screenshot shows the Los Angeles Times website with the Science section selected. The main article is titled "NASA James Webb Space Telescope model lands at South by Southwest". The article includes a large photo of the telescope model being rolled out, a byline for Amina Khan dated March 8, 2013, and a short introductory paragraph. To the right of the article is a sidebar with social media links, a Facebook recommendation, an advertisement for LexisNexis, and a section titled "In Case You Missed It..." with three small article teasers.

Sign in or Sign Up | Like 431k | Membership Services | Jobs | Cars | Real Estate | Subscribe | Rentals | Weekly Circulars | Custom Publishing | Place Ad

Los Angeles Times | SCIENCE

See how easy it is to find someplace unforgettable. TRAVEL IN STYLE Explore it now >

LOCAL U.S. WORLD BUSINESS SPORTS ENTERTAINMENT HEALTH LIVING TRAVEL OPINION SHOP WEEKLY AD

BREAKING PHOTOS VIDEO CRIME OBITUARIES WEATHER TRAFFIC CROSSWORDS SUDOKU HOROSCOPES APPS

TRENDING NOW ▲ HERKIMER, N.Y. | PI DAY | POPE FRANCIS | GOOGLE READER | KOBE BRYANT | SXSW 2013

save up to 15%* just book 14 days in advance

SCIENCE NOW

DISCOVERIES FROM THE WORLD OF SCIENCE AND MEDICINE

NASA James Webb Space Telescope model lands at South by Southwest

Comments 2 | Email | Share 83 | Tweet 29 | Like 54 | +1 0



A full-scale model of NASA's James Webb Space Telescope will be at South by Southwest in Austin, Texas, this weekend. Northrop Grumman officials say they hope to set the Guinness World Record for the largest outdoor astronomy lesson Sunday evening. (Northrop Grumman / April 6, 2013)

By Amina Khan
March 8, 2013 14:13 p.m.

Braving the rain, scientists and engineers have rolled out a full scale model of the NASA James Webb Space Telescope at South by Southwest. The public will get an up-close look at the telescope, which will look deep into the cosmos for

Hubble spots distant galaxies near edge of universe's cosmic dawn

LexisNexis® Sales Intelligence Solutions

Learn More >>

In Case You Missed It...

Sale of Staples Center owner AEG is halted

Futurist predictions become 2013 reality

Photos: A modern home for the family

JWST AT SXSW

1500% more tweets – Guinness World Record – Beyond Hubble Panel



Nathan T. Wright @nathantwright

10 Mar

I've died and gone to nerd heaven. Learning about the James Webb Space Telescope (Hubble 2.0!) @NASAWebbTelescop #nasawebb #sxsw #NASASXSW

Expand ← Reply ↻ Retweet ★ Favorite ⋮ More



Wired @wired

9 Mar

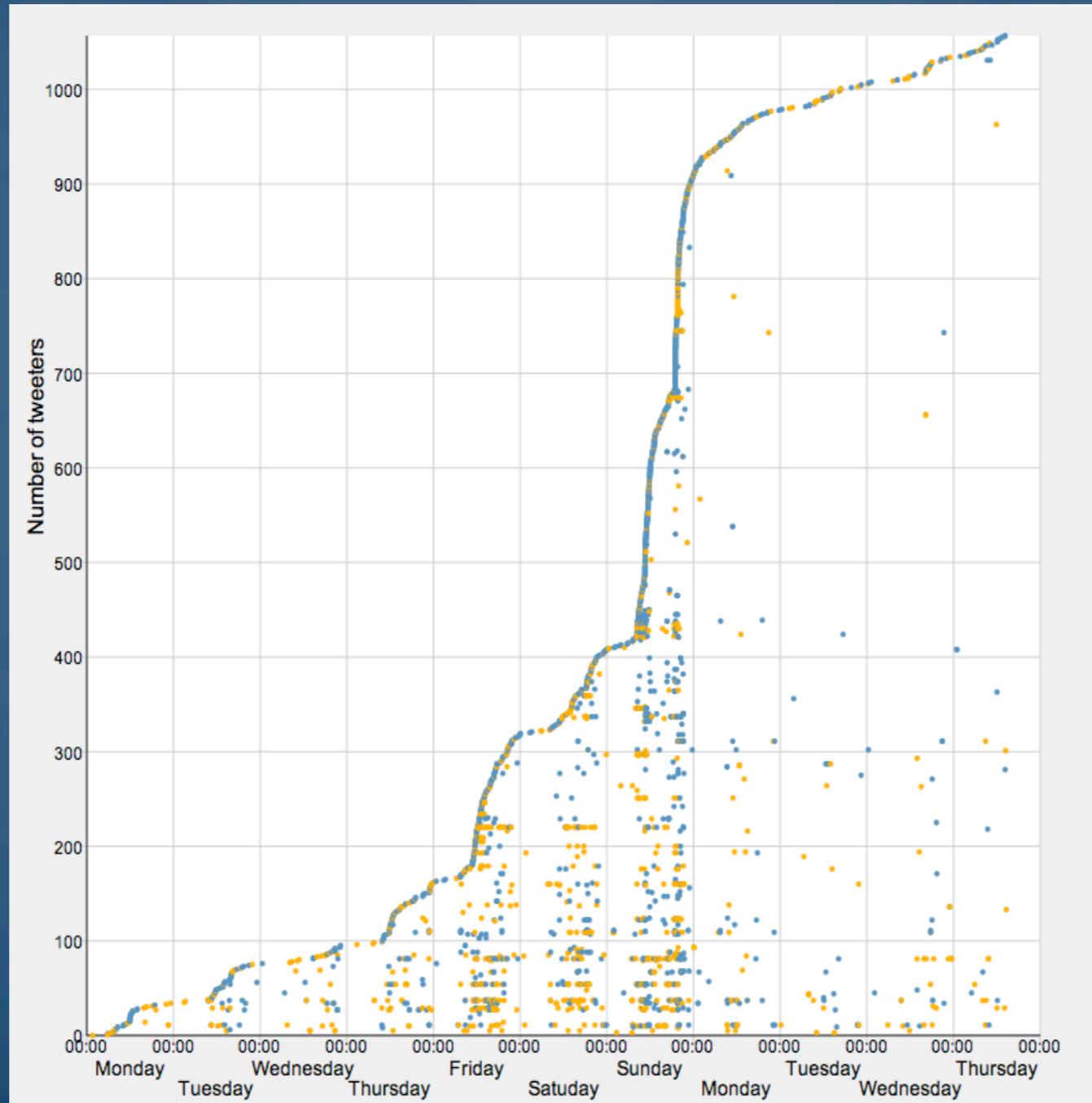
NASA brought their A-game to SXSW this year... A giant model of the Webb Telescope? Yes please! #wiredsxsw [instagram.com/p/Wp6Y8eIWmK/](https://www.instagram.com/p/Wp6Y8eIWmK/)

Retweeted by Stratis Kakadelis and 7 others

Expand ← Reply ↻ Retweet ★ Favorite ⋮ More

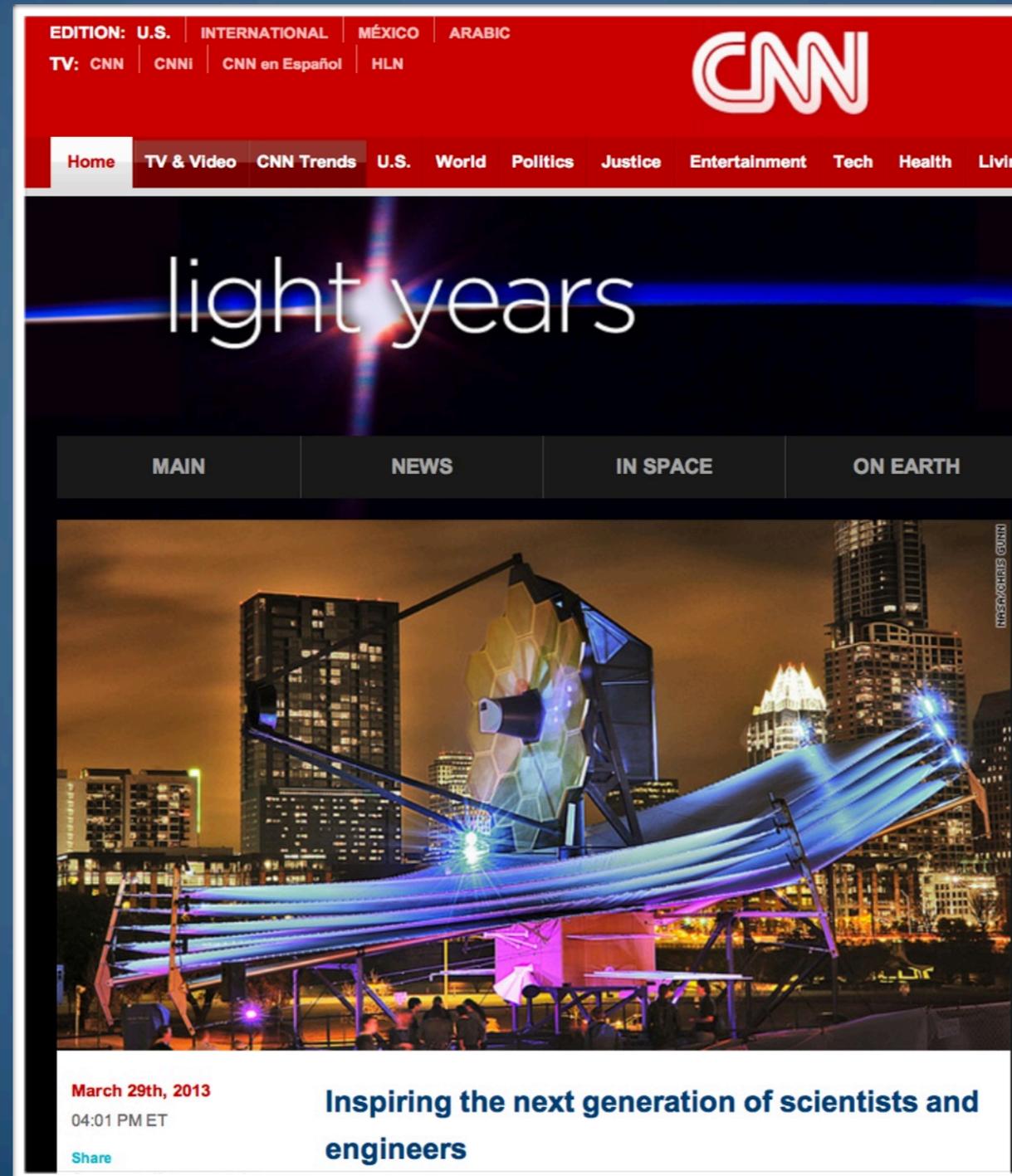
JWST AT SXSW

1500% more tweets – Guinness World Record – Beyond Hubble Panel



JWST AT SXSW

1500% more tweets – Guinness World Record – Beyond Hubble Panel



The image is a screenshot of the CNN website's homepage. At the top, there is a red navigation bar with the CNN logo and various menu items including 'Home', 'TV & Video', 'CNN Trends', 'U.S.', 'World', 'Politics', 'Justice', 'Entertainment', 'Tech', 'Health', and 'Living'. Below the navigation bar, the main content area features a large, stylized graphic with the text 'light years' in white, set against a dark background with a blue light streak. Underneath this graphic is a horizontal menu with four categories: 'MAIN', 'NEWS', 'IN SPACE', and 'ON EARTH'. The main article is a photograph of the James Webb Space Telescope (JWST) model at SXSW, illuminated with blue and purple lights. The article title is 'Inspiring the next generation of scientists and engineers', dated 'March 29th, 2013' at '04:01 PM ET'. A 'Share' link is visible below the date.

EDITION: U.S. | INTERNATIONAL | MÉXICO | ARABIC
TV: CNN | CNNI | CNN en Español | HLN

Home | TV & Video | CNN Trends | U.S. | World | Politics | Justice | Entertainment | Tech | Health | Living

light years

MAIN | NEWS | IN SPACE | ON EARTH

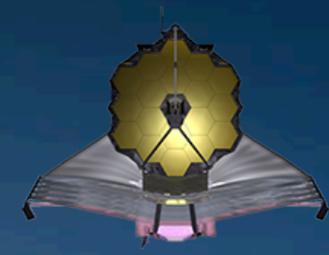
March 29th, 2013
04:01 PM ET
[Share](#)

Inspiring the next generation of scientists and engineers

JWST AT SXSW

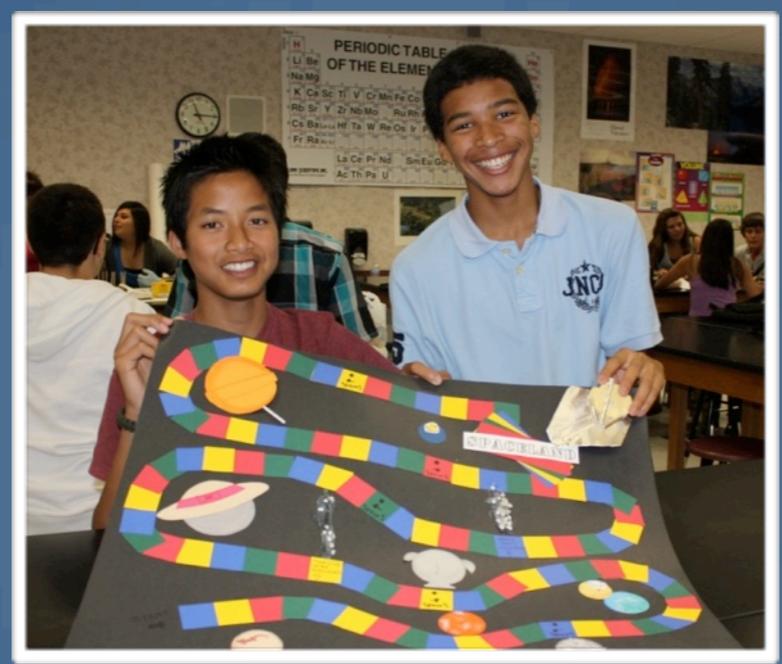
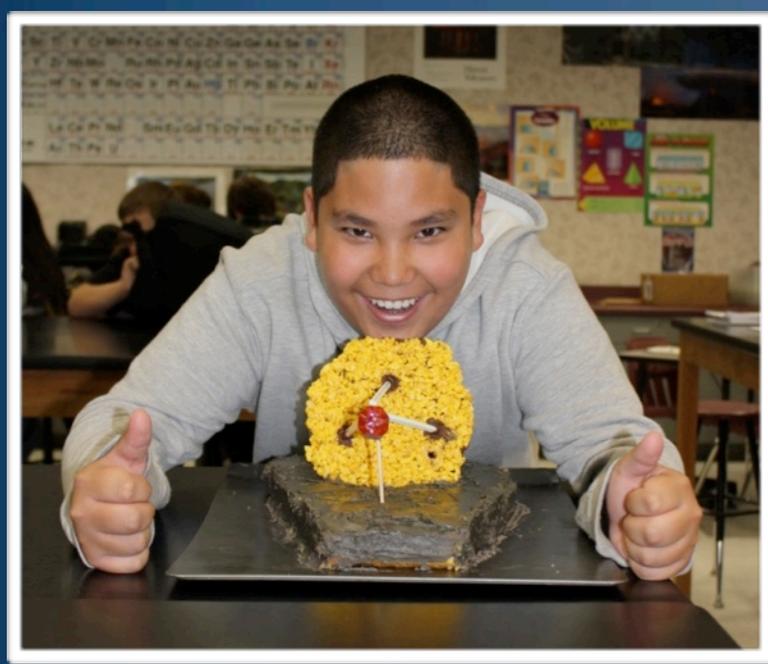
1500% more tweets – Guinness World Record – Beyond Hubble Panel





JWST Inspires

Science Technology Engineering Mathematics

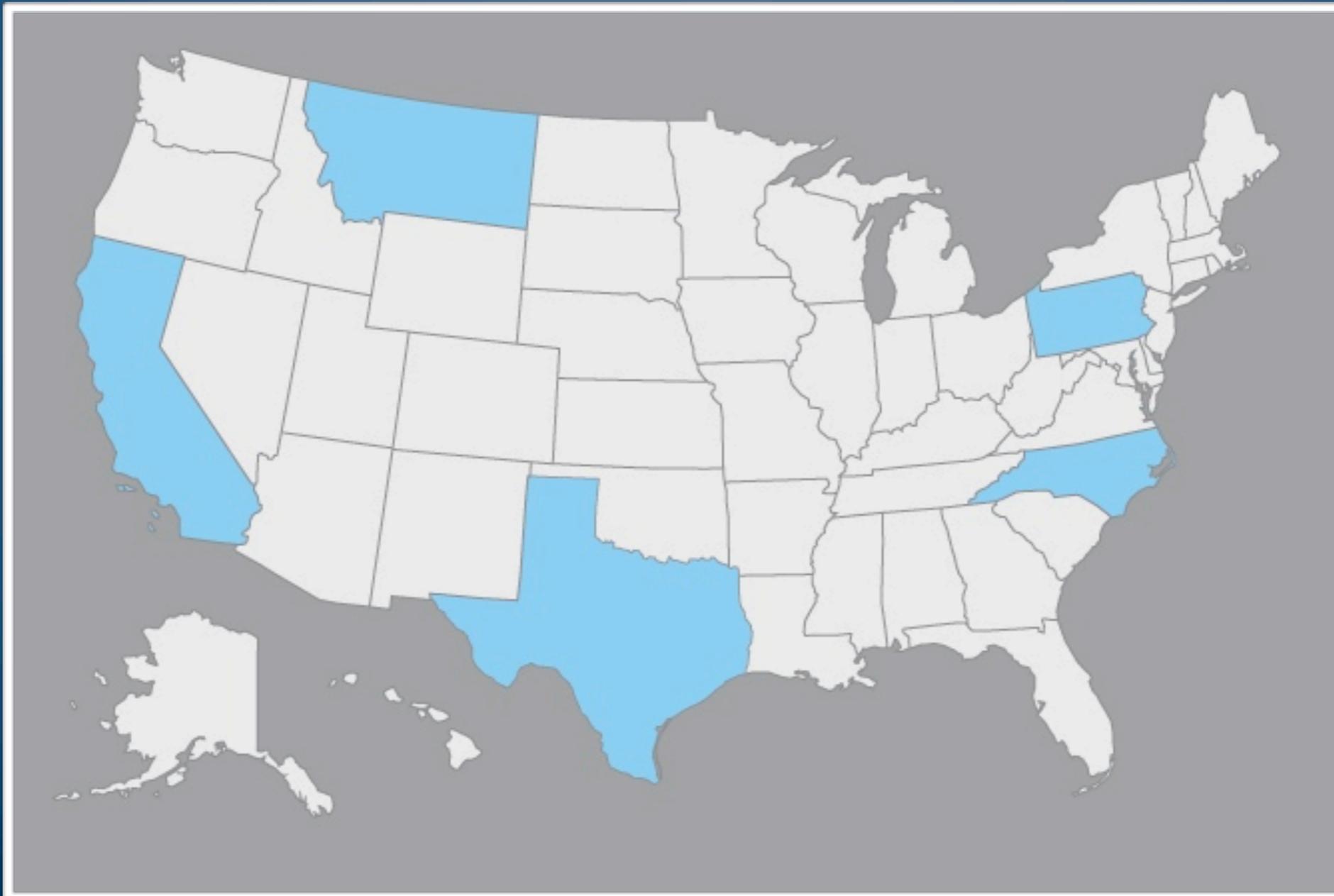


The Implementation

2011-2012 – pilot project
8 CA schools

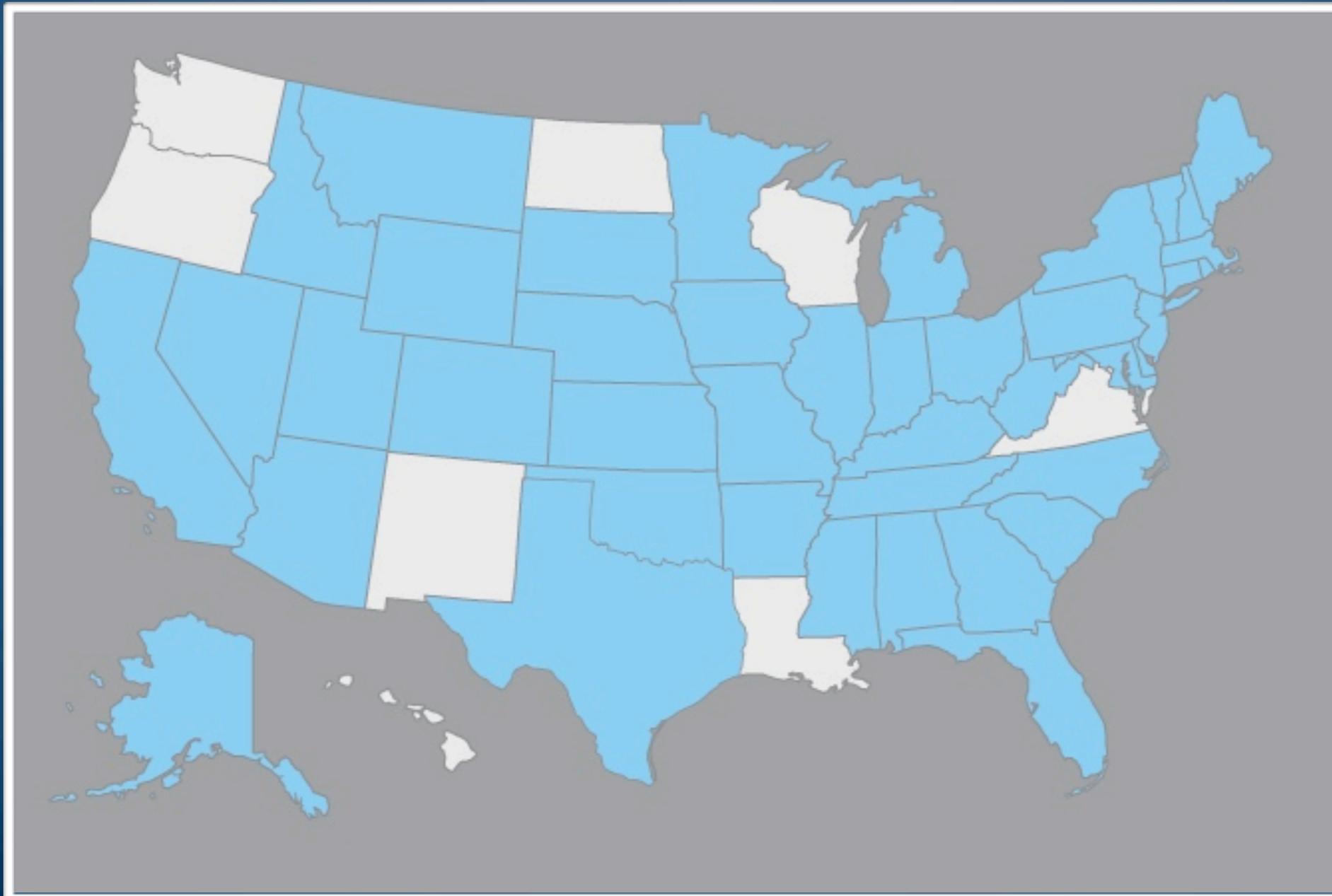


2012-2013 – 12 schools completed the project
CA, PA, NC, TX, and MT



2013-2014 – 135 schools want the project

AL (1), AK (1), AZ (3), AR (1), CA (40), CO (1), CT (1), DE (1) DC (1), FL (3), GA (6), ID (2), IL (2), IN, IA (2), KS (1), KY (1), ME (1), MD (10), MA (2), MI (2), MN (2), MS (0), MO (1), MT (2), NE (1), NV (3), NH (3), NJ (1), NY (2), NC (8), OH (1), OK (1), PA (3), RI (1), SC (3), SD (1), TN (4), TX (3), UT (8), VT (3), WV (1), WI (1)



Hubble is the People's Telescope



MORE INFORMATION

SCIENCE EDUCATION AND PUBLIC OUTREACH IMPACT

NASA MISSION EPO METRICS

- HOME
- ASTROPHYSICS
- EARTH SCIENCE
- HELIOPHYSICS
- PLANETARY SCIENCE



ASTROPHYSICS
Discovering the origins, structure, and evolution of our universe

EARTH SCIENCE
Identifying how the Earth is changing and the consequences for life on Earth

HELIOPHYSICS
Understanding the Sun, heliosphere, and planetary environments as a single connected system

PLANETARY SCIENCE
Exploring our solar system's content, origin, evolution and the potential for life elsewhere

NASA SMD Missions:
<http://nasamissionepometrics.com>

STSCI OFFICE OF PUBLIC OUTREACH

HOME / NEWS / EDUCATION / OUTREACH / ASTROPHYSICS FORUM / CONTACT



We share scientific knowledge of the universe in ways that inspire, excite, challenge and educate.



HubbleSite
Amazing Space
Webb Telescope
NewsCenter
NASA Wavelength

STSci E/PO Metrics Summary, 2012
STSci E/PO Diversity Plan: A Systematic Approach for Cultivating Diversity (PDF)

- News**
Communicating scientific findings to the public
News >
- Education**
Engaging the education community in scientific discovery
Education >
- Outreach**
Broodening public understanding of science
Outreach >
- Astrophysics Forum**
Coordinating NASA's astrophysics education programs
Astrophysics Forum >

STSCI Office of Public Outreach:
<http://outreachoffice.stsci.edu>

EVALUATION PROGRAM:

<http://outreachoffice.stsci.edu/evaluation/>

EDUCATION PARTNERSHIPS:

<http://outreachoffice.stsci.edu/education-partnerships/>

STSCI E/PO METRICS:

http://outreachoffice.stsci.edu/s/EducationMetricsforSTSci_7-28-13.pdf

DIVERSITY PLAN:

<http://outreachoffice.stsci.edu/s/STSci-EPO-DiversityPlanF2.pdf>

BACKUP SLIDES

FEDERAL SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) EDUCATION

5-YEAR STRATEGIC PLAN

MAY 2013

KEY ELEMENTS OF THE STRATEGIC PLAN

- Partnerships among school districts and universities, science agencies, businesses, and other community partners to transform teaching and learning.
- Improving the delivery of evidence-based STEM teaching to maximize undergraduate retention.
- Ensure that informal STEM education materials are aligned to what students are learning in the classroom.

KEY ELEMENTS OF STScI'S EDUCATION PROGRAM

- We have over **500 partners** including colleges and universities, schools and school districts, education organizations, science organizations, museums, planetaria and libraries.
- We train pre-service educators and college faculty using the latest STEM educational research and **real-world connections**.
- All education resources are aligned to national education **standards** and support **core curricular** topics.

Alignment with the President's 5-Year Education Strategic Plan

President's 5-Year Education Strategic Plan Goals

STScI Education Program's Alignment with Goals

Prepare 100,000 excellent new K-12 STEM teachers by 2020.

Graduate one million additional students with degrees in STEM fields over the next 10 years.

We train over **2,000 educators** per year in STEM using evidence-based approaches. We target **master teachers**, who train up to **55,000** additional teachers. Our **materials** are used by an estimated **1/2 million** teachers across the nation, and have been adopted by **more than half** the state departments of education.

We reach approximately **half** the enrollment in all U.S. **public middle schools**, when students are most **vulnerable** to abandoning STEM.

Support a 50 percent increase in the number of U.S. youth who have an authentic STEM experience each year prior to completing high school.

We use a network of over **500 partners** to disseminate resources that encourage active learning (i.e., analyzing data, conducting research, reporting findings, etc.).

Increase the number of students from groups that have been underrepresented in STEM fields that graduate with STEM degrees in the next 10 years.

STScI's programs are designed to **target diverse audiences** that reflect current and future demographics of the space science workforce.

Design graduate education for tomorrow's STEM workforce.

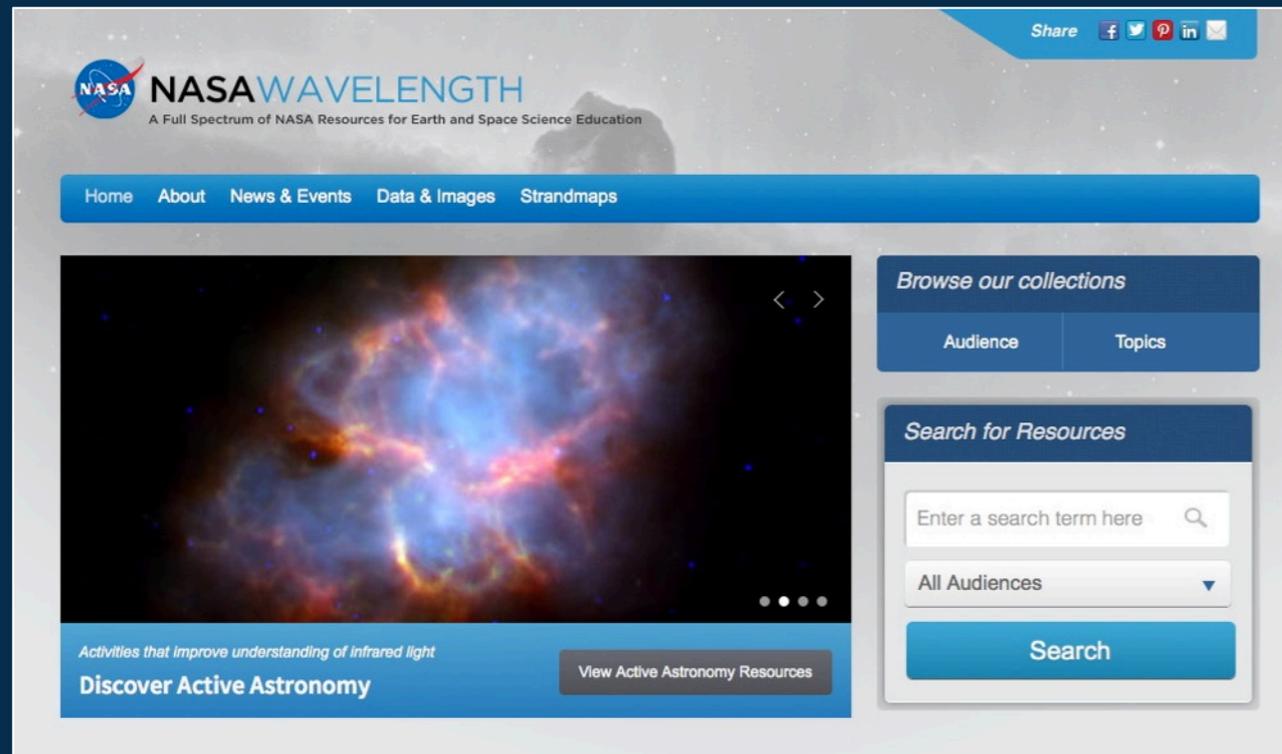
To date, Hubble has supported:
350 undergraduate interns
2,800 grad students
2,200 postdocs

STSCI COMMENSURATE WITH NASA'S BEST

ISS INVESTIGATIONS	K-12	Teachers
Student-Developed Investigations	560,612	19,308
Education Competitions	3,806	77
Students Performing Classroom Versions of ISS Investigators	1,059,938	5,287
Students Participating in ISS Investigator Experiments	89,768	6,225
Students Participating in ISS Engineering: Hardware Development	2,116	63
Educational Demonstrations & Activities	41,480,680	2,797,620
Cultural Activities	620	20
ISS TOTAL OVER 12 YEARS	43,197,540	2,828,630
ISS TOTAL PER YEAR	3,599,795	235,719
STSCI FORMAL ED/YEAR*	6.7 MILLION	520 THOUSAND
STSCI INFORMAL ED/YEAR*	9 MILLION	

*Numbers exclude outreach. Detailed breakdown of STSci metrics can be found at <http://outreachoffice.stsci.edu/education-metrics>.

NASAWavelength Hosts all Peer-Reviewed, Standards-Aligned SMD Education Products



<http://nasawavelength.org>

- Contains nearly 2,000 resources for K-12 formal, higher, and informal education + homeschoolers
- Designed and field-tested with user in mind
 - Resources are divided by subject area and grade levels
 - Search filters include type of assessment, instructional strategy
- Incorporates research-based best practices for digital libraries
- Includes “strandmaps” that graphically illustrate connections between concepts as well as how concepts build upon one another across grade levels

> Every SMD education product is accessible via NASAWavelength

Scientist-Educator Partnership

The purpose of this partnership is to transform science data into useful, grade-appropriate, educational products and programming while maintaining scientific accuracy and integrity.

Scientists bring...

- Knowledge of astronomy/
space science
- Knowledge of science research
and data
- Ability to communicate
science content to non-
scientists

Educators bring...

- Knowledge of science education
pedagogy
- Knowledge of target audience needs
(student/teacher)
- Knowledge of national education
standards

STATE DEPARTMENTS OF EDUCATION

Required use of STScl materials	Recommended use of STScl materials
Michigan	Hawaii
Alaska	North Carolina
South Carolina	Vermont
Utah	Virginia
California	Washington
Georgia	Arkansas
Kentucky	Colorado
Louisiana	Delaware
Texas	Florida
	Maine
	Maryland
	New Jersey
	Idaho
	Kansas
	Massachusetts
	Mississippi
	New Mexico
	New York

STSCI EPO PROGRAMS FOR UNDERREPRESENTED GROUPS

- JWST SIP Project
- Tactile Astronomy
- Women's Science Forum
- STEMcx
- Work with Baltimore City Public Schools (professional development & SABES curriculum project)
- The After-School Institute (professional development for Baltimore City after-school programs)
- Visions of the Universe traveling exhibit
- Girl Power event
- Expanding Your Horizons event
- Support for Baltimore City's Project Astro program
- Maryland MESA Partnership/Pre-College Fair
- Morgan State University - Innovative STEM Conference
- Delaware AeroSpace Education Foundation (professional development for rural teachers w/limited access to NASA)
- OPO high school internship program
- New Partnership with the Family League in Baltimore City – Baltimore City STEM Steering Committee

DIVERSITY

An essential element of our program is to ensure that our audiences are diverse, reflecting the various communities that make up the United States and the desired future demographic of the NASA workforce. OPO specifically embeds diversity into programming efforts, based upon a diversity plan developed by OPO and approved by NASA in 2006.



NASA SMD E/PO Supports the 5-year Federal STEM Education Strategic Plan

Do What We Know Works

- Partner scientists and science educators
- Build programs on audience needs and educational research findings
- Use strategic partnerships to cost-effectively reach broad and diverse audiences
- Recognize one size does not fit all in engaging a nation of diverse learners

Learn More About and Share What Works

- Grounded in rigorous reviews, evaluation, and data-driven decisions
- Gather and disseminate findings on audience needs
- Professional development for E/PO practitioners

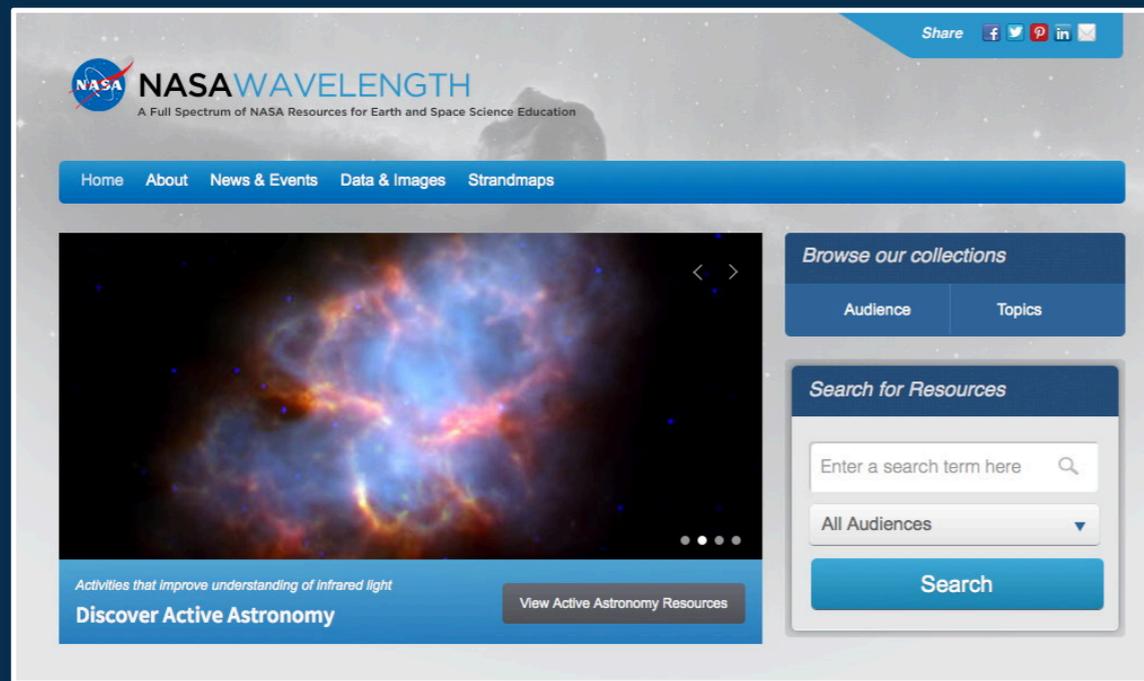
Increase Efficiency and Cohesion

- Minimize duplication and fragmentation
- Maximize collaboration and return on investment

Identify and Focus on Priority Issues

- Broaden and deepen the STEM experience in K-12 STEM Teacher Education, STEM Engagement, Undergraduate STEM Education, and Serving Groups Traditionally Underrepresented in STEM.

NASAWavelength Hosts all Peer-Reviewed, Standards-Aligned SMD Education Products



<http://nasawavelength.org>

- Contains nearly 2,000 resources for K-12 formal, higher, and informal education + homeschoolers
 - Designed and field-tested with user in mind
 - Resources are divided by subject area and grade levels
 - Search filters include type of assessment, instructional strategy
 - Incorporates research-based best practices for digital libraries
 - Includes “strandmaps” that graphically illustrate connections between concepts as well as how concepts build upon one another across grade levels
- > Every SMD education product is accessible via NASAWavelength**