



Happy Spring

SOS Ed Forum

April 13, 2022

Agenda

- Introductions: Kevin Tyle, Ross Lazear - University of Albany, State University of New York
- NOAA Educational Materials and Opportunities: Bruce Moravchik – National Ocean Service
- Sneak Peek & Feedback: Hilary, Eric, Beth, Juan Pablo – “The Pandemic and Air Quality”

University at Albany

*Department of Atmospheric &
Environmental Sciences*





The Department of Atmospheric and Environmental Sciences' overarching mission is to carry out world-class research relevant to the needs of society and to provide excellent education and training for our graduate and undergraduate students.



To this end, we strive to:

- Increase our fundamental knowledge and understanding of weather and climate.
- Facilitate the interdisciplinary research needed to solve complex problems important for society.
- Promote collaborative research with public and private sector partners where appropriate.
- Communicate key research results to the public.



- Undergraduate Programs
 - BS Atmospheric Science (70 credits), ~50 majors
 - BS in Environmental Science (70-71 credits) ~ 50 majors
 - **Coming Soon:** BS in Climate Science, BA in Environmental Studies
- Graduate Programs
 - MS and PhD in Atmospheric Science, ~70 students, one of the largest in USA
 - **Coming Soon:** MS in Applied Atmospheric Science, MS and PhD in Climate Science
- Strong emphasis on quantitative and data analysis skills in all majors



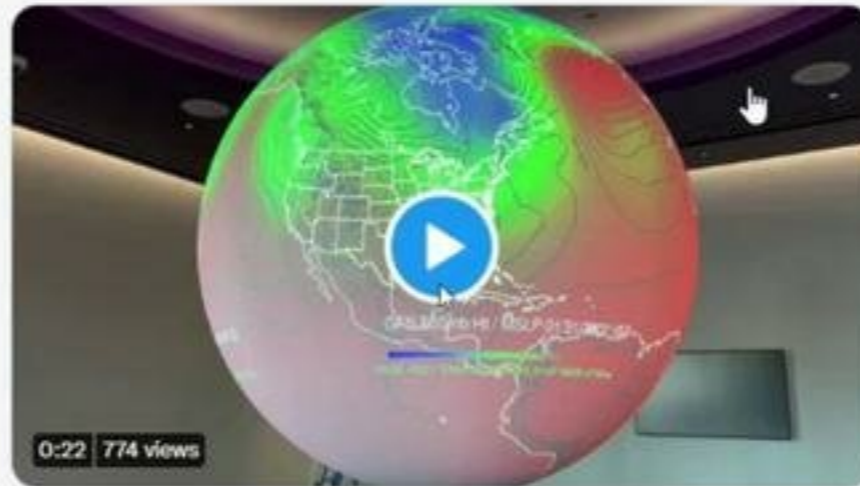
Opportunities

- Large graduate population means good variety of courses
- ETEC co-location with NWS, CoE, CEHC, Env. Sustainable Engineering
- Excellent relationships with federal labs and private companies
- Extensive outreach effort into local schools and broader community

Tours, tweets, and opening day!



UAlbany ATM/ENV Sci @UAlbanyDAES · Jan 24
Our newly-installed @NOAA_SOS is teasing us with a potential snowstorm for the upcoming weekend. Will Albany finally break out of what has been a much-below-normal snow season?



Education

Discover our resources and programs for educators, students, and anyone who wants to learn more about our ocean and coasts!

Get the latest education opportunities and resources from Ocean Service Education in your inbox twice a month with our newsletter, *The Watch*. [Sign up today!](#)



For Educators

Programs, content, and resources to increase ocean and climate literacy and stewardship.



For Students

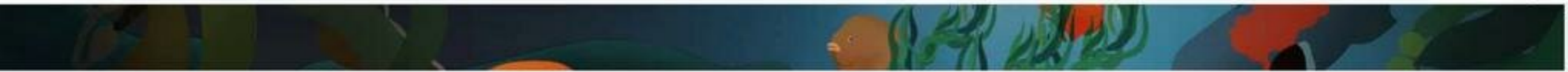
Take a deep dive into ocean and Earth science topics like corals, tides, and global positioning.



For Kids

Explore a wide variety of resources and activities for kids ... of all ages!





Discover Your World

Activities to help you learn more about our world, and how NOAA helps you explore, understand, and protect our Earth.

Games and Activities



Discover Your Changing World

Learn the essential principles of climate science with these fun hands-on activities.

Activity Book



Every Kid Outdoors

Hey fourth graders! Learn how you and your family get free access to hundreds of parks, lands, and waters for an entire year.

Recreation



Ocean Today "Every Full Moon"

Thematic collections of videos for kids of all ages. New videos are released every full moon from NOAA's Ocean Today program.

Video



Understanding Marine Debris

Videos, stories, puzzles, coloring books, lesson plans, and other great resources from NOAA's Marine Debris office.



Dive in to Sanctuaries

Coloring sheets, puzzles, and activities to help you learn all about NOAA's National Marine Sanctuaries.



Hands-On Science

Quick fun activities that get kids of all ages thinking about Earth Science.




Regional Activity Books

These downloadable books recommended for Grades 3-5 include fun and informative activities about the local coastal ocean and its inhabitants.



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Guam Coastal Adventure Activity Book



Coral Reef Activity Book



Chesapeake Bay Activity Book



Coastal North Carolina Activity Book



Salish Sea Activity Book



Mobile Bay Activity Book



Why is Hawaii's Ocean Important



Coastal Louisiana Activity Book



Arctic/Antarctic Activity Book

More Education Resources

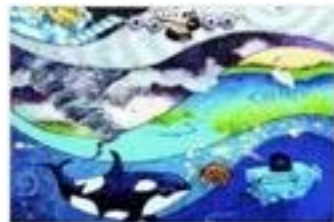
- For Educators
- For Students
- For Kids

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Author: NOAA
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Dive in to our tutorials on subjects ranging from corals to tides to geodesy.

[For Educators](#) | [For Kids](#)



All About Corals

An overview of the biology of and threats to coral reefs, as well as efforts being made to conserve and protect them.



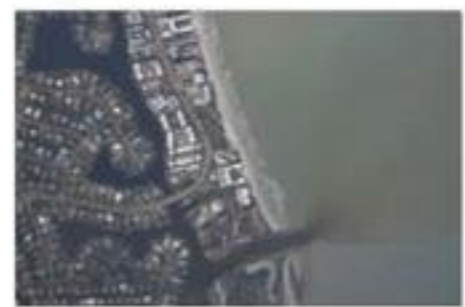
All About Estuaries

An overview of estuarine habitats, the threats facing them, and efforts to monitor and protect these unique ecosystems nationwide.



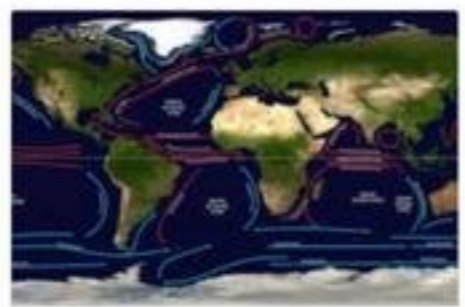
All About Global Positioning

An overview of the history, essential elements, and modern methods of global positioning.



All About Non-point Source Pollution

An overview about nonpoint source pollution, which is pollution that can't be tied to a specific location like city streets, farm fields, etc.



All About Ocean Currents

An overview of current types, what causes them, how we measure them, and how they affect people's lives.



All About Tides

An overview of the complex systems that govern the movement of tides and water levels.



$$(360^\circ / \theta) \times (s)$$

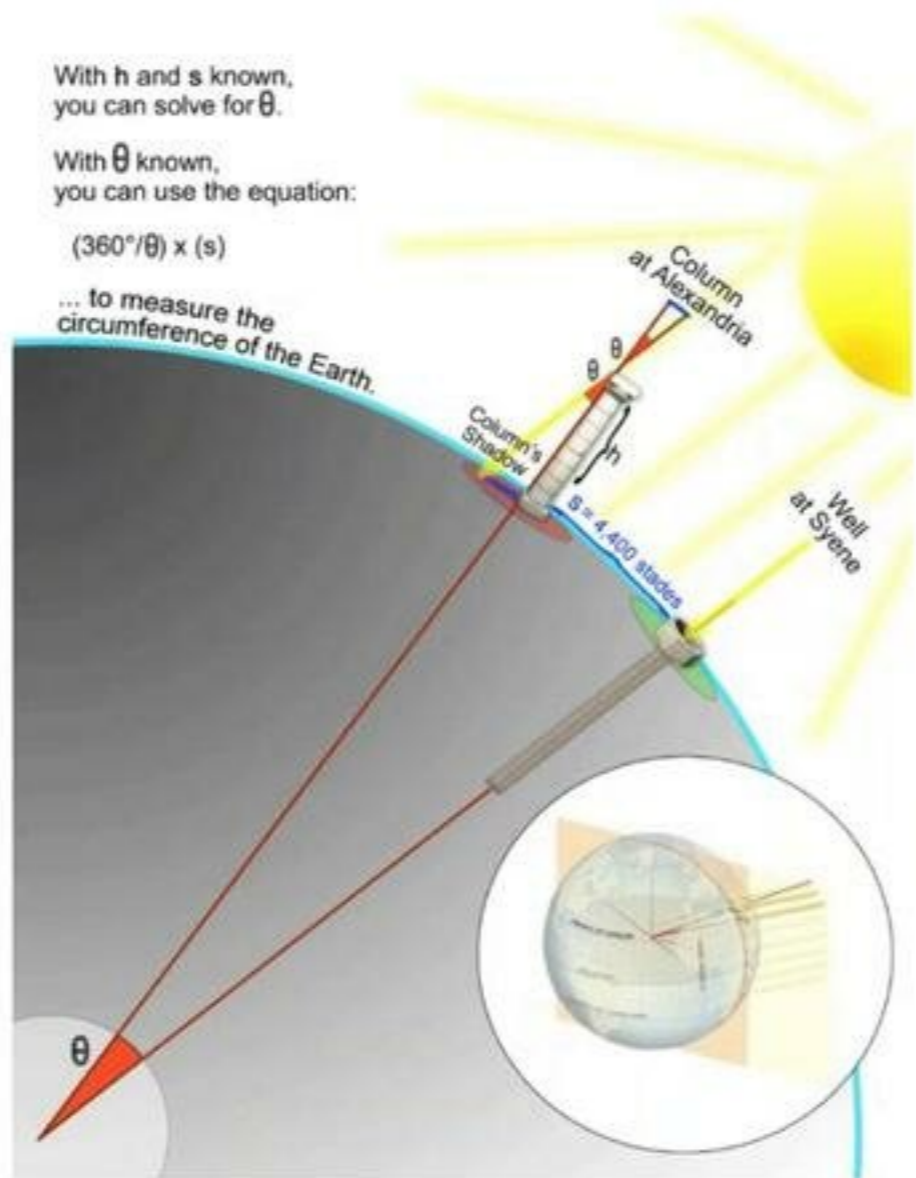
In this calculation, (s) is the distance between two points that lie north and south of each other on the surface of the Earth. If you were to draw a line from each of these points to the center of the Earth, the angle formed between them would be θ .

With h and s known, you can solve for θ .

With θ known, you can use the equation:

$$(360^\circ / \theta) \times (s)$$

... to measure the circumference of the Earth.



This illustration shows how Eratosthenes actually calculated the circumference of the Earth. At noon on the summer solstice, Eratosthenes measured the length of the shadow cast by a column of known height at Alexandria. With these two lengths, he could solve for the angle

- Gravity
- The National Spatial Reference System
- The Global Positioning System
- CORS and GIS
- References

More Information

- Roadmap to Resources
- Subject Review
- Is the Earth round? (Ocean Facts)



Geodesy Education

Heard of geodesy? These videos from NOAA's National Geodetic Survey offer a deep dive into the science of knowing where you – and everything else is in the world!

Search Our Facts

Get Social



Click to go back, hold to see history

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[For Educators](#) | [For Kids](#)



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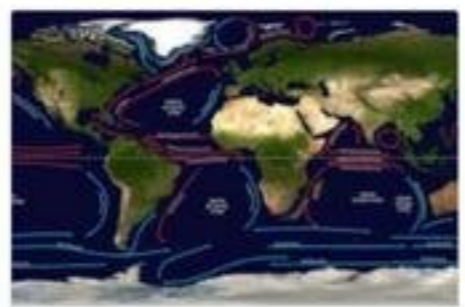
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Ocean and Climate Literacy

These guides outline the essential principles and fundamental concepts needed to be ocean and climate literate.



Planet Stewards

A national program providing resources to educators so they can build scientifically-literate communities, and engage in stewardship activities in response to environmental challenges.



Planet Stewards Projects

Articles authored by educators across the United States, sharing the programs they undertook in their classrooms and communities, and the outcomes they achieved to become successful environmental stewards.



Every Kid Outdoors

This federal government effort aims to get every fourth grader in the nation into public lands and waters. The goal is to foster the next generation of environmental stewards and ocean guardians.



Sea Level Rise Module

An NGSS aligned interactive module about the causes, and impacts of sea level rise, which challenges students to think about what they can do in response.



Beat the Uncertainty

In this game, your job is to make smart decisions that will increase your city's resilience to climate change.



Professional Development

Information and resources to integrate ocean, coastal, and climate science into local and state curricula.



Oysters in the Chesapeake

An engaging set of K-12 education resources that comprehensively support the vision for NGSS science education using the Eastern Oyster in Chesapeake Bay as an organizing theme.



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Global Warming Wheel Card

This simple tool (PDF) from the



Fisheries Education



Sanctuary Education

Find out all the opportunities and resources for educators, students and kids while



Estuary Education

Explore a variety of resources including activities, lesson plans, animations, videos.





[WHAT WE DO](#)

[INCREASING ENVIRONMENTAL LITERACY](#)

[SUPPORTING STEWARDSHIP](#)

[EDUCATION RESOURCES](#)

What We Do

NOAA Planet Stewards provides all educators working with elementary through college-aged students access to opportunities and resources enabling them to build up scientifically literate individuals and communities, and preparing them to respond to environmental challenges.

NOAA Planet Stewards also supports educators' efforts to implement hands-on action-based projects that conserve, restore, and protect human communities and natural resources from environmental challenges.

Increasing Environmental Literacy

The resources and programs afforded by NOAA Planet Stewards are available to all. Through our website, programs, and e-



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Education

[Upcoming Events](#)

[The Watch: Newsletter Archives](#)

[Webinar Archives](#)



challenges.

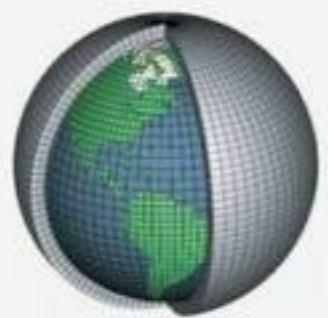
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Increasing Environmental Literacy

The resources and programs afforded by NOAA Planet Stewards are available to all. Through our website, programs, and e-newsletter — [The Watch](#) — educators can access a wide range of professional development opportunities and resources, as well as educational materials for elementary through collegiate level students. These include, but are not limited to, live and archived webinars, book club discussions, and workshops offered in person or via distance learning platforms at locations across the country.

Webinars are offered by nationally recognized scientists, educators, and communicators from NOAA and partner organizations. They provide knowledge and resources to help educators build their understanding of NOAA-related science as well as pedagogic and communication skills. [Sign up to our email list](#) and receive invitations to future events. On our [webinar Archive page](#) you can find over 50 selected videos of previous NOAA Planet Stewards broadcasts. Please note: many archived webinars were broadcast under our previous program name, NOAA Climate Stewards.



The Book Club provides opportunities for educators to discuss fiction and nonfiction science and education books, videos, and articles dealing with environmental challenges and solutions. [Visit our Upcoming Events page](#) to see a list of the books and the dates we'll be discussing them. On our [Book Club Archive](#) page, you can view previous book club selections and guided discussion questions.



Workshops are professional development opportunities held in person or via distance learning platforms at locations across the country. These events



Education

- [Upcoming Events](#)
- [The Watch: Newsletter Archives](#)
- [Webinar Archives](#)
- [Book Club Archives](#)
- [Education Resources](#)

Stewardship

- [Supporting Stewardship](#)
- [Past projects](#)
- [Focus Area Resources](#)
- [Applying for Funding](#)



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Your E-mail Address:



Supporting Stewardship

Taking Action in Your School or Community

Through federal funding opportunities of up to \$5,000, NOAA Planet Stewards supports educators in the implementation of hands-on action-based projects that conserve, restore, and/or protect human communities and/or natural resources from environmental challenges monitored by NOAA.



Students are excited about their efforts cleaning up marine debris in the Miami beach area.

Formal and informal educators requesting support from NOAA Planet Stewards must submit a formal stewardship project proposal and supporting documents by **Midnight (Pacific Time) June 5, 2022**. If approved, educators may use the funding to carry out their project during the following academic year.

Educators completing their stewardship projects and all reporting requirements may be invited, and supported, to:

- Represent NOAA Planet Stewards at a national science education conference or NOAA Planet Stewards workshops and offer a formal presentation of their work. Financial support is provided for this opportunity.



Last updated: 03/28/22
Author: NOAA
[How to cite this article](#)
[Contact Us](#)





About the Program

Through federal funding opportunities of up to \$5,000, NOAA Planet Stewards supports educators working in formal and informal educational settings to carry out hands-on action-based stewardship projects with elementary through college age students, as well as the general public. Stewardship projects must make a substantive, measurable impact on an environmental issue related to the educator's community. Projects should focus on the conservation, restoration, and/or protection of human communities and/or natural resources from environmental issues in one of the four focus areas identified below.

Educators requesting support from NOAA Planet Stewards must submit an application and supporting documents by **midnight (Pacific Time) June 5, 2022**. Applicants will be contacted regarding the status of their submission **no later than**



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Educators requesting support from NOAA Planet Stewards must submit an application and supporting documents by **midnight (Pacific Time) June 5, 2022**. Applicants will be contacted regarding the status of their submission **no later than July 31, 2022**. If approved, educators shall use the funds to carry out their project during the **2022/2023 academic year**.

Educators leading stewardship projects will be required to send a detailed progress report every six months until the project is completed. For projects taking place during the **2022/2023 academic year**, the first progress report is due by **midnight (Pacific Time), January 29, 2023**. A final report must be submitted within one month of completing the project, but **no later than July 30, 2023**.



Field day cleanup at Winaloa Beach, where 32 pounds of marine debris was removed.

Educators completing their stewardship project and all reporting requirements may be invited to:



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- Webinar Archives
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Subscribe to the NOAA Planet Stewards Million List. View our





NOAA Planet Stewards Book Club Archives

The following are books suggested by educators and discussed at previous NOAA Planet Stewards Book Club meetings. Included are links to resources and guiding questions. All are welcome to join our discussions! For information about current Book Club selections, meeting dates, and how to attend, see our [Upcoming Events](#) page. [Sign up to our email list](#) and receive invitations to future events. Have questions? Contact: oceanserviceeducation@noaa.gov.



CTRI

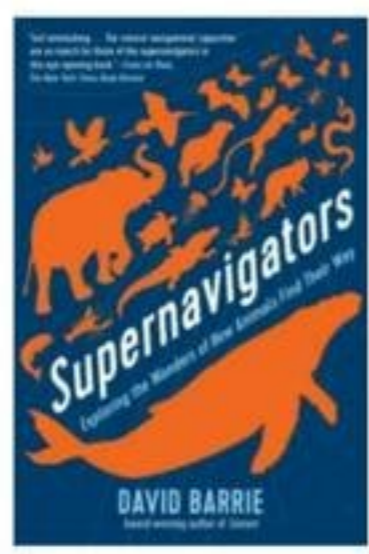
Monday, March 7, 2022



shocking truths about themselves.

Blackfish City is a remarkably urgent—and ultimately very hopeful—novel about political corruption, organized crime, technology run amok, the consequences of climate change, gender identity, and the unifying power of human connection.

[Discussion questions: \(click to see the list\)](#)



[Supernavigators: Exploring the Wonders of How Animals Find Their Way](#) © by David Barrie

Animals plainly know where they're going, but how they know has remained a stubborn mystery—until now. Supernavigators is a globe-trotting voyage of discovery alongside astounding animals of every stripe: dung beetles that steer by the Milky Way, box jellyfish that can see above the water (with a few of their twenty-four eyes), sea turtles that sense Earth's magnetic field, and many more. David Barrie consults animal behaviorists and Nobel Prize-winning scientists to catch us up on the cutting edge of animal intelligence—revealing these wonders in a whole new light.

[Discussion questions: \(click to see the list\)](#)



[South Pole Station: A Novel](#) © by Ashley Shelby

This touching and at times laugh-out-loud funny novel introduces us to Cooper Gosling, a painter who's struggling in the aftermath of family tragedy.



important crisis of our times.

Discussion questions: (click to see the list)

1. Freeman has gathered a daisy-chain of essays, stories and poems by thirty-five writers from the middle of the Pacific to the Roof of the World and every hot, cold, wet, and dry spot in between. How does this breadth of geography help capture the vastness of the issues of climate change? Where do you see connections to your locale? To your heritage?
2. In his introduction, Freeman writes, "We are swimming in facts, but a fact does not fully obtain the depth of a fact, the power of a fact, until it becomes part of a story." How do these stories make climate change much more than a scientific concept? Which had the most power for you and why? What stories might you use to educate others?
3. Most of us never have to think about the unpleasantness of the "flying toilets" in the Nairobi slums or the literal "shitstorm" caused by Beirut's Eden Bay developers. The "collective anus" of the well-off is linked to culverts that route our waste into faraway lakes, rivers, neighborhoods, cities, nations and cultures. The problem of waste disposal recurs throughout this collection; how do our hidden disposal systems - whether flushing toilets or pre-dawn garbage trucks - contribute to our ability to ignore our own impacts on the planet? What can we, with our "one-click shopping" mentality, do to become more zero-waste?
4. Some rivers and lakes have become so poisoned by industry, agriculture, and everyday life that they have all but ceased to sustain life and may never sustain it again. The countries first to drown in rising oceans have done the least to deserve their fate. The poor are not only most impacted, but are also blamed for the tragedy. Where do you see social injustice and climate change intersect? How can you use the idea of social justice and fairness to motivate change?
5. Just as rapid changes to an ecosystem can traumatize the landscape and its inhabitants, rapid changes to a cultural ecosystem can traumatize the people it sustains. How do we balance the destruction of ancient systems with the need for new buildings and growth? How can we get people with disparate values to come together, and serve the greater good?
6. Anuradha Roy writes about how government officials in India twist climate change to their own ends. Other tales relate top-down corporate manipulation and government malfeasance; yet since these affect us all, can we not rise up together, united against these universal villains, to protest the pillaging of our ecosystems and cultural systems for the sake of a few? Is there a glimmer of hope here?
7. Were there particular phrases or stories, essays, or poems that stood out to you?
8. "What if we believed, stupidly or hopefully, that every living life mattered equally?"



The Sea Around Us[®] by Rachel Carson

Published in 1951, *The Sea Around Us* is one of the most remarkably successful books ever written about the natural world. Rachel Carson's rare ability to combine scientific insight with evocative, poetic prose captivated her



Educators who completed projects supported by [NOAA Planet Stewards](#) share their stories, innovations, and resources in the following editions of [The Earth Scientist](#) — a peer reviewed science education journal published by [The National Earth Science Teachers Association](#). These articles include links to background information, supporting materials, and student worksheets available for you to download and adapt to your own education setting. They reflect the enthusiasm, hard work and success of educators, their students, and communities. [Find out how you can receive support from NOAA Planet Stewards](#) to carry out a hands-on stewardship project, and scroll down the page to read about more projects carried out by NOAA Planet Stewards educators.



Recharging Recycling

(Michele — High school teacher, Chantilly, Virginia)



A teacher and her students at a large Virginia high school decided to do something about the huge number of potentially recyclable items ending up in the trash every day at her school. Understanding that plastic is the most common type of marine debris, and seeing that many of the trashed recyclables were plastic, Michele and 150 students developed a program to recharge the recycling efforts at their school.



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NOAA Planet Stewards What Success Looks Like

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Home / Education



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NOAA Planet Stewards

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Education

[Upcoming Events](#)



Podcast: Tsunami Support

How water level stations help NOAA's tsunami warning centers issue accurate alerts.

[Listen](#)



TIDES AND CURRENTS



NAUTICAL CHARTS



SEA LEVEL RISE



HURRICANE RESPONSE



MOBILE SITES/APPS



EDUCATION RESOURCES



NOAA Sea Level Rise Portal

[NOAA TOOLS AND SERVICES](#)

[TOOLS AND SERVICES, OTHER FEDERAL AGENCIES](#)

[SEA LEVEL RISE EDUCATION](#)

Science-based tools allow people to make informed decisions given the sea level changes we are seeing now and predict in the future. Explore tools, services, and educational material available from NOAA and other federal agencies.

Tools and Services



[2022 Sea Level Rise Technical Report](#)

The Sea Level Rise Technical Report provides the most up-to-date sea level rise projections available for all U.S. states and territories.



[Coastal Inundation Dashboard](#)

Inundation Dashboard provides real-time and historic coastal flooding information, using both a map-based view and a more detailed station view.



[Sea Level Rise Viewer](#)

Use this web mapping tool to visualize community-level impacts from coastal flooding or sea level rise (up to 10 feet above average high tides).



[Sea Level Trends](#)

This tool measures relative sea level trends, with arrows representing the direction and magnitude of change.



Tools and Services



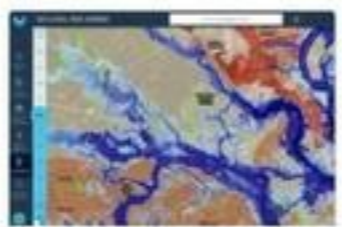
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High Tide Bulletin

NOAA seasonal high tide flooding bulletins show when regions around the nation may experience higher than normal high tides. Bulletins are updated quarterly.



Sea Level and Coastal Flooding Information

NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) provides data, tools and analysis related to changing ocean conditions.



Coastal Flood Exposure Mapper

Jumpstart community discussions about local coastal flooding hazards by developing maps that show the people, places, and natural resources at risk.



Coastal County Snapshots

Turn complex county-level data into easy-to-understand charts and graphics — use this tool to create printable handouts that help articulate your community resilience message.



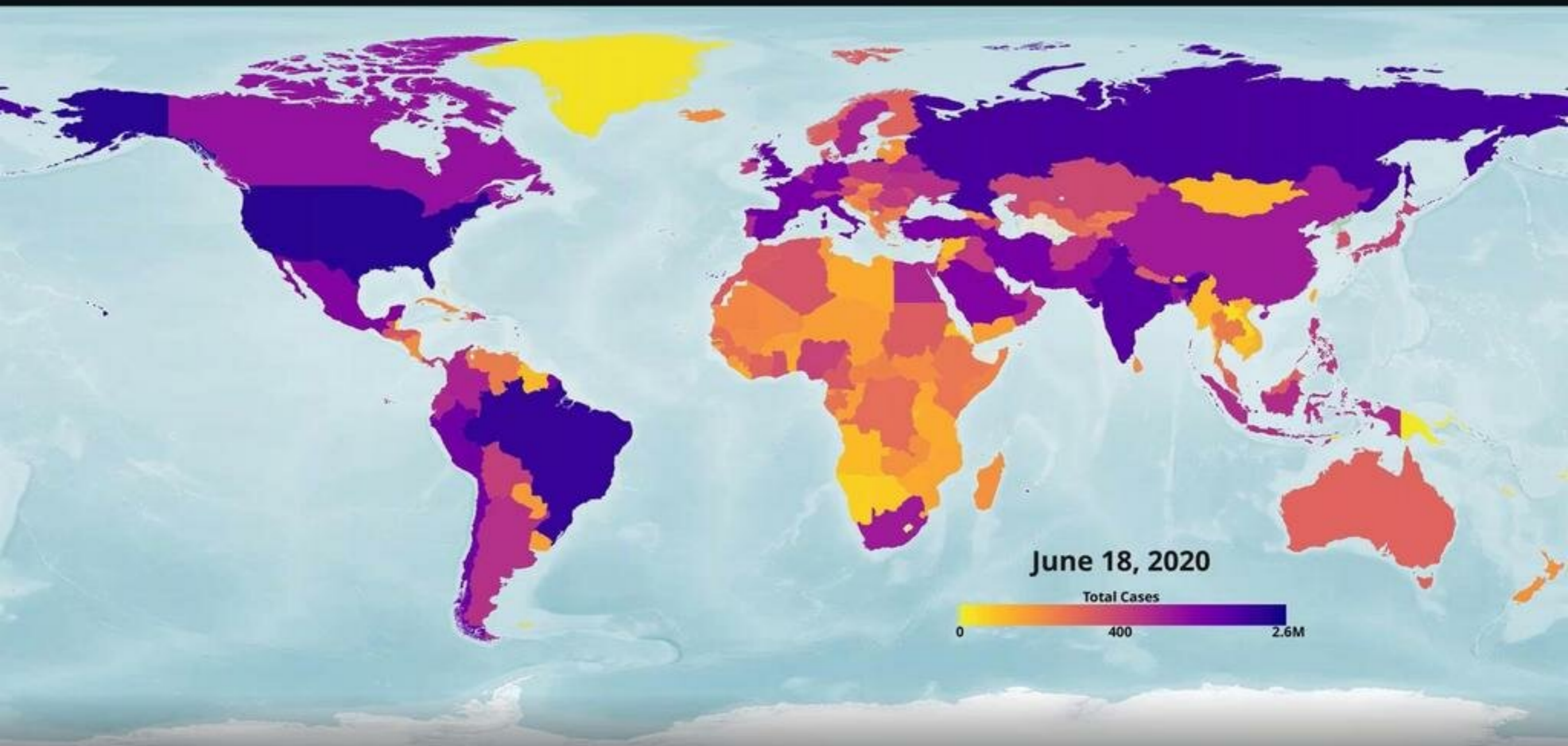
Testing new methods for Storytelling

- Idea
- Look for data
- Storyboard using StoryMap
- Gain feedback from Network
- Get approvals from SME's etc.
- Release as a package incl:
 - SOS Live program
 - SOS Catalog datasets (maybe even RT)
 - SOSx Tour
 - ESRI StoryMap
 - Educational Materials

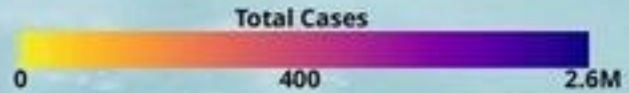


Feedback

- How do you envision the visualizations translated to the sphere?
 - Many of the visualizations are comparisons of pre vs. post COVID lockdown restrictions.
 - Some of the visualizations are better suited for local or zoomed-in view.
- Are there parts of the story that are missing?
- What data would you like to see representing the aftermath or the “rebound” of “business as usual” emissions?



June 18, 2020



Choropleth map of Total Cases of COVID animating from January thru June 2020. You can see the cases of COVID start in China and spreading through Asia then radiating across the world very quickly. By June of 2020 many of the world's most globalized and rich economic countries, like North America, Russia, Asia, Europe and parts of South America are inundated with cases.

Particulate Matter
Airborne particles such as *smoke, dust, dirt, soot, and salt*. The sources of these particles are numerous—including vehicles, factories, fires, and any other natural or human activity resulting in the addition of particulates into the air.

Ground Level Ozone
Ground level ozone is not directly emitted into the air, but forms when *nitrogen oxides (NOx)* emissions react with other *volatile organic compounds (VOCs)* in the presence of heat and sunlight.

Emissions from industrial facilities and electric utilities, motor vehicle exhaust, and chemical solvents are some of the major sources of NOx and VOCs.

Air Pollution

weather.gov/airquality

The infographic features a central illustration of a city skyline with smokestacks and cars emitting pollution. The text is arranged around this central image, with 'Particulate Matter' on the left and 'Ground Level Ozone' on the right. The NOAA logo and website URL are at the bottom right.

This graphic gives information about what makes up Air Pollution.

The World Health Organization (WHO) estimates that 4.2 million people die each year as a result of ambient outdoor air pollution. Air pollution and bad air quality are not just an annoyance but a serious global health concern.