

# Summer Fun for All Ages with GLOBE Citizen Science!

March 4, 2025



The webinar will begin at 11:00 am MT and will be recorded

# Welcome and Introductions

Claire Ratcliffe Adams and Sky ReidMills  
Space Science Institute

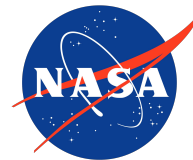
Theresa Schwerin  
Institute for Global Environmental  
Strategies

Rosalba Giarratano  
NASA Langley Research Center

Rose Kelly-Lyons  
Queens Public Library

Andrew Clark  
Institute for Global Environmental  
Strategies

Alicia Carlson  
GLOBE Program (U.S. Office)



# Agenda

- ❖ Icebreaker
- ❖ GLOBE Overview
- ❖ Programming ideas from Queens Public Library
- ❖ Activity: Color-a-Pixel Poster
- ❖ Art related GLOBE programs
- ❖ GLOBE Games & Puzzles
- ❖ Discussion and Q&A

# Icebreaker

While we wait for more friends to join...

What cloud personality do you have?

(Descriptions by Jade Rael from Santa Fe Indian School)



## A. Cumulus

Easygoing; happy most of the time; loves sunny days; likes to go on walks or hike.



## B. Stratus

Peaceful; loves the cool weather; wide range of interests.



## C. Cirrus

Delicate; quiet and thoughtful; always cold and needs a blanket; loves colors.



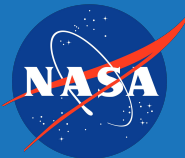
# GLOBEPROGRAM<sup>®</sup>

A Worldwide Science & Education Program



**127 Countries**  
**53K+ Educators**  
**890K+ Students**  
**290K+ Citizen Scientists**

Sponsored by:



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# GLOBE provides protocols (40) to monitor Earth's environment and a free database to store and access measurements

Atmosphere



Biosphere



Earth as a System



Pedosphere



Hydrosphere





*the app of* THE **GLOBE** PROGRAM

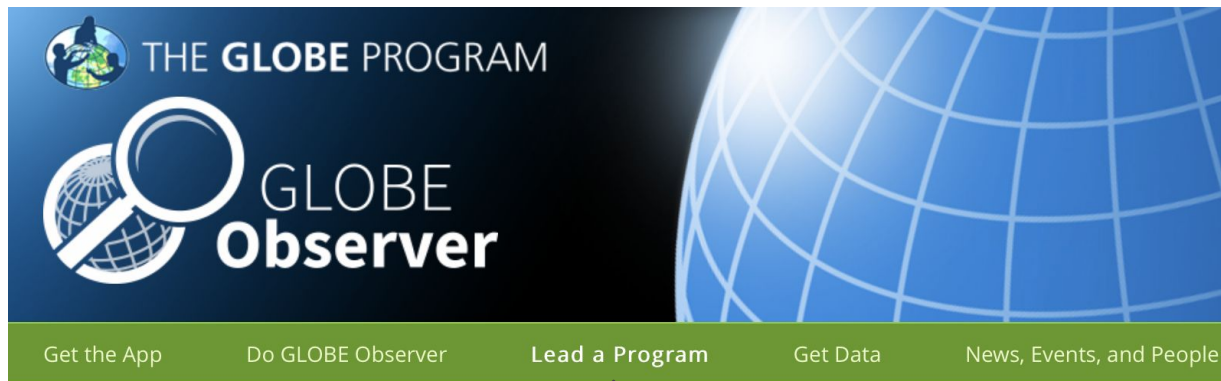


1. Download the app
2. Register for an account
3. You will receive an email with a link to confirm

**What do the 4 tools have in common?**



<https://observer.globe.gov/toolkit>



Home > Lead a Program

## TOOLKIT for INFORMAL EDUCATORS

Connect your organization's mission to real-world science by introducing visitors to GLOBE Observer, the app of the Global Learning and Observations to Benefit the Environment Program. GLOBE Observer can be integrated into programming at museums, science centers, zoos and aquariums, parks, public gardens, libraries and more. Simply engage visitors with a smartphone or tablet, integrate GLOBE Observer into an existing talk or demo, or create a new cart or event centered around the app.

It's easy to get started with GLOBE Observer. Simply [download the app](#), register for an account and plan your program using the resources included below. In this toolkit, you will find information, activities and resources for each of the app modules. In the [Advanced](#) section, you can find more information on topics such as organizing an event and becoming a GLOBE partner. Have a question? [Contact us](#).



# Queens Public Library

- Collaboration with NASA GLOBE Clouds team.
- Activities and games.
- Examples:
  - Sky Window
  - Elementary GLOBE Storybooks
  - Cloudscape
  - Cloud Dance



# Sky Window

- Safety first: Never look directly at the Sun!
- Make cloud observations and submit your data to GLOBE.
- Available in English and Spanish.

[Sky Window - English](#)

[Ventana del cielo - Español](#)

## High-level Clouds



Cirrus



Cirrostratus



Circumcumulus



Contrails

**When observing the sky, never look directly at the Sun!**

## Mid-level Clouds



Altostratus



Alto cumulus

**You Can Help NASA Study Clouds!**

Clouds have a large influence on Earth's energy balance, climate, and weather. Even small changes in the amount, location, or type of cloud can impact Earth's climate and weather. Collecting cloud data at the same time a satellite is overhead helps scientists.

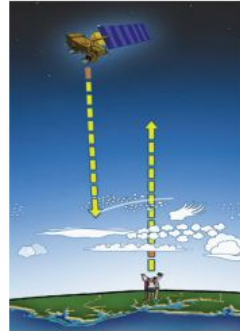
Submit your data through:

 **THE GLOBE PROGRAM**

or through the **GLOBE Observer** app, available for Apple or Android devices.

remove this card



Your reports from the ground looking up help NASA better understand our atmosphere and the views from the satellite looking down.

## Low-level Clouds



Cumulus



Stratus



Stratocumulus



Nimbostratus



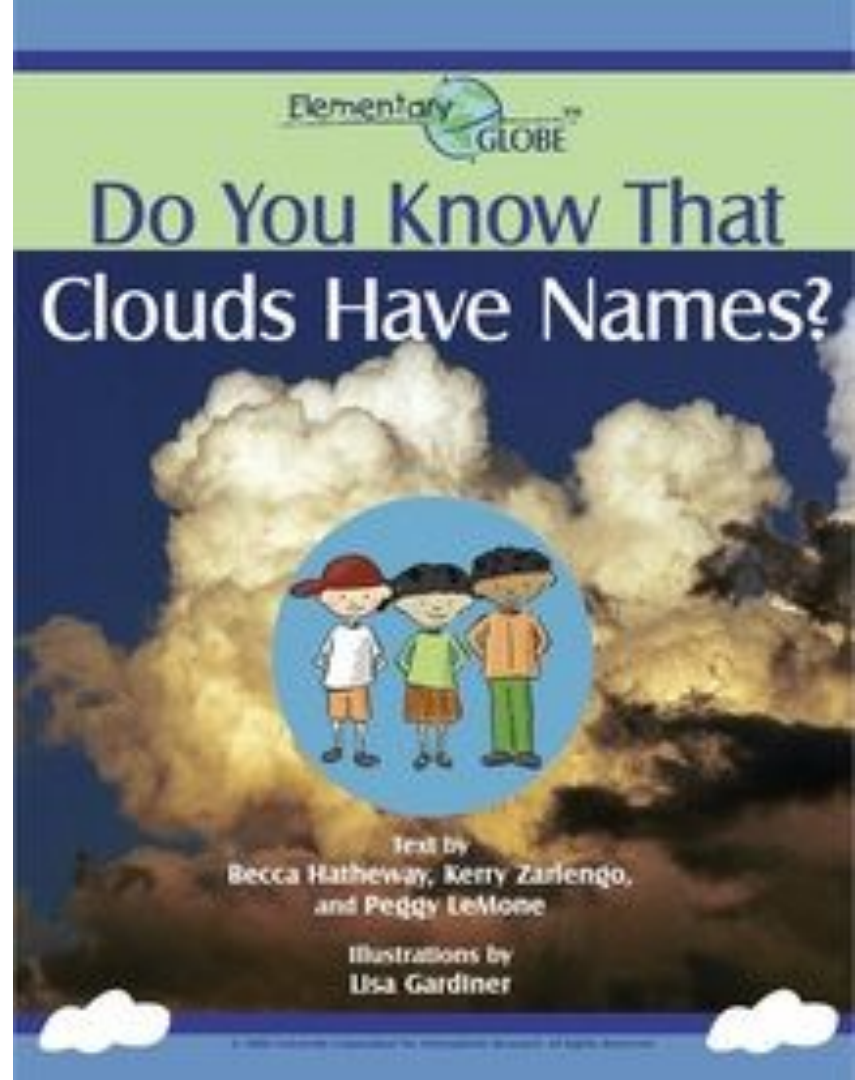
Cumulonimbus

## Low-level Precipitating Clouds

# Elementary GLOBE

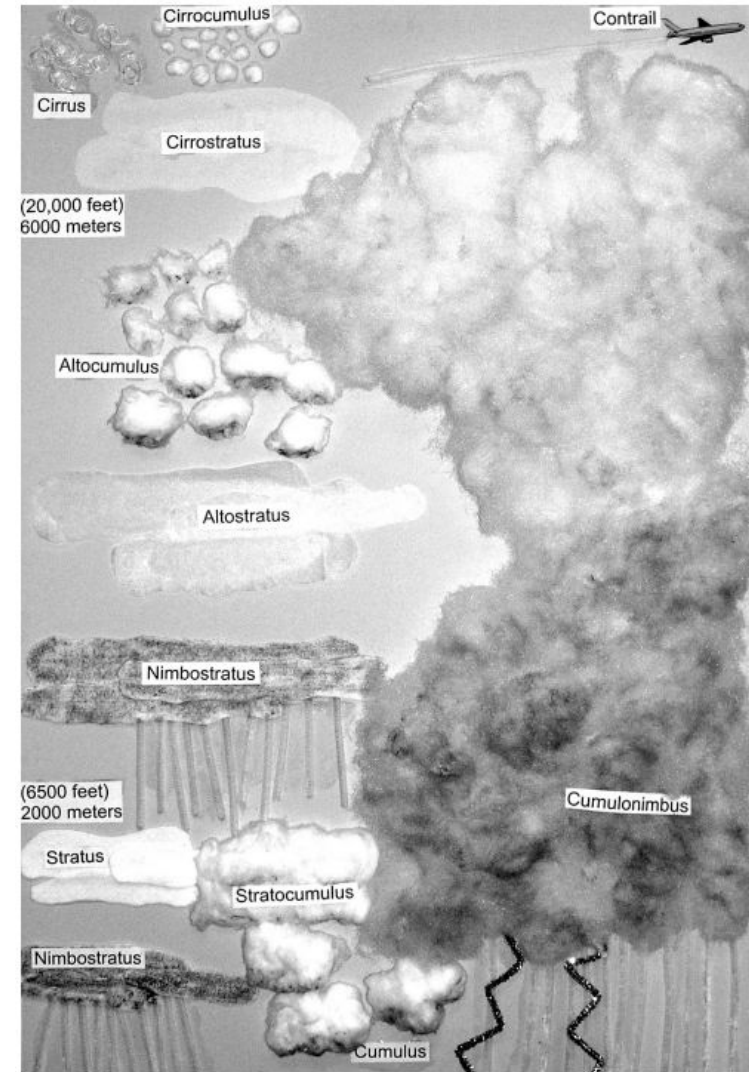
- Introduce students to the various aspects of Earth science:
  - Air quality
  - Climate
  - Clouds
  - Earth system
  - Seasons
  - Soils
  - Water
- Storybook approach, science-based, fictional narrative to engage students in the scientific method.
- Available in:
  - Arabic
  - English
  - French
  - German
  - Norwegian
  - Spanish

[Access Elementary GLOBE Modules](#)



# Cloudscape

- Sky scene ordering cloud types by altitude.
- Based on Elementary GLOBE book: *“Do You Know That Clouds Have Names?”* and sky observations.
- Using inexpensive materials: cotton balls, paper, fabric, tissues, etc.
- Kids can also describe their cloudscape verbally.



# Cloud Dance



Cumulus



Stratus



Cirrus

# Cloud Dance Extended Edition



Precipitation



Contrails



Rainbows

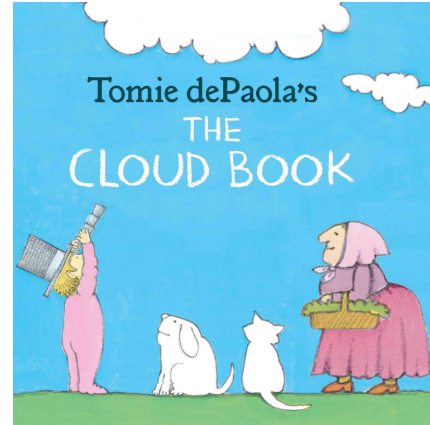
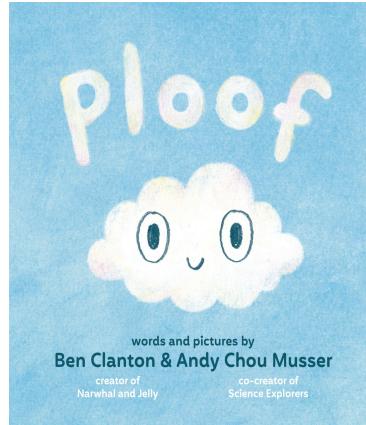
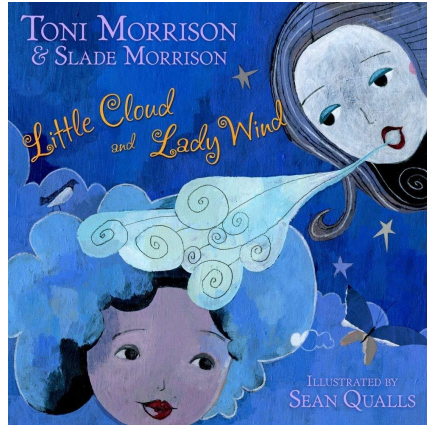
# Citizen Science



The image shows the GLOBE Observer app interface. At the top, there is a magnifying glass icon over a globe and the text 'GLOBE Observer'. Below this, it says 'Choose your protocol:'. There are four protocol options: 'Clouds' with a cloud icon, 'Mosquito Habitat Mapper' with a mosquito icon, 'Land Cover' with a landscape icon, and 'Trees' with a forest icon. At the bottom of the app interface, there are social media icons for Facebook, Twitter, Instagram, and YouTube. Below the social media icons are two buttons: 'Visit the GLOBE Website' and 'Visit the Observer Website'.

- Queens Public Library and the NASA GLOBE Clouds team are brainstorming ideas to take the next step.
- Kids are engaged using the Sky Window to identify clouds.
- They love doing the Clouds Dance and the Acorn, Acorn, Tree dance.
- Now, we want their families to join and use the GLOBE Observer app to make observations and contribute to Earth science!

# Additional Resources



Smologies with Alie Ward | EP368  
**Smologies #32: CLOUDS with Rachel Storer**

smologies

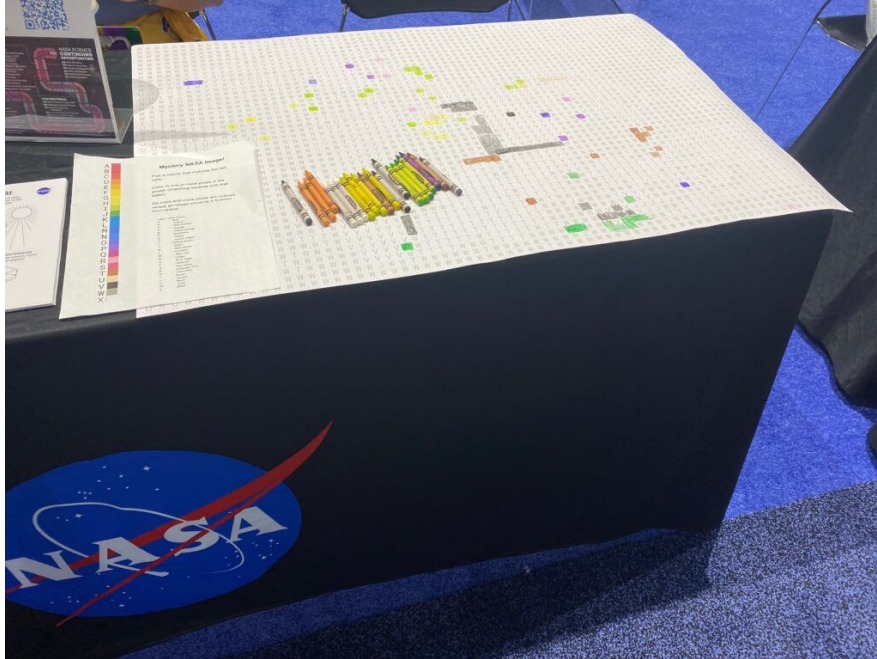
00:00 25:26

1X

PRIVACY SHARE SUBSCRIBE



# Color-a-Pixel Poster



*Step right up to help collaboratively reveal the mystery image, and learn something new about remote sensing in the process!*

- Generate interest
- Spur conversation
- Hands-on
- Easy-to-use
- Adaptable

**Blog Post:**

<https://strategies.org/products/color-a-pixel-activity>

**Pre-generated posters:**

<https://strategies.org/color-a-pixel-pregenerated>

**Make your own:**

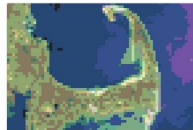
<https://color-a-pixel.streamlit.app/>

# Color-a-Pixel: Pre-Generated Posters

## Pre-generated Color-a-Pixel Activity Files

This page exists in support of the [Color-a-Pixel Activity Generator](#), and offers a selection of ready-to-use activities generated from satellite imagery of regions across the country.

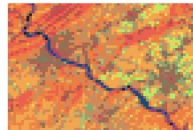
The bare minimum required to download and print in order to have a usable activity are the universal [Color Label PDF](#), and either the [Poster PDF](#) or [Multi-Page PDF](#) for the region of interest. If using the multi-page PDF, the universal [Grid Layout](#) image serves as a guide for how to recombine the pages into a single poster. The other images can provide additional visual references for discussion (Selected Region in Original Color, High Resolution Recolored Image, Solution Preview), and targeted legends specific to the region of interest.



### Cape Cod

MA

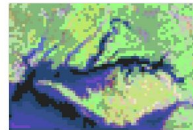
- [Background URL](#)
- [Original Color](#)
- [Solution Preview](#)
- [Hi-Res Recolored Image](#)
- [Named Legend](#)
- [Frequency Legend](#)
- [Poster PDF](#)
- [Multi-page Handout PDF](#)



### Susquehanna River

PA

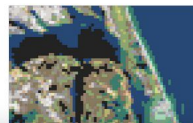
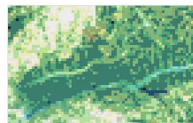
- [Background URL](#)
- [Original Color](#)
- [Solution Preview](#)
- [Hi-Res Recolored Image](#)
- [Named Legend](#)
- [Frequency Legend](#)
- [Poster PDF](#)
- [Multi-page Handout PDF](#)



### Chesapeake Bay

VA, MD, DC, PA, DE

- [Background URL](#)
- [Original Color](#)
- [Solution Preview](#)
- [Hi-Res Recolored Image](#)
- [Named Legend](#)
- [Frequency Legend](#)
- [Poster PDF](#)
- [Multi-page Handout PDF](#)

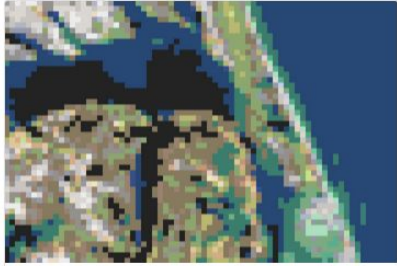


The minimum required to download and print in order to have a usable activity:

- Universal [Color Label PDF](#)
- [Poster PDF](#) -or- [Multi-Page PDF](#)
- If using the multi-page PDF, the universal [Grid Layout](#) image serves as a guide for how to recombine the pages into a single poster.

The other images can provide additional visual references for discussion (Selected Region in Original Color, High Resolution Recolored Image, Solution Preview), and targeted legends specific to the region of interest.

# Color-a-Pixel: Pre-Generated Posters



Kitty Hawk

NC

- [Background URL](#)
- [Original Color](#)
- [Solution Preview](#)
- [Hi-Res Recolored Image](#)
- [Named Legend](#)
- [Frequency Legend](#)
- [Poster PDF](#)
- [Multi-page Handout PDF](#)

NASA Landsat Image Gallery

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Search the gallery... search

**Kitty Hawk and Kill Devil Hills**

**Downloads**

- [kittyhawk\\_ol\\_2017355\\_lrg.jpg](#) (6151x6151, JPEG)
- [killdevilhills\\_ol\\_2017355.jpg](#) (720x480, JPEG)

**Metadata**

- **Sensor(s):** Landsat 8 - OLI
- **Data Date:** December 21, 2017
- **Visualization Date:** December 17, 2020

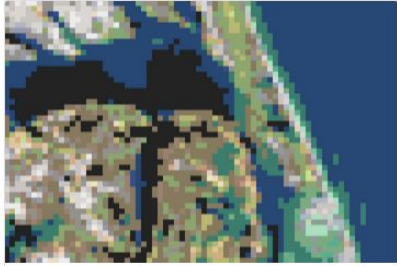
ALBERMARLE SOUND Kitty Hawk Detail Jockey Ridge State Park ATLANTIC OCEAN

acquired December 21, 2017

Kill Devil Hills Wright Brothers National Memorial ATLANTIC OCEAN ALBERMARLE SOUND

acquired December 21, 2017

# Color-a-Pixel: Pre-Generated Activities



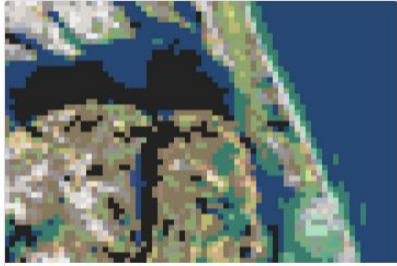
Kitty Hawk

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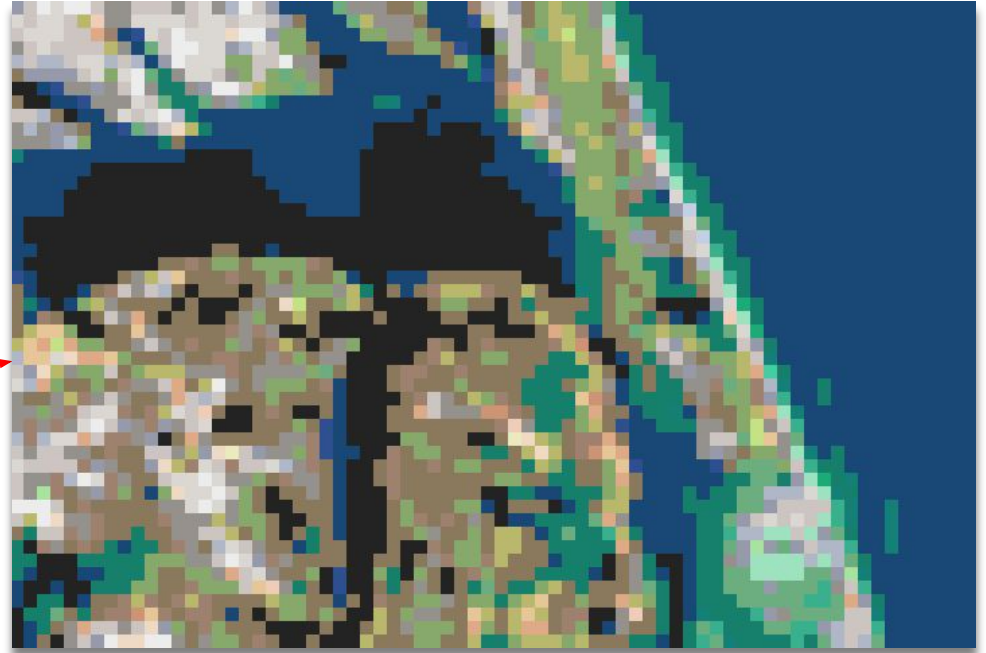
# Color-a-Pixel: Pre-Generated Activities



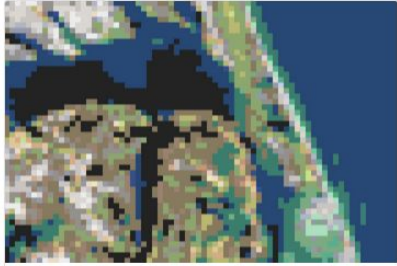
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# Color-a-Pixel: Pre-Generated Activities



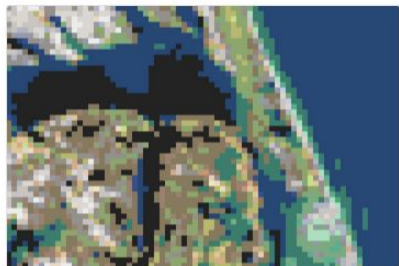
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# Color-a-Pixel: Pre-Generated Activities



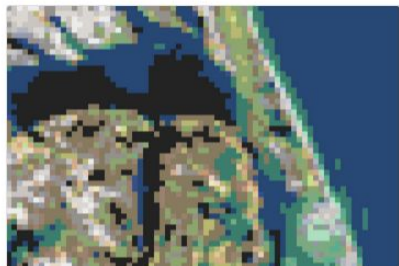
Kitty Hawk

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- [Named Legend](#)
- [Frequency Legend](#)
- [Poster PDF](#)
- [Multi-page Handout PDF](#)

41		Manatee
44		Cadet Blue
50		Midnight Blue
59		Pine Green
60		Tropical Rain Forest
62		Jungle Green
66		Sea Green
67		Forest Green
71		Granny Smith Apple
72		Asparagus
74		Yellow Green
78		Olive Green
79		Spring Green
85		Shadow
86		Gold
88		Gray
89		Timberwolf
90		Almond
96		Tumbleweed
98		Desert Sand
100		Beaver
107		Silver
119		White
120		Black

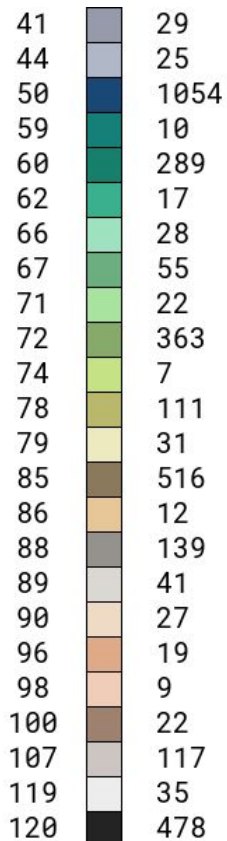
# Color-a-Pixel: Pre-Generated Activities



Kitty Hawk

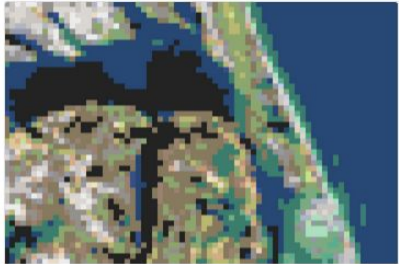
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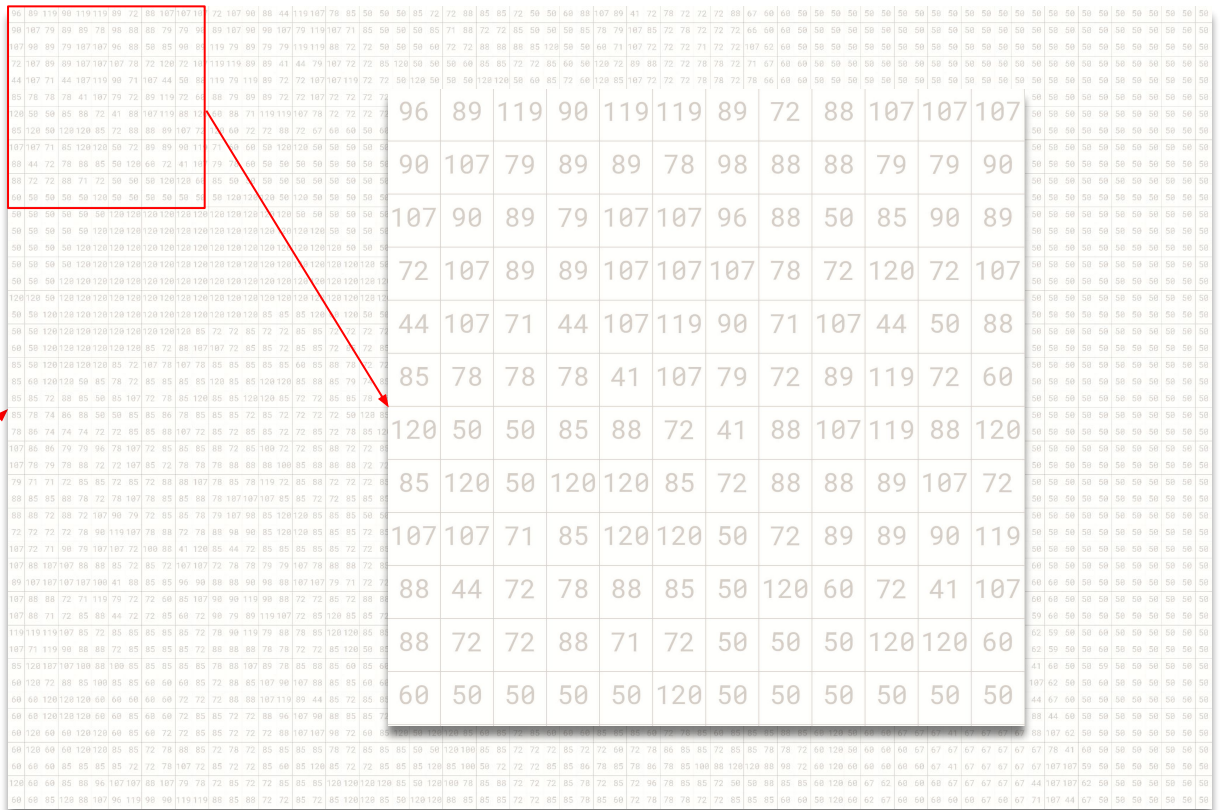
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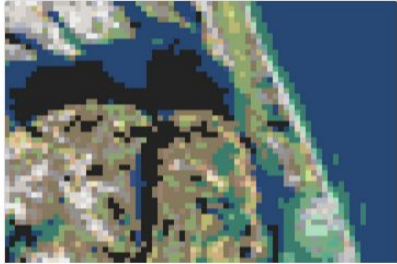
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# Color-a-Pixel: Pre-Generated Activities



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- [Named Legend](#)
- [Frequency Legend](#)
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- [Multi-page Handout PDF](#)

96	89	119	90	119	119	89	72	88	107	107	107
90	107	79	89	89	78	98	88	88	79	79	90
107	90	89	79	107	107	96	88	50	85	90	89
72	107	89	89	107	107	107	78	72	120	72	107
44	107	71	44	107	119	90	71	107	44	50	88
85	78	78	78	41	107	79	72	89	119	72	60
120	50	50	85	88	72	41	88	107	119	88	120
85	120	50	120	120	85	72	88	88	89	107	72
107	107	71	85	120	120	50	72	89	89	90	119
88	44	72	78	88	85	50	120	60	72	41	107
88	72	72	88	71	72	50	50	50	120	120	60
60	50	50	50	50	120	50	50	50	50	50	50

(Row 1, Column 1)

## Grid Layout

(Row 1, Col 1)	(Row 1, Col 2)	(Row 1, Col 3)	(Row 1, Col 4)	(Row 1, Col 5)	(Row 1, Col 6)
(Row 2, Col 1)	(Row 2, Col 2)	(Row 2, Col 3)	(Row 2, Col 4)	(Row 2, Col 5)	(Row 2, Col 6)
(Row 3, Col 1)	(Row 3, Col 2)	(Row 3, Col 3)	(Row 3, Col 4)	(Row 3, Col 5)	(Row 3, Col 6)
(Row 4, Col 1)	(Row 4, Col 2)	(Row 4, Col 3)	(Row 4, Col 4)	(Row 4, Col 5)	(Row 4, Col 6)

# Color-a-Pixel Poster

## Programming Ideas and Tips

# Game Night

This game night included several activities that participants could rotate through.

People would color for a little bit (some longer than others) then move on to another activity.

Time: ~1-2 hours

Post final image alongside with original image

**Print poster on matte paper!**



# Station/Tabletop Activity

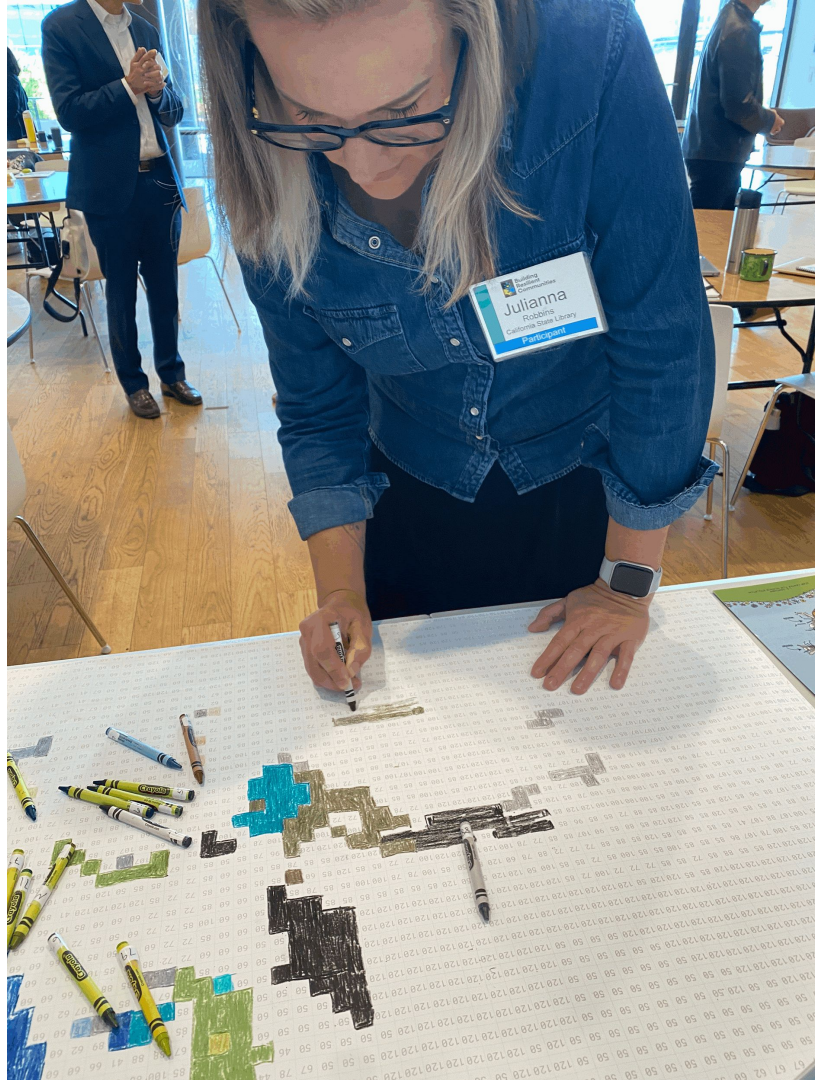
Post instructions with color legend for that image.

## Mystery NASA Satellite Image!

- Match the crayon to the number printed on the poster
- Color in the pixels of to reveal an image of a location from space.
- What clues can you use to guess where this is?

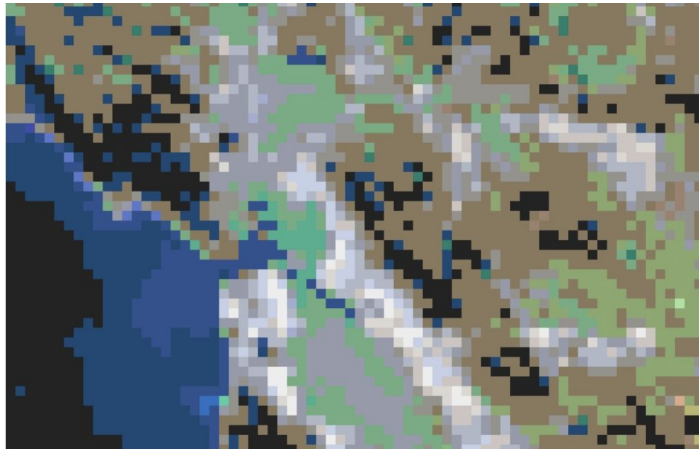
Ideas:

- Start with a few pixels colored in
- Leave the poster up for an event or over a period of time (week).
- Post some clues to generate interest
- Post the answer with original image and link to learn more.



# Color-a-Pixel: Practical Tips

Print the color key generated for your image and only put out the crayon colors for that image. When activity is completed share/post the original image.



Pixelated image of San Francisco Bay uses 20 different colors shown in key

36	Royal Purple
41	Manatee
42	Indigo
43	Wild Blue Yonder
44	Cadet Blue
45	Periwinkle
46	Blue Violet
48	Denim
50	Midnight Blue
60	Tropical Rain Forest
62	Jungle Green
67	Forest Green
72	Asparagus
85	Shadow
88	Gray
89	Timberwolf
100	Beaver
107	Silver
119	White
120	Black



Above: Original Landsat 9 image of San Francisco Bay (Credit NASA/USGS)

# Color-a-Pixel: Practical Tips

- Crayons are packed randomly by the manufacturer (left photo)
- Sort crayons by color, using paper wrapper as a guide (right photo)



# Color-a-Pixel: Practical Tips

Download and print master key

Sort 120 crayons using master key

Master key is also a template for crayon labels





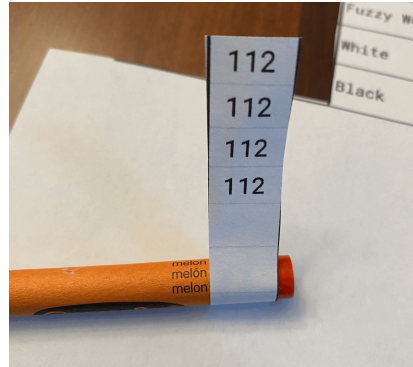
# Label crayons with numbers

## 1. Cut out label



112	112	112	112	112			Melon	
113	113	113	113	113			Bittersweet	
114	114	114	114	114			Sunset Orange	
115	115	115	115	115			Red Orange	
3	3	3	3	3				

## 2. Wrap label around end of Crayon, using glue stick or tape to secure



## Other Ideas

- Write numbers on crayons
- Don't number crayons, and post the legend with crayon names & numbers

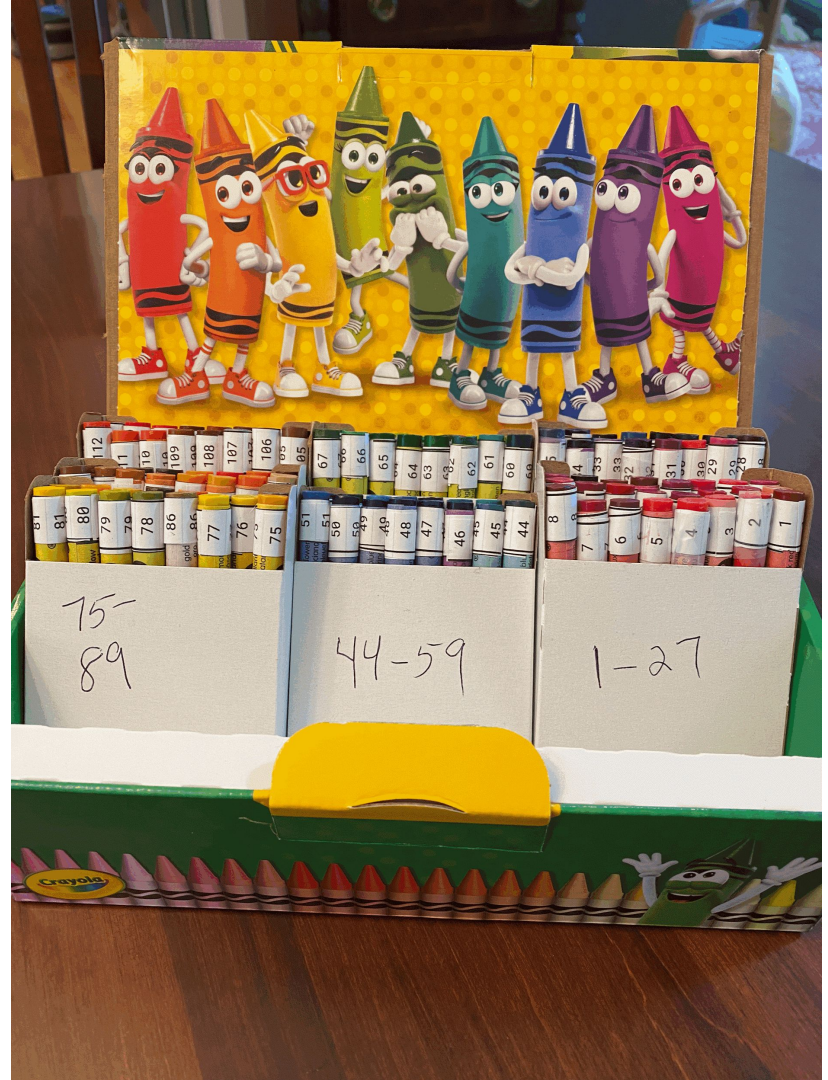


# Happy Coloring!

Let us know any suggestions for making this a better activity for libraries.

Share how you use this activity and any tips for others.

- [theresa\\_schwerin@strategies.org](mailto:theresa_schwerin@strategies.org)
- Post on STARnet Community  
<https://www.starnetlibraries.org/starnet-community/>



# Art related GLOBE Programs

## GLOBE Resources for 2025 Library Summer Reading Programming

- Children's Programming
- Teen Programming
- Intergenerational Programming
- Early Literacy Programming
- Picture Book Reading Lists by Topic
- Further Activities by Topic



<https://bit.ly/GLOBE-Libraries>



## GLOBE Resources for 2025 Library Summer Reading Programming

This guide provides ready-to-use library program plans featuring GLOBE Program activities and data collection opportunities that align with the 2025 Collaborative Summer Library Program theme "[Color Our World](#)."

### The GLOBE Program

The [GLOBE Program](#) is an international science and education program sponsored by NASA and supported by National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF), and the U.S. Department of State. The program gives K-16 students and the public a way to meaningfully contribute to an understanding of the Earth system through place-based, authentic research.

### Download the GLOBE Observer App


GLOBE's citizen science app, [GLOBE Observer](#), allows volunteers to make environmental observations that complement NASA satellite observations. The app guides you through the observation process for tree height, clouds, mosquito habitats, and land cover data collection. Create a free account to get started!


### Acknowledgements

This resource was developed by the U.S. GLOBE Coordination Office at the University of New Hampshire Leitzel Center with comments and feedback from the U.S. GLOBE Partnership community and in collaboration with Theresa Schwerin, Institute for Global Environmental Strategies and GLOBE Observer team.

# Children's Programming Example

## Children's Storytime: Seasons and Colors

1. Read *Summer Colors* by Diana Morgan (2018).
2. Go on a color walk to record the colors that can be seen in the summer. 
3. Read *Green on Green* by Dianne White (2020).
4. Everyone votes for their favorite season.
5. Art activity: NOAA paint-by-number maps of plant growth in different seasons.
6. Movement break with *The Seasons Song* by Super Simple Songs.

Elementary GLOBE  The Mystery of the Missing Hummingbirds

**The Colors of the Seasons Student Activity Sheet**

Name \_\_\_\_\_

Date _____ Season _____	<input type="checkbox"/> Red	<input type="checkbox"/> Blue
<input type="checkbox"/> Yellow	<input type="checkbox"/> Green	<input type="checkbox"/> Orange
<input type="checkbox"/> Purple	<input type="checkbox"/> White	<input type="checkbox"/> Brown
<input type="checkbox"/> Pink	<input type="checkbox"/> Gray	<input type="checkbox"/> Black

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# Teen Programming Example

## Trees and Kindness Rocks (from LaSalle Public Library)

1. Go outside to use the GLOBE Observer app to measure tree height.
2. Make a “kindness rock” with paint or markers, showing your tree and its measurements.
3. Leave your rock at the base of the tree you measured to inspire others (see activity for other ideas!).
4. Read *Rise to the Sky: How the World's Tallest Trees Grow Up* by Rebecca E. Hirsch (2023).



Read about Kindness Rocks and trees at <https://www.starnetlibraries.org/gratitude-kindness-rocks-where-science-and-art-meet/>

# Intergenerational Programming Example

## Clouds Family Program (from Los Angeles Public Library)

1. Do the Cloud in a Jar activity.
2. Go outside to use the GLOBE Observer app to make cloud observations.
3. Go back inside to make Cloud Mobiles.



## Cloud in a Jar

### Materials

- clear glass jar
- metal tray or plate
- ice cubes
- hot water
- matches (optional)

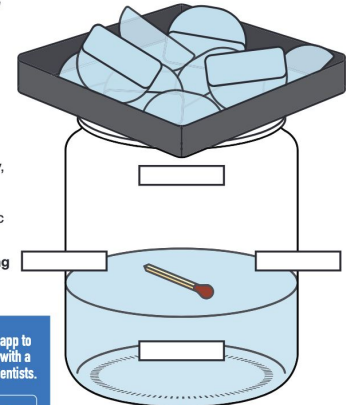
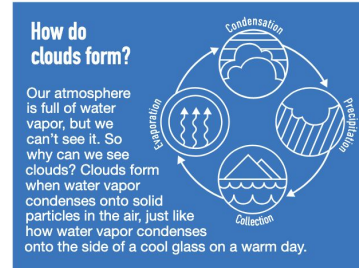
### Creating Your Cloud

1. Fill the jar with about 2 inches of hot water and stir.
2. Light a match, blow it out, and drop it into the jar (optional).
3. Once the smoke clears, place the ice tray on top.
4. Watch a cloud form!

### What's Happening?

In this activity, stirring the water increases the amount of water vapor in the jar. As the water vapor rises towards the cool tray, it condenses onto particles in the air. If you used a match, this effect will be even more dramatic because of the smoke particles.

**Sketch what you see happening inside of the jar and label the parts of the water cycle.**



Download the GLOBE Observer app to share your cloud observations with a global community of citizen scientists.

Download on the App Store

GET IT ON Google Play

# Cloud Mobile

Start



Finish



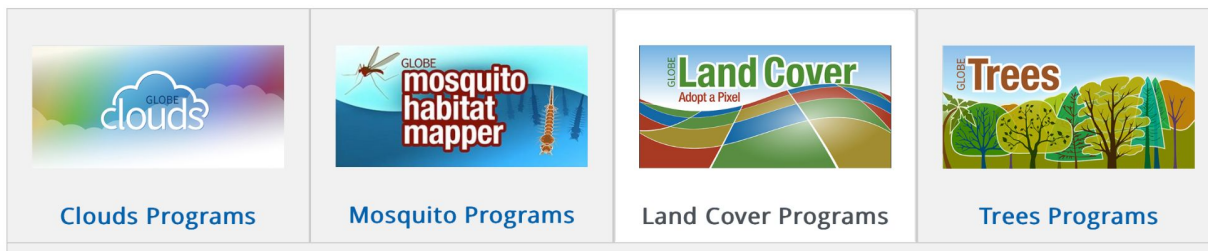
# Games to Support Summer Programs

See **GLOBE Observer Library Guide** sample programs and ideas to combine resources for passive and active library programs (games, videos, hands-on activities, and more).

## Sample Library Programs

Following are programs created and suggested by our partners that can serve as inspiration to create additional library programs. The examples mix and match resources from the [GLOBE Observer Toolkit for Informal Educators](#) where we've collected hands-on activities, videos, booklists, and promotional materials.

### Programs by protocol



<https://observer.globe.gov/libraries>



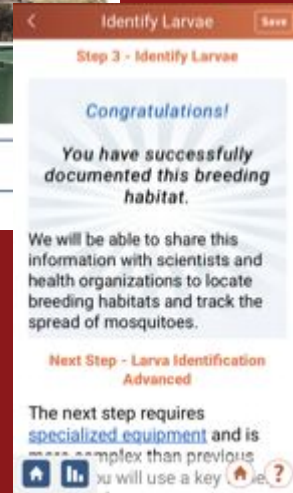
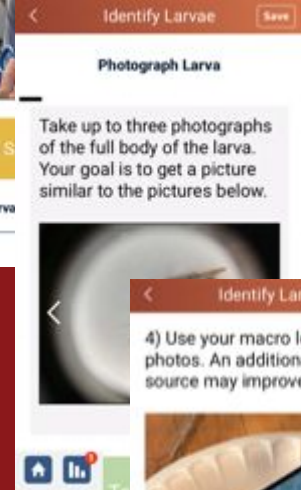
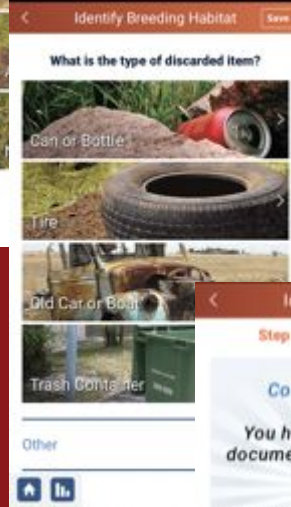


# Mosquito Habitat Mapper: Habitats and Hideouts Game



Steps to observe:

- Identify habitat
- Sample and count
- Identify larvae
- Eliminate habitat (clear standing water)



# Habitats and Hideouts Game

Learn about the different places where water collects and mosquito moms can lay their eggs.

Can be played 3 ways:

- Bingo
- Name that habitat
- Sketch that habitat

Download PDFs of activity guide, playing boards (30), and call sheet/slides

<https://strategies.org/products/mosquito-habitats-and-hideouts>



Abandoned car



Animal dish or trough



Animal, people or tire tracks



Birdbath



Can, bottle, cup



Ditch



Estuary



Grill



Hollows in plants



Hollows in trees



House or structure



Lake or pond



Mosquito eggs



Mosquito larva



Mosquito pupa



Mosquito trap



Ovitrap



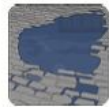
Plant pot



Pool



Public works



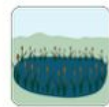
Puddle



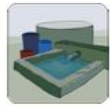
River or stream edge



Shells (animal or plant)



Swamp



Tank



Tire



Trash container



Trash/discarded objects



Water jars



Well or cistern

# Variations on Habitats and Hideouts

## Scavenger Hunt:

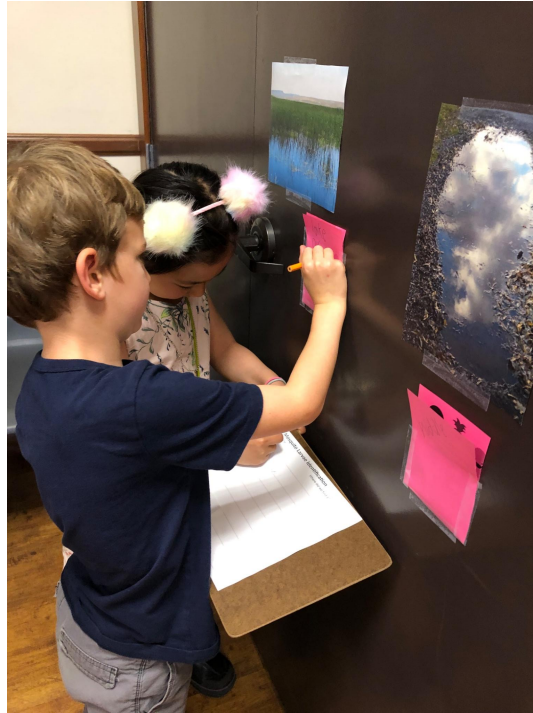
Los Angeles Public Library included a scavenger hunt with photos posted around the library.

## Mosquito Habitats and Hideouts Walk

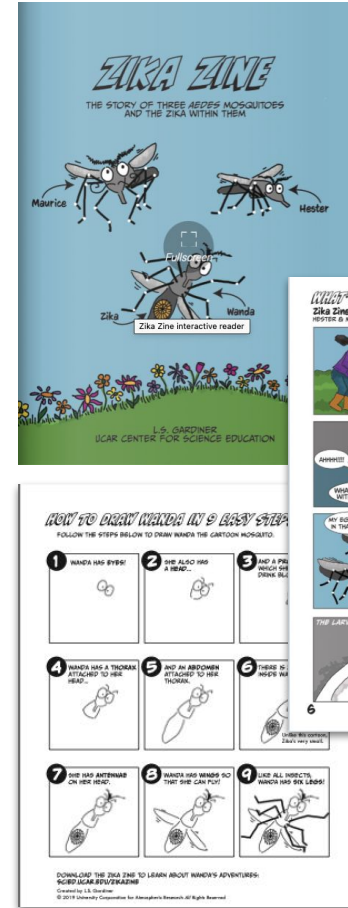
Use the call sheet from bingo to search for potential habitats.

## Couple with Zika Zine Comic

Download the coloring pages, [How to Draw Wanda in 9 Easy Steps](https://scied.ucar.edu/zikazine) and [Make Your Own Zika Zine Comic](https://scied.ucar.edu/zikazine) and create your own mosquito pictures and stories. <https://scied.ucar.edu/zikazine>



Above: Photo courtesy Los Angeles Public Library





# Discussion

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Answer in the chat: How might your library implement these activities in your summer programming?



# Thank you!

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Any Questions?