



GLOBE **Land Cover**

Girl Scouts and GLOBE Observer



The [Global Learning and Observations to Benefit the Environment \(GLOBE\) Program](#) is an international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process and contribute meaningfully to our understanding of the Earth system and global environment.



The [GLOBE Observer](#) app is a GLOBE's data entry tool that allows an international network of citizen scientists to work together to learn more about our shared environment and changing climate. *GLOBE Observer* currently accepts observations of Clouds, Mosquito Habitats, Land Cover and Trees.

GLOBE Land Cover

NASA GLOBE and Girl Scouts

GLOBE Observer Trees Tool: Think Like a Citizen Scientist



Hear



Smell



Touch



See



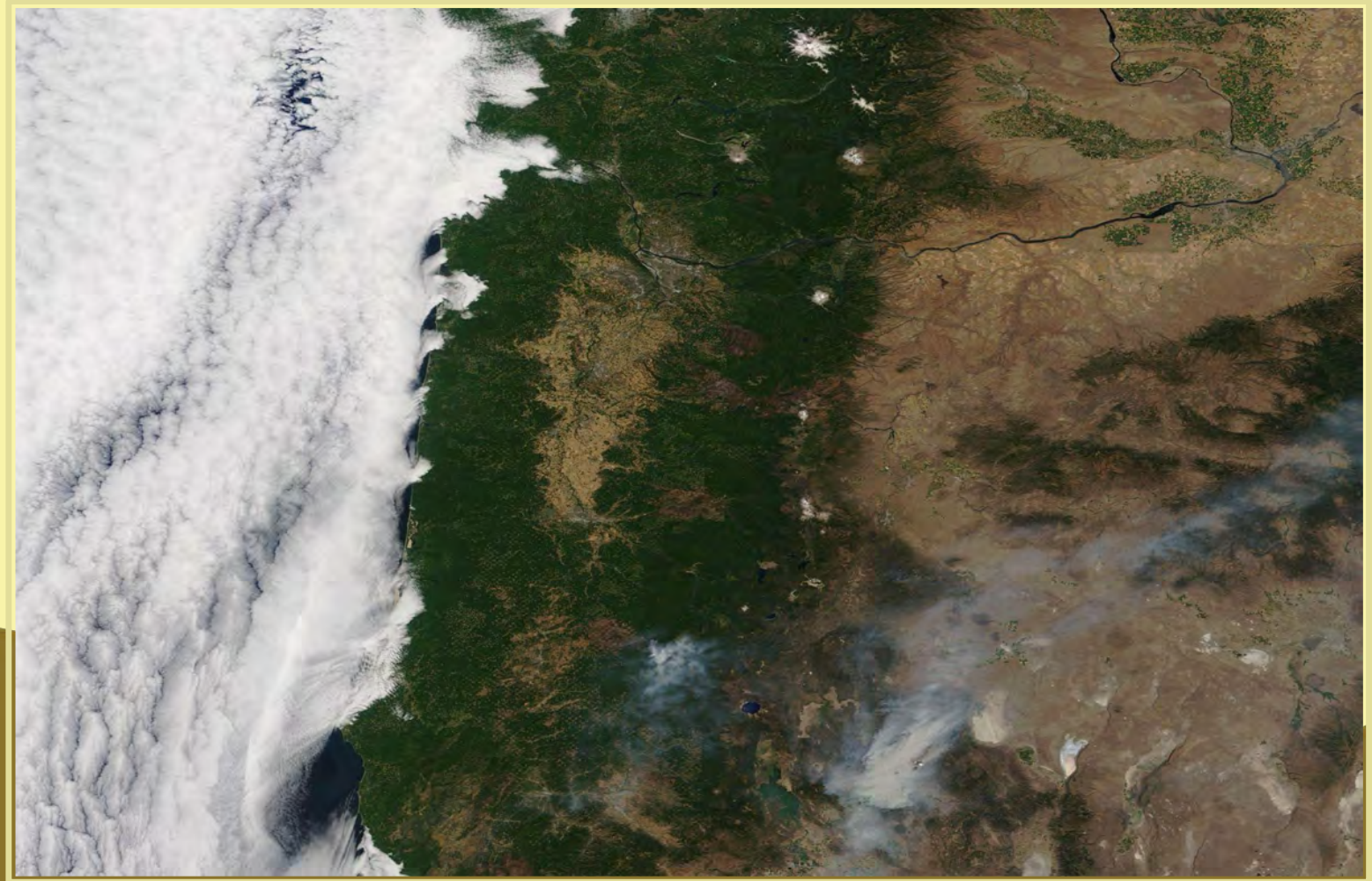
Taste

GLOBE Land Cover

What's an Observation?

Observations

- What do you notice about the satellite image?
- What colors do you see?
- What recognizable features do you see?
- When was this image taken?
- What satellite collected the data?



GLOBE **Land Cover**

Satellite Image

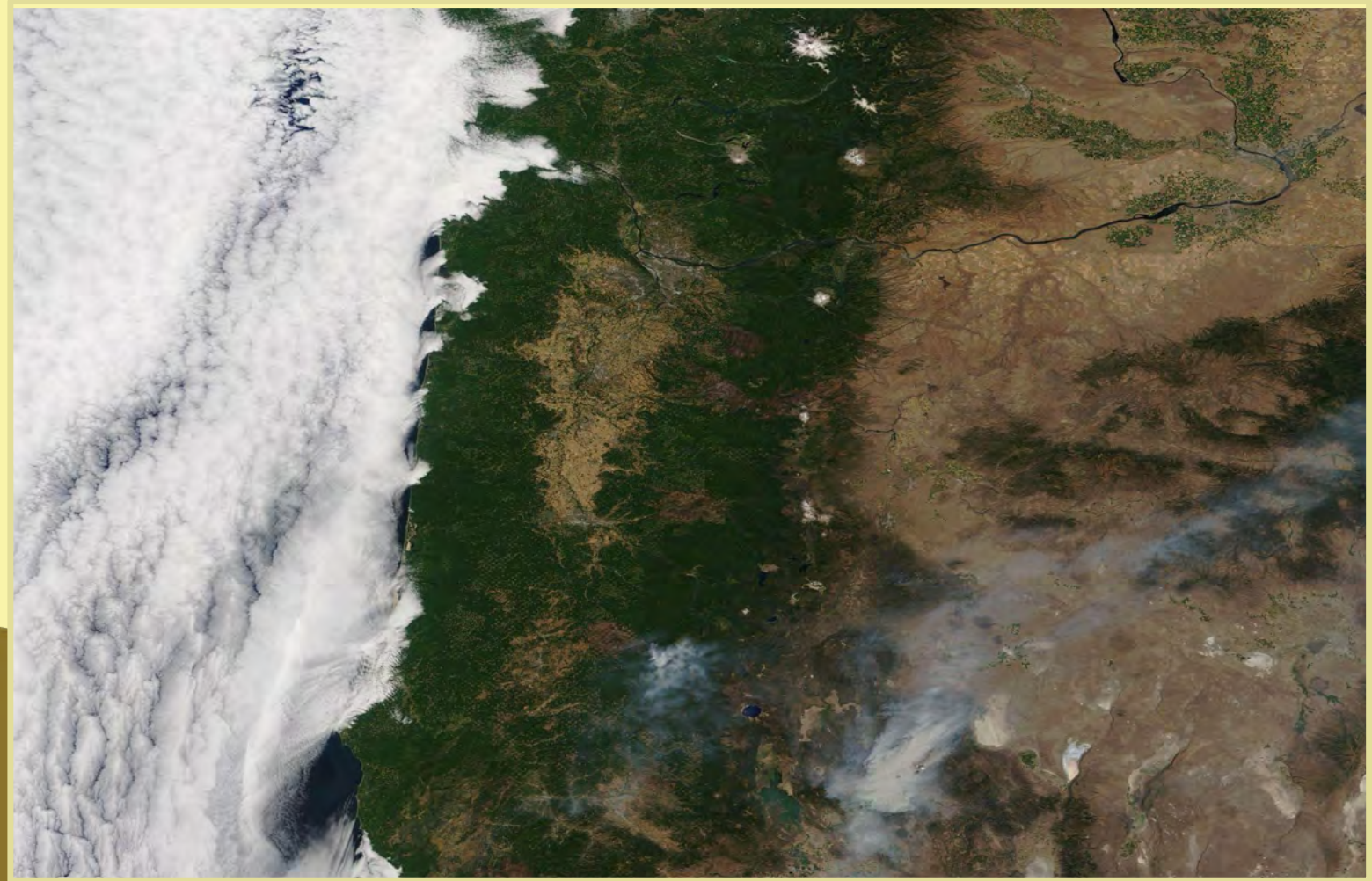
6 July 2021, Oregon and southwest Washington

Observations

- What do you notice about the satellite image?
- What colors do you see?
- What recognizable features do you see?
- When was this image taken?
- What satellite collected the data?



Press pause while you discuss.



GLOBE **Land Cover**

Satellite Image

6 July 2021, Oregon and southwest Washington

What does a Scientist Do?

GLOBE Land Cover





Press pause while you discuss.

What does a Scientist Do?

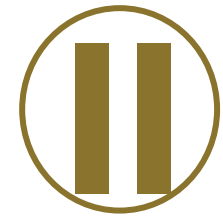


GLOBE Land Cover

What does a Scientist Do?

1. Observe
2. Ask a Question
3. Make a Hypothesis





Press pause while
you discuss.

GLOBE **Land Cover** **Ask a Question**
????????????????????



GLOBE

Land Cover Ask a Question

What is located where there are clusters of white pixels?

Question: What is located where there are clusters of white pixels?

Hypothesis: The white pixels indicate that there are a lot of lights, so I think that there are more lights in cities. The clusters of white pixels are where there are cities.



GLOBE **Land Cover** Make a Hypothesis

Answer your question based on observations

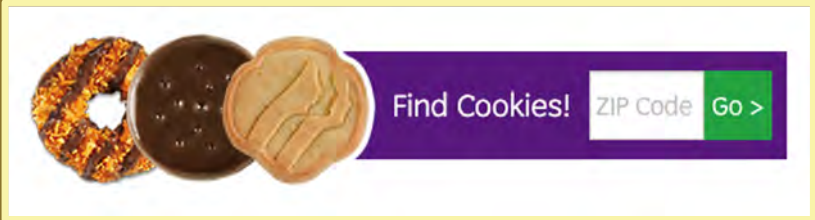
How do scientists know if their hypothesis is correct?

Collect and Analyze Data



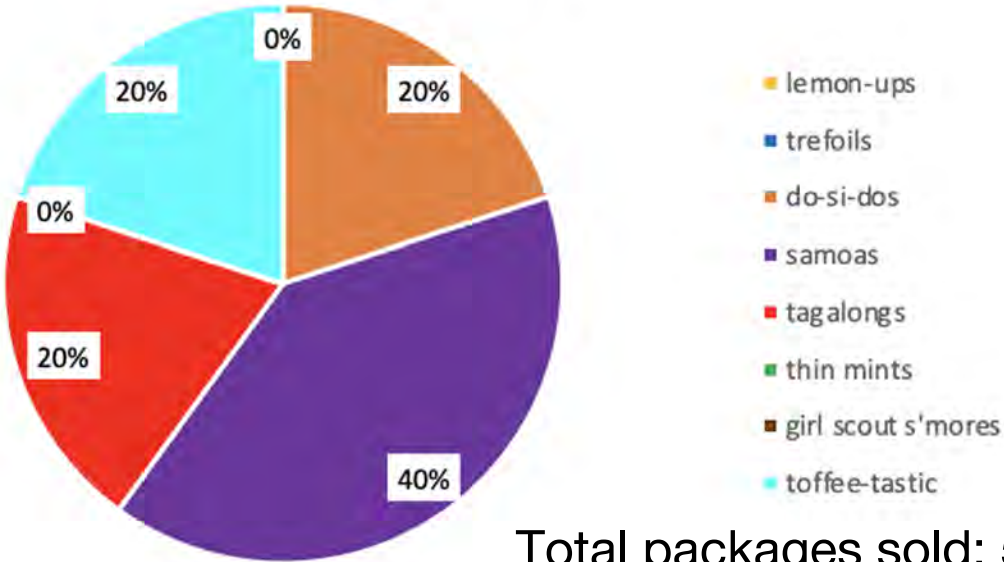
Collect and Analyze Data

Girl Scout Cookie Sales



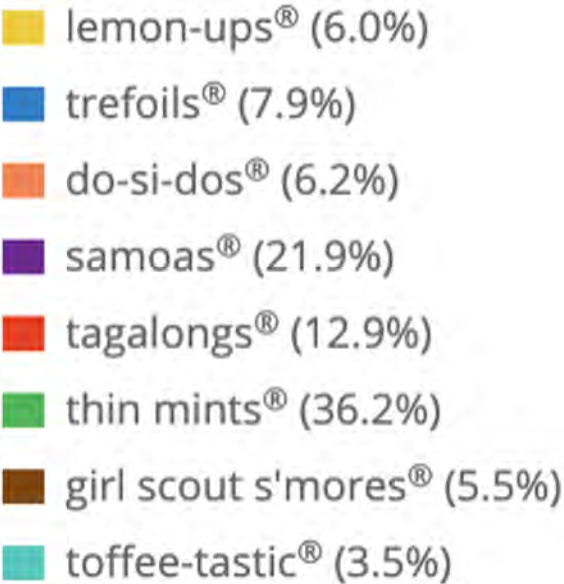
Single Sale

Single Family

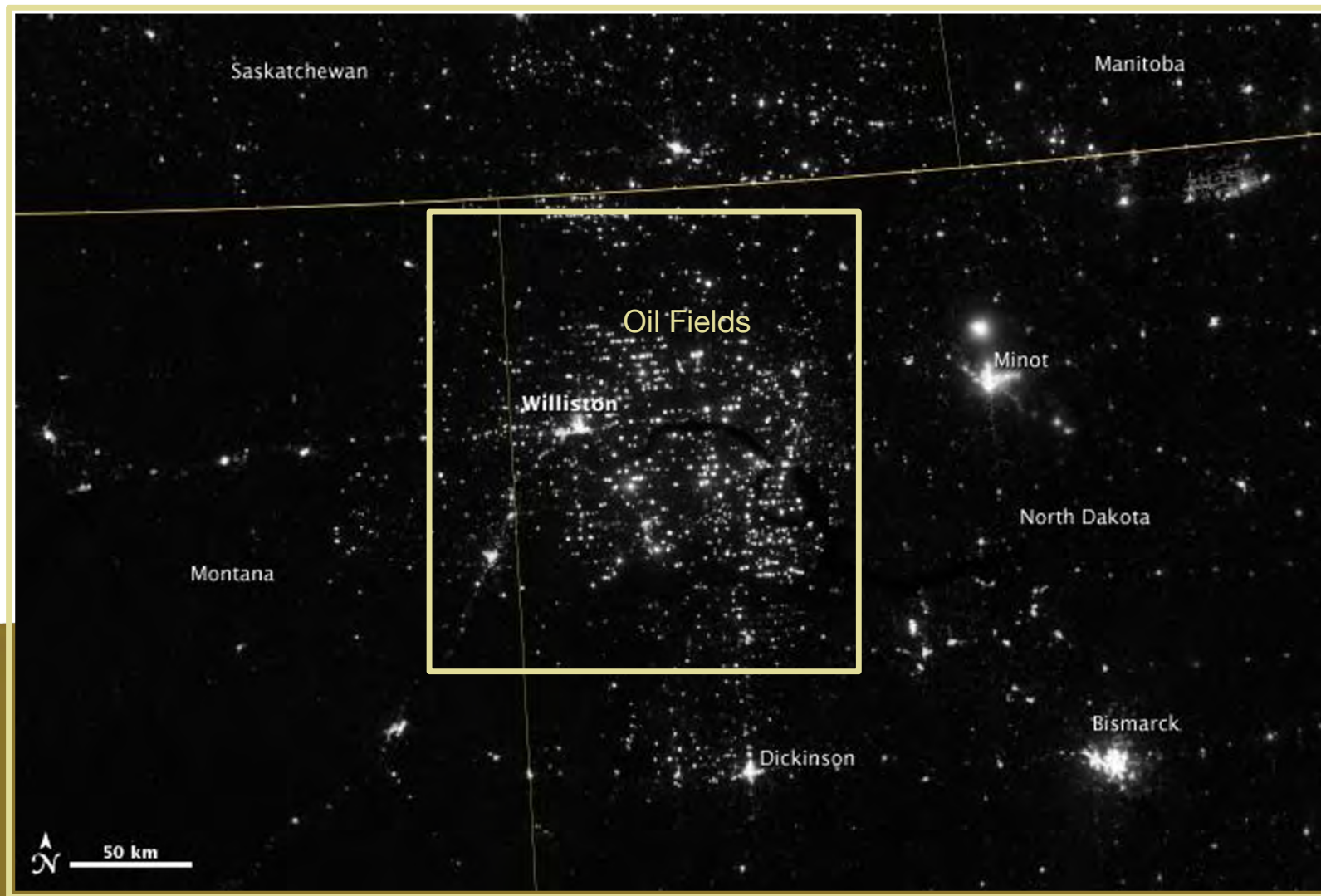


Total packages sold: 5

Troop Sales

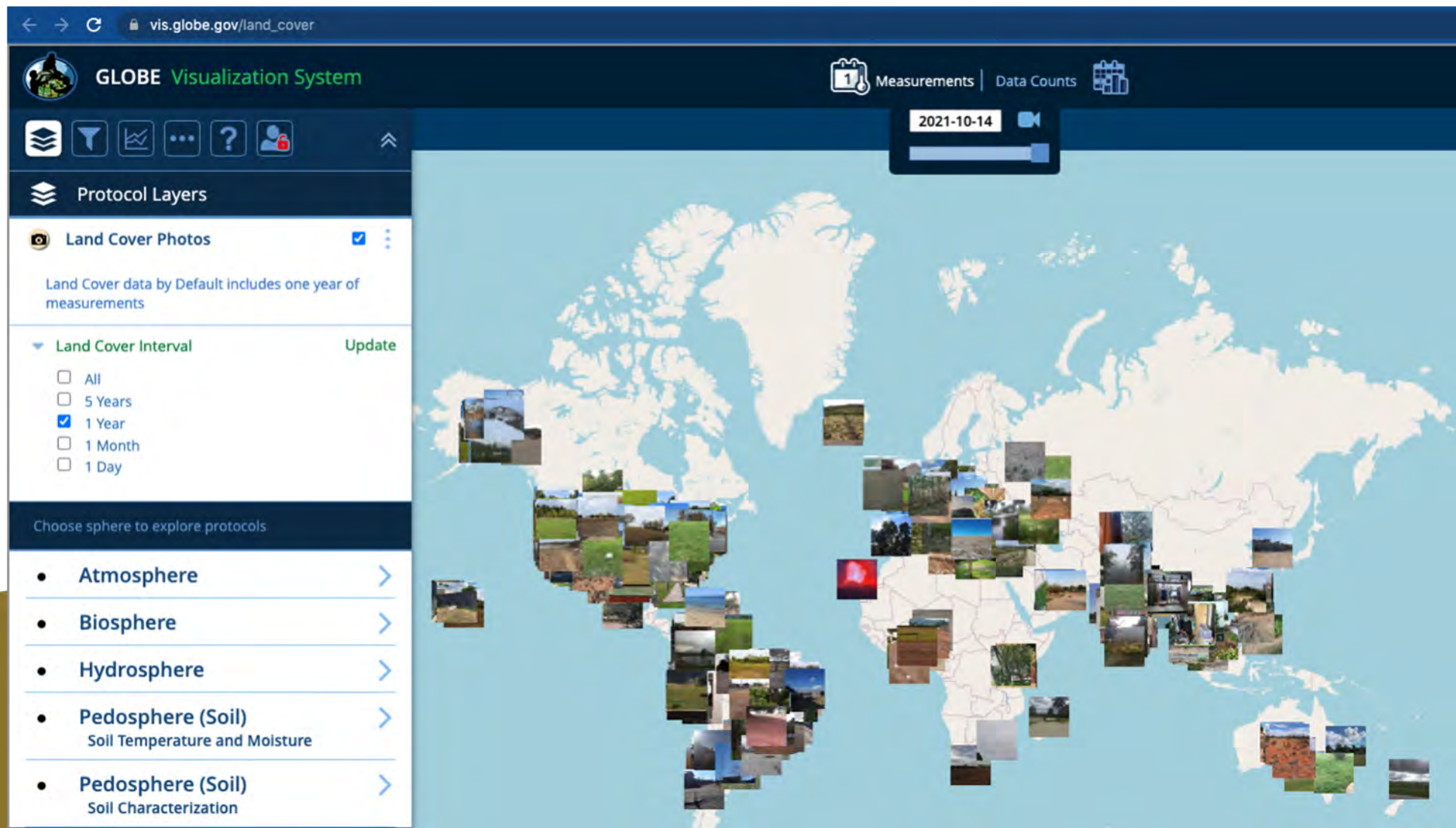


Total packages sold: 1,559



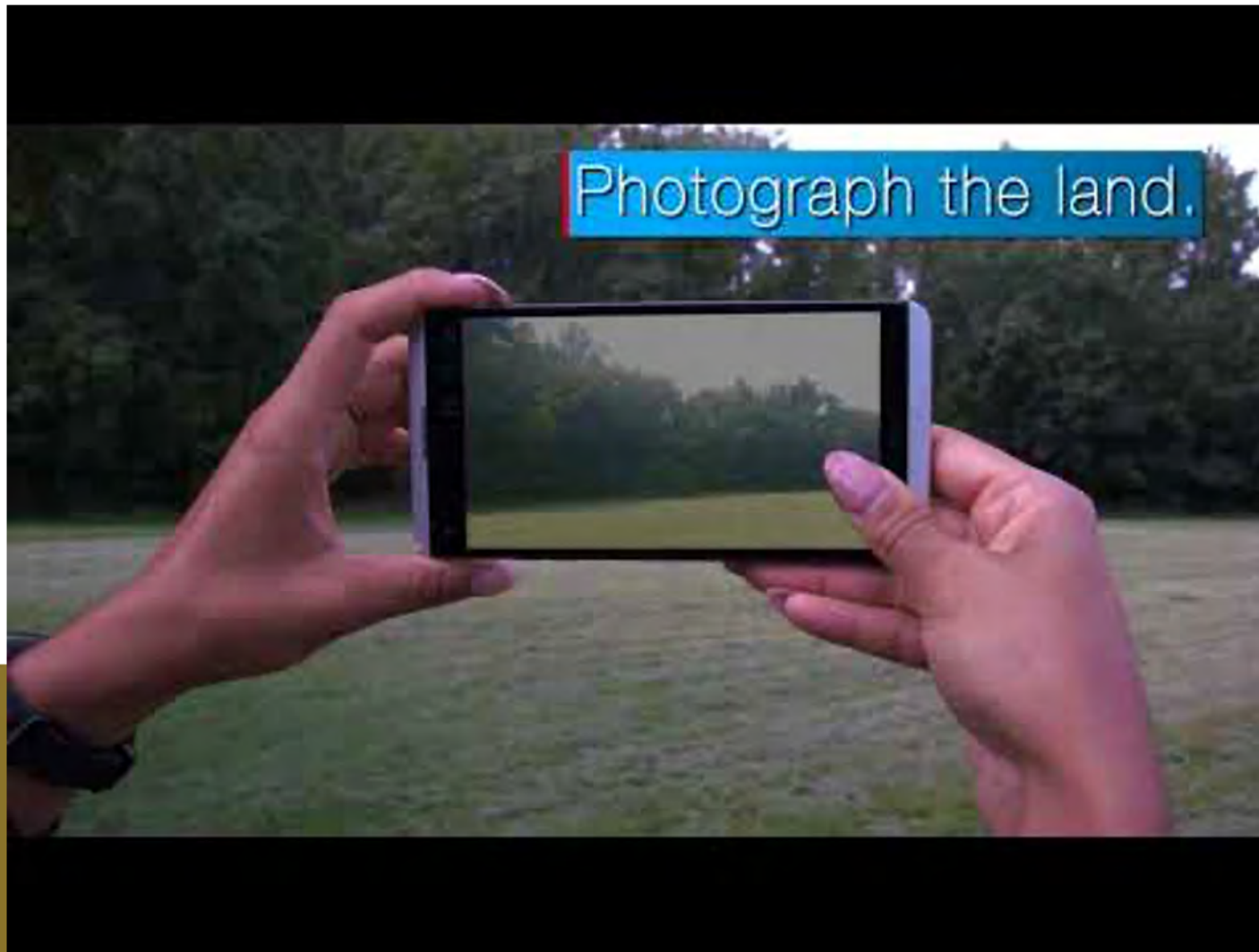
GLOBE Land Cover Outliers

Oddball data that doesn't match trends or the other data



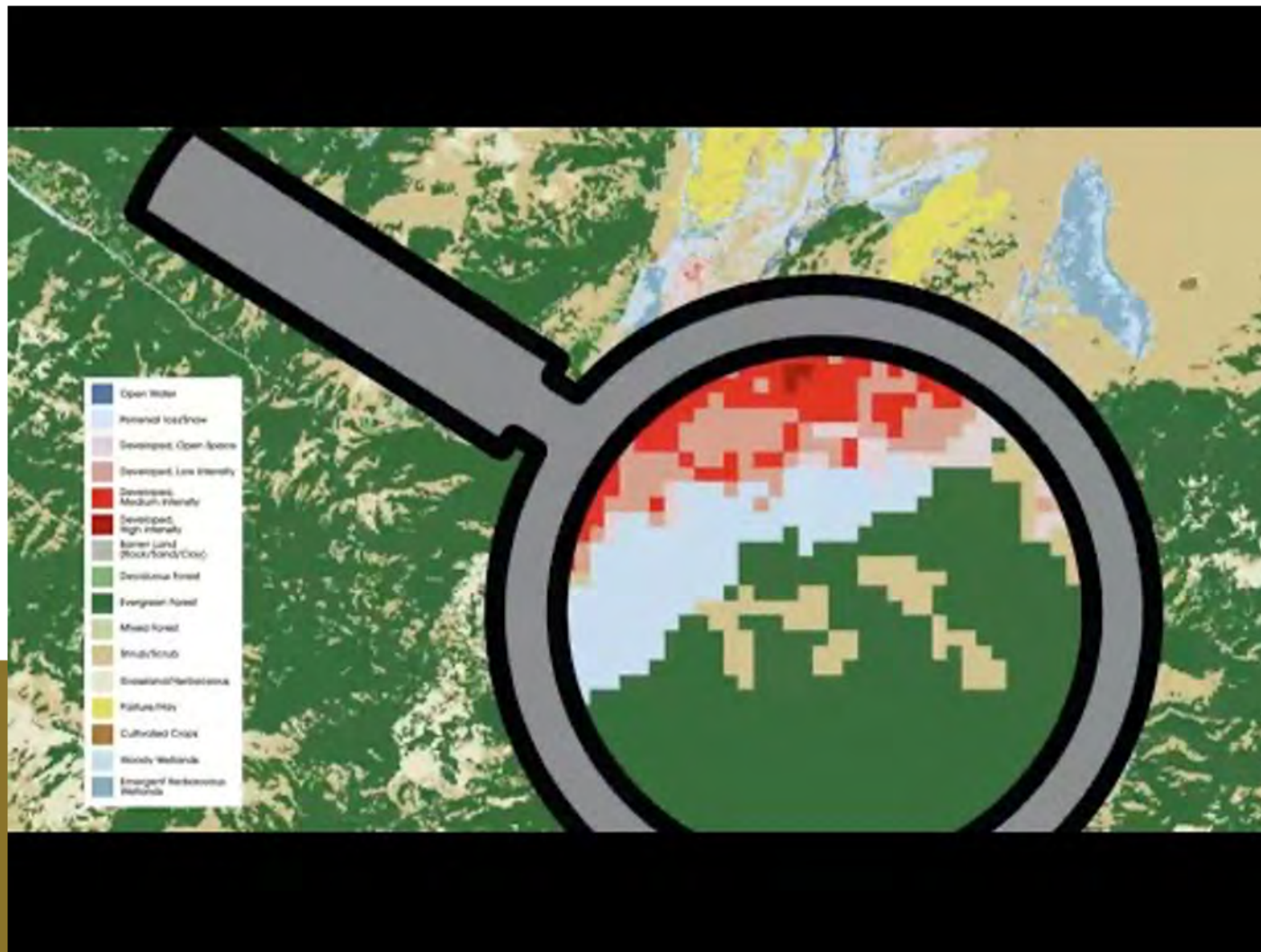
GLOBE Land Cover Land Cover Data

https://vis.globe.gov/land_cover



GLOBE Land Cover Introducing GLOBE Observer: Land Cover

<https://youtu.be/HkXLweBNKd4>



GLOBE Land Cover Why Observe: Land Cover

<https://youtu.be/vHmwHBFHCQE>

































GLOBE Observer Land Cover Classification Challenge

GLOBE Land Cover

GLOBE Land Cover

We call the type of land at the Earth's surface **land cover**. You may encounter many different types of land cover everyday, including roads, fields and forests.

Use this guide to help identify land cover types while using GLOBE Observer.

Cultivated			Trees		Shrubs	
			Evergreen		Tall shrubs are over 2 meters (6.5 feet).	
Crops or Pastures	Cultivated Grass		Needle Leaved	Broad Leaved	Evergreen	
					Tall	Short
			Deciduous			
			Needle Leaved	Broad Leaved		
					Deciduous	
					Tall	Short
						
						
Orchards	Plants managed by humans, like crops, orchards and lawns are considered cultivated.		Extremely Dry		Extremely Dry	
			If the tops of the trees are touching, these trees are considered closely spaced.		Tall	Short
			Loosely Spaced	Closely Spaced		
						
Herbaceous & Grassland			Barren		Wetlands	
			Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.		Freshwater	
Grasses			Dry Salt Flats		Lake	
Tall	Medium	Short				
			Perennial Snowfields		Marine	
Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.						
			Sandy	Glaciers		
						
Ferns or Flowers			Bare Rock	Soil		
						
Urban					Open Water	
Residential	Commercial	Roads and Parking		Freshwater		Marine
						

Land Cover Quick Reference Guide

Instructions

- 1) Each slide will show you a photo from a GLOBE Observer Land Cover Observation.
- 2) Use the Land Cover Type Quick Reference Guide to identify the types of land cover in the photos.
- 3) Write down your answers on a piece of paper.
- 4) After all 9 photos, continue watching the video to see how many you got right?

Link to helpful tool to identify land cover:
[Land Cover Quick Reference Guide](#)

GLOBE Land Cover

Challenge Instructions



Land Cover Classification



Image 1

GLOBE Land Cover

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Cultivated

Crops or Pastures	Cultivated Grass
Orchards	Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses		
Tall	Medium	Short
Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.		
Ferns or Flowers		

Urban

Residential	Commercial	Roads and Parking

Trees

Evergreen					
Needle Leaved	Broad Leaved				
Deciduous					
Needle Leaved	Broad Leaved				
Extremely Dry	If the tops of the trees are touching, these trees are considered closely spaced.				
	<table border="1"> <tr> <td>Loosely Spaced</td> <td>Closely Spaced</td> </tr> <tr> <td></td> <td></td> </tr> </table>	Loosely Spaced	Closely Spaced		
Loosely Spaced	Closely Spaced				

Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats	Perennial Snowfields
Sandy	Glaciers
Bare Rock	Soil

Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen	
Tall	Short
Deciduous	
Tall	Short
Extremely Dry	

Wetlands

Freshwater	
Lake	River
Marine	
Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.	

Open Water

Freshwater	Marine



Image 2

GLOBE Land Cover

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Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses

Tall

Medium

Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved

Broad Leaved



Deciduous

Needle Leaved

Broad Leaved



Extremely Dry



If the tops of the trees are touching, these trees are considered closely spaced.

Loosely Spaced

Closely Spaced



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall

Short



Deciduous

Tall

Short



Extremely Dry

Tall

Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



Soil



Wetlands

Freshwater

Lake

River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine





Image 3

GLOBE Land Cover

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Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses

Tall



Medium



Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved



Broad Leaved



Deciduous

Needle Leaved



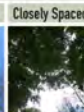
Broad Leaved



Extremely Dry



If the tops of the trees are touching, these trees are considered closely spaced.



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall



Short



Deciduous

Tall



Short



Extremely Dry

Tall



Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



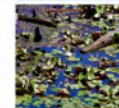
Soil



Wetlands

Freshwater

Lake



River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine





Image 4

GLOBE Land Cover

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Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses

Tall

Medium

Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved

Broad Leaved



Deciduous

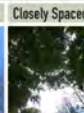
Needle Leaved

Broad Leaved



Extremely Dry

If the tops of the trees are touching, these trees are considered closely spaced.



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall

Short



Deciduous

Tall

Short



Extremely Dry

Tall

Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



Soil



Wetlands

Freshwater

Lake

River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine

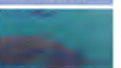




Image 5

GLOBE Land Cover

We call the type of land at the Earth's surface **land cover**. You may encounter many different types of land cover everyday, including roads, fields and forests.

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Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses

Tall



Medium



Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved



Broad Leaved



Deciduous

Needle Leaved



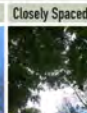
Broad Leaved



Extremely Dry



If the tops of the trees are touching, these trees are considered closely spaced.



Loosely Spaced

Closely Spaced

Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall



Short



Deciduous

Tall



Short



Extremely Dry

Tall



Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



Soil



Wetlands

Freshwater

Lake



River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine

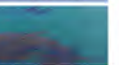




Image 6

GLOBE Land Cover

We call the type of land at the Earth's surface land cover. You may encounter many different types of land cover everyday, including roads, fields and forests.

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Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved



Broad Leaved



Deciduous

Needle Leaved



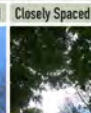
Broad Leaved



Extremely Dry



If the tops of the trees are touching, these trees are considered closely spaced.



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall



Short



Deciduous

Tall



Short



Extremely Dry

Tall



Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



Soil



Wetlands

Freshwater

Lake



River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine





Image 7

GLOBE Land Cover

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Use this guide to help identify land cover types while using GLOBE Observer.

Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses

Tall



Medium



Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved



Broad Leaved



Deciduous

Needle Leaved



Broad Leaved



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall



Short



Deciduous

Tall



Short



Extremely Dry

Tall



Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



Soil



Wetlands

Freshwater

Lake



River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine





Image 8

GLOBE Land Cover

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Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses

Tall

Medium

Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved

Broad Leaved



Deciduous

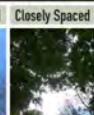
Needle Leaved

Broad Leaved



Extremely Dry

If the tops of the trees are touching, these trees are considered closely spaced.



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall

Short



Deciduous

Tall

Short



Extremely Dry

Tall

Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



Soil



Wetlands

Freshwater

Lake

River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine

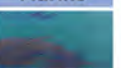




Image 9

GLOBE Land Cover

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Cultivated

Crops or Pastures



Cultivated Grass



Orchards



Plants managed by humans, like crops, orchards and lawns are considered cultivated.

Herbaceous & Grassland

Grasses

Tall

Medium

Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Ferns or Flowers



Trees

Evergreen

Needle Leaved

Broad Leaved



Deciduous

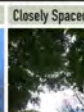
Needle Leaved

Broad Leaved



Extremely Dry

If the tops of the trees are touching, these trees are considered closely spaced.



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall

Short



Deciduous

Tall

Short



Extremely Dry

Tall

Short



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

Dry Salt Flats



Perennial Snowfields



Sandy



Glaciers



Bare Rock



Soil



Wetlands

Freshwater

Lake

River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.

Urban

Residential



Commercial



Roads and Parking



Open Water

Freshwater



Marine

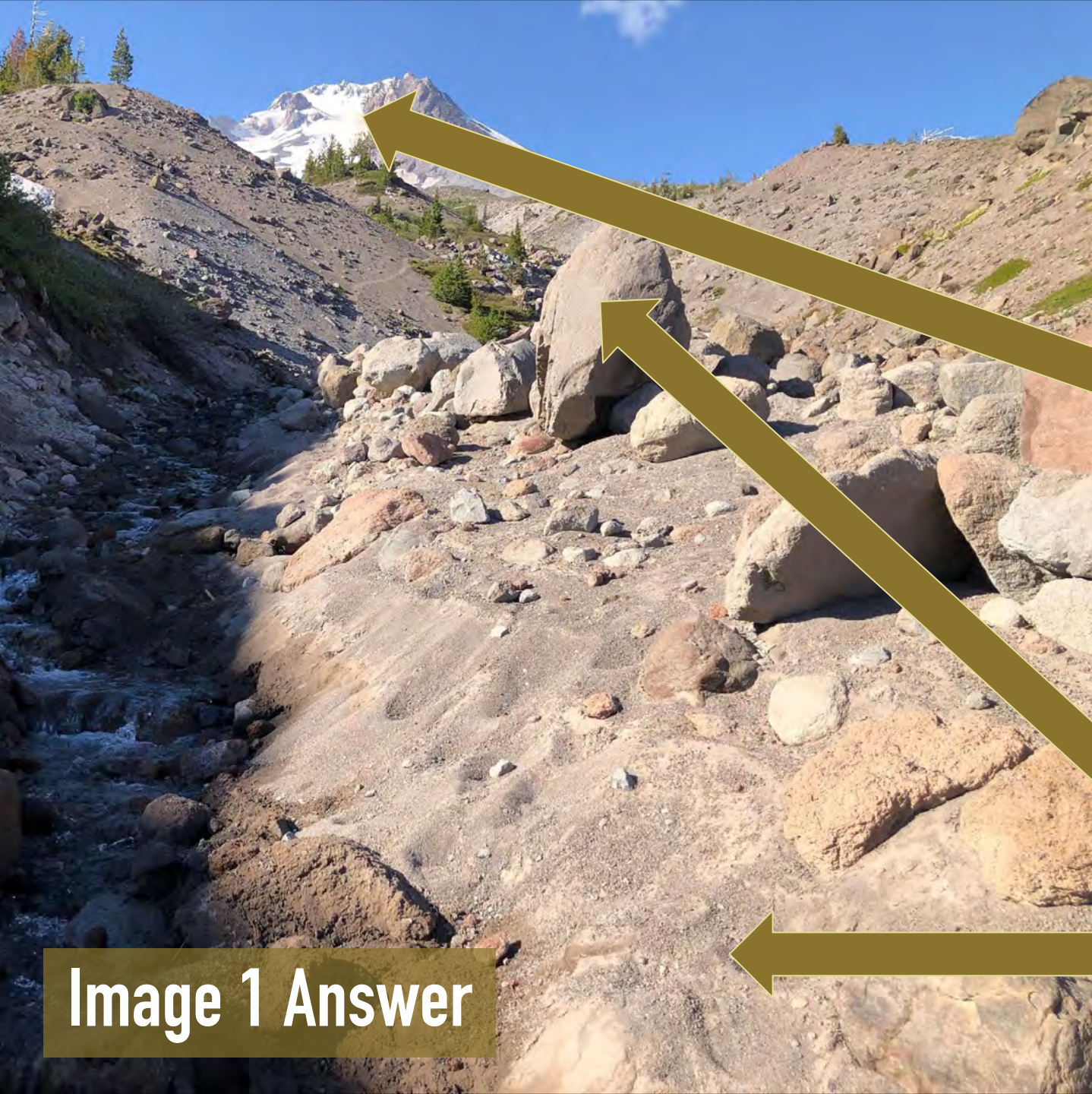


And the ANSWERS are...

GLOBE

Land Cover

**Land Cover Classification Challenge
Answers**



Barren

Barren land has a limited ability to support life. The snow or ice found in barren areas does not completely melt each year.

**Dry Salt
Flats**



Sandy



Bare Rock



**Perennial
Snowfields**



Glaciers



Soil



Image 1 Answer

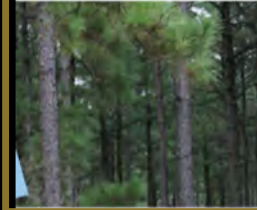
Image 2 Answer



Trees

Evergreen

Needle Leaved



Broad Leaved

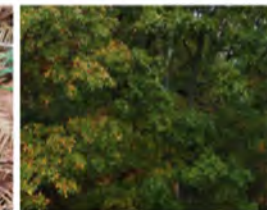


Deciduous

Needle Leaved



Broad Leaved

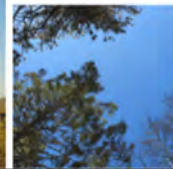


Extremely Dry

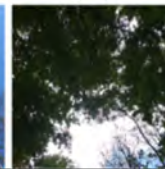


If the tops of the trees are touching, these trees are considered closely spaced.

Loosely Spaced



Closely Spaced



Urban

Residential



Commercial



Roads and Parking



Image 3 Answer



Herbaceous & Grassland

Grasses

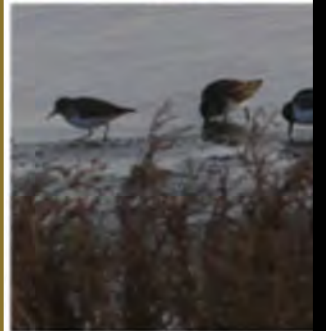
Tall



Medium



Short



Tall grasses are over 2 meters (6.5 feet) and short grasses are under 50 cm (2 feet). Grasses that are mowed are considered cultivated.

Image 4 Answer



Trees

Evergreen

Needle Leaved



Broad Leaved

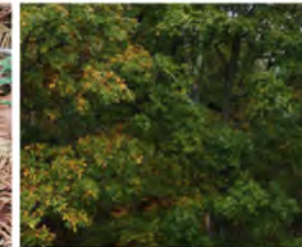


Deciduous

Needle Leaved



Broad Leaved



Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall

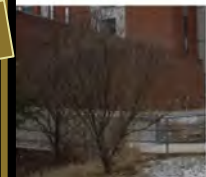


Short



Deciduous

Tall



Short



Extremely Dry

Tall



Short





Image 5 Answer

Open Water

Freshwater

Marine

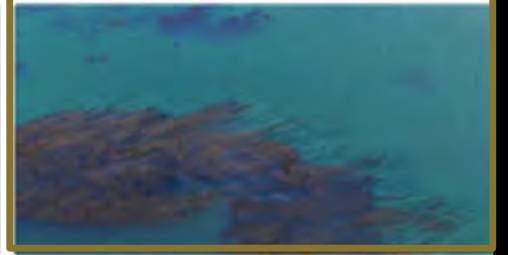




Image 6 Answer

Open Water

Freshwater



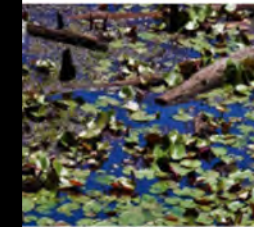
Marine



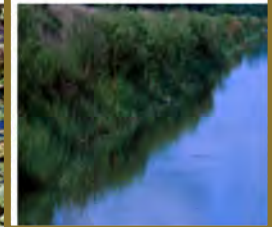
Wetlands

Freshwater

Lake



River



Marine



Wetlands are areas where plants grow out of the water, like marshes or swamps. Wetlands often border open water, like rivers or oceans.



Image 7 Answer

Shrubs

Tall shrubs are over 2 meters (6.5 feet).

Evergreen

Tall



Short

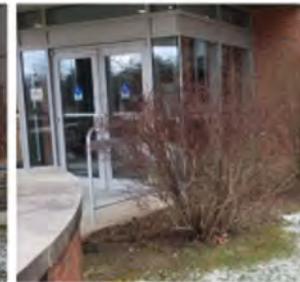


Deciduous

Tall



Short



Extremely Dry

Tall



Short





Image 8 Answer

Urban

Residential



Commercial



Roads and Parking





Image 9 Answer

Cultivated

**Crops or
Pastures**



**Cultivated
Grass**



Orchards



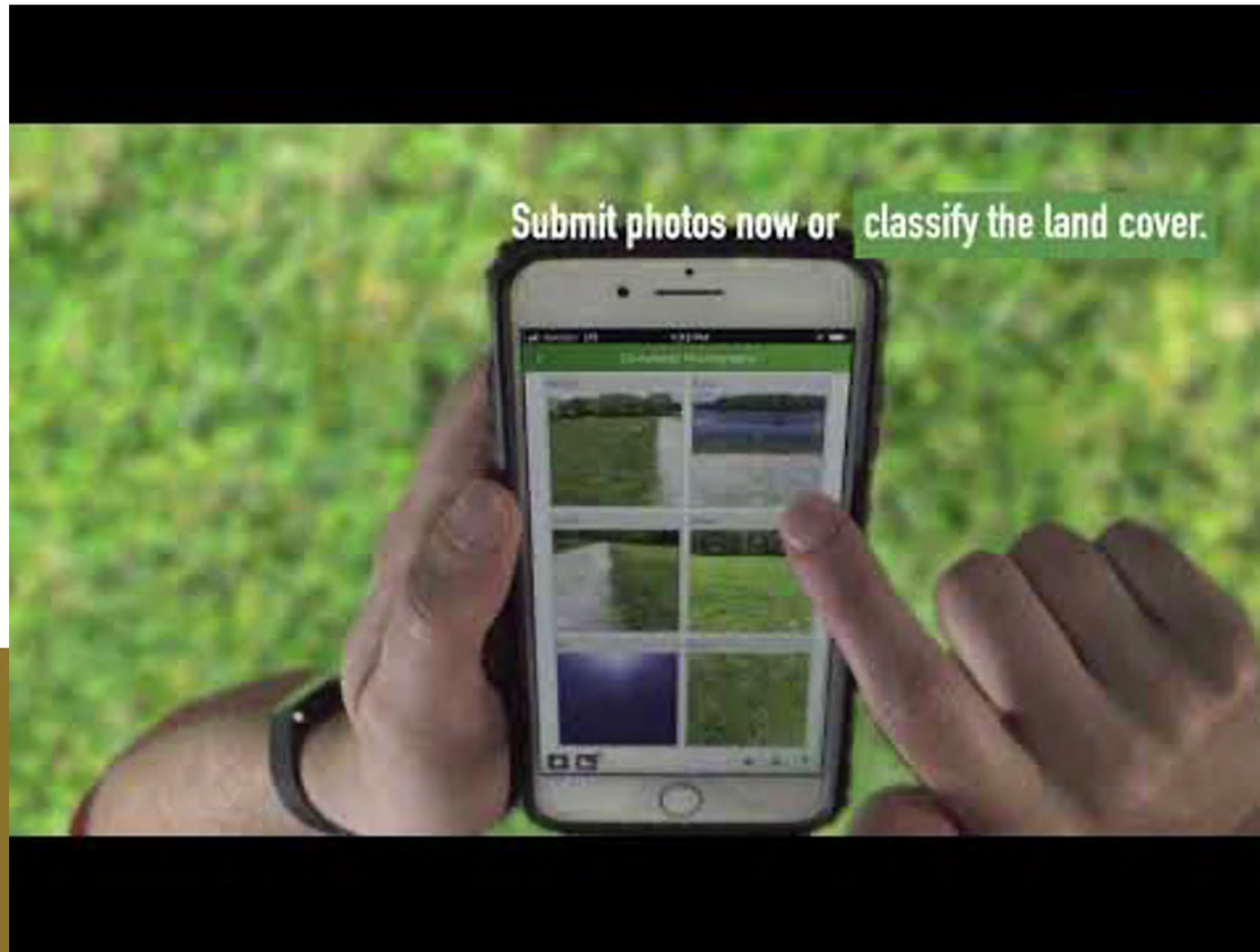
**Plants managed by
humans, like crops,
orchards and lawns are
considered cultivated.**

CONGRATULATIONS!

Thanks for playing the
Land Cover Classification Challenge!

GLOBE**Land Cover** GLOBE Observer

Land Cover Classification Challenge



GLOBE Land Cover How to use the Land Cover Tool

<https://youtu.be/PSCEpPIfGMs>



Welcome, Girl Scouts!

This is the sign up page for Troop Leaders/Volunteers. If you're a Girl Scout, you'll need to wait for an email from your troop leader to get started.

Sign Up For A SciStarter Account

email

How should we refer to you on the site?

password

re-enter password

zipcode or postal code

☒ Sign up for our newsletter

☒ By signing up, I agree to SciStarter's Terms of Use.

Log In With A SciStarter Account

email

password

[Forgot your password?](#)

GLOBE Land Cover Register your Troop on SciStarter

<https://scistarter.com/girlscouts/volunteer/landing>

Add Troop Details

Select Project

Confirm Settings

Confirm Your Project!

Make sure your selections are correct or change them with the links below.



NASA/GLOBE

GLOBE Observer: Land Cover *

Goal Observe land cover and help improve maps

Task Photograph and classify land cover and share the [more»](#)

Where Global, anywhere on the planet

You've selected a citizen science project for the Journey.

Now, it's time to invite your troop to join this Journey!

Confirm your email address to receive the invitation you can easily forward to them. It will include a unique link to connect them with your Troop's Journey and the project your girls selected.

Send To:

[send to a different address](#)

[confirm & send me the invitation](#)

[back to previous step](#)

GLOBE **Land Cover** Choose GLOBE Observer: Clouds

Get the App



GLOBE Observer, the app of [The GLOBE Program](#), invites you to make environmental observations that complement NASA satellite observations to help scientists studying Earth and the global environment. Those in the [120+ GLOBE countries](#) can download and use the app.

[Lee esta página en español.](#)

GLOBE Land Cover Download the App

<https://observer.globe.gov/get-the-app>



Take Action

What can you do?



- ▲ **Adopt a place** to take observations. While you are there, take care of it. Pick up litter, do some gardening.
- ▲ **Create a program** to teach other Girl Scouts about a place that is important to you.
- ▲ **Start a hiking group** and take observations as part of your walk.
- ▲ **Document changes** with scheduled observations.
- ▲ **Create a team** of your troop, council, or service unit (www.globe.gov/globe-community/globe-teams) and take observations together.



@TheGLOBEProgram



@GLOBEProgram



GLOBE Land Cover Questions? Share your projects.