&

GLOBE Observer

# 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.

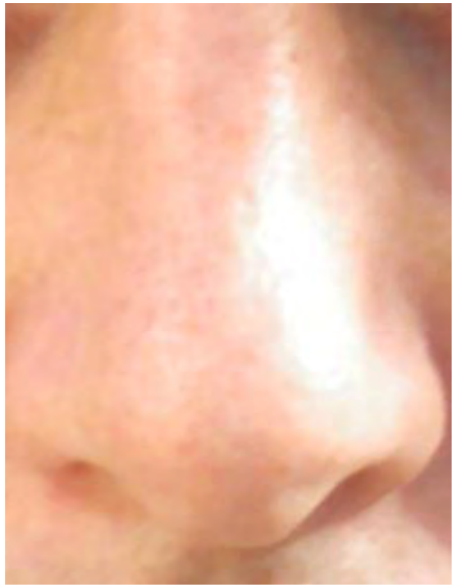
The *GLOBE Observer* app is a GLOBE's data entry tool that allows an international network of citizen scientists to work together to learn more about our shared environment and changing climate. *GLOBE Observer* currently accepts observations of Clouds, Mosquito Habitats, Land Cover and Trees.

GLOBE Land Cover

# NASA GLOBE and Girl Scouts

## GLOBE Observer Trees Tool: Think Like a Citizen Scientist

Hear



Smell

Touch

See

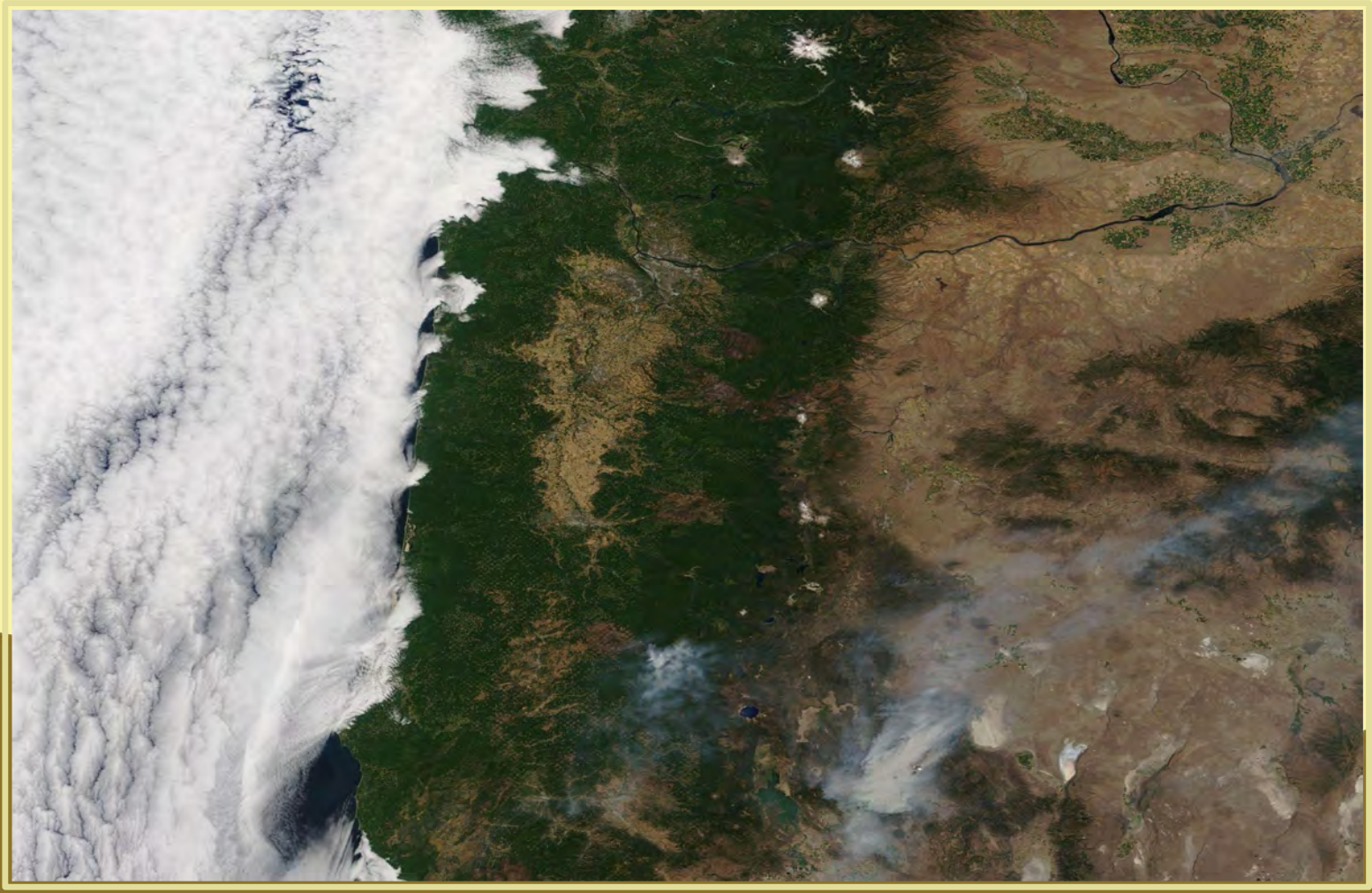
Taste

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

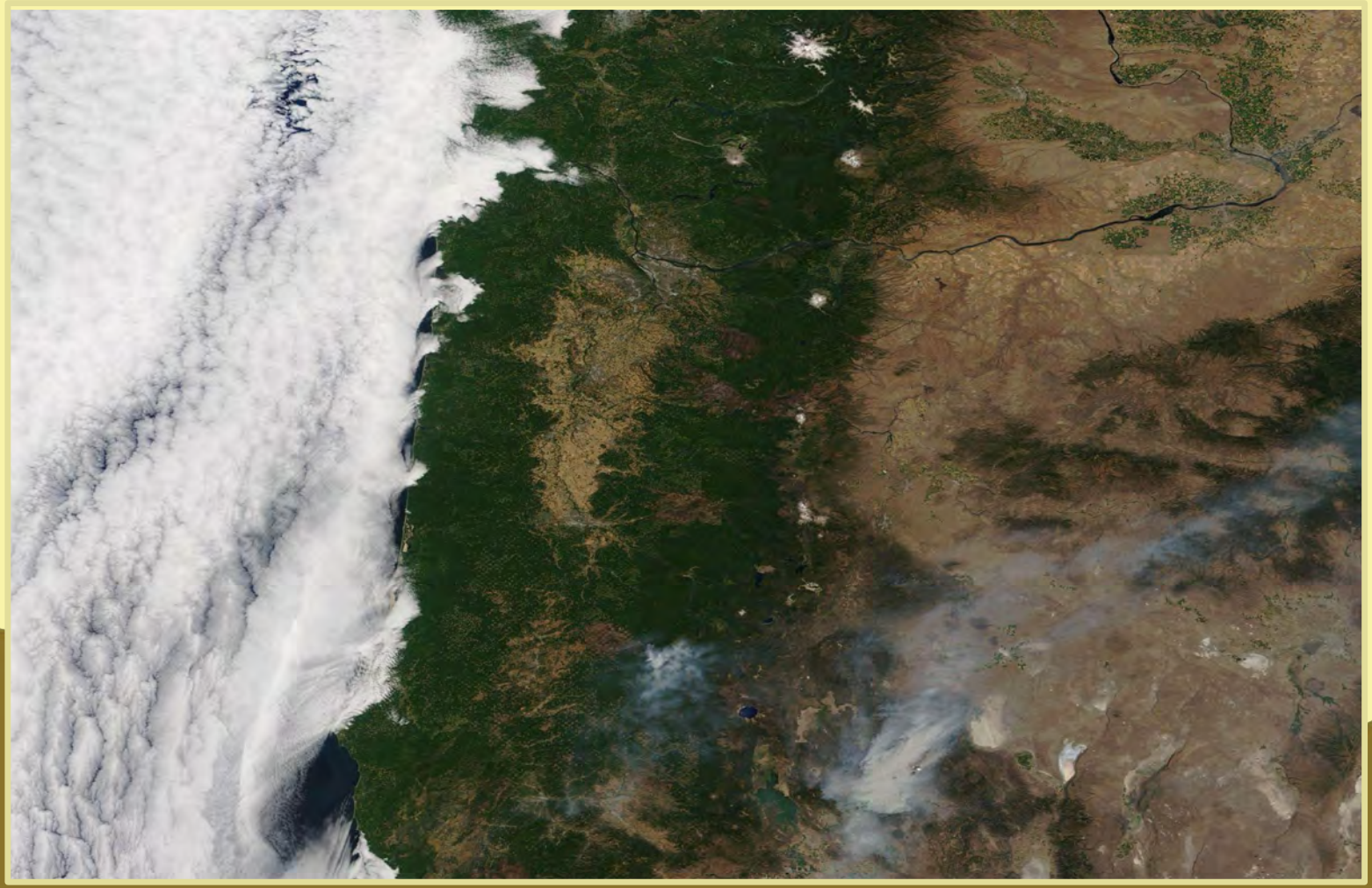
## Satellite Image

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.

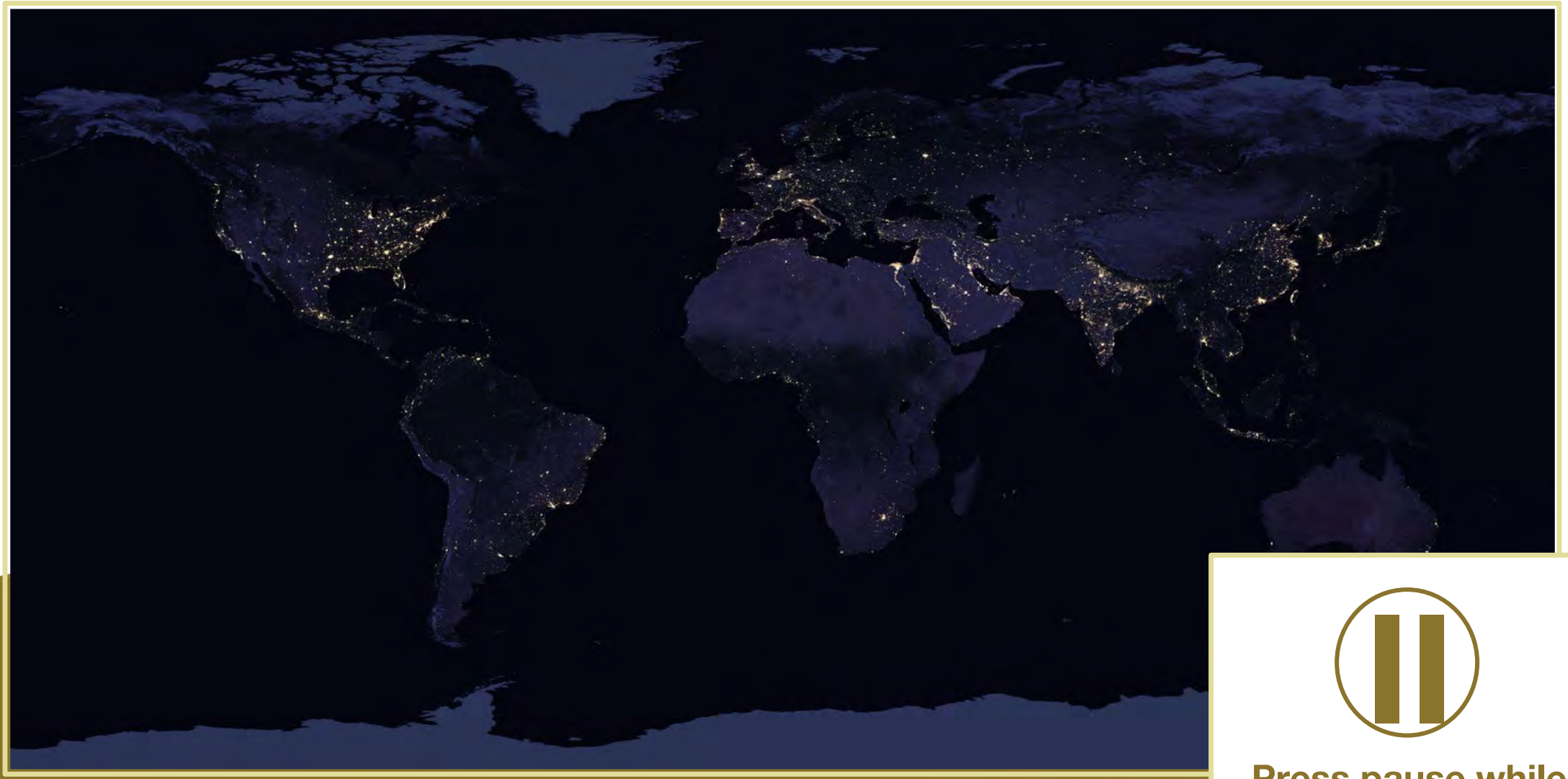
# What does a Scientist Do?

GLOBE Land Cover

# What does a Scientist Do?

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

GLOBE Land Cover



GLOBE

# Land Cover

## Ask a Question

## ??????????????????

Press pause while you discuss.

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.

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# Land Cover

## Make a Hypothesis

Answer your question based on observations

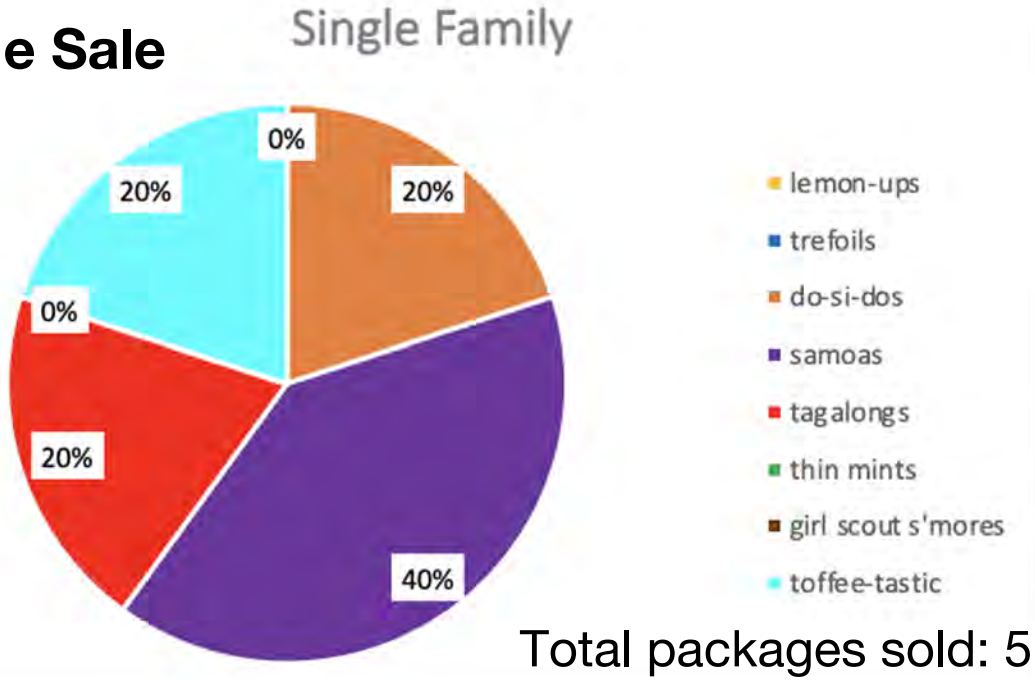
# How do scientists know if their hypothesis is correct?

## Collect and Analyze Data

# Collect and Analyze Data

## Girl Scout Cookie Sales

**Single Sale**

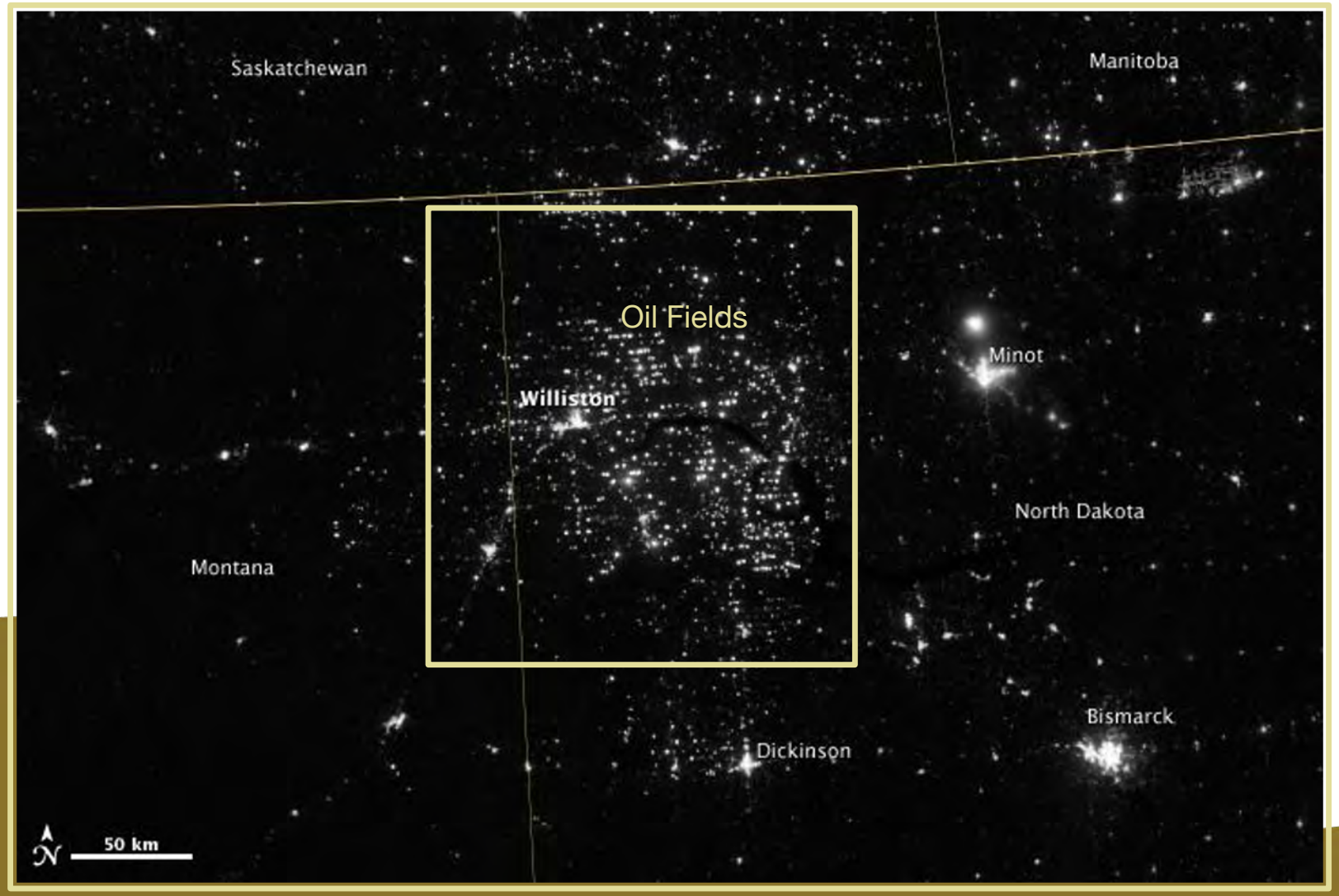



Total packages sold: 5

**Troop Sales**

lemon-ups® (6.0%)
trefoils® (7.9%)
do-si-dos® (6.2%)
samoas® (21.9%)
tagalongs® (12.9%)
thin mints® (36.2%)
girl scout s'mores® (5.5%)
toffee-tastic® (3.5%)

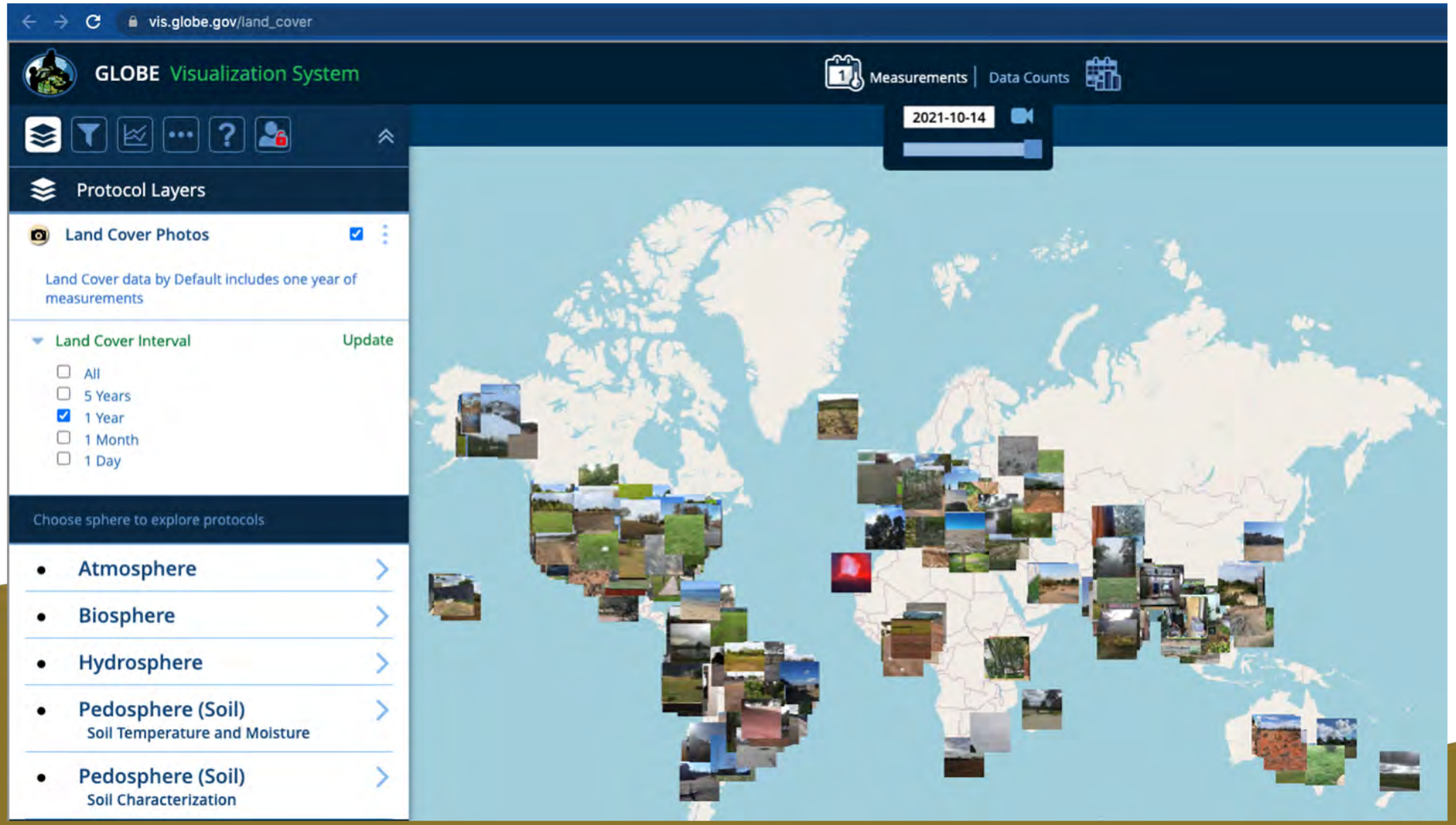
Total packages sold: 1,559




GLOBE

# Land Cover Outliers

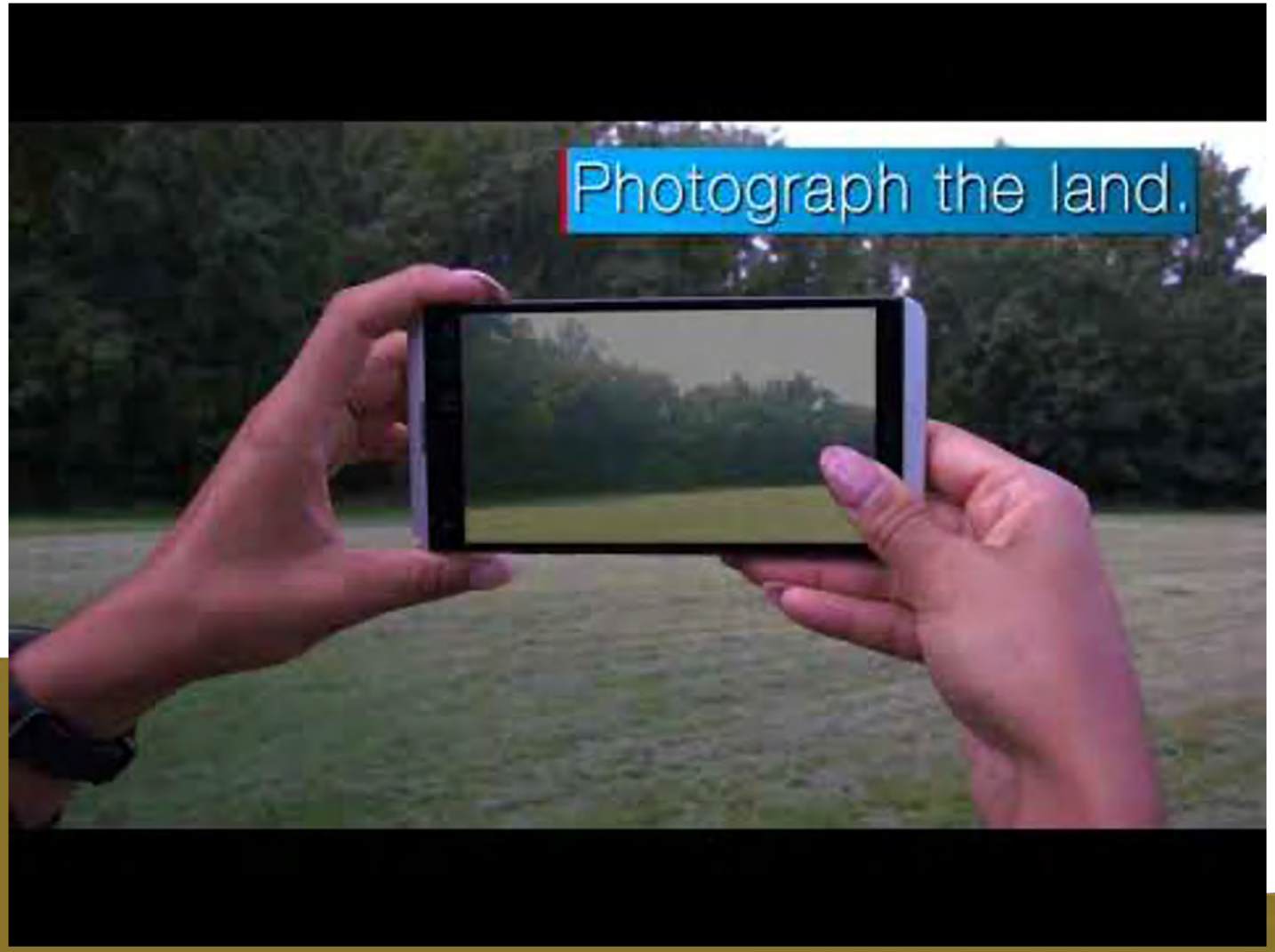
## Oddball data that doesn't match trends or the other data




# GLOBE Land Cover

## Land Cover Data

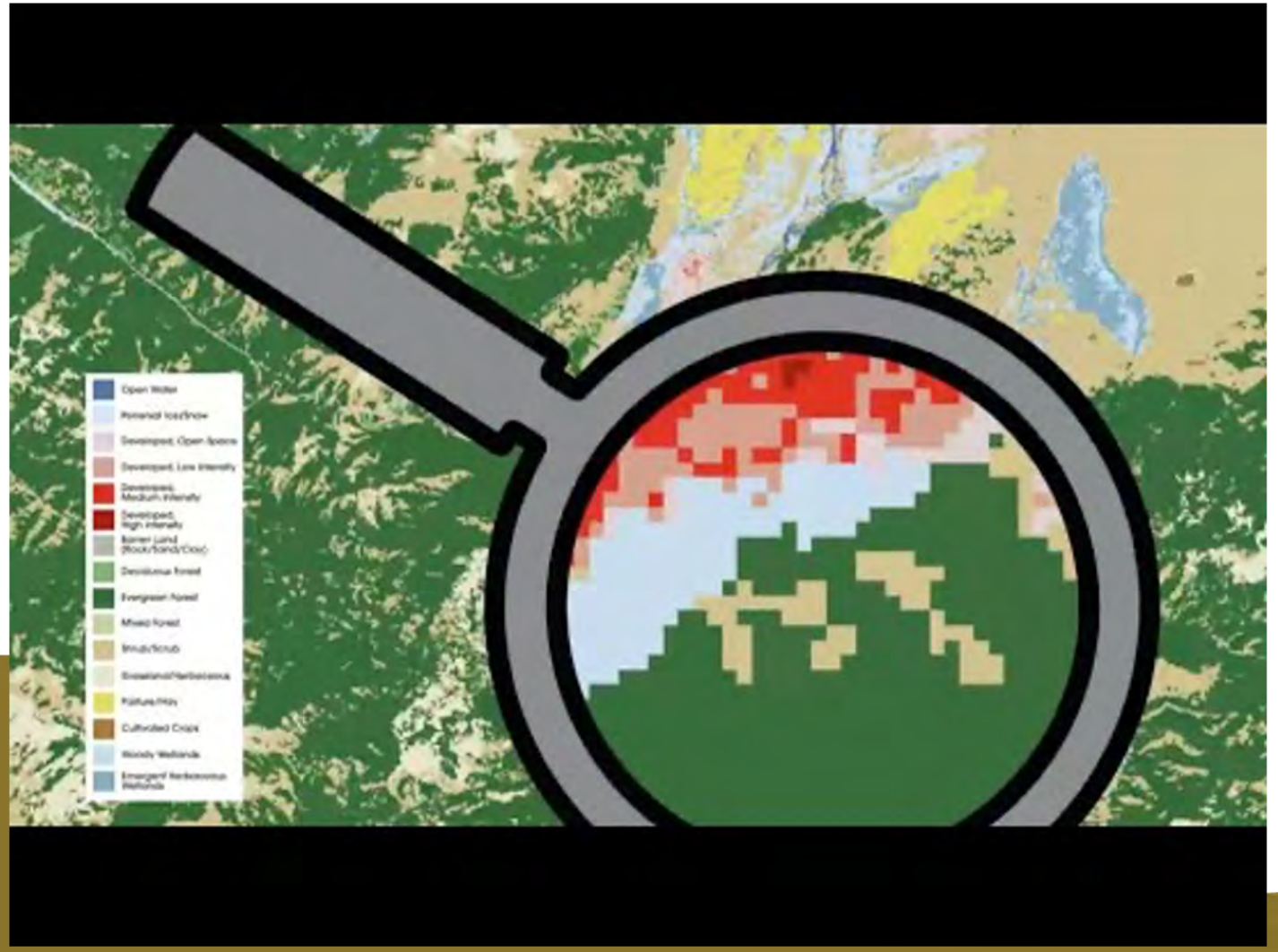
https://vis.globe.gov/land_cover




GLOBE Land Cover

# Introducing GLOBE Observer: Land Cover

https://youtu.be/HkXLweBNKd4



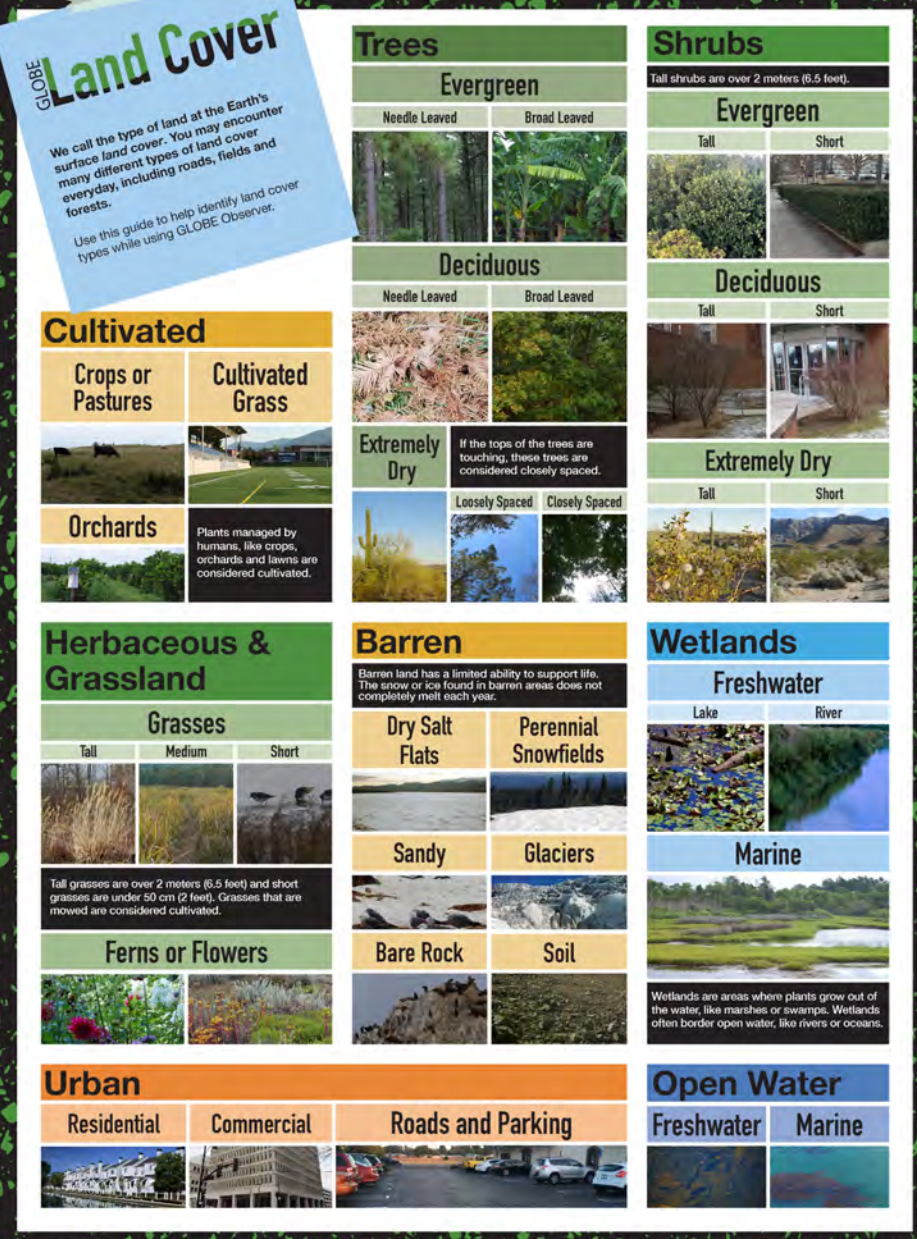
GLOBE Land Cover

# Why Observe: Land Cover

https://youtu.be/vHmwHBFHCQE

# GLOBE Observer Land Cover Classification Challenge

GLOBE Land Cover




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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## Trees

### Evergreen

Needle Leaved | Broad Leaved

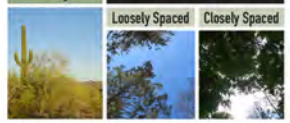
### Deciduous

Needle Leaved | Broad Leaved

**Extremely Dry**

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

Loosely Spaced | Closely Spaced



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Tall | Short

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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

## 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

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Image 2

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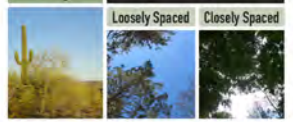

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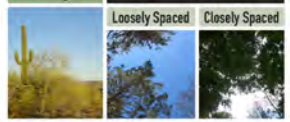

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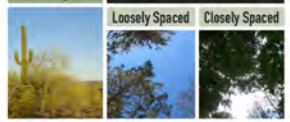

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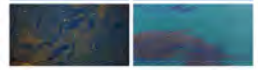

Image 5

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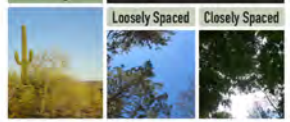

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Image 6

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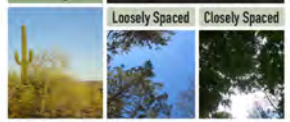

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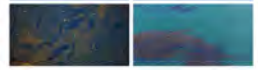

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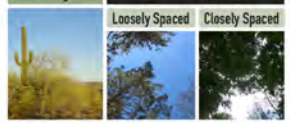

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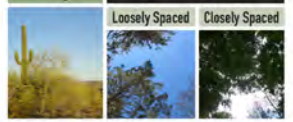

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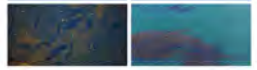

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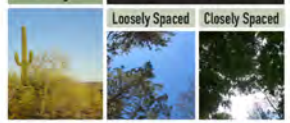

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### Glaciers

### 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

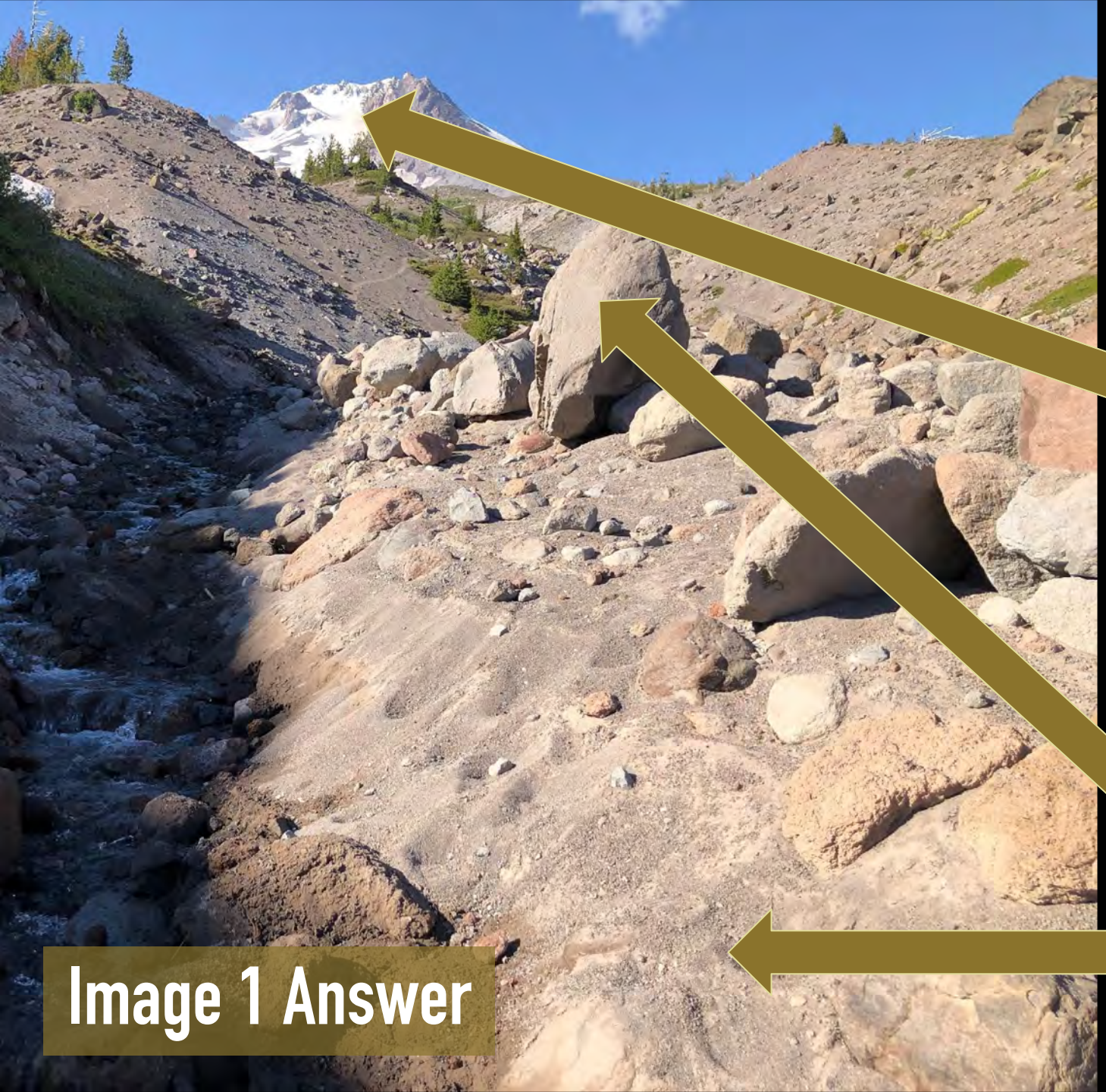


Image 1 Answer

# 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

# Image 2 Answer

## Trees

### Evergreen

Needle Leaved

Broad Leaved

### Deciduous

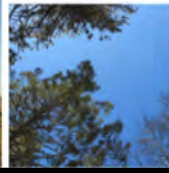
Needle Leaved

Broad Leaved

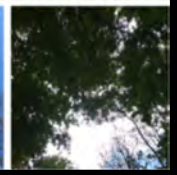
Extremely Dry

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

Loosely Spaced



Closely Spaced

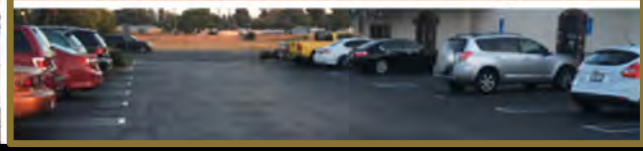


## Urban

Residential

Commercial

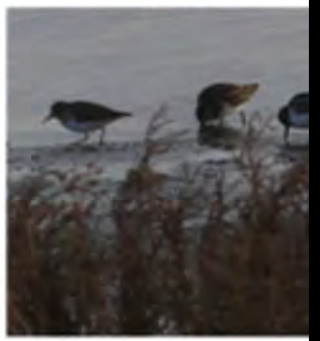
Roads and Parking



# Image 3 Answer

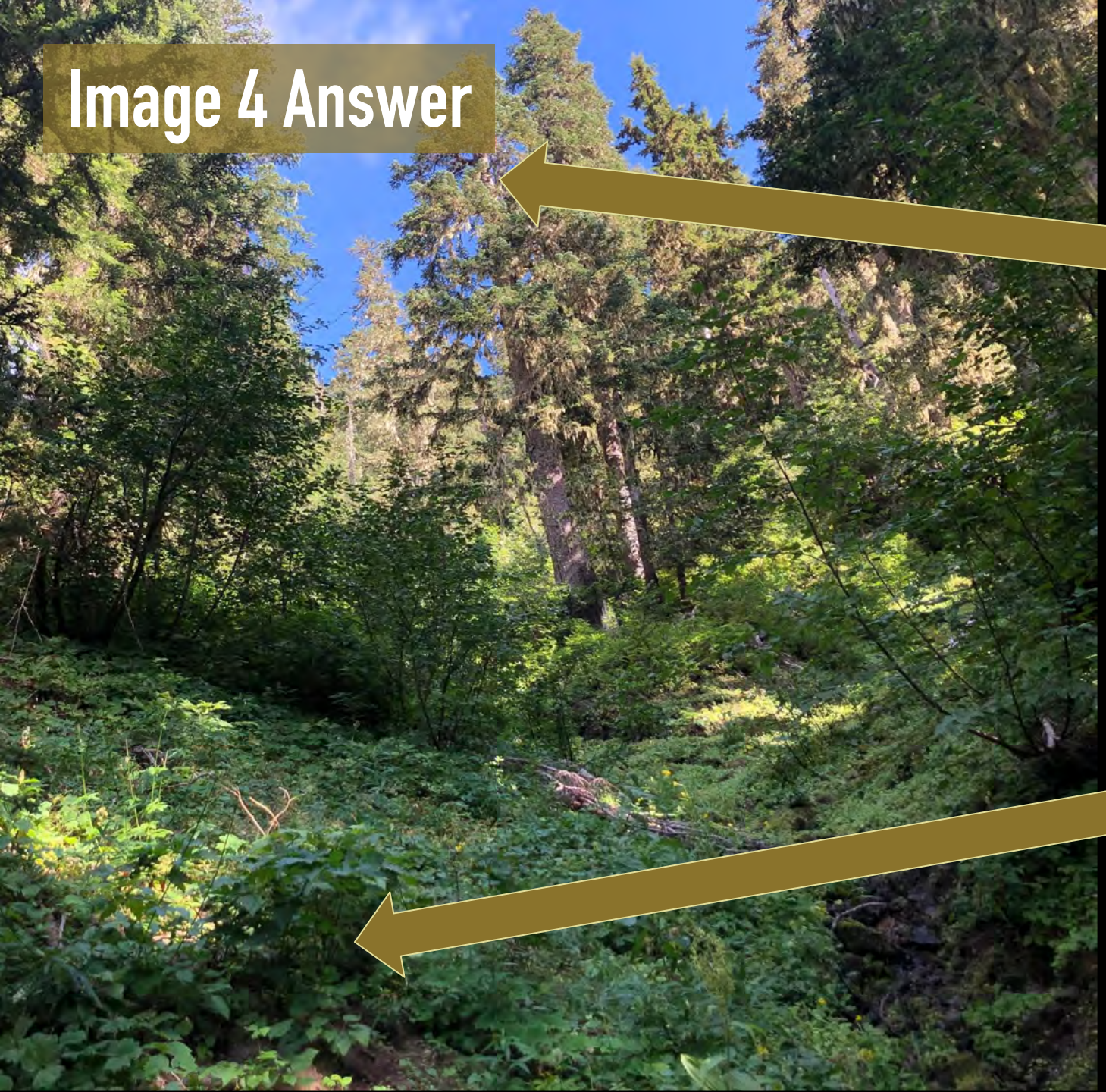
## Herbaceous & Grassland

### 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

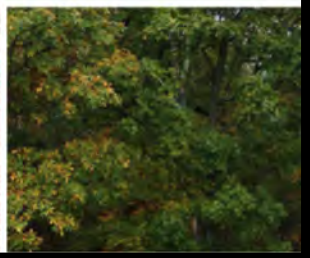


## Trees

### Evergreen

| Needle Leaved | Broad Leaved |
| --- | --- |
| | |

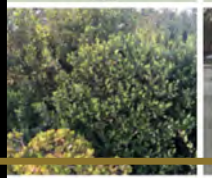
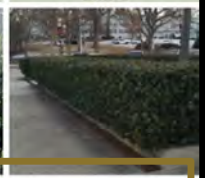
### Deciduous

| Needle Leaved | Broad Leaved |
| --- | --- |
| |  |

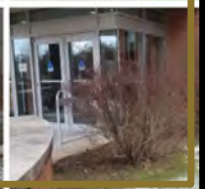
## Shrubs

Tall shrubs are over 2 meters (6.5 feet).

### Evergreen

| Tall | Short |
| --- | --- |
|  |  |

### Deciduous

| Tall | Short |
| --- | --- |
| |  |

### Extremely Dry

| Tall | Short |
| --- | --- |
| | |

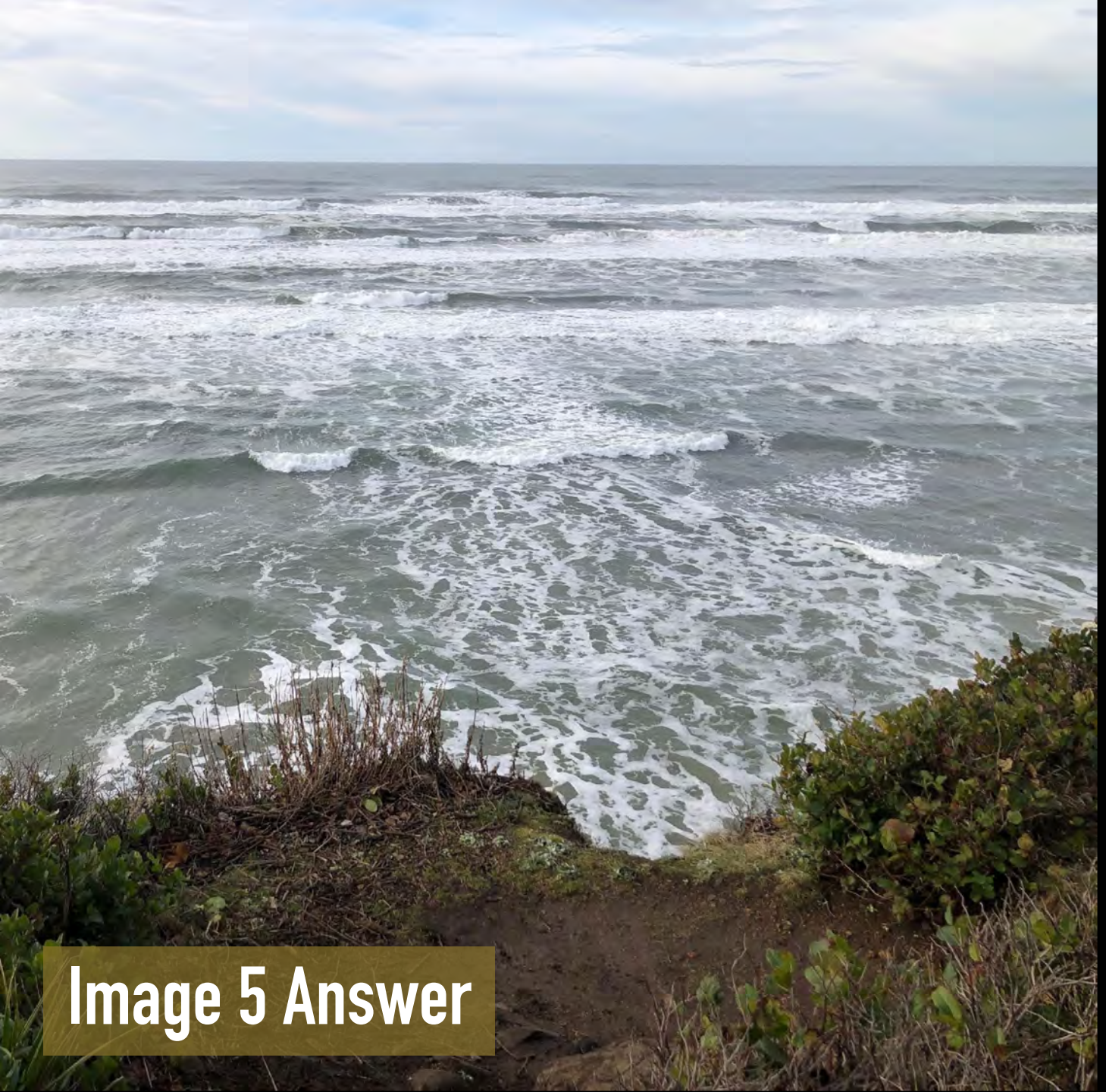


Image 5 Answer

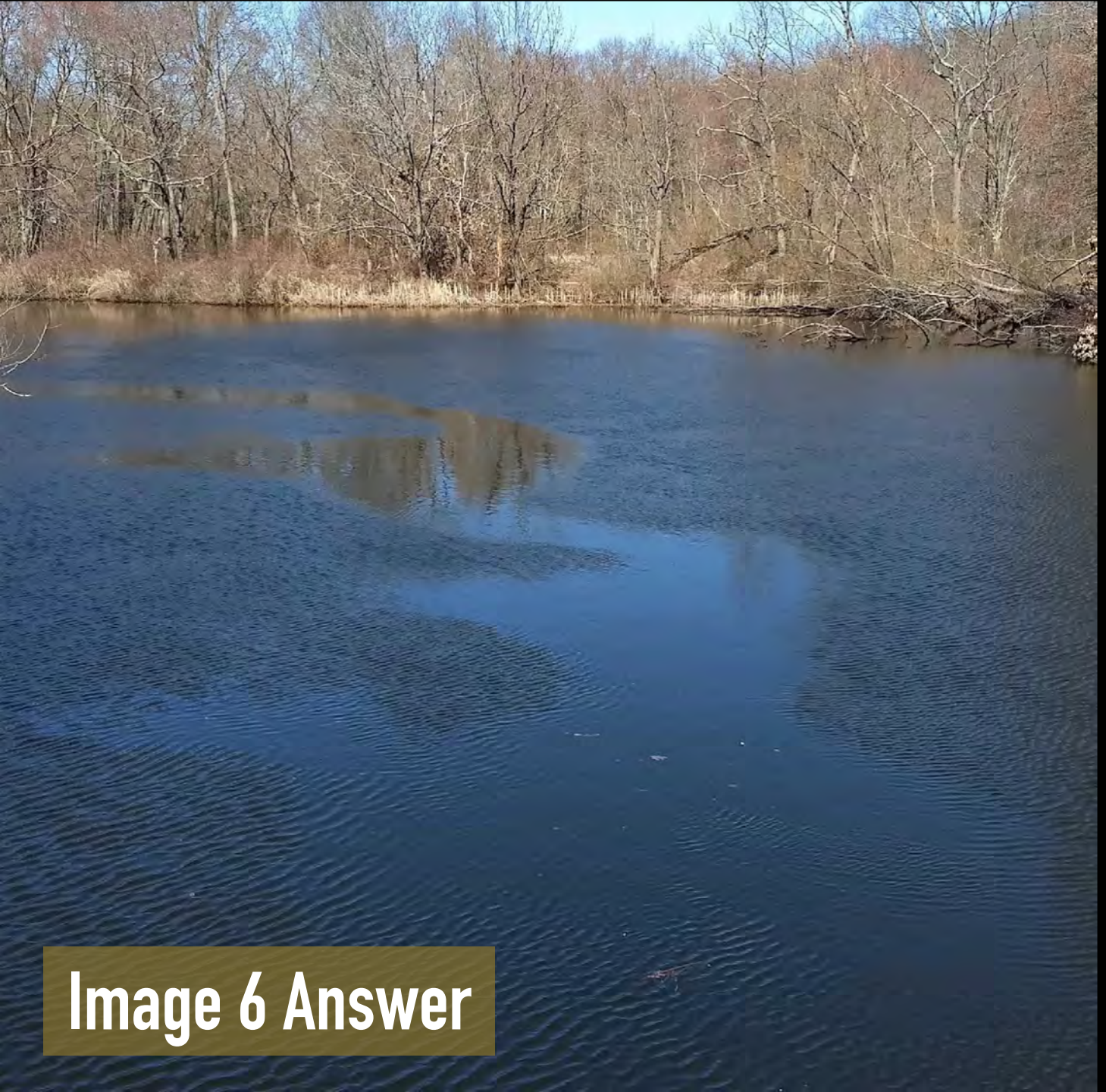
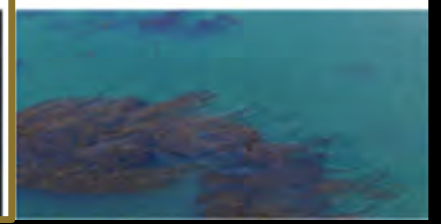


Image 6 Answer

## Open Water

### Freshwater

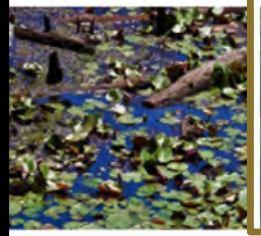
### Marine



## 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

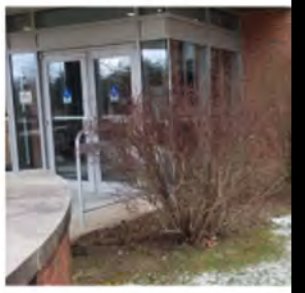
## Shrubs

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!

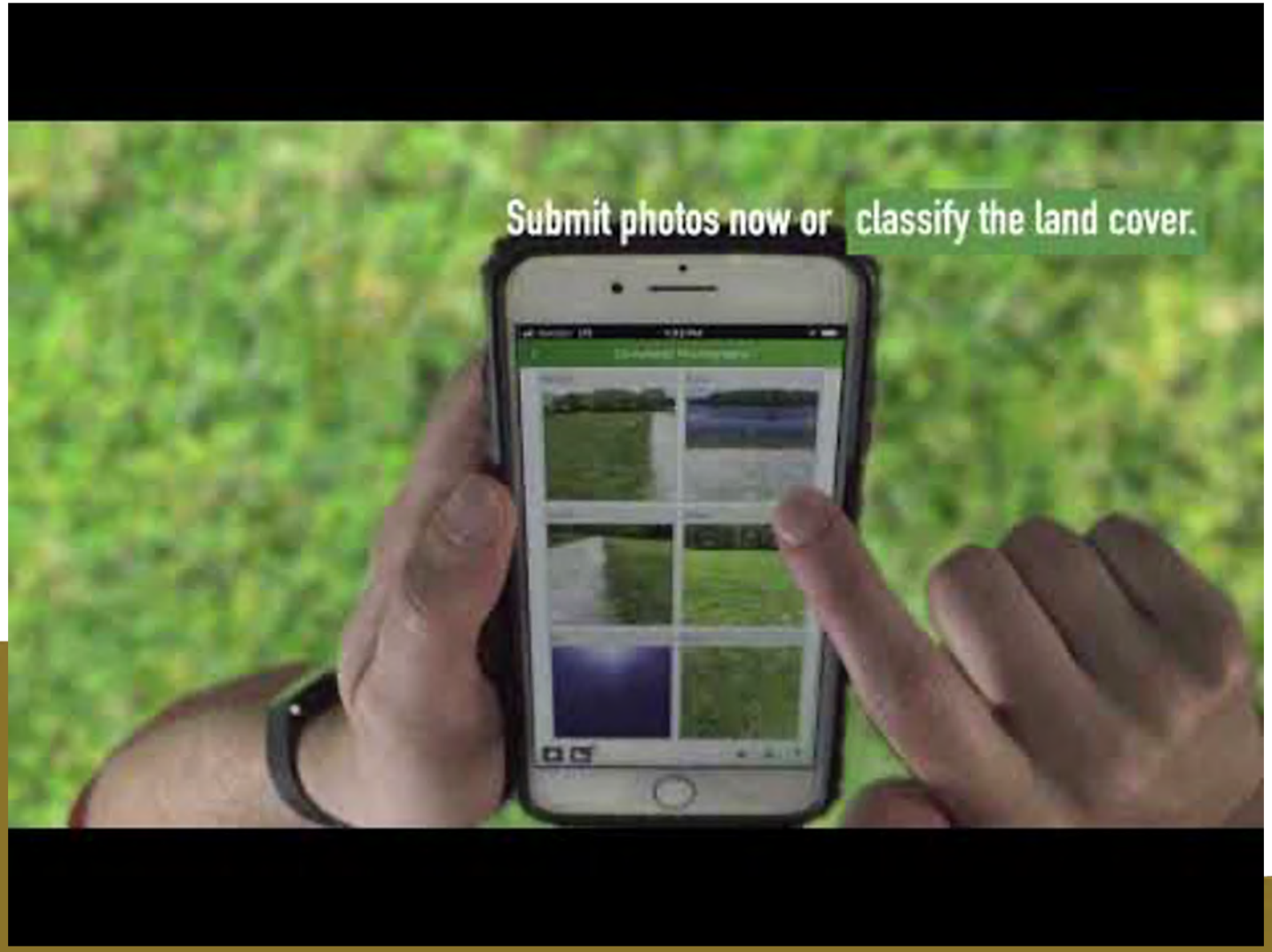
Thanks for playing the

**Land Cover Classification Challenge!**

GLOBE Land Cover

GLOBE Observer

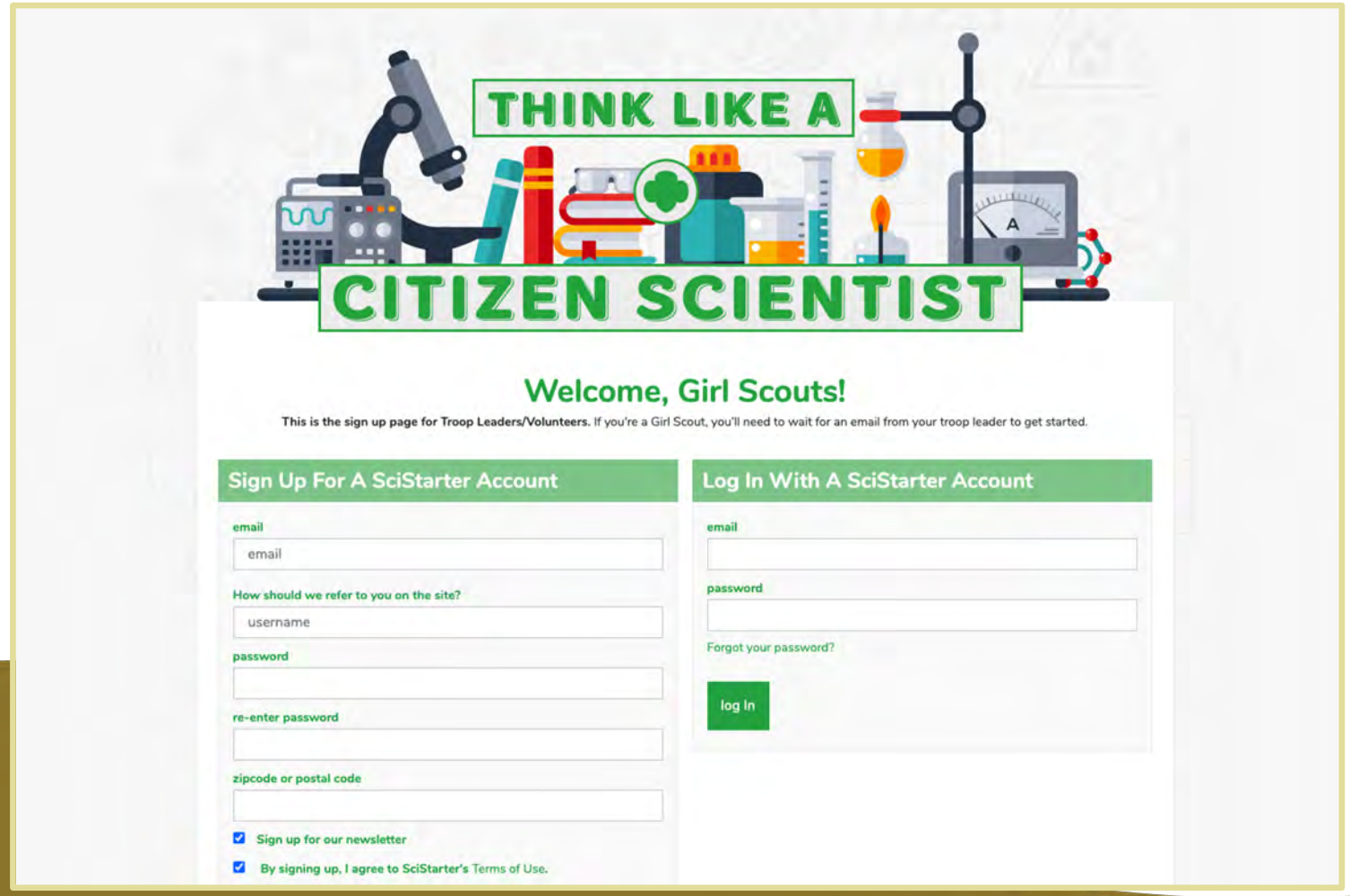
Land Cover Classification Challenge




GLOBE Land Cover

# How to use the Land Cover Tool

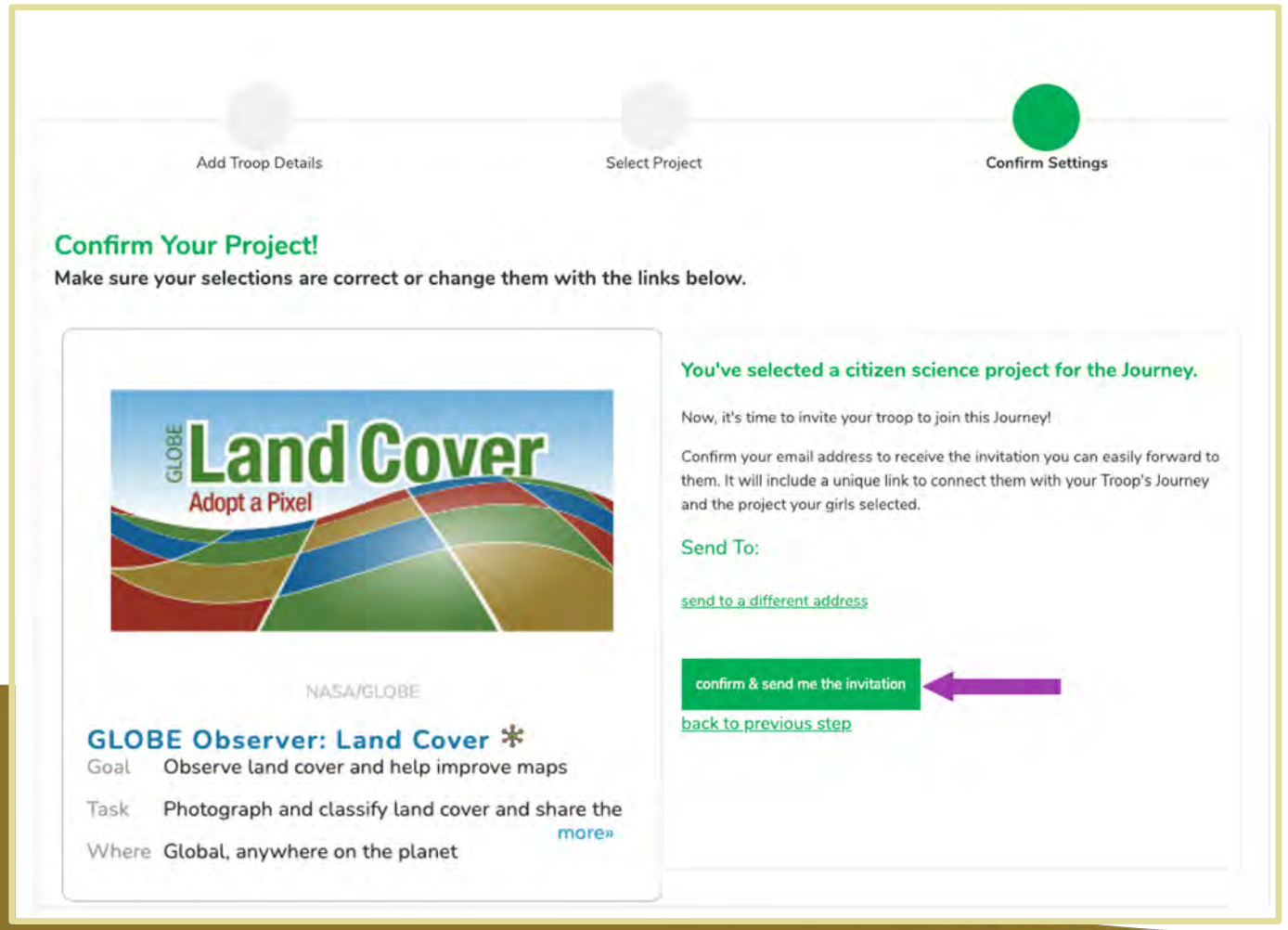
https://youtu.be/PSCEpPIfGMs




# GLOBE Land Cover

# Register your Troop on SciStarter

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

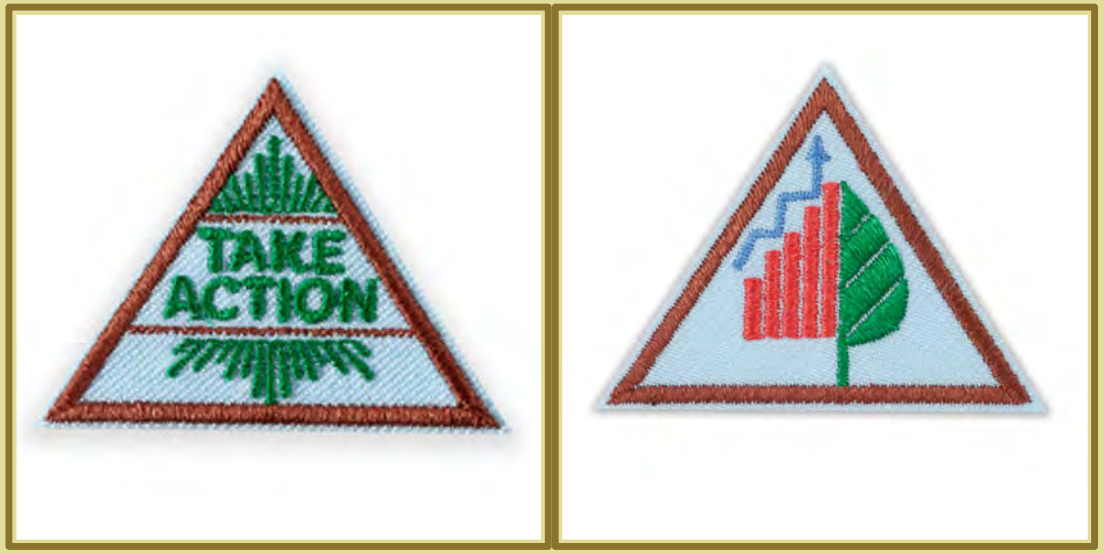



# GLOBE Land Cover Choose GLOBE Observer: Clouds

# 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.