

WORKSHEET

How resilient is my local area to climate change?

School name

Teacher name

Local time

 AM PM

Date of survey

D D M M Y Y Y Y

Study site

City, Country

Observer names

OBSERVE YOUR SURROUNDINGS

- 1 Go outside and take some time to observe the area around you.
- 2 Use your senses (sight, hearing, smell, touch) to identify good and bad things about the local environment.
- 3 Answer the questions below to help you rate the state or health of the ecosystem. Cross out or circle your answer where needed. E.g.,

Question Option 1 Option 2 or Question Option 1 Option 2

Land-use

What type of land-use is present?
(tick all that apply)

Protected nature site

Public park

Forest

Industrial

Farmland

Commercial

Other nature site

Residential

Urban



Built-up area with a high population density

Other

(specify)

What type of area are you in?
(pick one)

Suburban



Lower population density e.g., small town or residential area

Any notes?

Rural



e.g., farmland

Pollution

Do you see any rubbish in the area?

None

Very little

Some

Plenty

Which types of rubbish do you see?
(tick all that apply)



Fabric



Glass



Metal



Paper



Plastic

Other

(specify)

Any notes?

Biodiversity

Which of the following forms of life can you see in the area? *(tick all that apply)*


 Birds

 Fish

 Invertebrates *e.g., insects, worms, spiders*

 Mammals

 Plants & Trees

 Fungi

 Other *(specify)*

How many of each life form do you see?

1 or 2	3-10	11-50	>50
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1 or 2	3-10	11-50	>50
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1 or 2	3-10	11-50	>50
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1 or 2	3-10	11-50	>50
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1 or 2	3-10	11-50	>50
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1 or 2	3-10	11-50	>50
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1 or 2	3-10	11-50	>50
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Soil

How much of the ground around you is covered in natural material? %
(soil, grass, vegetation, natural gravel, etc.)

How much of the ground is covered in bare soil? %

Do you see any signs of soil erosion? *(exposed roots, ditches, etc.)*

Yes No

Any notes?

In the space below, draw a picture of the area around you. Include key aspects of land-use, pollution, biodiversity, and soil that you noted above.

How healthy would you rate your local environment? *(pick one)*

Pristine

Healthy

Moderate

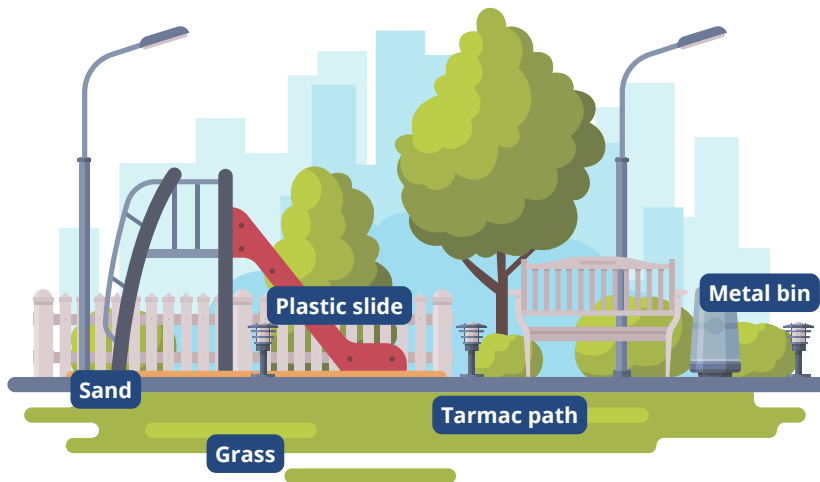
Degraded

Critical

What GLOBE protocols would you use to further investigate the ecosystem health?

DO A GLOBE OBSERVATION

Measure Surface Temperature



Which items do you think would have the highest surface temperatures?

Lowest

°C ↓

1.
2.
3.
4.
5.

Highest

EQUIPMENT NEEDED

- Infrared thermometer (for surface temperature)
- Max/Min digital thermometer / Alcohol-filled thermometer (for air temperature)
- GPS unit / Smartphone

INSTRUCTIONS

- 1 Choose a site that is covered in grass (ideally this should be ~30 m²).
- 2 Collect the GPS coordinates and elevation in the centre of the site.
- 3 Within your study site, record the following on the next page:
 - a. **Air temperature**
 - b. **Surface temperature at 9 random spots.** Record by holding thermometer at arms-length from your body parallel to the ground.
 - c. **Time**
 - d. **Snow depth** (if present)



Photo credit: Kevin Czajkowski

- 4 Repeat Steps 1–3 for two other types of land cover. Examples of other land cover include asphalt/tarmac, concrete, bare soil, astroturf, brick, wood chips, metal, or other.

Note:

- When comparing temperatures of different surface types, do not measure surface temperature in a shadow.
- Ensure that all 9 measurements are done on the same type of surface/land cover.

		1	2	3
Surface Type				
Time				
Ground Conditions (wet/dry/snow)				
Snow Depth (cm) (if present)				
Air Temperature (°C)				
Surface Temperature (°C)	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
Average Surface Temp. (°C)				

How resilient do you think this area is to climate change? Will surface temperatures increase/decrease to uncomfortable levels given the types of surfaces around?

How would you recommend the surfaces be changed to make the area more resilient to climate change? E.g., how can you cool the area?

Game:

- Use the infrared thermometer to scan various object surfaces in the area. See which team can find the surfaces with the highest and lowest surface temperatures!

Do a Cloud Observation

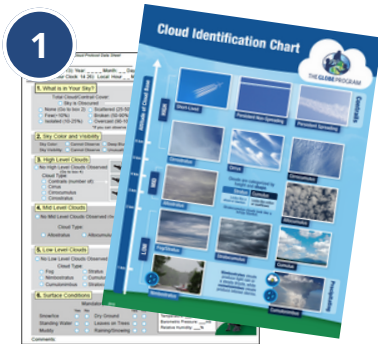
(Optional: Do if there is time)

EQUIPMENT NEEDED

- GLOBE Observer App / Cloud Identification Chart & Datasheet

INSTRUCTIONS

There are 2 ways to record your cloud observations:



Cloud Identification Chart & Datasheet



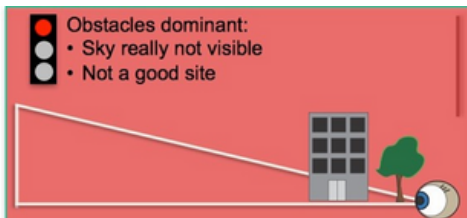
GLOBE Observer Cellphone App



Submit your Cloud Observation data to NASA to help them improve their satellite cloud measurements!

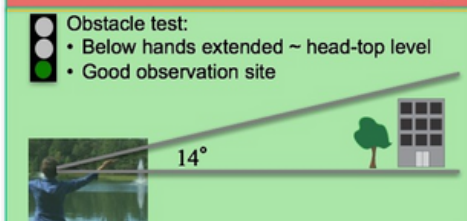
Do your cloud observations from a location that provides the best view of the sky. You will need to observe the sky above you from about 14 degrees above the horizon. To help point out the observation area, hold both arms up in a V in front of you as if you're about to do a squat! You must observe the entire sky above your hands. Turn around in a circle to make sure that you look at the entire sky (**top, North, East, South, and West**). It's best to observe from the same place each time.

Bad




- Obstacles dominant:
 - Sky really not visible
 - Not a good site

Good



- Obstacle test:
 - Below hands extended ~ head-top level
 - Good observation site



Do your cloud observation within 15 minutes of a NASA satellite flying over your location to compare your findings with NASA's!

Safety precaution

Don't look directly into the sun!



This photo shows observers estimating 14 degrees above the horizon by placing their hands in a "V" at about head height. The area between their hands, above them, is their observation area.