

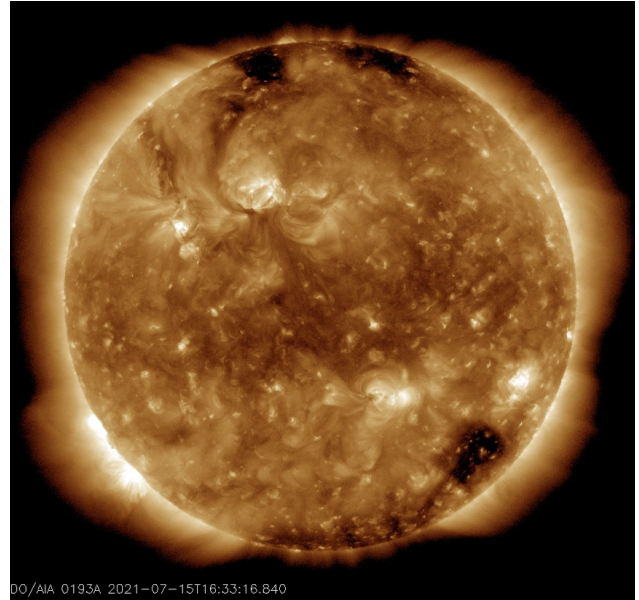
Please refer to the Teacher Resource document for information on how to use the worksheet for the activity.

Q1. Compare the two images below. What features look the same or different?

The Earth ([Earth Satellite View \(with Weather\)](#))



The Sun ([Sun Satellite View](#))



The features I notice on Earth are....

Expected Responses:

- There is water, land, and clouds
- There is an atmosphere
- It has some liquid and some solid and some gas in the atmosphere
- Lots of space between land
- Nothing escaping/spewing out of the planet into space

The features I notice on the Sun are.....

Expected Responses:

- There is no land/solid
- There is a liquid or gas swirling around
- There is something escaping/leaking from the sun (is it liquid or gas?)
- The surface looks dense/covered/no gaps
- There are dark bits and light bits
- It looks like there are hurricanes or whirlpools on the surface
- Is that the atmosphere or the surface in the image?
- It looks like the surface/atmosphere is moving

Q2. In the early 20th century, an astrophysicist called Cecilia Payne-Gaposchkin studied the Sun to find out what elements were present. Imagine that you are a scientist assisting Cecilia Payne-Gaposchkin. She has asked you to investigate the **state of matter** that different elements would be if they were on the Sun.

Table A tells you the **highest and lowest temperatures** ever recorded on the Earth and the Sun.

Table B tells you the **temperature** at which each element either melts into a liquid or boils into a gas.

Using the data in tables A and B **determine the state of matter of the given elements on the Sun and complete Table C.**

Table A.

Location	Highest temperature (°C)	Lowest temperature (°C)
Earth	70.7°C	-89.2°C
Sun	5,000,000°C	6700°C

Table B.

Element	Melting Point (°C)	Boiling Point (°C)
Carbon	3527	4827
Oxygen	-218.4	-182.96
Helium	-272.20	-268.934
Bromine	-7.3	58.78
Iron	1535	2750
Neon	-248.67	-246.05
Hydrogen	-259.14	-252.87
Magnesium	648.8	1090

Calcium	839	1484
Mercury	-38.87	356.58

Table C.

Element	State of matter on Earth	State of matter on the Sun
Carbon	Solid	Gas
Oxygen	Gas	Gas
Helium	Gas	Gas
Bromine	Liquid	Gas
Iron	Solid	Gas
Neon	Gas	Gas
Hydrogen	Gas	Gas
Magnesium	Solid	Gas
Calcium	Solid	Gas
Mercury	Liquid	Gas

Q3. Using your observations from Q1. and the information from Q2. describe what you think conditions are like on the Sun? Could humans live there? Explain your answer.

Expected Responses:

Everything on the Sun must be a gas - so no water and no solids (land) could be there. If Humans were to survive they need water and food. Plants need carbon and water for photosynthesis so without water the plants will not grow. This means no food for Humans (also no animals could survive).

Humans cannot survive above 40 degrees Celcius so the Sun's conditions would be unsuitable for Humans.