

The Water Cycle

Lesson Map: <http://esriaustralia.com.au/education/SpatialActivity78>

Engage

Water on planet Earth

- ➔ Click on the map URL above to open this lesson's Story Map, titled *The Water Cycle*. Scroll down to begin.
- ➔ Read the section titled *Water on planet Earth*. Take some short notes if required and stop to discuss as necessary.
- ➔ Read the section titled *Water is everywhere*. Take some short notes if required and stop to discuss as necessary.
- Explore the 3D Scene viewer, which displays an interactive image of Earth. Perform the following functions:
 - Spin the Earth around one full rotation. Observe the vast amounts of water readily observable in the planet's oceans.
 - Rotate the Earth to the north and south poles. Find the water that is locked up in icecaps, glaciers and permanent snow.
 - Use the search bar in the top-left corner of the 3D scene viewer to search for an Australian lake or river (e.g. *Lake Argyle in Western Australia or the Murray River*) and zoom in until the surface water is visible.
- ➔ Scroll down to the section titled *But what's missing?* Read through this section and take notes if required. Stop to discuss as necessary.

Explore

The Water Cycle - evaporation, transpiration, condensation

- ➔ Scroll down and read the section titled *The Water Cycle*. Take notes if required and stop to discuss as necessary. Take some time to engage with the *Water Cycle diagram*.
- ➔ Scroll down and read the section titled *Evaporation*. Take notes if required and stop to discuss as necessary.

Download student worksheet [here](#).

Time

45 minutes

Activity

Investigate the water cycle.

Learning Outcome

Students will be able to:

- Define key terminology of the water cycle
- Examine the spatial relationship between evapotranspiration and rainfall
- Understand the continuous nature of the water cycle
- Consider the water cycle in terms of changes to the state of water

ACARA Curriculum Link

[Year 7 Science: Earth and space sciences](#)

[ACSSU116 | ACSIS133](#)

Teacher Feedback:

To share your feedback on this, or any Spatial Activity, please contact education@esriaustralia.com.au

- ➔ Scroll down and read the section titled *Transpiration*. Take notes if required and stop to discuss as necessary.
- Explore the map titled *Global Evapotranspiration*. Click anywhere on the map to enable the ability to interact (e.g. pan and zoom).
- ? Observe evapotranspiration in Australia. Based on your knowledge of Australia's climate, explain why lower rates of evapotranspiration occur in Australia's remote and rural regions? [*Australia's remote and rural regions are hot and dry (arid/semi-arid). As a result, less rainfall and bodies of water exist in these regions, which results in lower rates of evapotranspiration.*]
- ? Pan the map to South-East Asia or mid-Africa. Why might these regions have higher rates of evapotranspiration? [*These regions are tropical regions characterized by high levels of annual rainfall, as well as warm temperatures throughout the entire year. The warmer weather results in higher levels of evapotranspiration.*]
- ➔ Scroll down and read the section titled *Condensation*. Take notes if required and stop to discuss as necessary.
- ? Can you think of any examples where you have seen condensation occur? [*Answers may vary. E.g. droplets appearing on the outside of a cold-water bottle once it has been taken out of the fridge.*]

Explain

The Water Cycle - precipitation, run-off and infiltration

- ➔ Scroll down and read the section titled *Precipitation*. Take notes if required and stop to discuss as necessary.
- Explore the map titled *Global rainfall*. The map shows the average annual rainfall experienced by different regions of the Earth.
- ? What factors may be contributing to higher quantities of rainfall? [*Factors that are contributing to higher quantities of rainfall are directly related to the characteristics of a geographic location and biome. The areas with higher annual rainfall are mostly in tropical or sub-tropical biomes, which are characterised by warmer weather, even in winter.*]
- ? Pan the map to Antarctica and the Arctic. Why might these areas be receiving little to no annual rainfall? [*These areas are receiving little to no rainfall as precipitation would fall from clouds in the form of snow, sleet or hail.*]
- ? After observing the *Global rainfall* map, revisit the *global evapotranspiration* map.

Explain the relationship that exists between each set of data. *[After reviewing both maps, it becomes apparent that there is a clear relationship between rainfall and evapotranspiration. It is evident that regions that experience high levels of average annual rainfall – South-East Asia, Central Africa and the northern countries of South America – also experience high levels of evaporation and transpiration. This occurs because of the tropical climates of these region.]*

- ➔ Scroll down and read the section titled *Run-off*. Take notes if required and stop to discuss as necessary.
- ➔ Scroll down and read the section titled *Infiltration*. Take notes if required and stop to discuss as necessary.

Extend

Consolidating my knowledge of the water cycle

- ➔ Scroll down and read the section titled *Putting it all together*. Take notes if required and stop to discuss as necessary.
- Engage with *the Water Cycle* diagram. Make your way through each stage of the water cycle. As you do, create a one-sentence definition for each stage of the water cycle in the table below:

| Term | Definition |
|---------------|---|
| Evaporation | <i>The process of water changing form from liquid to vapour due to heating up.</i> |
| Transpiration | <i>The process of water being drawn up through the roots of plants/trees, through the plant or tree itself, and then being evaporated through the leaves.</i> |
| Condensation | <i>The process of water vapour turning back into liquid as the air cools around it.</i> |
| Precipitation | <i>The process of rain, snow, sleet, or hail falling to the ground.</i> |
| Run-off | <i>The transportation of water across the surface of the ground to a body of water.</i> |
| Infiltration | <i>The process of water filtering through the surface of the earth and becoming groundwater.</i> |

Next Steps:

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