

## KS5 Rainforest: Carbon and Water Cycles Classroom activity pack

This pack contains a series of activities for you to complete with your class both before and after your visit to Kew.

You may choose to do all of the activities or just select one. Post-visit activities are intended to build on the learning from the educational session at Kew. The resources can be used on a whiteboard or can be printed.



## KS5 Rainforest: Carbon and Water Cycles

Thank you for booking the Carbon and Water Cycles education session at Kew. You can use the pre-visit activity to support your pupils' learning.

Ahead of your visit, your pupils could answer the question below. They can tell us about their answers when they come to Kew.



**Question:** Tropical rainforests play an integral role in the global carbon and water cycles. Suggest the ways they are involved.

You can encourage your pupils to discuss:

- Evapotranspiration
- Infiltration and throughflow
- Carbon stored in above and below-ground biomass
- Effects of deforestation on the water and carbon cycles.

## KS5 Rainforest: Carbon and Water Cycles

Kew is involved in rainforest conservation projects across the globe, providing expertise in a range of areas.

-  Tropical rainforests play an integral role in the global carbon and water cycles. Suggest the ways they are involved.



## Post-visit teacher notes

### KS5 Rainforest: water and carbon cycles

We hope that the teaching session at Kew assisted in developing the skills and knowledge of your pupil's and provided them with an insight into the amazing plants and world-leading plant science at Kew.

Following your visit, you can use the post-visit activity to further support your pupils' learning.

Pupils could answer the long answer exam-style question below.



“Human activity is the biggest cause of changes to the water cycle in the rainforest.” To what extent do you agree with this statement?

[20 marks]

They can then check their answers using the mark scheme provided.



“Human activity is the biggest cause of changes to the water cycle in the rainforest.”

To what extent do you agree with this statement?

[20 marks]



Qu.	Marking guidance	Assessment Objectives	Total marks
1	<p><b>“Human activity is the biggest cause of changes to the water cycle in the rainforest.”</b>  <b>To what extent do you agree with this statement?</b></p> <p><i>AO1 – Knowledge and understanding of water cycle in the rainforest. Knowledge and understanding of factors that impact the water cycle in the rainforest.</i>  <i>AO2 – Application of knowledge and understanding to analyse how various factors affect the water cycle in the rainforest and evaluate whether human activity has the greatest impact.</i></p> <p><b>AO1</b></p> <ul style="list-style-type: none"> <li>• Role and importance of the water cycle in the rainforest; including role of water vapour as a greenhouse gas, playing a role in controlling the climate.</li> <li>• Water cycle processes in the rainforest, including: <ul style="list-style-type: none"> <li>• Evaporation</li> <li>• Condensation</li> <li>• Precipitation</li> <li>• Drainage basins (including input of water through precipitation, interception, throughfall, stemflow, overland flow/sheet flow infiltration, transpiration, evaporation, percolation and channel flow)</li> </ul> </li> <li>• Factors that cause a change in the water cycle: <ul style="list-style-type: none"> <li>• Human activity</li> <li>• Natural variations (e.g. rainstorm)</li> <li>• Seasonal changes</li> </ul> </li> </ul> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Impact of human activity on the water cycle: <ul style="list-style-type: none"> <li>• Deforestation (reduces interception so water goes directly to the surface. No vegetation means infiltration is decreased; and any new vegetation has less leaves and shallower roots, meaning it cycles less water, so more water runs off the land, increasing the risk of floods).</li> <li>• Agricultural land use impacts, including: soil compaction, increasing runoff; agricultural drainage which increases the speed of throughflow, increasing the risk of flooding; many animals in an area can also impact the soil; ploughing soil and growing grass crops increase infiltration, which leads to subdued hydrographs.</li> <li>• Mining (involves deforesting large areas, reducing evotranspiration).</li> </ul> </li> <li>• Students may consider the impacts of climate change. Could discuss increase in temperature affecting the rate of evaporation and precipitation. This could lead to a decrease in rainforest rivers.</li> <li>• Students should come to an evaluative conclusion, deciding whether human activity has the greatest impact on the water cycle in the rainforest. This should be justified by their previous discussions.</li> </ul>	<p>AO1 = 10  AO2 = 10</p>	<p>20</p>