



Water Cycle KS3 duration: 1 hour

Students explore change of state by creating their own clouds in a model water cycle and testing the purity of their rain to demonstrate how evaporation and condensation make rivers flow and provide us with fresh water. They also see an amazing cloud made from dry ice and investigate the effects of surface run-off.

Key Words:

Water cycle. Investigation. Precipitation. Dry ice. Run off. Laboratory. Testing. States of matter. Solids. Liquids. Gases. Heating. Cooling. Melting. Freezing. Evaporation. Condensation. Sublimation, Deposition.

Learning objectives

Appreciate that water can exist in different states—as a solid, liquid and gas, and that changes between these states involves the transfer of heat energy

Understand the physical processes of melting, freezing, evaporation and condensation and the role they play in the water cycle

Recognise the four key stages of the water cycle and where they occur

Understand the significance of fresh water to life and the processes that produce it

To work safely and as instructed in a laboratory environment

Understand that chemical tests can be used to distinguish between fresh and salt water

Plan, make predictions and record measurements in an investigation into surface run-off

Working safely in a lab setting and use lab equipment

Content

See condensation in air in a dramatic demonstration of cloud formation using dry ice

Plan and construct a model water cycle and relate this model to the natural cycle

Test the water produced for salinity and understand that the water cycle results in fresh water

Investigate and measure the effect of ground surface and slope on the run-off resulting from rainfall and relate this to the natural and built environment

Curriculum Links:

Science: Working scientifically Use appropriate techniques, apparatus and materials during lab work, paying attention to health and safety. Interpret observations and data and draw conclusions

Chemistry: The particulate nature of matter The properties of the different states of matter (solid, liquid and gas) in terms of the particle model

Changes of state in terms of the particle model

Chemistry: Pure and impure substances The concept of a pure substance. Mixtures, including dissolving. Simple techniques for separating mixtures. Identification of pure substances

Physics: Physical Changes Conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation and dissolving. Similarities and differences, including density differences, between solids, liquids and gases

Human and physical geography Physical geography relating to: hydrology

Potential Hazards and accessibility

The workshop is based in a laboratory and all activities are conducted under careful supervision throughout. Dry ice is used by the presenter during a demonstration. Students will boil water using a portable heat filament. Students will work with glassware.

Related activities

Theme Days System Earth