



Year: 10

Topic: 2.4 THE EVER-CHANGING EARTH

Knowledge and Understanding to be developed:

This topic explores the structure of the Earth and the composition of the atmosphere, looking at changes in both over time. They gain an understanding of how a balance of processes maintains the composition of the atmosphere and the effects upon this of human activity.

Working Scientifically
This topic contributes to an understanding of how scientific methods and theories develop over time. Learners will be able to develop scientific explanations and understanding of familiar and unfamiliar facts.

Mathematical Skills
Standard form can be used to express the age of the Earth in years and the time over which continents have moved and the atmosphere has evolved. Plotting data on graphs and identifying trends can be incorporated

Key Terms to be learned this topic:

Plate tectonics Conservative
destructive constructive
combustion Photosynthesis
Respiration Acid rain
Global warming
Carbon dioxide

**Learning Objectives and Outcomes:
Students should be able to demonstrate and apply their knowledge and understanding of :**

- (a) the large scale structure of the Earth in terms of solid iron core, molten iron outer core, mantle and crust
- (b) the theory of plate tectonics and how it developed from Alfred Wegener's earlier theory of continental drift
- (c) the processes occurring at conservative, destructive and constructive plate boundaries where plates slide past one another, move towards one another and move apart respectively
- (d) the formation of the original atmosphere by gases, including carbon dioxide and water vapour, being expelled from volcanoes
- (e) the present composition of the atmosphere and how the composition of the atmosphere has changed over geological time
- (f) the roles of respiration, combustion and photosynthesis in the maintenance of the levels of oxygen and carbon dioxide in the atmosphere
- (g) the environmental effects and consequences of the emission of carbon dioxide and sulfur dioxide into the atmosphere through the combustion of fossil fuels
- (h) the measures used to address the problems of global warming and acid rain
- (i) the air as a source of nitrogen, oxygen, neon and argon (j) the tests used to identify oxygen gas and carbon dioxide gas