

**A1.11**

communicate ideas using appropriate language and in a variety of formats

A1.12

use appropriate graphic modes of representation

D2.1

use appropriate terminology related to climate change

D3.1

describe the principal components of Earth's climate system and how the system works

Global Climate Systems

Earth's climate systems are complex. The best way to visualize them is to build a three-dimensional model.

In this assignment you will build a model of the Earth that illustrates as many processes relating to climate systems as you can.

Earth's climate systems are complex. The global climate processes are dynamic and heavily interdependent. To fully understand them requires knowledge of physics, chemistry, biology, and geology — to name just a few of the fields of science involved in climate studies.

It is difficult to represent many climate processes on the printed page, because they are three-dimensional. Models are much better than diagrams, but they don't fit in textbooks! Building your own model will help you understand and remember these processes much better than merely looking at a picture.

Copy or glue the attached pattern onto cardboard, cut it out, and fold and glue it into a small globe. Add other parts out of paper or cardboard to show systems and processes that are three-dimensional, such as convection cells.

You may find it easier to colour and label your model before you fold and glue it.

Your model *must* include include the following items:

- convection cells
- prevailing winds
- major surface ocean currents

Your model should also include as many of the following items as possible:

- Great Ocean Conveyor (thermohaline conveyor)
- evaporation and condensation
- energy transfer

These lists are not restrictive: you will receive credit for any extra information and processes that you can include.

Evaluation Guidelines

Your model will be evaluated according to the following criteria:

Item	Level 0	Level 1	Level 2	Level 3	Level 4
Communications: climate systems and processes should be clearly communicated (A1.11)	Information in model is not understandable.	Information in model is hard to understand.	Information in model is mostly understandable.	Information in model is understandable.	Information in model is clear and understandable.
Cartography: globe should follow standard map-making conventions (ie. water is blue not green) and use standard symbols (A1.12)	Model does not follow standard map-making conventions.	Model follows some standard map-making conventions.	Model follows most standard map-making conventions.	Model follows standard map-making conventions.	Model follows standard map-making conventions; elements are clear and easy to follow.
Content: model must show convection cells, prevailing winds, and major surface currents. It should also contain the thermohaline conveyor, evaporation and condensation, and energy transfer. Full marks require other systems or processes to be included. (D2.1)	Model is missing a required element.	Model has all required elements.	Model includes some of the other listed elements.	Model includes all listed elements.	Model includes all listed elements as well as extra climate processes or systems.
Accuracy: Models should describe all elements completely and accurately. (D3.1)	Elements indicate major misconceptions about climate systems and processes.	Elements indicate serious misconceptions about climate systems and processes.	Elements indicate minor misconceptions about climate systems and processes.	Elements indicate no misconceptions about climate systems and processes. Some minor mistakes.	Elements are accurate.

Everybody talks about the weather, but nobody does anything about it.

Mark Twain

Content Checklist		
Must include	Should include	Also includes
<input type="checkbox"/> convection cells	<input type="checkbox"/> thermohaline conveyor	<input type="checkbox"/> _____
<input type="checkbox"/> prevailing winds	<input type="checkbox"/> evaporation	<input type="checkbox"/> _____
<input type="checkbox"/> major currents	<input type="checkbox"/> condensation	<input type="checkbox"/> _____
	<input type="checkbox"/> energy transfer	<input type="checkbox"/> _____