

**National Certificate of Educational
Achievement**

2013 Assessment Report

Earth and Space Science Level 3

- 91413 Demonstrate understanding of the processes in the ocean system**
- 91414 Demonstrate understanding of the processes in the atmosphere system**

COMMENTARY

Candidates who addressed all the questions were generally able to demonstrate understanding of how the processes in the ocean and/or atmosphere impact our lives and vice versa. Higher grades were awarded to those who linked their answers directly to the context of the question rather than recalling general concepts alone.

Some candidates did not meet sufficiency only attempting one of the three questions which, no matter how well it was answered, was not enough to achieve the standard.

Many candidates used annotated diagrams which showed a clearer understanding of the requirements of the standard than their written explanations. Candidates therefore benefited from including annotated diagrams and in some instances the annotations were vital in ensuring the candidate received a higher grade score for the question.

STANDARD REPORTS

91413 Demonstrate understanding of the ocean system

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They typically:

- showed understanding of surface circulation and the cause of the Coriolis effect
- described the cause of ocean acidification and how carbon dioxide is absorbed into the ocean
- described the sun as the main factor in the change of thermoclines in different seasons
- described the three layers of the ocean using an annotated diagram.

NOT ACHIEVED

Candidates who were assessed as Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They typically:

- recalled information related to ocean systems, but not related to the question
- did not attempt to use the bullet points to help them answer the questions
- confused the thermocline with thermohaline circulation
- discussed the question in terms of weather and the atmosphere rather than the ocean system
- re-wrote information already given in the question
- explained terms that are not related to the standard, for example photosynthesis.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit typically:

- explained how the winds transfer energy to the water to affect circulation
- outlined the surface circulation from the equator due to heat
- explained acidity is due to the concentration of hydrogen ions in the solution and outlined the reaction that produced these ions

- explained how the energy from the sun changed the thermocline in summer and winter (in Mexico).

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence typically:

- explained in detail concepts directly within the context of the question
- explained why carbon dioxide levels in the atmosphere increase ocean acidity in relation to the buffering action of the ocean
- explained in depth the energy of the sun and mixing by the wind is involved in the changing of the thermocline in different seasons.

OTHER COMMENTS

Candidates should aim to use annotated diagrams to help explain their answers. In some cases, detailed, annotated diagrams were sufficient for Excellence.

91414 Demonstrate understanding of the atmosphere system

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They typically:

- showed basic knowledge of weather, the Westerlies and the Troposphere
- provided basic facts
- gave a basic description of a concept; e.g. air forced up a mountain, a convection cell, temperature decreasing with height.

NOT ACHIEVED

Candidates who were assessed as Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They typically:

- provided insufficient or incorrect facts
- provided answers that were not relevant to the question
- drew poorly annotated diagrams that did not answer the question.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit typically:

- explained links between concepts; e.g. atmospheric water content in air moving over the Alps, air movement in Ferrel cells to the Polar or Hadley cell, or linking atmospheric attributes to their cause
- used annotated diagrams to support their written answer.

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence typically:

- integrated several concepts by discussing the links between them in depth
- produced a well thought out discussion: e.g. Question Three: explained the air's moisture content from evaporation off the Tasman Sea and change over the Southern Alps to the Canterbury Plains.

OTHER COMMENTS

Candidates benefited from completing all questions, in some cases, a partially answered question was the difference between an Achieved and a Merit grade. The reverse was also noticeable, the quality of two well answered questions indicated that a basic attempt at the third may have elicited enough marks to gain that candidate a higher grade. Again well annotated diagrams were, in some cases, sufficient to ensure a candidate received a higher grade score.