

## Achievement Standard

|                            |  |                               |                  |
|----------------------------|--|-------------------------------|------------------|
| <b>Subject Reference</b>   | Earth and Space Science 2.7  |                               |                  |
| <b>Title</b>               | Demonstrate understanding of physical principles related to the Earth System |                               |                  |
| <b>Level</b>               | 2  | <b>Credits</b>                | 4                |
|                            |  | <b>Assessment</b>             | External         |
| <b>Subfield</b>            | Science  |                               |                  |
| <b>Domain</b>              | Earth and Space Science  |                               |                  |
| <b>Status</b>              | Registered   | <b>Status date</b>            | 17 November 2011 |
| <b>Planned review date</b> | 31 December 2020   | <b>Date version published</b> | 20 November 2014 |

This achievement standard involves demonstrating understanding of physical principles related to the Earth System.

### Achievement Criteria

| Achievement   | Achievement with Merit   | Achievement with Excellence   |
|---|--|---|
| <ul style="list-style-type: none"> <li>Demonstrate understanding of physical principles related to the Earth System.</li> </ul> | <ul style="list-style-type: none"> <li>Demonstrate in-depth understanding of physical principles related to the Earth System.</li> </ul> | <ul style="list-style-type: none"> <li>Demonstrate comprehensive understanding of physical principles related to the Earth System.</li> </ul> |

### Explanatory Notes

- 1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 7 Planet Earth and Beyond achievement objective: Earth Systems and Interacting Systems; and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

- 2 *Demonstrate understanding* involves describing physical principles related to the Earth System.

*Demonstrate in-depth understanding* involves explaining physical principles in terms of the Earth System.

*Demonstrate comprehensive understanding* involves linking physical principles to the Earth System.

- 3 *Physical principles* will be selected from:
    - source (solar and terrestrial) and transport of heat by radiation, convection and conduction
    - transmission, reflection, absorption, and scattering of visible and/or infra-red radiation.
  - 4 The *Earth System* contains the hydrosphere, atmosphere, geosphere, and/or biosphere.
  - 5 Assessment Specifications for this achievement standard can be accessed through the Science Resources page found at <http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/ncea-subject-resources/>.
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### Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233