

Storming the classrooms: making climate science hot again

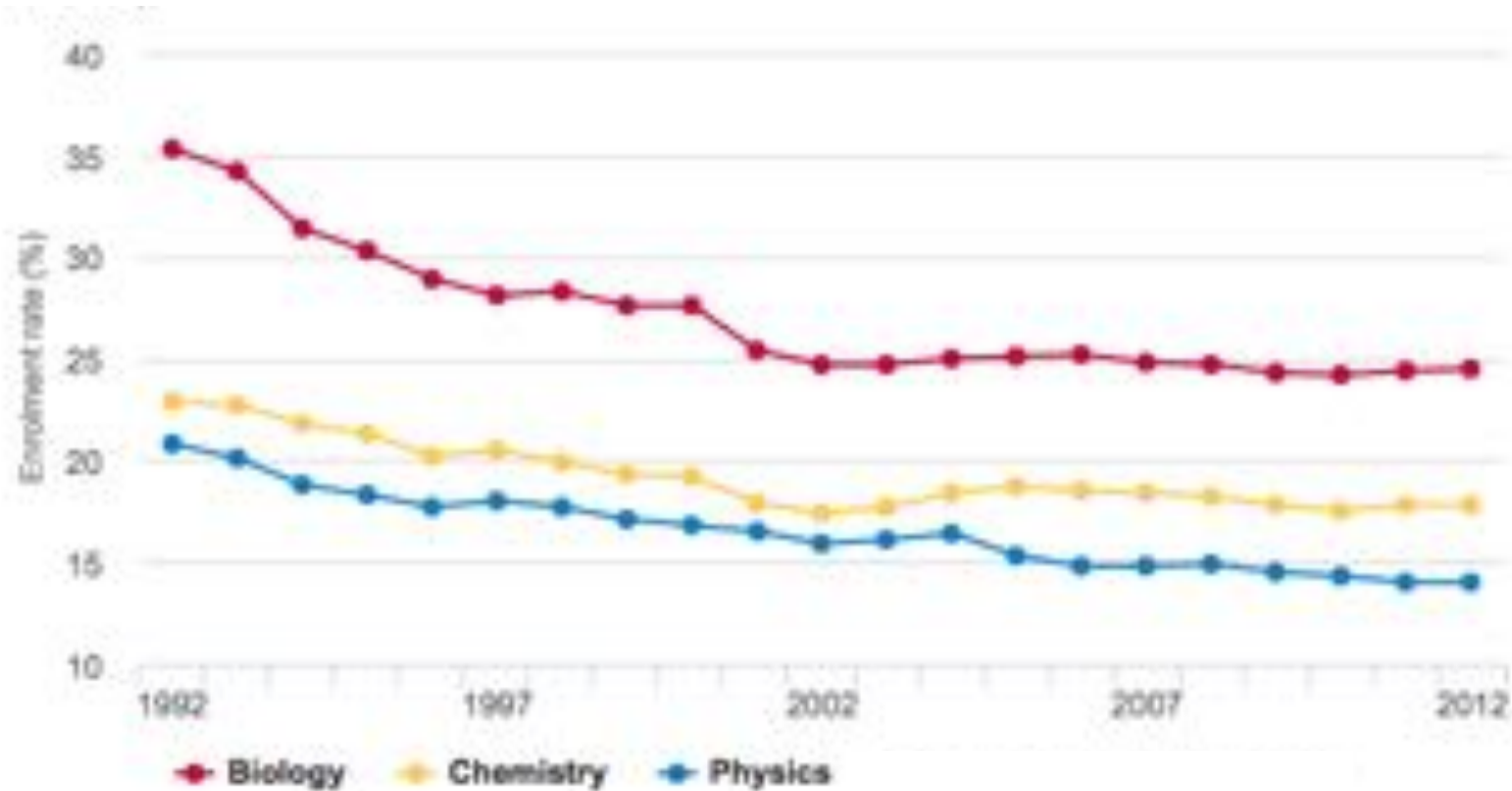
Paul Holper



Outline

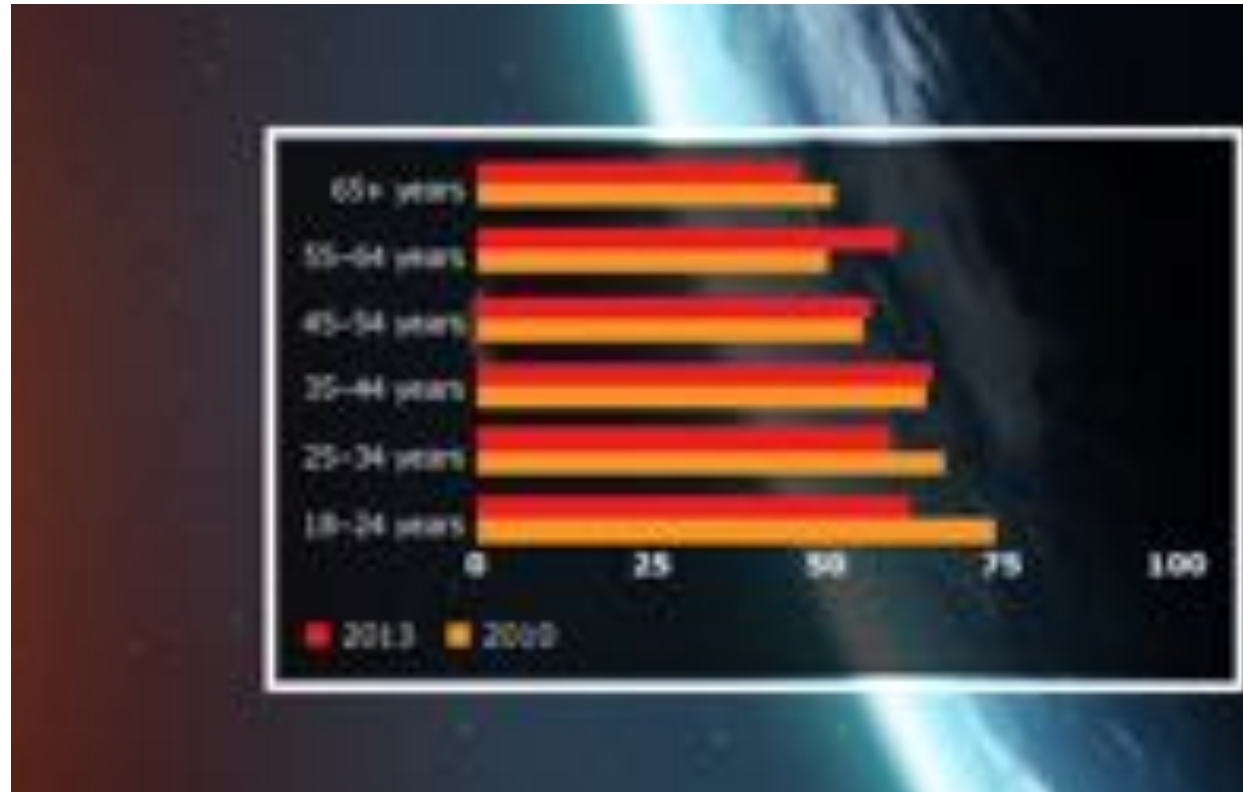
- The decline in student interest in maths and science
- Climate science in the Australian curriculum
- Institutional support for education
- Resources
- Ideas for action

Fewer secondary students study science



Graphic: Inga Ting | Source: Kennedy, Lyons and Quinn 2014

How long does it take for the Earth to go around the Sun?



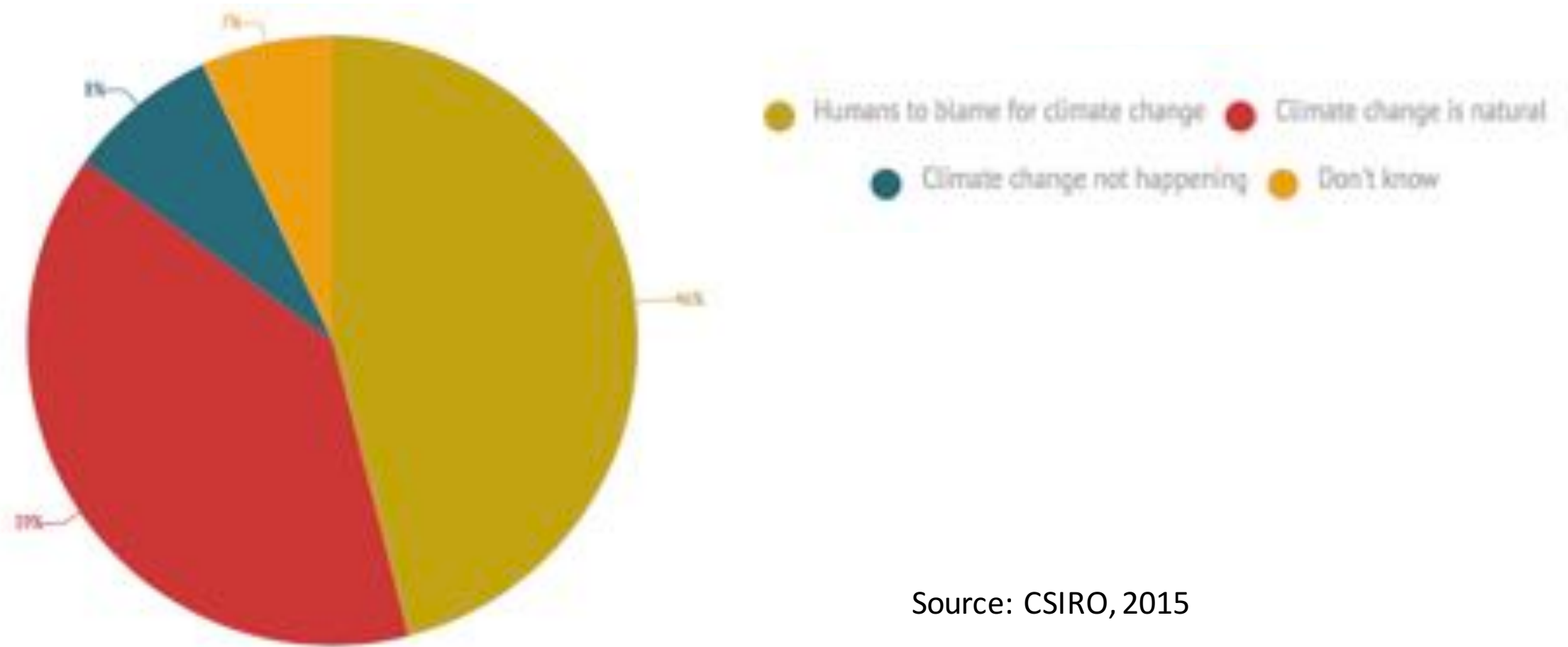
Percentage correct answer

30% of Australians think that it takes one day for the Earth to orbit the Sun

Greatest fall in knowledge (2010 – 2013) of how long the Earth takes to orbit the Sun is amongst younger cohorts

Source: Science literacy in Australia. Australian Academy of Science, 2013

What Australians think about climate change



Source: CSIRO, 2015

Climate science in the Australian curriculum

Earth and space sciences

Y3: Earth's rotation on its axis causes regular changes, including night and day

Y5: The Earth is part of a system of planets orbiting around a star (the Sun)

Y6: Sudden geological changes and extreme weather events can affect Earth's surface

Y7: Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the Moon

Y10: Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere

Y11-12: VCE Environmental Science, in for example, Victoria

Resources: Australian Academy of Science

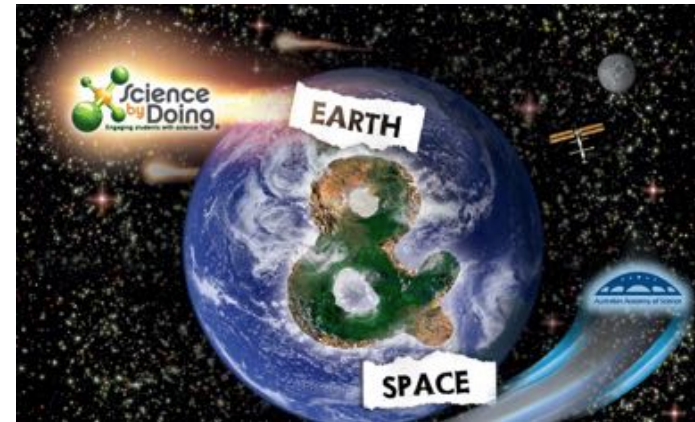
Primary Connections



WEATHER IN MY WORLD - KIT



Science by Doing



Booklet



Resources: Non-government organisations

WithOnePlanet: withoneplanet.org.au

Cool Australia: www.coolaustralia.org

Australian Youth Climate Coalition: www.aycc.org.au

Australian Education for Sustainability Alliance:
www.educationforsustainability.org.au



Why put resources into education?

- Science agencies need to support future science talent
- Students will become voters and taxpayers
- It's in all of our interests to have a scientifically literate population
- Children influence their parents

What's needed?

- More face to face time, e.g. Scientists in Schools program
- Dedicated, curriculum-linked material, ready to use
- Teacher training & seminars

ACTIVITY

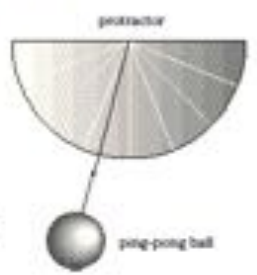
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measuring wind speed

Measuring wind speed can be done with minimal equipment and surprising accuracy.

EQUIPMENT

- strong thread or thin fishing line — about 40 cm long
- ping-pong ball
- large protractor
- glue and tape
- thick cardboard for mounting protractor



PROCEDURE

1. Mount the protractor with tape to the cardboard, curved side pointing down.
2. Tape or glue the thread to the ping-pong ball.
3. Tie or glue the other end of the thread to the centre of the protractor.
4. When the wind blows the thread off centre, read the angle on the protractor.
5. Convert this angle to the wind velocity in this table.
6. Use your instrument outside and away from buildings to measure wind speed. At the same time, use the Beaufort wind scale to write down your observations about the strength of the wind.

String angle (degrees)	90	80	70	60	50	40	30	20
Wind speed (km/h)	0	11	19	24	29	34	41	51

QUESTIONS

1. What is wind?
2. Can wind be useful to us?
3. What damage can wind do?
4. Does your instrument give a measurement of wind speed that agrees with the measurement using your observations and the Beaufort wind scale? Can you suggest any improvements to the instrument?

MEASURING WIND SPEED

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BoM & CSIRO material perfect for lesson plans

- Daily forecasts
- Climate information and data
- Seasonal outlooks
- Trend maps and time series
- Cape Grim greenhouse gas data (<http://www.csiro.au/greenhouse-gases/>)
- Biennial State of the Climate reports
- Climate Change in Australia projections

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