

RESEARCH HIGHLIGHTS

CLIMATE CHANGE

Global warming could speed up

The rate of global warming could more than double over the coming decades, as greenhouse gases build up in Earth's atmosphere.

Steven Smith and his colleagues at the Pacific Northwest National Laboratory in College Park, Maryland, analysed the rate of warming in global climate simulations, and compared them over different 40-year periods. The team found that the global rate of warming in these simulations increases to an average of 0.25 °C per decade by 2020. An analysis of palaeoclimate data rarely showed rates of temperature change above 0.1 °C per decade during the last millennium.

The Arctic, Europe and North America will probably see larger increases in warming rates than the global average.

Nature Climate Change
<http://dx.doi.org/10.1038/nclimate2552> (2015)

PALAEONTOLOGY

Oldest *Homo* fossil found

A 2.8-million-year-old jawbone from Ethiopia may represent the earliest fossil from the genus *Homo* yet discovered — pushing back the known origins of humankind by nearly 500,000 years.

The fossil (**pictured**), analysed by Brian Villmoare at the University of Nevada, Las Vegas, William Kimbel at Arizona State University in Tempe and their colleagues, has key features



of *Homo*, such as the parabolic shape of the jaw. But it also has more primitive traits, such as the jaw's overall size, that are seen in *Australopithecus afarensis*, a human ancestor that lived around 3 to 4 million years ago.

The fossil could belong to an ancestral *Homo* species, the authors say, filling a gap in the human fossil record.

Science <http://dx.doi.org/10.1126/science.aaa1343> (2015)



ANIMAL BEHAVIOUR

Post-menopausal whales lead the hunt

After they reach menopause, female killer whales help their kin to survive by sharing their hunting expertise.

Humans, killer whales (*Orcinus orca*; **pictured**) and one other whale species are the only animals whose females are known to experience a long post-reproductive life. Female orcas can live into their 90s, even though they stop reproducing in their 40s. Darren Croft at the University of Exeter, UK, and his team analysed more than 750 hours of video footage

of killer whales off the US Pacific coast collected between 2001 and 2009. Observations of 102 different whales up to 91 years old showed that post-reproductive females tended to lead group hunts for salmon, an important source of food. This leadership was particularly pronounced in years when salmon were scarce.

This is the first direct evidence that post-menopausal females are a source of ecological know-how, the authors say.

Curr. Biol. <http://doi.org/2mx> (2015)

ASTRONOMY

Quadruple images of supernova

A rare configuration of cosmic objects has produced multiple images of an exploding star in the same frame. If more images of the supernova appear, the system could provide a new way to measure the Universe's growth rate.

Patrick Kelly at the University of California, Berkeley, and his colleagues discovered the supernova kaleidoscope when examining

images from the Hubble Space Telescope.

The multiple images occurred because two giant objects, a galaxy cluster and a galaxy within that cluster, acted as cosmic magnifying lenses that bent and boosted the light from the distant supernova. Light rays taking different paths around the gravitational lenses created the four different images. These rays took different amounts of time to travel their respective paths. Measuring such differences could help astronomers to better estimate

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