found that the relatively small amount of thermal sea-level rise caused by these short-lived gases is much harder to reverse than their warming effect on the atmosphere.

Even greenhouse gases with an atmospheric lifetime of only a few years have a long-lasting effect on thermal expansion, because oceans absorb and release heat very slowly.
Proc. Natl Acad. Sci. USA **http://doi.org/bw2q (2017)**

ECOLOGY

Trees grow thick skin to survive fire

Trees that live in fire-prone areas have evolved thick bark to protect themselves. This trait can be used as an indicator of how resilient a tree species is to increased fire risk under global warming.

Adam Pellegrini, now at Stanford University in California, and his colleagues combed the literature for data on the relative thickness of bark for 572 tree species, and categorized the habitat of each. Savannahs typically experience more frequent fires than do forests, and the team found that tree bark from such habitats was, on average, three times thicker than that from forests. An analysis of a global data set of fires revealed that the more often a tree's habitat burned, the thicker was its bark. Fire and precipitation patterns together explain half the variation in bark thickness between species.
Ecol. Lett. **http://doi.org/bw3p (2017)**

PALAEONTOLOGY

Trilobites laid eggs

The discovery that extinct marine organisms called trilobites laid eggs provides the first direct evidence for how they reproduced.

Trilobites lived between 520 million and 250 million years ago, and are one of the earliest known groups of arthropods (invertebrates, including modern insects, with exoskeletons and segmented bodies). Thomas Hegna of Western Illinois University in Macomb and his colleagues report the discovery of ancient trilobite eggs in New York State, in rocks about 450 million years old. The eggs are spherical, almost 200 micrometres in diameter, and lie near several well-preserved trilobite fossils (**pictured**).

Trilobites may have released eggs and sperm through genital pores at or near the backs of their heads, the authors say.
Geology 45, **199–202 (2017)**

YALE PEABODY MUSEUM/CC0 1.0

EVOLUTION

How menopause emerged in whales

Differences between the breeding success of mothers and daughters may have driven the evolution of menopause, according to a study on killer whales.

Evolutionary biologists have long puzzled over why females of certain species — humans, killer whales and short-finned pilot whales — stop ovulating long before they die. Darren Croft at the University of Exeter, UK, and his colleagues analysed 43 years of data on two populations of killer whales (*Orcinus orca*; **pictured**) living off the west coast of North America. They confirmed that females become more closely related to their local group as they age, because they are producing offspring that become part of that group. The team also found that calves born to older mothers are 1.7 times more likely to die if born in groups where younger mothers are also breeding.

The authors say that selection favours younger females that invest more in competition for the limited resources needed for reproduction than do older related females. Menopause seems to be driven both by the high cost of breeding for older mothers and by other benefits they can provide by helping the rest of the group.
Current Biol. **http://doi.org/bw6v (2017)**

CONSERVATION

Pristine forests are shrinking fast

Less than one-quarter of the world's forests show no obvious signs of human activity, and the proportion of undisturbed forest has dropped markedly since the millennium.

Peter Potapov at the University of Maryland in College Park and his co-workers used satellite images to identify areas of intact forest larger than 500 square kilometres, and compared their sizes in 2000 and 2013. During that period, 7.2% of intact forest landscapes around the globe disappeared. In protected areas the proportion was lower, with a loss of only 1.8%.

Worldwide, logging was the leading cause of intact forest loss, followed by land-clearing for agriculture. Designating forest lands as protected helped to preserve pristine environments, although this was more effective in preventing logging than agriculture.
Sci. Adv. 3, **e1600821 (2017)**

CANCER BIOLOGY

Tumours slowed by diet tweak

A high-fat diet speeds tumour growth in mice, but this can be counteracted by drugs that lower levels of a metabolite in the blood.

Diet can influence cancer survival, but the molecular reasons are largely unknown. Jing Chen at Emory University in Atlanta, Georgia, and his colleagues searched for clues in mice with tumours that carried the BRAF V600E mutation, which occurs in some human cancers. They found that high-fat, low-carbohydrate diets boosted concentrations of acetoacetate — which is made when the liver breaks down fat — in the animals' blood, and that this spurred tumour growth. Treatment with cholesterol-lowering agents slowed tumour growth by reducing acetoacetate levels. Moreover, an acetate inhibitor reversed the effects of a fatty diet on tumours.

The results suggest that physicians could one day tailor diets to slow cancer progression.
Cell Metab. **http://doi.org/bw6t (2017)**

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