

SEVEN DAYS

The news in brief

EVENTS

Nuclear deal

Iran agreed on 14 July to stringent new limits on its nuclear programme in exchange for the lifting of international sanctions. Following months of negotiations with six world powers, the country has committed to stop making weapons-grade uranium and plutonium and to get rid of 98% of its existing enriched-uranium stockpile. Sanctions will begin to be lifted after international observers certify Iran's compliance, but will 'snap back' into place if it is later found in breach of the deal. Iranian scientists have hailed the deal in the hope that it will facilitate international collaborations. See page 394 and go.nature.com/oinqcx for more.

Climate report

Greenhouse-gas emissions rose to their highest-ever levels in 2014, which was also the warmest year on record, the US National Oceanic and Atmospheric Administration said in its annual state of the climate report on 16 July. Atmospheric carbon dioxide concentrations rose by 1.9 parts per million (p.p.m.) to a global average of 397.2 p.p.m. in 2014, up nearly 42% from pre-industrial levels. Upper-ocean and sea-surface temperatures also reached unprecedented highs, whereas global sea-level rise kept pace with the 3.2-millimetre annual increase witnessed over the past two decades.

Solar plane stuck

Technical problems will delay the completion of an attempt to fly around the world fuelled by solar power alone. Rechargeable batteries on the aeroplane *Solar Impulse 2*



MASTERFILE/CORBIS

States will not fish in Arctic high seas

The five nations that surround the Arctic Ocean have agreed that they will fish in the high-seas area (often referred to as 'international waters'), only if there is proper management in place to protect species. The United States, Russia, Canada, Denmark (with respect to Greenland)

and Norway signed a joint declaration in Oslo on 16 July. Although the statement acknowledged that fishing was unlikely to take place in these waters in the near future, ice that has previously prevented access by vessels there is disappearing as a result of climate change.

overheated during the craft's most recent flight; a crossing of the Pacific Ocean which on 3 July broke the record for the longest non-stop solar-powered solo flight. On 15 July organizers announced that the onward trip from Honolulu, Hawaii, to the US mainland, will be delayed by at least nine months while they repair the batteries and consider new heating and cooling systems. The attempt will resume in April 2016.

Rocket failure

The chief executive of SpaceX, Elon Musk, revealed on 20 July that a faulty metal strut is likely to have led to the destruction of one of its Falcon 9 rockets shortly after take-off on 28 June. The US company says that a helium canister secured by the strut broke free and

ruptured, causing one of the rocket's fuel tanks to explode. The rocket was carrying supplies to the International Space Station. See go.nature.com/6dcvwa for more.

RESEARCH

Ethics debacle

The psychiatry department of the University of Minnesota is facing another ethics scandal. On 15 July, psychologist Ken Winters admitted to having falsified legal documents for a proposed clinical trial. These would have protected his researchers from being forced to turn over study participants' confidential information to law-enforcement agencies. Winters, who will now retire this month, said that he had tired of waiting for regulators to approve the

real documents. Earlier this year, an investigation by the Minnesota state government into the 2004 death of a clinical-trial participant found that the university had serious ethical issues.

PEOPLE

Top-job departures

Several top officials at the American Psychological Association (APA) have left the organization following a scathing investigative report released on 10 July. The report concluded that the APA had colluded with the US defence department and the Central Intelligence Agency in writing its ethics guidelines to permit psychologists to participate in the interrogation and torture of government detainees in the aftermath of the terrorist

attacks of 11 September 2001. APA ethics chief Stephen Behnke left the organization when the report was released. Three other officials, including chief executive Norman Anderson, left on 14 July.

Physicist dies

Yoichiro Nambu, a Japanese theoretical physicist who translated discoveries about exotic materials into fundamental insights into the behaviour of elementary particles, died on 5 July aged 94. Nambu showed that the spontaneous breaking of physical symmetry — which explains how superconductors conduct electricity without resistance — could occur in quantum fields in a vacuum. That was the basis for a suggestion by other physicists about how a ‘Higgs field’ could give mass to other particles. For his work, Nambu shared the 2008 Nobel Prize in Physics. The particle associated with the Higgs field was discovered in 2012.

Fossil scientist dies

Pioneering palaeontologist David Raup died on 9 July at the age of 82. Raup (pictured) had since 1977 worked at the University of Chicago, which announced his death on 14 July. His work on extinctions and the fossil record was hugely influential, and he co-authored *Principles*



of *Paleontology* (Freeman, 1971), which became a standard textbook for his field.

FACILITIES

Telescope locales

The governing board of the planned Cherenkov Telescope Array announced final sites for the observatory in a 16 July statement. The array will consist of roughly 100 dishes in Paranal, Chile, and around 20 more in La Palma, Spain, which won out over Mexico as the Northern Hemisphere site. The two sites will ensure good coverage of the sky to detect very-high-energy γ -rays streaming from some of the Universe’s most cataclysmic events. See go.nature.com/1yrq9r for more.

BUSINESS

Celgene deal

Pharmaceutical firm Celgene will pay US\$7.2 billion for a company with an experimental

drug against multiple sclerosis and inflammatory bowel disease. On 14 July, Celgene announced that it would buy Receptos of San Diego, California, in order to acquire its experimental drug ozanimod, currently in late-stage clinical testing. Celgene, based in Summit, New Jersey, predicts that peak sales of the drug could reach \$6 billion per year. Ozanimod is an anti-inflammatory drug that acts on white blood cells, blocking their migration to inflamed regions of the body.

FUNDING

SETI’s \$100 million

The search for extraterrestrial intelligence (SETI) got a US\$100-million boost on 20 July. Russian billionaire Yuri Milner announced the sum for a decadal project to provide the most comprehensive hunt for aliens so far. The initiative, called Breakthrough Listen, will use radio telescopes in the United States and Australia to scan around one million stars in the Milky Way and a hundred nearby galaxies for potential alien communications. Milner is also releasing an open letter backing the idea of an intensified search; it has been co-signed by numerous scientists, including physicist Stephen Hawking. See page 392 and go.nature.com/quikvb for more.

COMING UP

25–29 JULY

Researchers from fields as diverse as geology and medicine will meet in Philadelphia, Pennsylvania, for the annual meeting of the American Crystallographic Association.

go.nature.com/tmqsga

27 JULY–1 AUGUST

The International Association of Mathematical Physics holds its three-yearly meeting in Santiago, Chile. Quantum field theory and dynamical systems are among the topics to be discussed.

go.nature.com/tjwfte

30 JULY–6 AUGUST

Supermassive black holes, cosmic ray physics and γ -ray astronomy feature in the biennial International Cosmic Ray Conference, this year held in The Hague in the Netherlands.

go.nature.com/nmpqo8

MENTORING AWARDS

Nominations for *Nature’s* annual awards for outstanding science mentoring are open until 14 September. This year, *Nature* seeks to honour mentors in China, where two competitions will be held, one in the south of the country and one in the north (see go.nature.com/bacwn3). In each, prizes will be awarded for lifetime achievements and for mid-career achievements in mentoring. See go.nature.com/fbenwn for details of the awards judging panels, and for nomination forms.

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TREND WATCH

There are huge inequalities in mental-health resources, the World Health Organization (WHO) reported on 14 July. The *Mental Health Atlas 2014* reveals low global spending, especially given that one in ten people have a mental-health disorder. Countries are making some progress towards goals laid out by the WHO in a 2013 action plan, the report says. The goals include increasing services, promotion and prevention programmes and cutting the suicide rate by 10% from 11.4 per 100,000 people.

MENTAL-HEALTH SPEND

The amount spent by governments on mental health varies dramatically, especially according to a country’s wealth.

