



measurements so soon after a major earthquake, researchers hope to better understand fault properties and the mechanisms of tsunami-generating earthquakes.

Drillers successfully retrieved core samples from the vicinity of the fault zone, 648 meters to 844.5 meters beneath the sea floor, though they do not yet know if they have samples from the rupture itself. And mechanical troubles thwarted the installation of a borehole temperature monitoring system intended to detect frictional heat generated by the movement of the fault. The Japan Agency for Marine-Earth Science and Technology, which operates *Chikyu* for the international Integrated Ocean Drilling Program, will try to install the system again this summer. *Chikyu* made news earlier this spring by setting a record for creating the deepest undersea research borehole (*Science*, 4 May, p. 525).

#### Senkaku Islands, Japan 4

### Disputed Islands Could Be Marine Research Site

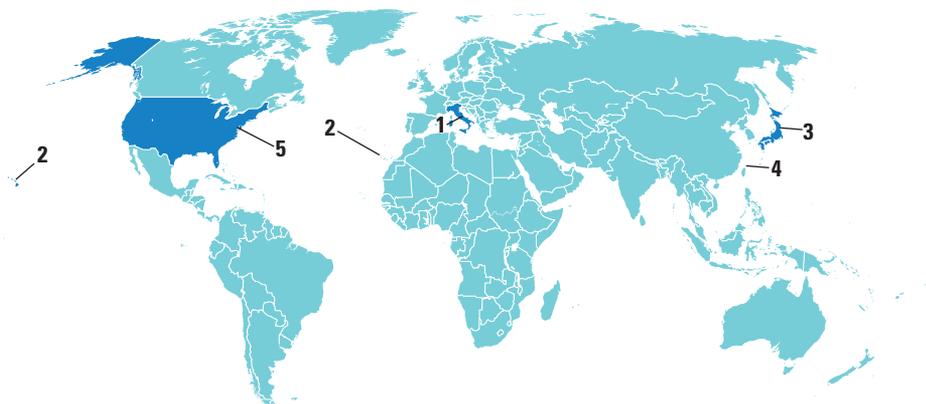
The Senkaku Islands, a group of islets and reefs in the East China Sea controlled by Japan but also claimed by Taiwan and China, would be an ideal site for marine science research, said the governor of Tokyo, Shintaro Ishihara, at a press conference in Tokyo on 29 May.

Japan has controlled the now-uninhabited islands, which are mostly privately owned, since the late 1800s, but the islands have

#### NOTED

>It's officially time to update your periodic table of the elements. On 31 May, the International Union of Pure and Applied Chemistry approved the names proposed last year for elements 114 and 116; they will be known as **Flerovium (Fl)** and **Livermorium (Lv)**, respectively. The names honor two leading institutions in heavy element research: Russia's Flerov Laboratory of Nuclear Reactions and Lawrence Livermore National Laboratory in California.

## AROUND THE WORLD



#### L'Aquila, Italy 1

### Earthquake Experts Testify In Manslaughter Trial

Seven scientists and engineers charged with manslaughter for allegedly understating the danger before the devastating 2009 L'Aquila earthquake took to the witness stand for the first time on 30 May.

The accused—all members of Italy's National Commission for the Forecast and Prevention of Major Risks—testified that a “swarm” of tremors the night before the



earthquake had not given reliable warning of the quake that followed. “A seismic sequence, whether consisting of big or small tremors, cannot tell us if a major earthquake is on the way,” said Enzo Boschi, who at the time of the quake was president of Italy's National Institute of Geophysics and Volcanology. Defendant Claudio Eva, a geophysicist at the University of Genoa, pointed out that the L'Aquila quake was the only strong tremor in Italy in the past 50 years to be preceded by such a swarm. The trial, which started in September 2011, will break until September, when lawyers for both sides will present their final arguments. The judge is expected to render a verdict before the end of October. <http://scim.ag/EQtrial>

#### Mauna Kea, Hawaii, and La Palma, Canary Islands 2

### Telescopes Face Closure

Several of the United Kingdom's astronomical telescopes in the Northern Hemisphere received a stay of execution last week to finish ongoing projects. The telescopes, which faced closure at the end of this year because of government funding cuts, will stay open for between 1 and 3 years and then close unless other funders can be found.

The James Clerk Maxwell Telescope on Mauna Kea in Hawaii will remain open until September 2014, while the U.K. Infrared Telescope at the same site has 1 more year of operation. The Science and Technology Facilities Council, which manages the telescopes, will continue to support the Isaac Newton Group of Telescopes (ING) on La Palma in the Canary Islands until March 2015 while it negotiates with its ING partners, the Netherlands and Spain, over continued operation. The United Kingdom has been scaling back its support for the Northern Hemisphere telescopes since joining the European Southern Observatory in 2002.

“The closure of these innovative facilities, telescopes that continue to deliver groundbreaking research, is a sad day for British astronomy,” said David Southwood, president of the Royal Astronomical Society, in a statement.

#### Oshika Peninsula, Japan 3

### Drill Ship Nabs Fault Zone Cores

On 24 May, the deep-sea drilling vessel *Chikyu* completed its expedition to drill through the plate boundary fault off the coast of Japan that caused the March 2011 earthquake and tsunami. By studying fault logging data, core samples, and temperature

been the site of recent tension between China and Japan. The fiercely nationalistic Ishihara has launched a drive to collect funds to buy the islands from their Japanese owners.

Marine researchers are eager to visit the islands, says Mineo Okamoto, a coral specialist at Tokyo University of Marine Science and Technology who studies reefs in Okinawa. The Kuroshio Current, which is similar to the Gulf Stream in the Atlantic, runs through the Senkakus, bringing warm waters and nutrients that produce a rich but little-studied pocket of biodiversity. But, Okamoto says, the geopolitical sensitivity of the area and the lack of an official research policy for the islands have made scientific efforts “very difficult.” [http://scim.ag/senkaku\\_site](http://scim.ag/senkaku_site)

Washington, D.C. 5

## Spy Telescopes to Study Dark Energy

Two telescopes originally intended to gaze down upon Earth from space to collect intelligence may have a new purpose: NASA hopes to use the telescopes to investigate astronomical questions from dark energy to extrasolar planets.

Last year, the National Reconnaissance Office (NRO), which manages the nation’s spy satellites, offered two surplus instruments—each as big as the Hubble Space Telescope—as a gift to NASA. NASA officials and a small group of astronomers are now considering how to use the telescopes in the proposed Wide-Field Infrared Survey Telescope (WFIRST) mission, intended to study dark energy and exoplanets.

Budget constraints had all but eliminated the possibility that NASA could pursue the estimated \$1.5 billion WFIRST mission before the mid-2020s. NRO’s gift has revived hope that WFIRST could become viable sooner. However, officials caution that it will take some time to evaluate how the telescopes would need to be repurposed. The two instruments are currently sitting in a clean room in Rochester, New York, and are costing NASA about \$100,000 a year to store.

## NEWSMAKERS

### Bioengineer Wins Lemelson-MIT Prize

Stanford University physicist and bioengineer **Stephen Quake** has won the \$500,000 2012 Lemelson-MIT Prize for midcareer inventors.

Inspired by computer chips, Quake devel-



## Raindrops Don't Swat Down Mosquitoes

A fat raindrop falling onto a mosquito should have the impact of a bus running over a human. But the mosquito’s rugged construction helps it survive collisions with even the largest raindrops, report a team of engineers and biologists at the Georgia Institute of Technology in Atlanta online this week in the *Proceedings of the National Academy of Sciences*.

Mechanical engineer David Hu and colleagues subjected *Anopheles* mosquitoes to artificial rain, placing the mosquitoes in a mesh-covered acrylic cage and then shooting jets of water into the cage to simulate raindrops falling. The team then filmed the impacts with a high-speed video camera. The videos showed that the mosquitoes would pitch, yaw, or roll to deflect the blows; they survived even direct hits without falling more than about 20 body lengths. Hu and his colleagues hypothesized that due to the insects’ low mass, the raindrop loses very little speed and momentum upon encountering the mosquito and thus imparts very little force to it. The mosquitoes’ ability to withstand the impacts may also be due to their exoskeletons, the hard outer covering that protects the inner organs. <http://scim.ag/rainmos>



Quake

oped tiny chips containing miniature pipes and valves that can control the flow of biological fluids. These labs-on-a-chip are now used for tasks such as growing protein crystals and measuring the expression of cancer genes. Quake invented the first instrument that sequences single DNA molecules and used it to sequence his own genome. His prenatal test for Down syndrome looks for an extra chromosome 21 in fetal DNA floating in a pregnant woman’s blood.

Quake also developed a way to comprehensively sequence immune system genes. His work has led to four companies and more than 80 patents.

“Stephen has also been a pioneer in inventing new tools that will allow others to engage in scientific discovery and the pro-

totyping of new biomedical devices quicker and easier—paving the way for even more breakthrough ideas,” said Dorothy Lemelson, chair of The Lemelson Foundation, in a press release on 5 June.

## Shaw Prizes: Planets, Protein Folding, and Esoteric Math

The discovery of trans-Neptune bodies, breakthroughs in understanding protein folding, and pioneering work in a mathematical technique known as deformation quantization have won this year’s Shaw prizes. The awards, which include \$1 million cash in each category, were announced on 29 May in Hong Kong.

**David Jewitt** of the University of California, Los Angeles, and **Jane Luu** of Massachusetts Institute of Technology in Cambridge share the astronomy >>

## &gt;&gt;NEWSMAKERS

prize for discovering and characterizing trans-Neptune bodies: objects in the solar system orbiting just beyond Neptune that are relics of the formation of the solar system and supply short-period comets.

**Franz-Ulrich Hartl**, of the Max Planck Institute of Biochemistry in Martinsried, Germany, and **Arthur Horwich** of Yale University won the prize in life science and medicine for their studies of the role of “chaperones” in guiding protein folding; their work has helped to explain normal protein folding as well as what goes wrong in cystic fibrosis, Alzheimer’s, and Huntington diseases.

**Maxim Kontsevich** of the Institute for Advanced Scientific Studies near Paris won the mathematics prize for work in algebra, geometry, and more esoteric aspects of mathematics including deformation quantization and mirror symmetry.

## Kavli Foundation Names 2012 Winners

Seven scientists from the fields of astrophysics, nanoscience, and neuroscience have earned the biennially awarded Kavli prizes. Each field gets \$1 million in prize money, which is split among the winners. The awards, first commissioned in 2008 by Norwegian philanthropist Fred Kavli’s Kavli Foundation, aims to support seminal research picked by an international panel of experts from several countries’ national academies. This year’s winners were announced on 31 May in Oslo. They are:

In astrophysics: **David C. Jewitt**, University of California, Los Angeles; **Jane X. Luu**, Massachusetts Institute of Technology (MIT), both of whom also won a Shaw Prize in Astronomy this year; and **Michael E. Brown**, California Institute of Technology, for their discovery and description of the Kuiper belt.



In nanoscience: **Mildred S. Dresselhaus**, MIT, for her work on electron-phonon interactions and thermal transport in nanostructures.

In neuroscience: **Cornelia Isabella Bargmann**, Rockefeller University; **Winfried Denk**, Max Planck Institute for Medical Research in Germany; and **Ann M. Graybiel**, MIT, for their research into the neuronal mechanisms that underlie perception and decision-making.

## FINDINGS



## Life Blooms Under Arctic Ice

Once the Arctic ice begins to melt, life begins to bloom in the nutrient-rich waters of the Arctic Ocean—or so scientists thought. But life may not wait for the ice to retreat; scientists visiting the Chukchi Sea’s continental shelf last July discovered a bright green bloom of phytoplankton—under ice more than a meter thick. Such blooms, which are invisible to satellites and scientists alike, suggest biological productivity in the region has been dramatically underestimated, the researchers note online this week in *Science*.

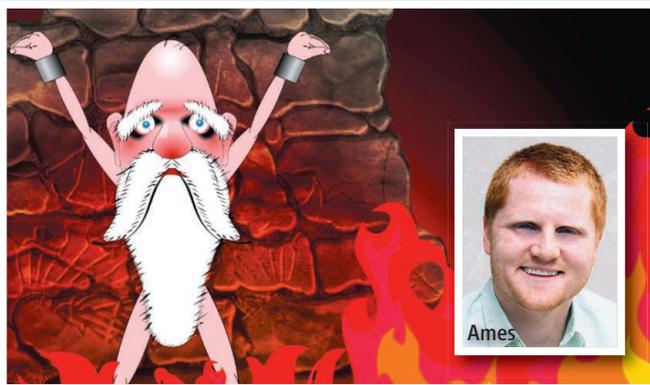
Light was thought to be the limiting factor, says Kevin Arrigo, a biological oceanographer at Stanford University in California. It’s dark under the ice, and phytoplankton, the photosynthesizing basis of a food chain that supports migratory species from Arctic terns to grey whales, require light to thrive.

But Arrigo and his team noted many melt ponds on the surface of the Chukchi Sea ice. Thick ice simply reflects incoming sunlight, but melt ponds can transmit more than 50% of the light to the waters below, promoting under-ice blooms, he says. How long this has been going on is uncertain. But changes in bloom timing might not be good news for migratory animals still expecting to arrive just in time for peak productivity.

## Random Sample

### Flame Challenge Answers a Burning Question

Can you explain a flame to an 11-year-old? That was the recent challenge set for scientists by Alan Alda and the Center for Communicating Science at Stony Brook University in New York (*Science*, 2 March, p. 1019). The Flame Challenge aimed to get scientists thinking about how to communicate



difficult concepts simply, clearly, and vividly. Some 822 entries were vetted for scientific accuracy, and were then judged by more than 6000 11-year-olds around the world.

“The kids loved the idea of judging the scientists’ work,” Alda says.

“And they judged it

not on flippancy but on the amount of information they were getting. Our goal is not to turn scientists into entertainers, and that’s not what the kids wanted either.”

The winner of the challenge, announced on 2 June at the World Science Festival in New York, was Ben Ames (inset), a doctoral student studying quantum optics at the University of Innsbruck in Austria. Ames submitted a 7-minute animated video explaining the science of flames, with the aid of music, Legos, and cupcakes (<http://www.flamechallenge.org>).

“My first 3 years as an undergraduate I was too afraid to do science—I was going to be a lawyer,” Ames says. Those initial fears, he adds, have helped him understand how to make scientific concepts easily accessible. “It comes out of my own ignorance. I want to explain things to others the way I wish they were explained to me: very simple and very direct.”

The Flame Challenge hasn’t burned out yet; middle-schoolers are now invited to suggest a question they want answered for next year’s contest.

## Science LIVE

Join us Thursday, 14 June, at 3 p.m. EDT for a live Father’s Day chat on **paternal care and bonding in animals**.  
<http://scim.ag/science-live>