RESEARCH HIGHLIGHTS

Selections from the scientific literature

ENVIRONMENTAL SCIENCES

Sinking ground poisons wells

A previously unrecognized source of arsenic threatens Vietnam's clean water.

Arsenic contamination generally affects wells at shallow depths, so wells deeper than 150 metres are often deemed safer. However, Steven Gorelick and colleagues at Stanford University in California suggest how arsenic contamination can occur deep underground. They analysed an area in the Mekong Delta of Vietnam, where many deep wells are contaminated. Using satellite measurements and simulations, they found that the land around deep wells has sunk by up to 27 centimetres since 1988 as groundwater has been pumped out. Clay layers adjacent to the pumped areas have compacted, which could be forcing water containing dissolved arsenic into deep aquifers. Wells that initially test as arsenic-free may not remain so, the authors say.

Proc. Natl Acad. Sci. USA **http://dx.doi.org/10.1073/pnas.1300503110 (2013)**

PAUL KENNEDY/LONELY PLANET IMAGES/GETTY

GEOPHYSICS

Sand collisions kick up storms

Sandstorms whipped up by desert winds owe their strength to mid-air collisions between sand grains.

Marcus Carneiro and Hans Herrmann at the Swiss Federal Institute of Technology in Zurich and their colleagues used computer simulations to show that without collisions, sand grains whizz along close to the ground or make small hops. But when they encounter each other in the air, a few particles are bounced upwards off their neighbours and are accelerated by the stronger winds that blow higher up. These high-flying 'saltons' ultimately crash into the ground, kicking out sprays of sand that further fuel the storm.

Such collisions can double the amount of material in the air, boosting the quantities that storms carry as they sculpt desert landscapes.

Phys. Rev. Lett. 111, **058001 (2013)**

BIOMECHANICS

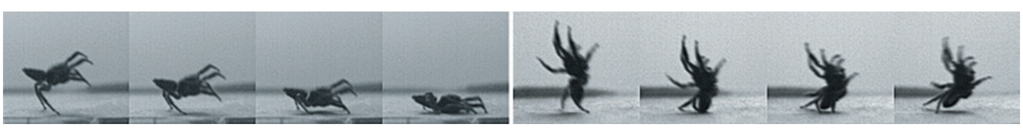
Spider silk stalls a somersault

A silk string helps leaping spiders to land fast on their feet.

Jumping spiders, or salticids, can travel more than 20 times their body length in a single bound, usually with a dragline of silk, thought to function as a safety line, trailing behind them. Kai-Jung Chi at National Chung Hsing University in Taiwan and her colleagues showed that the dragline also provides stability, preventing the predatory spiders from pitching too far back through the air and so leaving them poised for action on landing.

Time-lapse images of the salticid *Hasarius adansoni* showed that spiders with silk (**pictured**; left panels) maintained orientation during jumps: they landed feet-first and were ready to pounce within about 10 milliseconds. Salticids that did not produce silk (right panels) landed on their abdomens, slipped or tumbled, sometimes requiring more than 50 milliseconds to regain their footing.

J. R. Soc. Interface 10, **20130572 (2013)**



YUNG-KANG CHEN; KAI-JUNG CHI/JRSI

CLIMATE SCIENCE

Climate tracking by smartphone

Scientists can gather climate data from smartphones in their owners' pockets.

Aart Overeem of Wageningen University, the Netherlands, and his colleagues exploited an existing Android smartphone app to collect and select around 1.3 million temperature readings from eight cities around the world, averaging more than 800 readings per city each day. The app gathered data from phone-battery temperature sensors and uploaded the readings when a data connection was available. A simple heat-transfer model accounted for the effects of body warmth and clothing, and allowed the researchers to estimate daily temperatures in urban environments. The approach could be used to collect data at a finer scale and lower cost than is currently possible with weather stations, the authors suggest.

Geophys. Res. Lett. **http://dx.doi.org/10.1002/grl.50786 (2013)**