New islands in the Red Sea

EAST AFRICAN RIFT The volcanism accompanying continental rifting in the Afar region of Africa has now been joined by the appearance of new volcanic islands in the southern Red Sea.

Magmatic activity is a feature of the East African Rift on land as a whole; the appearance of two new islands in the Zubair archipelago, north of Afar, suggests that offshore seismicity is also related to magma movement. Sholan island formed in late 2011 and early 2012, Jadid in 2013; both are small, less than a kilometre in any dimension at their largest and subject to weathering and erosion. The Red Sea marks a triple junction where the Nubian, Somalian and Arabian tectonic plates diverge. Wenbin Xu and colleagues at King Abdullah University of Science and Technology, Saudi Arabia, combined optical, seismic and radar observations to find out how the islands formed.

While seismic monitoring of the Red Sea is limited, networks on land recorded seismic swarms suggesting that fissure eruptions (from extensive north–south dykes) played a part in the formation of these islands. Interferometric synthetic aperture radar (InSAR) data on the islands show that the whole of the archipelago was affected by the eruptions, with faulting and fissuring as well as eruptions. The Zubair archipelago has features in common with spreading centres such as Afar and Iceland, with multiple episodes of magma migration along fissures, extension and rifting. There are also signs of deep mantle flow in the region, possibly related to the southern Red Sea ridge. Xu *et al.* published their work in *Nature Communications*.

http://bit.ly/1HhEKuQ

Methane in meteorites hints at life on Mars

MARS Methane is an enigmatic component of the martian atmosphere that could come from mineral reactions or living microbes. Now analysis of meteorites from Mars suggests that martian petrology could give rise to methane and hydrogen in much the same way as similar rocks do on Earth, and may have provided a potential energy source for microbes on Mars in the past.

Researchers from Aberdeen and Glasgow Universities working with Canadian colleagues crushed the meteorite samples and identified the gases released from grain boundaries and fluid inclusions within grains, using mass spectrometers. The team used samples from within the meteorites, to minimize terrestrial contamination; they also tested carbon-rich meteorites, which produced a distinctive gas profile, suggesting that the gases released depend on the original meteorite mineralogy and are not related to their time on Earth. The martian meteorites showed signs of water alteration of minerals, including the formation of serpentinite from olivine which generates methane and hydrogen.

Hydration and other mineralogical reactions generating methane take place below ground on Earth. The volcanic rock basalt – on Earth and on Mars – contains minerals that could give rise to methane and hydrogen, even in the absence of oxygen; the team identifies cracks and fissures in the subsurface as a potential habitat for life on Mars. This research is published by Balmey *et al.* in *Nature Communications* in June.

http://bit.ly/1LTUZSg

Vega starspots may be light, not dark

STARSPOTS Subtle variations in the spectra of bright star Vega arise from starspots, the first spectroscopic detection of surface structures on a normal A-type star.

A team led by Torsten Böhm of the University of Toulouse has used high-resolution spectroscopy from the SOPHIE/OHP instrument and found the signature of many faint starspots. Vega is a notably stable star, but improved data have revealed subtle (1–2%) photometric variability. The data indicate structures on the surface of the star.

The team ruled out chemical variations in the star's atmosphere, as Vega rotates fast enough to disperse patches of different composition. Spots like sunspots are another possibility; stars of this type had been thought not to have magnetic fields, but Vega was discovered to have a weak field in 2009. Or Vega might have a close hot Jupiter planet, co-rotating with the star.

The authors suggest Vega could be one of a class of weakly magnetic A-type stars, in which starspots are a feature. A dynamo originating in convective layers within the star's radiative envelope is possible, as is one generated early in the star's lifetime. They also suggest that Vega's spots would be bright rather than the dark regions seen on the Sun, because the weaker (7 gauss) magnetic field limits convective heat transfer. The results are published in *Astronomy & Astrophysics*.

http://bit.ly/1MhAj4o

RAS Thesis Prize winners

AWARDS Guido W Pettinari (left) has won the Michael Penston Thesis Prize for "Observable predictions of generalized inflationary scenarios" at the University of Portsmouth. "I studied the nonlinearity of the cosmic microwave background under the supervision of Prof. Robert Crittenden," said Dr Pettinari. "I have written SONG, a code able to discriminate between primordial and late non-Gaussianity via the CMB bispectrum. I also investigated the nonlinear CMB with Dr Antony Lewis, as a research assistant at Sussex University."

Hannah Christensen (left) has won the Keith Runcorn Thesis Prize for "Stochastic parametrization and model uncertainty" at the University of Oxford. "My PhD, working with Tim Palmer, was concerned with using stochastic techniques to represent errors in atmospheric simulators, with a particular focus on producing well-calibrated probabilistic weather forecasts," said Dr Christensen. "I stayed on at Oxford for a postdoc. I am particularly interested in constraining stochastic parametrization schemes by comparing high- and low-resolution simulations – this will allow us to explicitly measure the 'error' term which a stochastic scheme aims to represent, and provide a firm physical foundation for these schemes."

RAS grants deadline

GRANTS The next deadline for applications to the RAS for grants is 15 August. This round includes applications for instrumentation grants, up to a maximum of £2000 for innovative laboratory experiments or developments to be undertaken by undergraduates or postgraduate students in areas related to astronomy or geophysics (see page 4.7). Details of how to apply for RAS grants and for the Instrumentation Grants in particular can be found on the RAS webpages.

http://bit.ly/1D2CUdf

Annual RAS picnic

COMMUNITY All Fellows, Friends and family members are invited to join in the Annual RAS Picnic. This will be held at The Old Royal Observatory Greenwich, SE10 8XJ, on Sunday 2 August 2015. We will assemble by the Wolfe Statue, just outside the main entrance to the observatory at 12:30, before moving off to a suitable picnic spot nearby on a grassy bank overlooking the National Maritime Museum and joined by a large bottle of champagne. The après-picnic will involve huge water rockets being launched on Blackheath, nearby. Please bring some suitable ground cover to ensure a comfortable stay. For further details, please contact the organizers – Dr Q Stanley (q@hpsresearch.com) and David Lally (davelally@outlook.com) – who can supply additional travel information.

CORRECTION

The Editor apologizes for inadvertently renaming Paul Williams of the University of Reading in the last issue. He and Karen Aplin asked for readers' examples of music influenced by science. Please share your ideas at the link below. I'd like to add *The Race for Space* by Public Service Broadcasting, which samples recordings from Apollo missions.

http://bit.ly/1GbGTUY