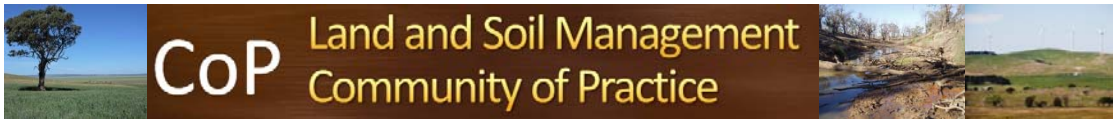


Ancient soils considered for impact on diverse flora

22 October 2015 by Teresa Belcher, Sciencenetwork Wa

The only species in WA known to hyperaccumulate nickel is the shrub violet (Hybanthus floribundus) which is present and widespread across the south-west. Credit: Jean and Fred

Understanding how WA plants live and thrive in a certain soil type has been the focus of a recent review by scientists and the findings may help rehabilitate the environment, especially mined areas. http://phys.org/news/2015-10-ancient-soils-impact-diverse-flora.html

Absorbent soils yields big benefits for air and water.

By Brett Walton
Circle of Blue

NORMAN, Oklahoma — On a bright October morning in a hotel parking lot, Greg Scott turns on the rainfall simulator.

Photo © Brett Walton / Circle of Blue

The rainfall simulator demonstrates the soil's capacity to store and filter water. When heavy rain strikes bare fields and construction sites, the two soil samples in the middle, dirty water flows into rivers and streams. *Click image to enlarge.*

The machine's swiveling nozzle sprays fat drops on five soil samples held in trays a few feet below. Some soil is bare; other samples are planted with prairie grass, wheat, and other field crops. Within minutes dirty, sediment-saturated water begins flowing off the plots that are not anchored by vegetation. In the other trays, the drops soak into the ground. The little water that does run off the planted trays is much cleaner, the color of green tea. The lesson of the artificial cloudburst is clear: neglect the soil and water will suffer.

http://www.circleofblue.org/waternews/2015/world/healthy-soils-reduce-water-pollution/

Should I add more phosphate to my soil test recommendation?

Soil pH can have an impact on the chemical makeup of the numerous phosphorus minerals that make up our Plains soils. Just having an alkaline soil (pH of over 7.3) doesn't mean you should automatically boost the fertilizer rate over the soil test recommendation. Changing placement or timing may be a more economical option.

Our soils are made up of microscopic rocks that have been weathered out of much, much larger rocks. Many of our High Plains soils were developed from limestone-like materials. They may or may not be alkaline (high pH), depending on the climate and other factors during their formation. Some high pH soils are "calcareous." Calcareous soils contain very fine carbonate particles—something similar to lime dust or chalk dust. The amount of carbonates in a soil sample may range from essentially zero to 10 percent or more. http://www.hpj.com/opinion/should-i-add-more-phosphate-to-my-soil-test-recommendation/article_72be7fbb-bc9b-56eb-ad3f-5cffe99608ca.html

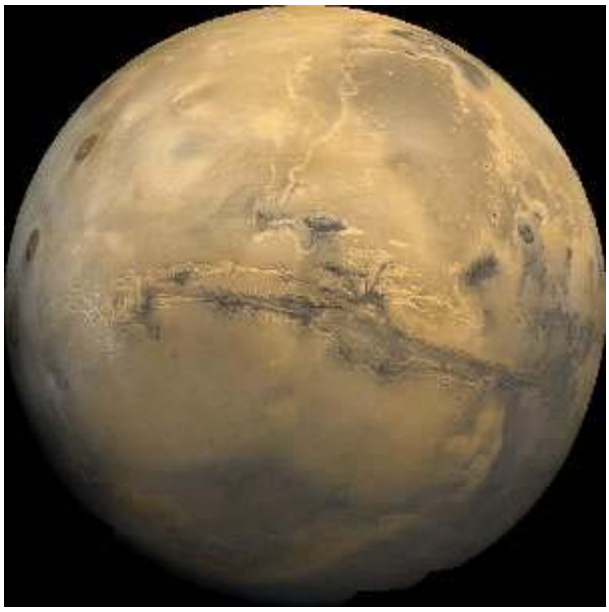
Inaugural Iowa Soil Health Conference coming in February 2016

By Iowa State University 16 October 2015 | 12:45 pm EDT

The Inaugural Soil Health Conference, “Strategies for Building Healthy Soils” will be February 2-3, 2016, at the Scheman Building in Ames, Iowa. The conference is a collaborative effort between Iowa State University Extension and Outreach, Iowa State University College of Agriculture and Life Sciences and the United States Department of Agriculture Natural Resource Conservation Service. The goal of this conference is to increase awareness and understanding of soil health as a pivotal measure to sustainable agriculture and environmental quality in Iowa.
http://www.agprofessional.com/news/inaugural-iowa-soil-health-conference-coming-february-2016

Farming on Mars? The Martian raises questions about soil

29 October 2015



Valles Marineris, Mars. Credit: NASA

In the recent sci-fi hit, The Martian, the main character, astronaut Mark Watney (played by Matt Damon), manages to grow potatoes on the planet with a mix of ingenuity, science, and a bit of Hollywood make-believe. Could it work?

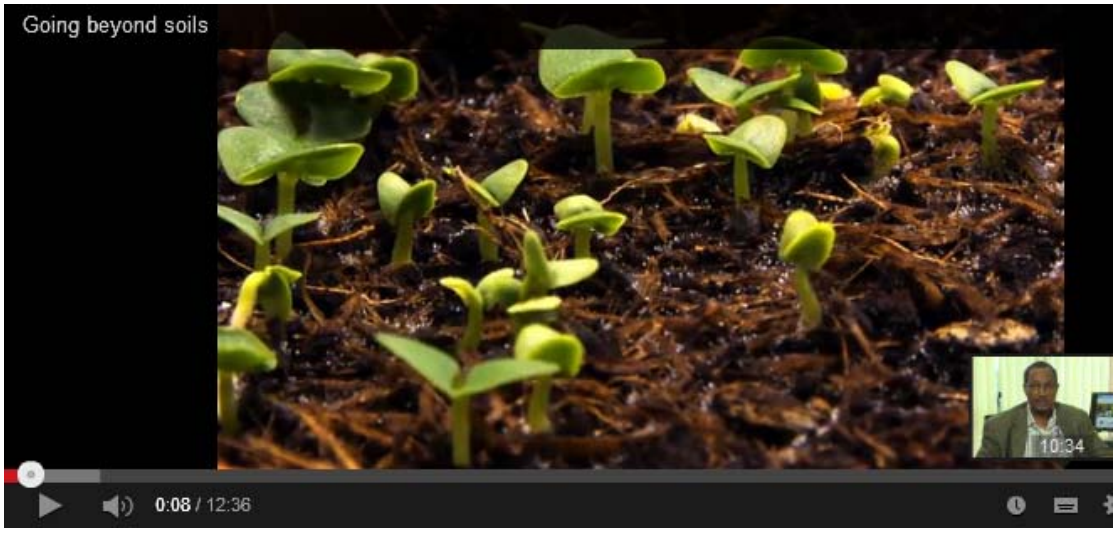
Read more at: http://phys.org/news/2015-10-farming-mars-martian-soil.html#jCp

Side Event: Sustainable Soil Management: Healthy Soils for Food Security & Nutrition" at the Committee on World Food Security

14.10.2015

This side event will present evidence and lessons learnt from successful policy measures, as well as civil society and private sector initiatives, related to sustainable soil management that have been beneficial in enhancing food security and nutrition. Representatives from various sectors will share their practical experience as a case for guiding future actions, especially taking the momentum created by the International Year of Soils and linked to an agenda for action such as the Global Soil Partnership. http://www.ifoam.bio/en/news/2015/10/14/side-event-sustainable-soil-management-healthy-soils-food-security-nutrition

Going beyond Soils; transforming the agribusiness value chain from the ground up.



In 2008, the Arusha Times (TZ) reported on the pigeon pea, a “gem” that could potentially turn around the fortunes of farmers in Northern Tanzania and that was fetching Tsh 65000 - Tsh 70,000 per bag. This had been as a result of research efforts by the Selian Agricultural Research Institute (SARI) and ICRISAT in developing new seed varieties, and tackling diseases like the fusarium wilt, a fungal soil borne disease that devastates the crop and which had brought about low yields and heavy losses. http://www.agra.org/media-centre/news/going-beyond-soils-transforming-the-agribusiness-value-chain-from-the-ground-up/

A soil conditioner for agriculture in the cities

Biochar can boost crops in West Africa

The "Urban Food Plus" project promotes sustainable climate-friendly measures

In West Africa, many farmers move to the cities, where they cultivate soils, many of which are not very fertile. The international team involved in the "Urban Food Plus" project, coordinated by Prof Dr Bernd Marschner from the Ruhr-Universität Bochum (RUB), is looking for ways of boosting crop yields. In their experiments, they have identified biochar as an effective agent. It can be manufactured from crop residues at low costs. Their report has been published in the science magazine RUBIN.

Larger lettuce heads on biochar-enriched soils

"In West Africa, water is the number one limiting factor for agriculture," says Dr Volker Häring from the Chair of Soil Science and Soil Ecology. The second-largest is soil fertility; generally, the sandy subsoil does not store nutrients well. Biochar works as a soil conditioner; it ensures that nutrients are better absorbed and it improves the water balance. In a field experiment under controlled conditions in Ouagadougou,

Burkina Faso, the researchers compared crops from biochar-enriched soils and untreated soils. Lettuce heads grown on enriched soils reach a greater weight.

Climate benefits from stable storage of greater carbon volumes http://aktuell.ruhr-uni-bochum.de/pm2015/pm00141.html.en

Hunting Soils in Southern Patagonia

October 14, 2015

ESPM graduate student Marco Pfeiffer and professor Ronald Amundson study the relationship between soil, climate, and landscape in the Atacama Desert in northern Chile. Last year, they visited the Patagonian region of Magallanes in Southern Chile to conduct exploratory research soils of the area. Learn more about their trip in Marco's photoblog!

http://ourenvironment.berkeley.edu/2015/10/hunting-soils-in-southern-patagonia/

Scientists develop a new method for predicting volcanic eruptions

29 October 2015

Researchers from the Department of Earth Sciences at Royal Holloway, University of London, have developed a new method which could more accurately determine the conditions needed for a volcano to erupt. The study was published today (28 October) in *Scientific Reports*. http://phys.org/news/2015-10-scientists-method-volcanic-eruptions.html

Soil Science Students Get Hands-On Experience at Oppenheimer Research Centre

19 Oct 2015

UKZN Soil Science students during a field trip at Umgenipoort.

A group of UKZN second year Soil Science students enjoyed practical experience and got their hands dirty during a field trip at Umgenipoort in the KwaZulu-Natal Midlands, the research facility made available to the University through the generosity of the Oppenheimer family.

The 230 Soil students learned about the practical side of pedology, the science of soil formation and classification, after the Oppenheimer Family Trust invited the College of Agriculture, Engineering and Science to make use of the facilities and scientific research opportunities on the farm Umgenipoort, and its neighbouring property, Wakefield.

Mr Kyle Reddy, who plans to major in Soil Science and hydrology, was among 53 students on the excursion. He explained what a soil mapping survey entailed. 'We were broken into groups and each given our own area with boundaries to map,' said Reddy. http://www.ukzn.ac.za/news//2015/10/19/soil-science-students-get-hands-on-experience-at-oppenheimer-research-centre

Compost increases the water holding capacity of droughty soils

By M. Charles Gould, Michigan State University Extension October 20, 2015 | 5:27 pm EDT

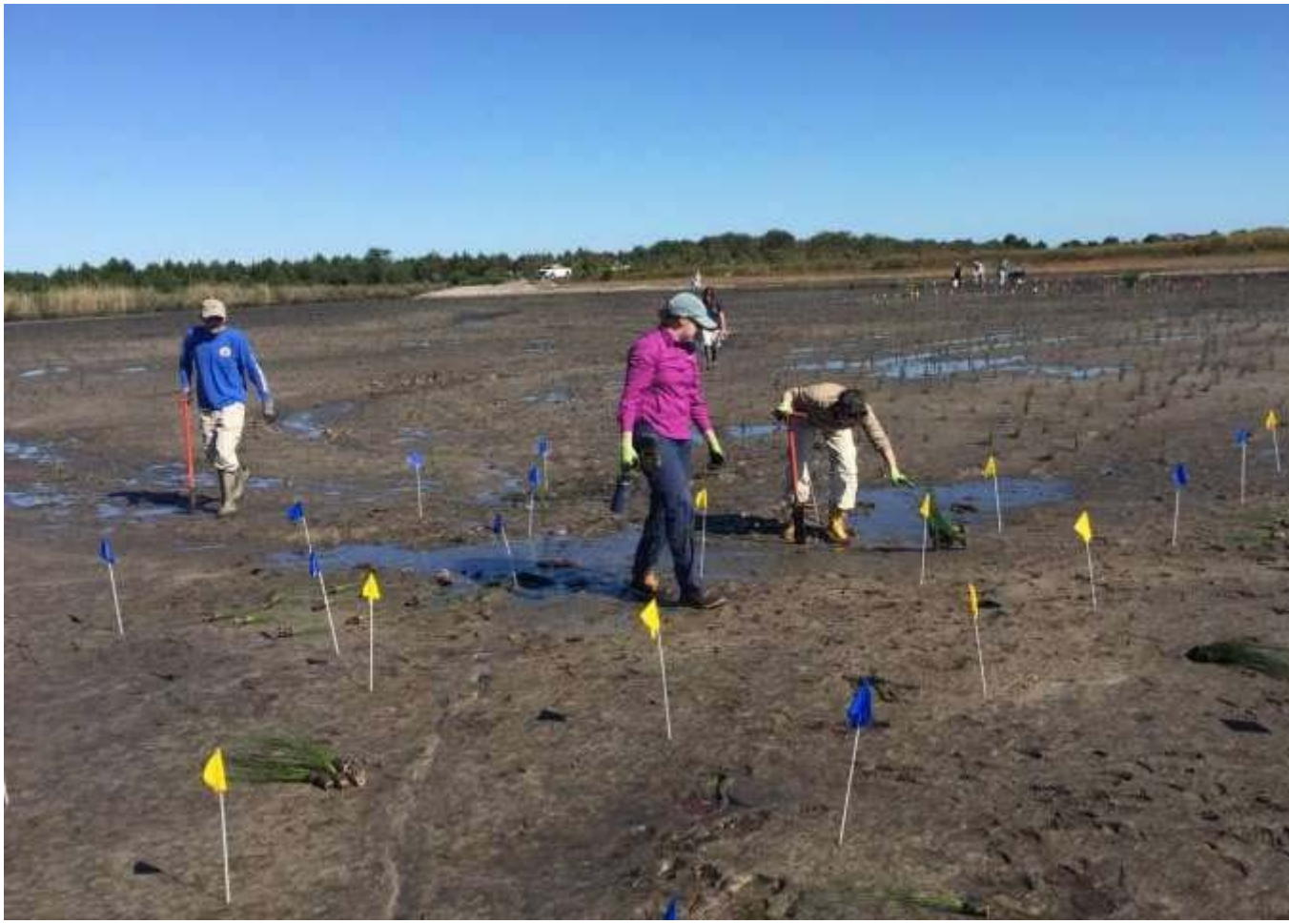
Photo by iStock/belterz

Compost is an earthy-smelling, humus-like material that is a product of the controlled aerobic decay of organic nitrogen (such as manure) and carbon

(such as sawdust, straw or leaves). One advantage of compost is its ability to hold moisture. The focus of this article is to understand how to choose composts that increase the soil's water holding capacity. http://www.dairyherd.com/news/compost-increases-water-holding-capacity-droughty-soils

Planting in clumps boosts wetland restoration success

2 November 2015



A team of researchers planting a restored wetland test site in Florida. Credit: Credit: Brian Silliman, Duke Univ.

When restoring coastal wetlands, it's long been common practice to leave space between new plants to prevent overcrowding and reduce competition for nutrients and sunlight

Read more at: http://phys.org/news/2015-11-clumps-boosts-wetland-success.html#jCp

Langdon’s soil health field day yields good info

Naeem Kalwar (far right) describes the unique tiling system installed at the Langdon REC.

Langdon’s soil health field day yields good infoDale Hildebrant, Farm & Ranch Guide Farm and Ranch Guide

20 October 2015

LANGDON, N.D. – Saline and sodic soils continue to be a growing problems for landowners in the northeastern part of North Dakota. These problems have been increasing since the period of wet weather started back in 1993.
http://www.farmandranchguide.com/news/crop/langdon-s-soil-health-field-day-yields-good-info/article_fa30023c-7422-11e5-99f7-576472dc0749.html

A similar principle predicts the growth of fractures and rivers

2 November 2015

River Kvirila at Sachkhere, Georgia. Credit: Wikipedia

A general mathematical theory that predicts how cracks spread through materials like glass and ice can also predict the direction in which rivers will grow, according to a new MIT study.

Read more at: http://phys.org/news/2015-11-similar-principle-growth-fractures-rivers.html#jCp

Doubly green trees

By Susan Fisk

In a study published in the Journal of Environmental Quality, several tree species were better than others at removing storm water from bioswales and back into the atmosphere—a process known as "water cycling."

Meadow Lake is adjacent to the 1990s addition of a parking lot and visitor center to Morton Arboretum. Keeping stormwater runoff out of the lake was a major reason for installing permeable pavers and bioswales in the parking lot design. Photo credit B. Scharenbroch.

These hard-working trees were part of an upgraded parking lot and visitor center built at the Morton Arboretum, just outside Chicago. The upgrades took place in the 1990s. As an education and research facility, the team at Morton wanted to use best management practices in their design. This was especially important because the new center and parking lot would be immediately adjacent to Meadow Lake and the east branch of the DuPage River. The center wanted to avoid polluting these important waterbodies. https://www.soils.org/discover-soils/story/doubly-green-trees

Study predicts bedrock weathering based on topography

29 October 2015

Dr. Kamini Singha and a student drill a borehole in the Boulder Creek Critical Zone Observatory. Credit: Taylor Perron

Just below Earth's surface, beneath the roots and soil, is a hard, dense layer of bedrock that is the foundation for all life on land. Cracks and fissures within bedrock provide pathways for air and water, which chemically react to break up rock, ultimately creating soil—an essential ingredient for all terrestrial organisms. This weathering of bedrock is fundamental to life on Earth http://phys.org/news/2015-10-bedrock-weathering-based-topography.html

NRCS to farmers: tillage will dry out soils faster

NRCS

Natural Resources Conservation Service

Posted: Friday, October 23, 2015 1:00 pm

NRCS to farmers: tillage will dry out soils faster NRCS

(Des Moines)--Very little rainfall in October throughout much of Iowa allowed most farmers to start and finish harvest without much delay. If conditions remain dry this fall, many farmers may be tempted to till the soil to allow any additional moisture to infiltrate. According to soil experts with USDA's Natural Resources Conservation Service (NRCS), however, that is a common misconception.

Doug Peterson, regional soil health specialist with NRCS in Des Moines, says tilling the soil will actually accelerate the drying process and cause soil to erode more easily. He says the combination of high winds and warmer than normal temperatures wastes water if soils aren't covered.
http://www.kmaland.com/ag/nrcs-to-farmers-tillage-will-dry-out-soils-faster/article_fceb6600-79af-11e5-bdc9-8f0df28d93c8.html

Turning unproductive soil into profits

06/09/201506/09/2015 Antonio Soil Science, Under researchaustralia, microbiota,

Preeti Roychand

La Trobe University

AgriBio Centre for AgriBioscience

Melbourne, VIC, Australia

Sandy soils in Western Australia are bad soils for growing plants due to their poor nutrients and water holding capacity (see an example in Figure 1). In general, these soils are water repellent, which leads to land degradation by increasing soil erosion risk and run-off rates. Nevertheless, these soils may be improved by clay addition, which leads to increase soil organic carbon content (Franzluebbers et al. 1996). Several ways have been used to increase soil organic carbon content in soils: i) no-tillage systems, ii) addition of bio char , iii) organic amendments or fertilizer addition and iv) switch to perennial plants. But there is another potential method for enhancing soil organic carbon storage in soils which has received little attention: mixing of isolated clay with sandy soils.

 Figure 1. Sandy soils in Western Australia (http://www.florabank.org.au).

https://gsoil.wordpress.com/2015/09/06/turning-unproductive-soil-into-profits/#more-2377

Earthquakes recorded through fossils

2 November 2015

Northern California, USA. Credit: NASA.

The Cascadia subduction zone (CSZ) has captured major attention from paleoseismologists due to evidence from several large (magnitude 8-9) earthquakes preserved in coastal salt marshes. Stratigraphic records are proving to be useful for learning about the CSZ's past, and microfossils may provide more answers about large ancient earthquakes. They may also allow modelers to learn more about potential major hazards related to earthquakes in the area, which would contribute to public preparedness for such events http://phys.org/news/2015-11-earthquakes-fossils.html

Oil and Gas Companies Make Statement in Support of U.N. Climate Goals

By STANLEY REED 16 OCT 2015

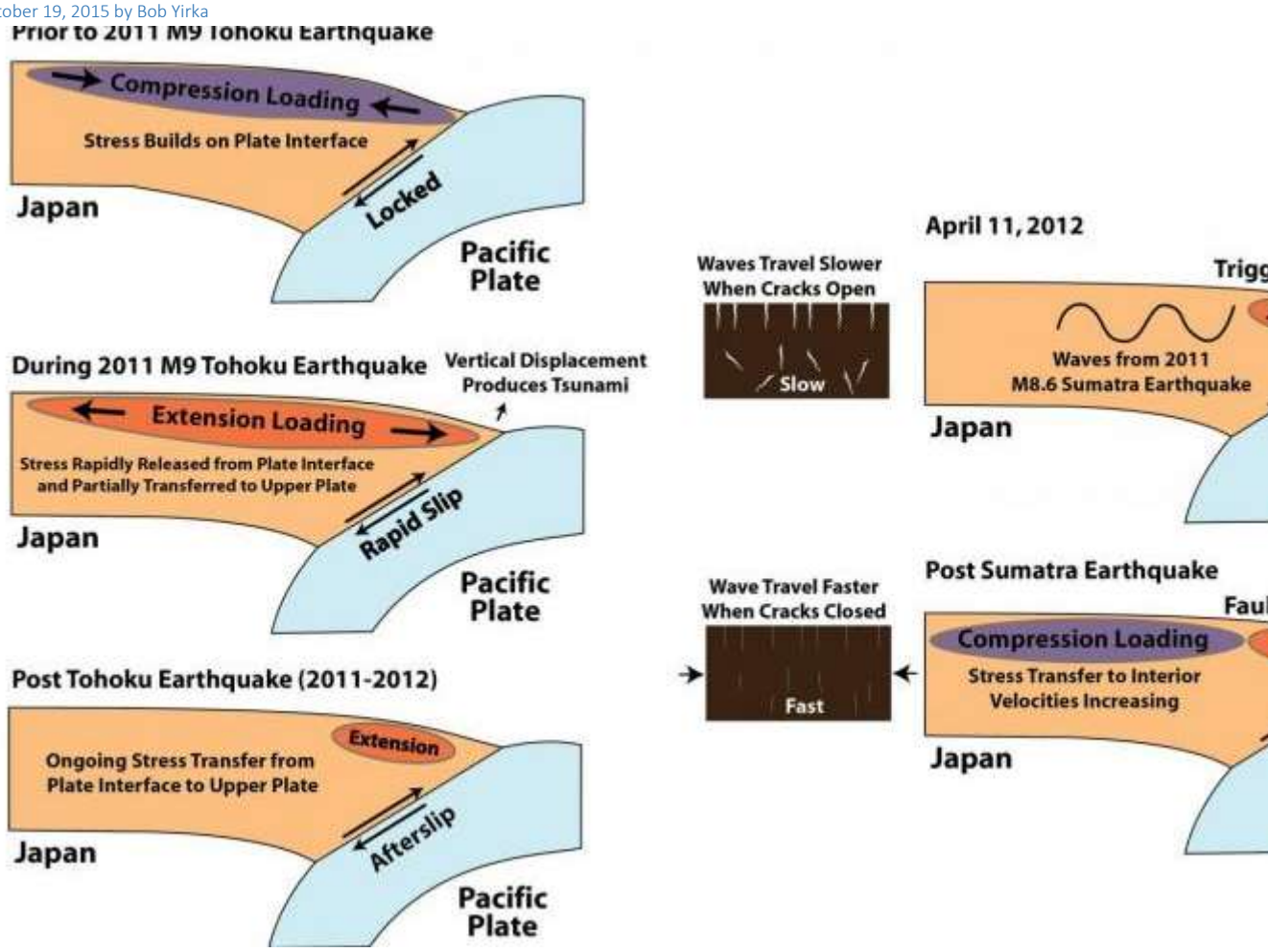
From left, the chiefs of BG Group, Eni, Pemex, BP, Saudi Aramco, Total, Statoil and Repsol. Credit Eric Piermont/Agence France-Presse — Getty Images

LONDON — Ten of the world's big oil companies, mainly from Europe, jointly acknowledged on Friday that their industry must help address global climate change and said that they agreed with the United Nations' goals of limiting global warming.

The public declaration by a group called the Oil and Gas Climate Initiative was an effort to convince an increasingly skeptical world that energy companies, whose fossil fuels are a big source of greenhouse gases, are serious about delivering cleaner energy and combating climate change. http://www.nytimes.com/2015/10/17/business/energy-environment/oil-companies-climate-change-un.html?ref=earth&_r=0

Researchers find cascading elastic perturbation likely contributed to small earthquakes in Japan

October 19, 2015 by Bob Yirka



Following the 2011 M9 Tohoku earthquake, the crust above the plate interface is loaded in extension. Waves from the 2012 M8.6 Sumatra earthquake trigger earthquakes in the loaded crust, which extends the crust offshore and compresses the crust onshore. When the crust onshore is compressed, seismic velocities increase. Credit: Andrew Delorey

(Phys.org)—A team of researchers with members from Los Alamos National Laboratory, MIT and the University of Tokyo, has found evidence that suggests elastic disturbance caused by one earthquake may be one of the causes of another earthquake occurring in a far distant location. In their paper published in the journal *Science Advances*, the team describes their study of seismic activity in Japan following an earthquake that occurred in the Indian Ocean, just days before.

Read more at: http://phys.org/news/2015-10-cascading-elastic-perturbation-contributed-small.html#jCp

Understanding Soil Risks and Hazards

Using Soil Survey to Identify Areas With Risks and Hazards to Human Life and Property

Gary B. Muckel (editor), United States Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska

http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052508.pdf

Researchers make technological breakthrough against potato cyst nematode

2 November 2015 by Grant Hill

A new study by UK scientists has the potential to deal with roundworm infestation that costs the UK agricultural industry £50million a year.

http://phys.org/news/2015-11-technological-breakthrough-potato-cyst-nematode.html

Considerations when planting wheat into dry soils

Wheat

Wheat dusted in near Belleville in October 2015. Photo by Romulo Lollato, K-State Research and Extension.

Posted: Tuesday, 20 October 2015 9:36 am

Considerations when planting wheat into dry soils **K-State Agronomy eUpdate**

The full soil profile observed early this summer due to abundant rainfall has become steadily drier through the late summer and early fall. Topsoil conditions are now very dry in many areas of Kansas, which leaves producers with basically three main options for wheat yet to be planted:

“Dust in” the wheat

Producers can choose to “dust in” the wheat at the normal seeding depth and normal planting date, and hope for rain. Some farmers may consider planting it shallower than normal, but this could increase the potential for winterkill or freeze damage. Planting the wheat crop at the normal depth and hoping for rain is probably the best option where soils are very dry. The seed will remain viable in the soil until it gets enough moisture. http://www.farmtalknewspaper.com/news/considerations-when-planting-wheat-into-dry-soils/article_02deba28-7738-11e5-9173-234a550dd5cb.html

Tramadol found in African soils almost certainly artificial

26 October 2015Tim Wogan

'Unequivocal' proof that tramadol found in the soils of northern Cameroon is synthetic, rather than produced by the plant *Sarcocephalus latifolius*, has been found by researchers in Germany and Cameroon. Accelerator mass spectrometry shows that the carbon in tramadol present in soils and rivers has no radiogenic component, suggesting it was manufactured from fossil fuel precursors rather than atmospheric carbon dioxide.

Some researchers have suggested that *Sarcocephalus latifolius* produces tramadol, while others argued that it might be a contaminant © Flickr, Samperdale (CC BY-NC 2.0)

In 2013, neuroscientist Michel de Waard and colleagues at Joseph Fourier University in France used high-performance liquid chromatography on extracts of *S. latifolius* root, which is used in traditional African medicine to treat a variety of ailments, including pain. They discovered tramadol, a synthetic opiate developed in the 1960s, in the extracts and claimed that the plant was making it.

http://www.rsc.org/chemistryworld/2015/10/tramadol-africa-soil-natural-synthetic-artificial

Ice 'lightning' may have helped life survive Snowball Earth

2 November 2015 by Jon Telling, The Conversation

Between a rock and a hard place. Credit: Eddy Hill

The ice sheets and glaciers that extend over roughly 11% of the Earth's land mass are home to a surprisingly abundant source of life. Sections of liquid water beneath and inside the ice provide a habitat for a genetically diverse variety of microbes. And studying these organisms gives us some clue what life may have looked like if there were indeed periods of the planet's history when the land was entirely covered in ice for millions of years.

http://phys.org/news/2015-11-ice-lightning-life-survive-snowball.html

Satellite InSAR Course

Geoscience Australia and the ASEG are hosting the **EAGE EET9 Satellite InSAR Course**

Date: 25 November 2015 all day at Geoscience Australia, ACT (EAGE members €75 Non-members €150)

This course is not being offered in Sydney.

Course Outline

1. Introduction: why are satellite radar data relevant?

2. Synthetic Aperture Radar (SAR) sensors: acquisition geometry and image formation

3. Measuring range variations: the magic of SAR interferometry (InSAR)

4. A tool for digital elevation model reconstruction and surface deformation analysis

5. Advanced InSAR techniques: from qualitative to quantitative data

6. From surface deformation to volume and pressure changes at depth

7. Overview of possible applications: subsidence monitoring, fault characterization, calibration of geological models, reservoir monitoring

8. Time-lapse data for Carbon Capture and Sequestration (CCS), Underground Gas Storage (UGS), secondary and tertiary (EOR) oil recovery projects

9. Available data sources and historical archives of SAR data. A quick overview of other InSAR applications

10. Summary and future trends

Please register soon. Lunch is provided.

Event website & Registration: http://lg.eage.org/index.php?evp=10266

InvitatiON

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CSIRO

CSIRO invites you to attend a celebration showcasing breakthrough Australian innovation

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ON is CSIRO's innovation solution – turning world leading science and technology into commercial outcomes, better and faster.

We want you to join us in bringing the future **ON.**

Date:
Thursday, 3 December 2015

Program:
5:30pm - 6:00pm: Registration
6:00pm - 7:00pm: It's ON
7:00pm - 8:30pm: Networking

Venue:
Bay 4, Australian Technology Park
Locomotive St, Eveleigh NSW 2015

RSVP:
Thursday, 26 November 2015

csiro.au/on

REGISTER NOW

Ancient crystals reveal life could be millions of years older than first thought, international scientists say

By Sarah Taillier

Posted 20 Oct 2015, 7:18pmTue 20 Oct 2015, 7:18pm

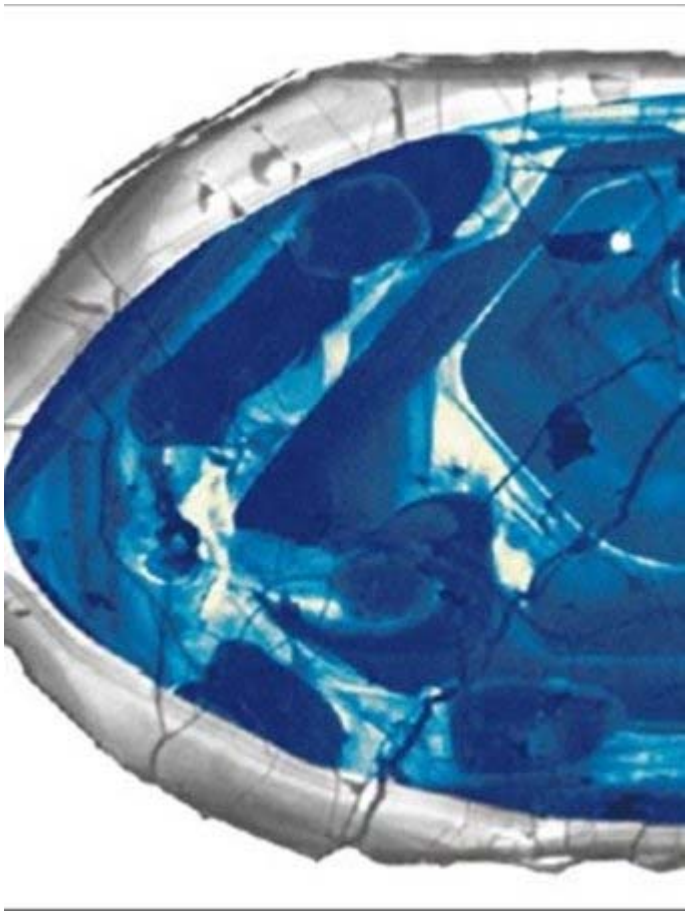

Photo: The zircon crystals - including one which scientists say contains the signature of life within it - were found at Jack Hills. (Supplied: John Valley/University of Wisconsin)

Ancient crystals unearthed in Western Australia may contain evidence that life existed hundreds of millions of years earlier than previously thought.

The multi-billion-year-old zircon crystals were found at Jack Hills, about 600 kilometres north-east of Perth, a site well known for the mineral grain, which is so far the oldest known material ever identified on dry land.

http://www.abc.net.au/news/2015-10-20/ancient-crystals-reveal-life-could-be-older-than-thought/6870678

“Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.”

— Marie Curie