Hi All,

Snakes are becoming more active with the warmer weather. Amongst all the soils articles please find some timely advice from the Royal Flying Doctors website on our slithery friends.

Cheers

Brian

Flying Doctor issues new snakebite advice

Our South Eastern Section has updated its advice and procedures following the publication of a new snakebite study. The Australian Snakebite Project is the most comprehensive ever carried out, involved over 1500 patients and collated snakebite data from the past 10 years (2005-15).

“The publication of this study is very timely as the warm, dry winter and sudden rise in temperatures has brought snakes out early this year,” said Tracey King, Senior Flight Nurse at the RFDS South Eastern Section, who has attended snakebites during her career.
https://www.flyingdoctor.org.au/news/flying-doctor-issues-new-snakebite-advice/

What makes soil, soil? Researchers find hidden clues in DNA

20 November 2017

Botswana soil crust found on trip to the country. Credit: Dr Kelly Ramirez - Netherlands Institute of Ecology (NIOO-KNAW)

Ever wondered what makes a soil, soil? And could soil from the Amazon rainforest really be the same as soil from your garden?

Researchers at the Netherlands Institute of Ecology (NIOO-KNAW) and The University of Manchester, UK, are using DNA sequencing to unlock the secrets of the world's different soils and, for the first time, analysing ecological patterns and microbial communities on a global scale.

Study: Better Soil Could Trap as Much Planet-warming Carbon as Transport Produces

14 November 2017 7:08 PM

FILE - A worker plants seedlings in Peru, Dec. 5, 2014. Better soil management could boost carbon stored in the top layer of the soil, according to a study published in the journal Nature.

ROME —
Improving soil health in farmlands could capture extra carbon equivalent to the planet-warming emissions generated by the transport sector, one of the world's most polluting industries, experts said Tuesday.

Soil naturally absorbs carbon from the atmosphere through a process known as sequestration, which not only reduces harmful greenhouse gases but also creates more fertile soil. https://www.voanews.com/a/study-better-soil-traps-more-carbon/4115578.html

Soil study lends clues to ancient climate

NEBRASKA U. RESEARCH GETS THE DIRT FROM 125M YEARS AGO

by Shawna Richter-Ryerson | Natural Resources

Jim Kirkland | Utah Geological Survey
Matt Joeckel, associate director of the Conservation and Survey Division, is seen mapping the Yellow Cat subdivision of the Cedar Mountain Formation in Utah.

Research led by the University of Nebraska-Lincoln's Matt Joeckel of the Conservation and Survey Division, Nebraska's geological survey, is furthering understanding of environmental conditions on land during the age of dinosaurs.

In a new study published in the November edition of Sedimentary Geology, Joeckel outlines the findings of a multi-year project that mapped ancient soils of the Yellow Cat Member, one of five

subdivisions of the Cedar Mountain Formation in central Utah's San Rafael Desert.
http://news.unl.edu/newsrooms/today/article/soil-study-lends-clues-to-ancient-climate/

WSU researcher sees huge carbon sink in soil minerals

Finding opens new avenue for offsetting rising greenhouse gases

WASHINGTON STATE UNIVERSITY

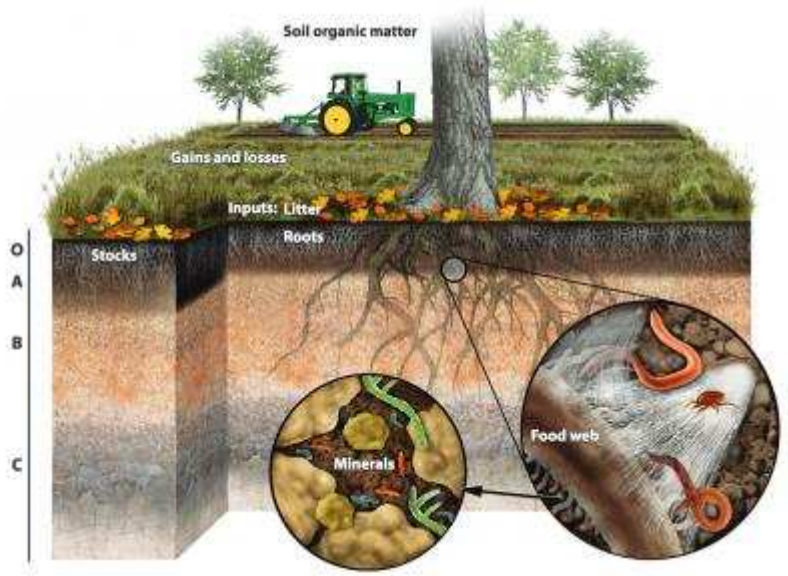


IMAGE: A Washington State University researcher has discovered that vast amounts of carbon can be stored by soil minerals more than a foot below the surface. The finding could help offset... view more

Credit: *Biogeochemistry Letters*

VANCOUVER, Wash. - A Washington State University researcher has discovered that vast amounts of carbon can be stored by soil minerals more than a foot below the surface. The finding could help offset the rising greenhouse-gas emissions helping warm the Earth's climate.

Marc Kramer, an assistant professor of environmental chemistry at WSU Vancouver, reports his finding in one of two related papers demonstrating how the right management practices can help trap much of the carbon dioxide that is rapidly warming the planet.
https://www.eurekalert.org/pub_releases/2017-11/wsu-wrs110717.php

DustWatch Repo

DustWatch

October

Dust activity	Some dust in the north west of New South Wales
Wind strength	Average for the month of October
Groundcover	Reducing and much less than values of October 2016
Rainfall	Above average for most of New South Wales
Land management	Crops and pastures responding to rain

Dust activity

There was increased dust activity across north western New South Wales in October 2017 (Figur
Most of the dust activity occurred on 25 and 26 October 2017 and was driven by very strong west
winds.

Decreasing groundcover (Figure 3) below the crucial 50% mark (Figure 2) and very strong weste
winds are the reason for the increased dust activity.

Social media pages showed some amazing pictures (e.g. picture 1 and 2) and reports of dust acr
north western New South Wales. Tibooburra, Menindee and Cobar also recorded dust a week ea
20 October 2017.

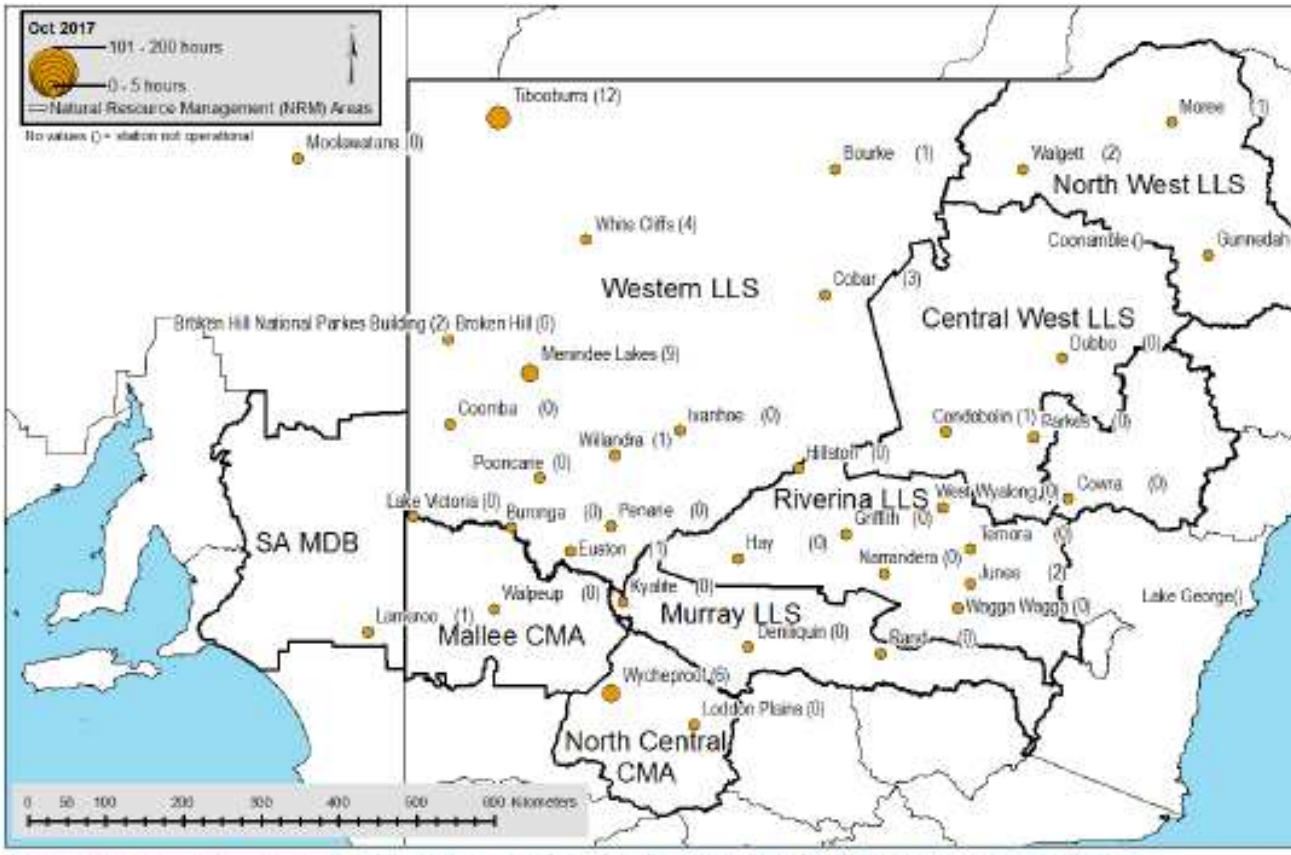


Figure 1: Hours of dust activity (number in brackets) at each DustWatch site in October 2017

http://preview.environment.nsw.gov.au/Research-and-publications/Publications-search/DustWatch-report-October-2017

Disrupting sensitive soils could make climate change worse, researchers find

24 November 2017 by Ker Than

Stanford research shows that climate change and certain farming practices could shift the amount of carbon dioxide that is released from soil. Credit: Shutterstock

Nearly a third of the carbon dioxide released into the atmosphere annually can be traced back to bacteria living in the soil, where they break down plant and animal matter for energy.

For most soil microbes, this transformation requires oxygen. But a new study finds that tiny, scattered populations of bacteria living in soil are oxygen-starved and have an underappreciated effect on the amount of this potent greenhouse gas that is released into the air.

The research, published Friday, Nov. 24 in the journal *Nature Communications* and led by Stanford's Scott […]

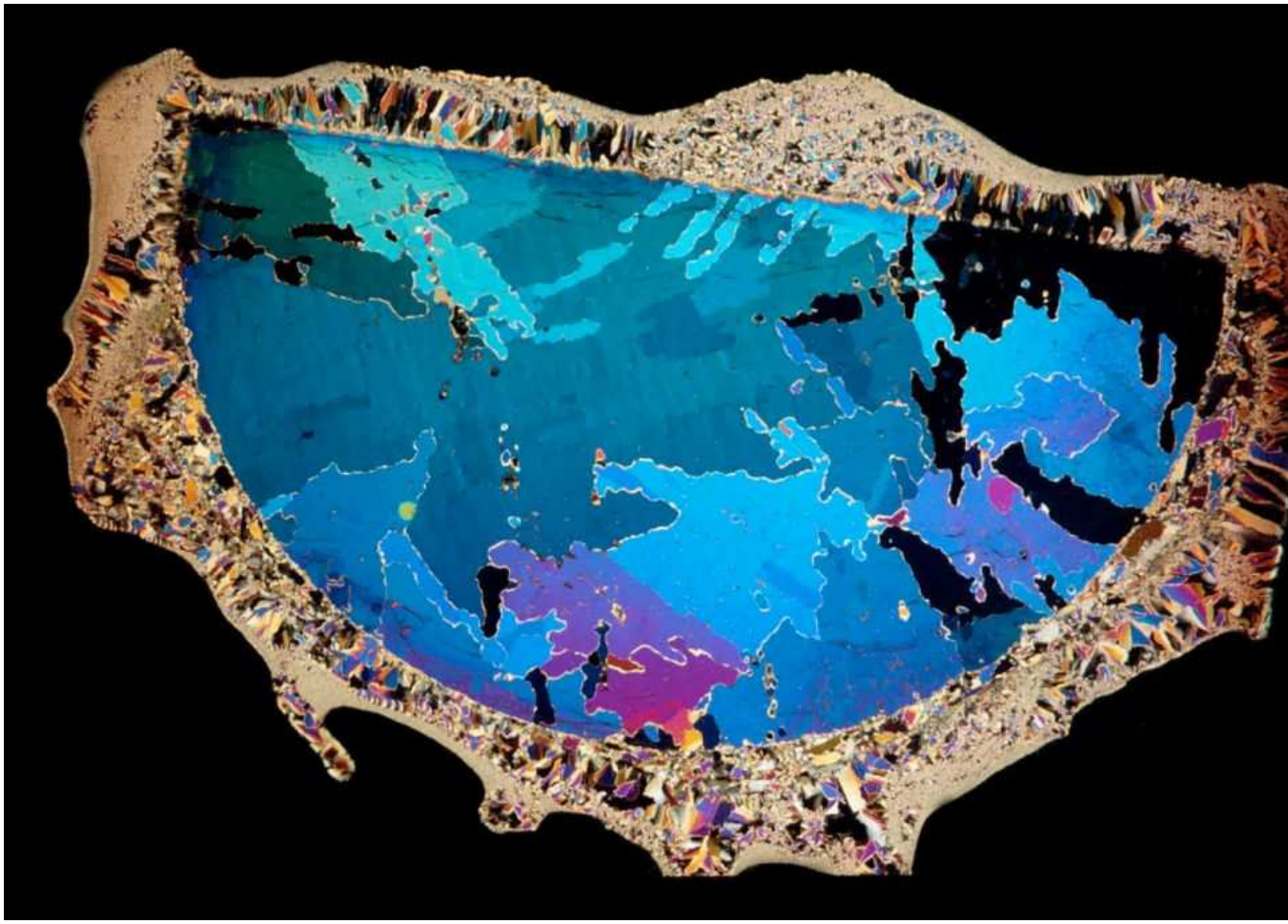
https://phys.org/news/2017-11-disrupting-sensitive-soils-climate-worse.html

The Big Data of Ice, Rocks, Soils, and Sediments

Inside the material archives of climate science.

Shannon Mattern

November 2017



Thin section of an ice core from Antarctica. [Sepp Kipfstuhl/Alfred Wegener Institute]

How often do you think about the mediated space between the weather forecast and the reality of climate change? Behind the day-glo radar maps and adorably abstract sun and cloud icons are vast amounts of data feeding atmospheric models that inform not only how we dress for the day, but how

we prepare for droughts and superstorms.
https://placesjournal.org/article/the-big-data-of-ice-rocks-soils-and-sediments/

Easing the soil's temperature

Cover crops shield soil from extreme temps

AMERICAN SOCIETY OF AGRONOMY

IMAGE: Soil scientist Samuel Haruna samples the soil in order to determine how cover and perennial biofuel crops affect soil temperature. view more

Credit: Samuel Haruna

Soil characteristics like organic matter content and moisture play a vital role in helping plants flourish. It turns out that soil temperature is just as important. Every plant needs a certain soil temperature to thrive. If the temperature changes too quickly, plants won't do well. Their seeds won't germinate or their roots will die.

"Most plants are sensitive to extreme changes in soil temperature," said Samuel Haruna, a researcher at Middle Tennessee State University. "You don't want it to change too quickly because the plants can't cope with it." https://www.eurekalert.org/pub_releases/2017-11/asoa-ets110617.php

Getting lime applications on acid soils right

Gregor Heard@grheard
18 Nov 2017, 6 a.m.
Cropping

Lisa Miller, Southern Farming Systems (SFS), uses a soil pit to explain how lime moves through the earth at SFS's AgriFocus event last month.

LIMING of acid soils is an accepted practice to boost productivity – but are growers getting the maximum benefit from their lime inputs when only spreading the ameliorant on the surface?

A Southern Farming Systems (SFS) project into improving acid soils has found that many soils have an acid layer starting at a depth of around 8cm.

Lisa Miller, Southern Farming Systems project coordinator, said at a number of trials through Victoria's Western District researchers had been surprised at how slow lime particles were to pass through the soil profile.

“Even fine grade lime needs up to […]

http://www.northqueenslandregister.com.au/story/5063850/adding-a-sweetener-to-acid-soils/?cs=4770

When Liming Soils Pays

It can be beneficial for soils sliding down the acid scale.
By
Gil Gullickson
20/11/2017

Gil Gullickson

The world of soil fertility revolves around nitrogen (N), phosphorus (P), and potassium (K). But soil pH is important, too.

The soil pH scale runs from 1 (very acidic) to 14 (very basic). For most crops, a slightly acidic soil proof of 6.2 to 6.8 is considered ideal.
https://www.agriculture.com/crops/fertilizers/when-liming-soils-pays

Timing is key in keeping organic matter in wet soils, new study finds

Date:
November 24, 2017
Source:
Iowa State University
Summary:
Periodically flooded soils may actually lose organic matter at accelerated rate, a new report suggests.

Periodically wet soils, such as farm fields that flood for a few days or weeks at a time, may not retain organic matter as well as once believed, according to new research.

Credit: Steven Hall

When it comes to keeping organic matter contained in wet soils, timing is everything. At least, that's what a new study led by an Iowa State University ecologist suggests.

Journal Reference:

1. Wenjuan Huang, Steven J. Hall. **Elevated moisture stimulates carbon loss from mineral soils by releasing protected organic matter**. *Nature Communications*, 2017; 8 (1) DOI: 10.1038/s41467-017-01998-z

https://www.sciencedaily.com/releases/2017/11/171124084933.htm

5 Ways to Control Pasture Weeds

Identification is a start. After that, mowing, proper fertilizer, and herbicide applications all play a part.

By
Gene Johnston
27/11/2017

Manage pasture weeds as aggressively as you do weeds in corn and soybeans, says Kevin Bradley, University of Missouri weed scientist. He offers the following five tips.

1. Know them.

Start by identifying your pasture weeds, says Bradley. “We have a smartphone app and a booklet to help,” he says. (Order the weed booklet or download the app at extension.missouri.edu/p/ipm1031.)

https://www.agriculture.com/agronomy-insider/5-ways-to-control-pasture-weeds

'Dark matter' discoveries could shine light on new treatments for diseases

27 November 2017

"Treasure trove" of bacteria with the potential to fight disease. Credit: Newcastle University

Soils from one of the highest, driest places on earth harbour microorganisms with the potential to treat HIV and tackle the world's antibiotic time bomb, research from Newcastle University, UK, has revealed.

Analysis of soils from the Cerro Chajnantor mountain landscape of Chile within the Atacama Desert, one of only two coastal deserts in the world, has revealed a treasure trove of bacteria with the potential to fight disease.

Read more at: https://phys.org/news/2017-11-dark-discoveries-treatments-diseases.html#jCp

Urbanization may have a positive effect on the soils

RUDN UNIVERSITY

IMAGE: Soil scientist from RUDN University (Russia) and his colleagues modeled how the expansion of the boundaries of the city of Moscow would affect the rural landscape in the next 30... view more

Credit: Vyacheslav Vasenev

Soil scientist from RUDN University (Russia) and his colleagues modeled how the expansion of the boundaries of the city of Moscow would affect the rural landscape in the next 30 years. Scientists came to an unexpected conclusion: urbanization can have a positive impact on the stocks of organic carbon in the soil. The results of the study are presented in the *Journal of Cleaner Production*.

Urbanization (the growth of cities and the expansion of urban landscapes) is responsible for large environmental changes worldwide. Traditionally, the impact of urbanization on the soils and environment in general has been seen as entirely negative -- through pollution, salinization, soil sealing and the like. However, [...]
https://www.eurekalert.org/pub_releases/2017-11/ru-umh111317.php

CIAT: “Soils are the basis of all food production”

A new report indicates that better farmland soil management may be able to sequester the same amount of carbon as emitted globally by the transportation sector. The study, a collaborative effort by the International Center for Tropical Agriculture (CIAT), The Nature Conservancy, and the Chinese Academy of Sciences (CAS), examined global soil samples and developed sequestration potential maps that can assist in developing mitigation strategies for reaching the targets set out in the Paris Climate Agreement.
https://foodtank.com/news/2017/11/ciat-soil-report/

Shining A Light On Soils

Researchers look at what's in soil to help farmers improve crops and their lives.

(Inside Science) -- "We’re working on various applications of spectroscopy in low resource settings. So, what that means is using optical technology to really understand the chemical makeup of different materials,” said Matt Keller, a research scientist at Intellectual Ventures Laboratory.
https://www.insidescience.org/video/shining-light-soils

New discovery to accelerate development of salt-tolerant grapevines

23 November 2017

Credit: CC0 Public Domain

A recent discovery by Australian scientists is likely to improve the sustainability of the Australian wine sector and significantly accelerate the breeding of more robust salt-tolerant grapevines.

With funding from Wine Australia, a team of scientists from the ARC Centre of Excellence in Plant Energy Biology at the University of Adelaide and CSIRO Agriculture and Food identified genes expressed in grapevine roots that limit the amount of sodium – a key component of salt – that reaches berries and leaves. The research has been published this week in the journal *New Phytologist*.

Read more at: https://phys.org/news/2017-11-discovery-salt-tolerant-grapevines.html#jCp

The outsized role of soil microbes

The soil microbial carbon pump (MCP) moves carbon derived from microbial anabolism into soil where it can become stabilized by the entombing effect. The yin-yang symbol represents a key part of soil MCP that links aboveground vegetation to belowground soil, and creates a sense of movement to illustrate that the movement is driven, but driven differently, by fungi and bacteria.

Credit: Xuefeng Zhu

Many complexities of the carbon sequestration process remain poorly understood, despite years of research and the significant impact of this process on global climate.

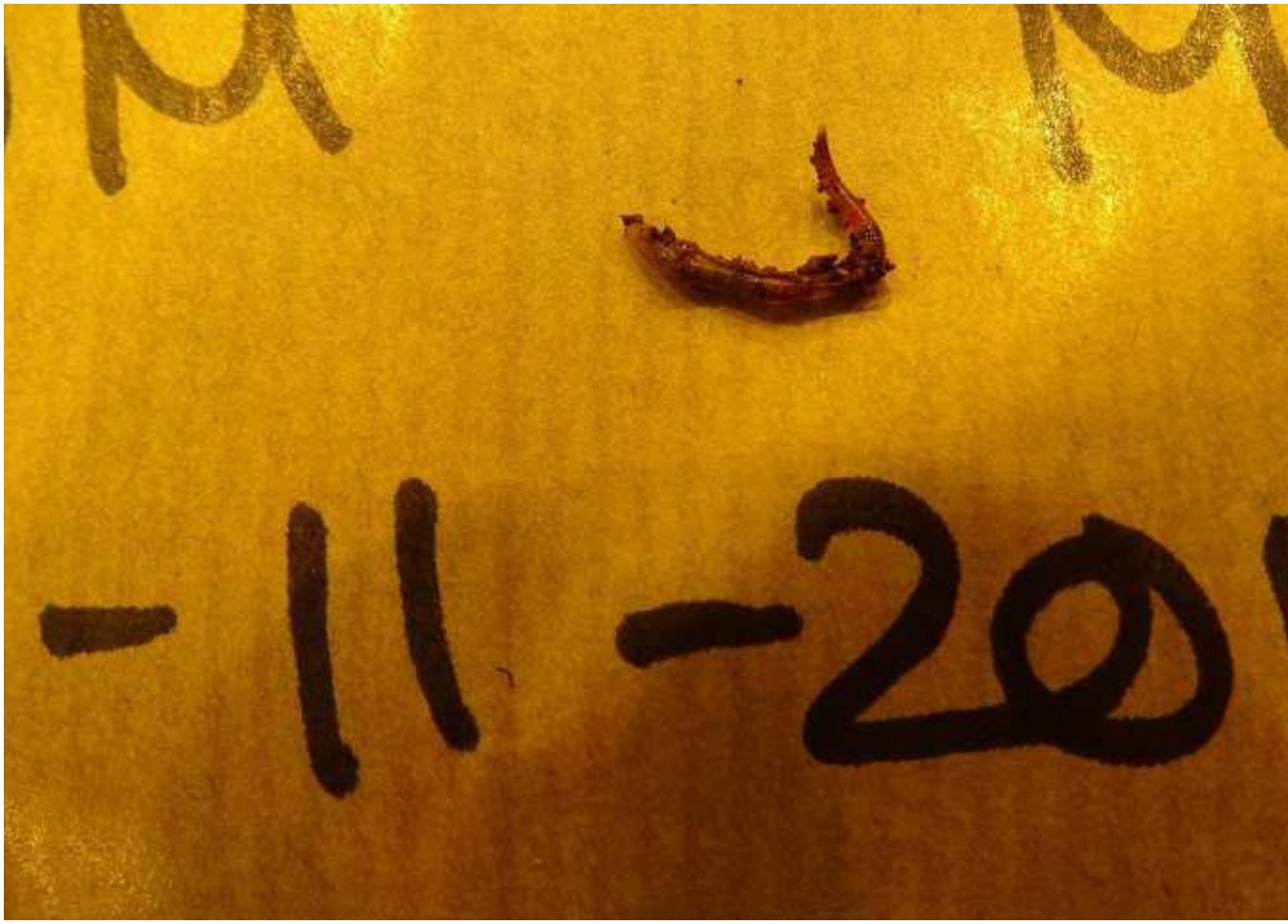
Journal Reference:

1. Chao Liang, Joshua P. Schimel, Julie D. Jastrow. **The importance of anabolism in microbial control over soil carbon storage**. *Nature Microbiology*, 2017; 2 (8): 17105 DOI: 10.1038/nmicrobiol.2017.105

https://www.sciencedaily.com/releases/2017/08/170829091049.htm

Earthworms can reproduce in Mars soil simulant

27 November 2017



Young worm, born in mars soil simulant. Credit: Wieger Wamelink, WUR

Two young worms are the first offspring in a Mars soil experiment at Wageningen University & Research. Biologist Wieger Wamelink found them in a Mars soil simulant that he obtained from NASA. At the start he only added adult worms. The experiments are crucial in the study that aims to determine whether people can keep themselves alive at the red planet by growing their own crops on Mars soils.

Read more at: https://phys.org/news/2017-11-earthworms-mars-soil-simulant.html#jCp

New database catalogues plants that soak up contamination

21 November 2017

New database catalogues plants that soak up contamination. Credit: New Phytologist

Hyperaccumulators are unusual plants that can absorb much larger amounts of metal compounds in their leaves and stems than normal plants, and they are very useful for cleaning up contaminated land. As described in a *New Phytologist* article, researchers have published a database that provides easier access to information on the plant world's hyperaccumulators.

Read more at: https://phys.org/news/2017-11-database-catalogues-contamination.html#jCp

How do atmospheric shifts affect soil-dwelling microbes?

POCKET SCIENCE: EXPLORING THE 'WHAT,' 'SO WHAT' AND 'NOW WHAT' OF HUSKER RESEARCH

by Scott Schrage | University Communication

Craig Chandler | University Communication

Welcome to Pocket Science: a glimpse at recent research from Husker scientists and engineers. For those who want to quickly learn the "What," "So what" and "Now what" of Husker research.

What?

Rising levels of carbon dioxide, ozone and other gases can affect crop growth. Microorganisms inside crops, on their roots or within nearby soil also influence crops by contributing nutrients, curbing disease and combating stresses such as drought. But little is known about how microorganisms respond as atmospheric conditions change.
http://news.unl.edu/newsrooms/today/article/how-do-atmospheric-shifts-affect-soil-dwelling-microbes/

Carbon sequestration role of savanna soil s key to climate goals

by Justin Catanoso on 1 November 2017

- *Savannas and grasslands cover a vast area, some 20 percent of the earth's land surface — from sub-Saharan Africa, to the Cerrado in Brazil, to North America's heartland. They also offer an enormous and underappreciated capacity for carbon sequestration.*
- *However, the role of forests in storing carbon has long been emphasized over the role of savannas (and savanna soils) by international climate negotiators, resulting in policies such as REDD+ for preserving and restoring forests, with no such incentives for protecting grasslands.*

https://news.mongabay.com/2017/11/carbon-sequestration-role-of-savanna-soils-key-to-climate-goals/

Maize pest exploits plant defense compounds to protect itself

27 November 2017

The western corn rootworm (*Diabrotica virgifera virgifera*), orginally from Central America, is more and more frequently found in Europe. Credit: Nowlan Freese, Max Planck Institute for Chemical Ecology

The western corn rootworm continues to be on the rise in Europe. Why attempts to biologically target this crop pest by applying entomopathogenic nematodes have failed, can now be explained by the amazing defense strategy of this insect. In their new study, scientists from the University of Bern, Switzerland, and the Max Planck Institute for Chemical Ecology in Jena, Germany, show that the rootworm larvae are able to sequester plant defense compounds from maize roots in a non-toxic form and can activate the toxins whenever they need them to protect themselves against their own enemies.

Read more at: https://phys.org/news/2017-11-maize-pest-exploits-defense-compounds.html#jCp

Soil health key to improving grazing productivity

Samantha Walton@SamanthaWalton0
25 Sep 2017, 8:30 a.m.
News

Graziers in Bowen discuss soil health on a local grazing property.

Landholders will have the chance to learn how improving soil health can benefit their bottom line at NQ Dry Tropics' upcoming Healthy Soils Healthy Profits field day near Bowen on Wednesday 11 October.

NQ Dry Tropics project officer Sharon Cunial said the event, at Salisbury Plains 30km north of Bowen, aims to get landholders thinking about how to cost-effectively improve soil health by using cattle as a regenerative tool: http://www.northqueenslandregister.com.au/story/4945146/soil-health-key-to-improving-grazing-productivity/

A deadly 2014 landslide's power came from soils weakened by past slides

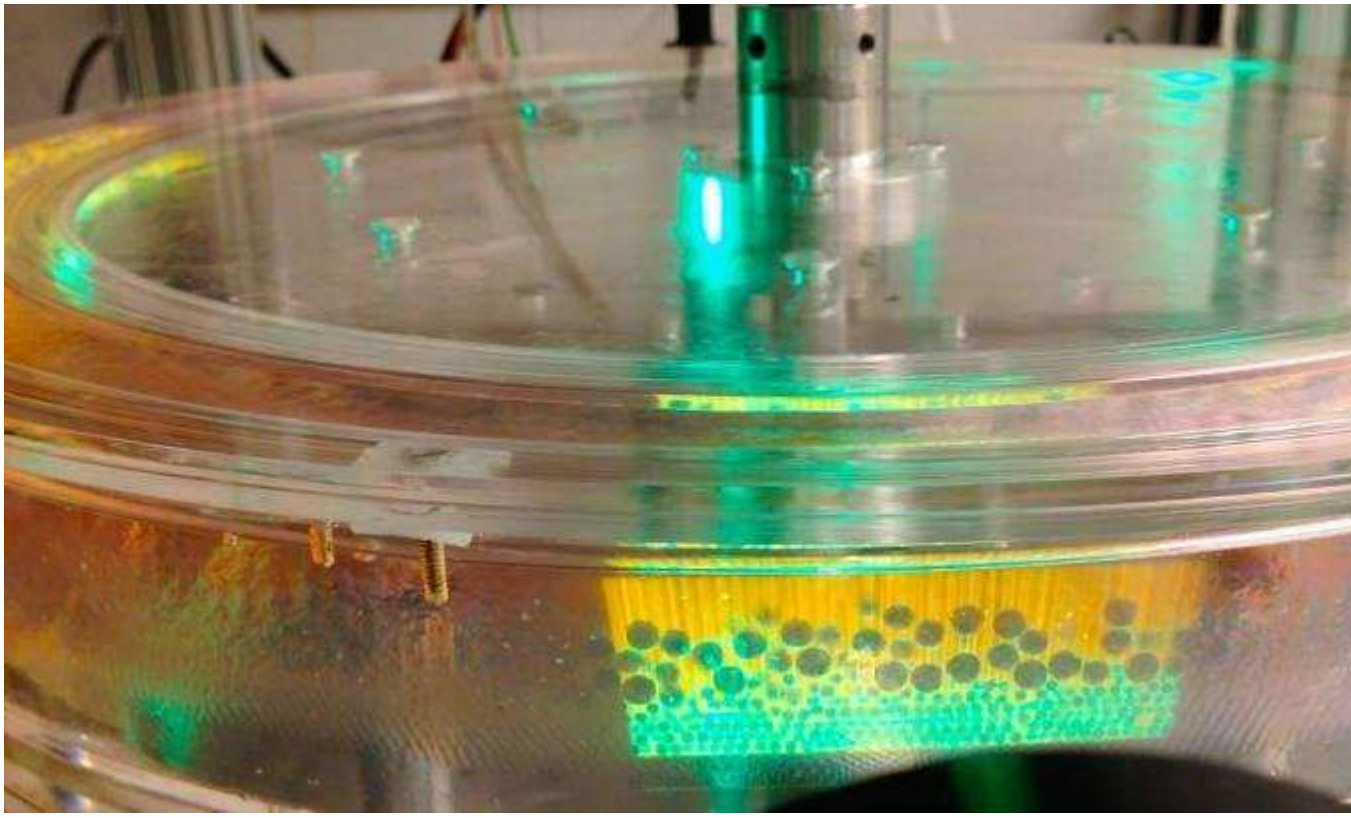
The Washington mudflow moved almost like an earthworm, extending and contracting

LETHAL LANDSLIDE Researchers reconstructed the anatomy of the Oso landslide, one of the deadliest in U.S. history, to understand why it was so widespread. Liquefied sediments, weakened by previous earthquakes, rafted the debris far down the hill.

SEATTLE — Earth weakened by previous landslides and soils behaving like water were responsible for the unusual size of a deadly 2014 landslide, two scientists reported October 24 at the Geological Society of America's annual meeting. Understanding why this landslide was so mobile could help geologists better map the hazards that could lead to others like it and prevent future loss of life.
https://www.sciencenews.org/article/deadly-2014-landslides-power-came-soils-weakened-past-slides

'Brazil nut effect' helps explain how rivers resist erosion, team finds`

21 November 2017



An experimental 'stream' -- a circular channel with varying sizes of particles and fluid embedded with fluorescent dye -- enabled the Penn team to examine the forces influencing the sorting of rocks in a riverbed. Credit: University of Pennsylvania

Pop the top off a can of mixed nuts and, chances are, Brazil nuts will be at the top. This phenomenon, of large particles tending to rise to the top of mixtures while small particles tend to sink down, is popularly known as the "Brazil nut effect" and more technically as granular segregation.

Read more at: https://phys.org/news/2017-11-brazil-nut-effect-rivers-resist.html#jCp

Carbon feedback from forest soils to accelerate global

Heated and control plots in a long-term soil warming study at Harvard Forest, Petersham, Mass. Jerry Melillo of the Marine Biological Laboratory, Woods Hole, Mass., and colleagues began the study in 1991.

Credit: Audrey Barker-Plotkin

After 26 years, the world's longest-running experiment to discover how warming temperatures affect forest soils has revealed a surprising, cyclical response: Soil warming stimulates periods of abundant carbon release from the soil to the atmosphere alternating with periods of no detectable loss in soil carbon stores. Overall, the results indicate that in a warming world, a self-reinforcing and perhaps uncontrollable carbon feedback will occur between forest soils and the climate system, adding to the build-up of atmospheric carbon dioxide caused by burning fossil fuels and accelerating global warming. The study, led by Jerry Melillo, Distinguished Scientist at the Marine Biological Laboratory (MBL), appears in the October 6 issue of *Science*.

Journal Reference:

1. J. M. Melillo, S. D. Frey, K. M. DeAngelis, W. J. Werner, M. J. Bernard, F. P. Bowles, G. Pold, M. A. Knorr, A. S. Grandy. **Long-term pattern and magnitude of soil carbon feedback to the climate system in a warming world**. *Science*, 2017; 358 (6359): 101 DOI: 10.1126/science.aan2874
https://www.sciencedaily.com/releases/2017/10/171005141825.htm

Floods are necessary for maintaining healthy river ecosystems, research shows

27 November 2017

River Kvirila at Sachkhere, Georgia. Credit: Wikipedia

Flooding rivers can wreak havoc on homes and roads but are necessary for healthy ecosystems, research at Oregon State University suggests.

The study shows that alterations to rivers' natural flow patterns - because of dams, diversions and changes in precipitation - cause damage to riparian plant communities and river ecosystems in general.

Read more at: https://phys.org/news/2017-11-healthy-river-ecosystems.html#jCp

Young farmers embrace technology to beat toxic soils

Some of the Esteem Eagles Welfare Youth Group members at the greenhouse in Meru South. [Peter Muthomi, Standard]

Tired of looking for elusive white-collar jobs, a group of young farmers decided to think out of the box. The 15-member group named ‘Esteem Eagles Welfare Youth Group’ started farming together. Initially it was a merry-go round, before they decided to pool resources and venture into greenhouse farming.
https://www.standardmedia.co.ke/business/article/2001259254/we-started-as-fun-group-now-we-re-a-force

How Understanding Soil Could Be One Answer to Help Save the Planet

TECH & SCIENCECLIMATE CHANGEENVIRONMENTCARBON DIXOIDE

The deep, dark depths of the ocean are often called the final frontier—but, according to one researcher, the soils of the Earth are little understood as well.

Some of the soil's mysteries could reveal how to store carbon, and maybe one day, carbon dioxide—a key greenhouse gas that is causing global temperatures to reach record-breaking temperatures. In a study published on Monday, Marc Kramer, an assistant professor of environmental chemistry at Washington State University Vancouver, digs deeper into what scientists know about soil, particularly uncovering how soil minerals are associated with carbon storage in soil. http://www.newsweek.com/western-canadas-ice-sheet-thousands-years-ago-might-tell-us-what-will-happen-707914

Experts warn about declining soil fertility in Mt Kenya

A trader selling bananas at Karatina market in Nyeri County on April 12, 2016. Soil fertility in Mt Kenya region is declining. PHOTO | JOSEPH KANYI | NATION MEDIA GROUP

In Summary

- Dr Gicheru said yields continued to shrink, affecting the livelihood of millions of farmers.
- He said the centre was seeking Sh10 million to set up a soil testing laboratory to advice farmers on proper ways to replenish their soils.

Soil scientists have raised the alarm over decline in soil fertility in Mt Kenya region, attributing it to lack of micronutrients.

They said the soil lacked basic micro minerals like zinc, potassium, nitrogen and phosphorous and this affected productivity. http://www.nation.co.ke/counties/Experts-warn-on-declining-soil-fertility-in-Mt-Kenya/1107872-4185610-format-xhtml-9c7tt5z/index.html

Soil Organic Carbon Content

Soil organic carbon, the major component of soil organic matter, is extremely important in all soil processes. Organic material in the soil is essentially derived from residual plant and animal material, synthesised by microbes and decomposed under the influence of temperature, moisture and ambient soil conditions. The annual rate of loss of organic matter can vary greatly, depending on cultivation practices, the type of plant/crop cover, drainage status of the soil and weather conditions. There are two groups of factors that influence inherent organic matter content: natural factors (climate, soil parent material, land cover and/or vegetation and topography), and human-induced factors (land use, management and degradation).

Soil organic carbon (SOC) is the largest carbon (C) stock in most terrestrial ecosystems (Lal, 2008a), containing approximately 2344 Gt of organic C globally (Stockmann et al., 2013). Moreover, soil is recognized as the second largest C pool after the oceans and one of the most important components of the biosphere, delivering major ecosystem services and functions (Ogle & Paustian, 2005). Policy frameworks influencing land use and land use changes could trigger dramatic changes in SOC levels. At a global scale, guidelines to quantify changes in greenhouse gas emissions from agricultural soils, land-use changes and forestry categories have been adopted in the 'Land Use, Land- Use Change and Forestry' (LULUCF) activities, listed in articles 3.3 and 3.4 of the Kyoto Protocol (UN, 1997). Following LULUCF Decision 529/2013 accounting for cropland and grazing land management has become mandatory for EU Member States.

European Soil Data Centre makes available the data and information on soil organic carbon both at European scale and Global scale.

Contact point: Roland Hiederer, Tel: +39 0332 785229, Fax: +39-0332-786394, E-Mail: roland.hiederer@jrc.ec.europa.eu
https://esdac.jrc.ec.europa.eu/themes/soil-organic-carbon-content

Salt lakes of the Great Sandy Desert

The salt deposits left behind by these evaporating lakes are visible from space.

A view of the Lake Willis (at left) and Lake Hazlett (right), ephemeral salt lakes of the Great Sandy Desert in Western Australia.
NASA EARTH OBSERVATORY

This photograph of Lake Willis and Lake Hazlett was taken by an astronaut aboard the International Space Station while passing over the Great Sandy Desert in Western Australia. https://cosmosmagazine.com/geoscience/salt-lakes-of-the-great-sandy-desert

Meadows beat out shrubs when it comes to storing carbon

23 November 2017

Norway's high-latitude alpine areas are seeing an increase in the areas being overtaken by shrubs. Researchers wanted to know what that means for carbon cycling in the region. Credit: Mia Vedel Sørensen

Excess carbon dioxide, emitted by burning fossil fuels like coal and petroleum, is one of the most important factors in driving global warming. While the world is focused on controlling global warming by limiting these emissions, less attention has been paid to the capacity of vegetation and soils to take up and store carbon.

Read more at: https://phys.org/news/2017-11-meadows-shrubs-carbon.html#jCp

Many-splendored wines from many-layered soils

At Alexana Winery's diverse site near Newberg, 31 distinct blocks give Bryan Weil a winemaker's palette deep with possibility

1/6 – *Aerial views of Alexana Winery reveal sections of the 31 growing blocks the vineyard manages to produce pinot noir, pinot gris, chardonnay, riesling and Bordeaux- and Rhone-style red and white blends. (Andrea Johnson Photography)*

By Sophia McDonald Bennett

For The Register-Guard

The face of the tasting bar inside Newberg's Alexana Winery has a striking design: wavy layers of colour ranging from ecru to brick red, giving it the look of something you'd see at the painted hills of John Day or in Arizona. http://registerguard.com/rg/life/tastings/36036439-82/many-splendored-wines-from-many-layered-soils.html.csp

Defector's Condition Indicates Serious Health Issues in North Korea

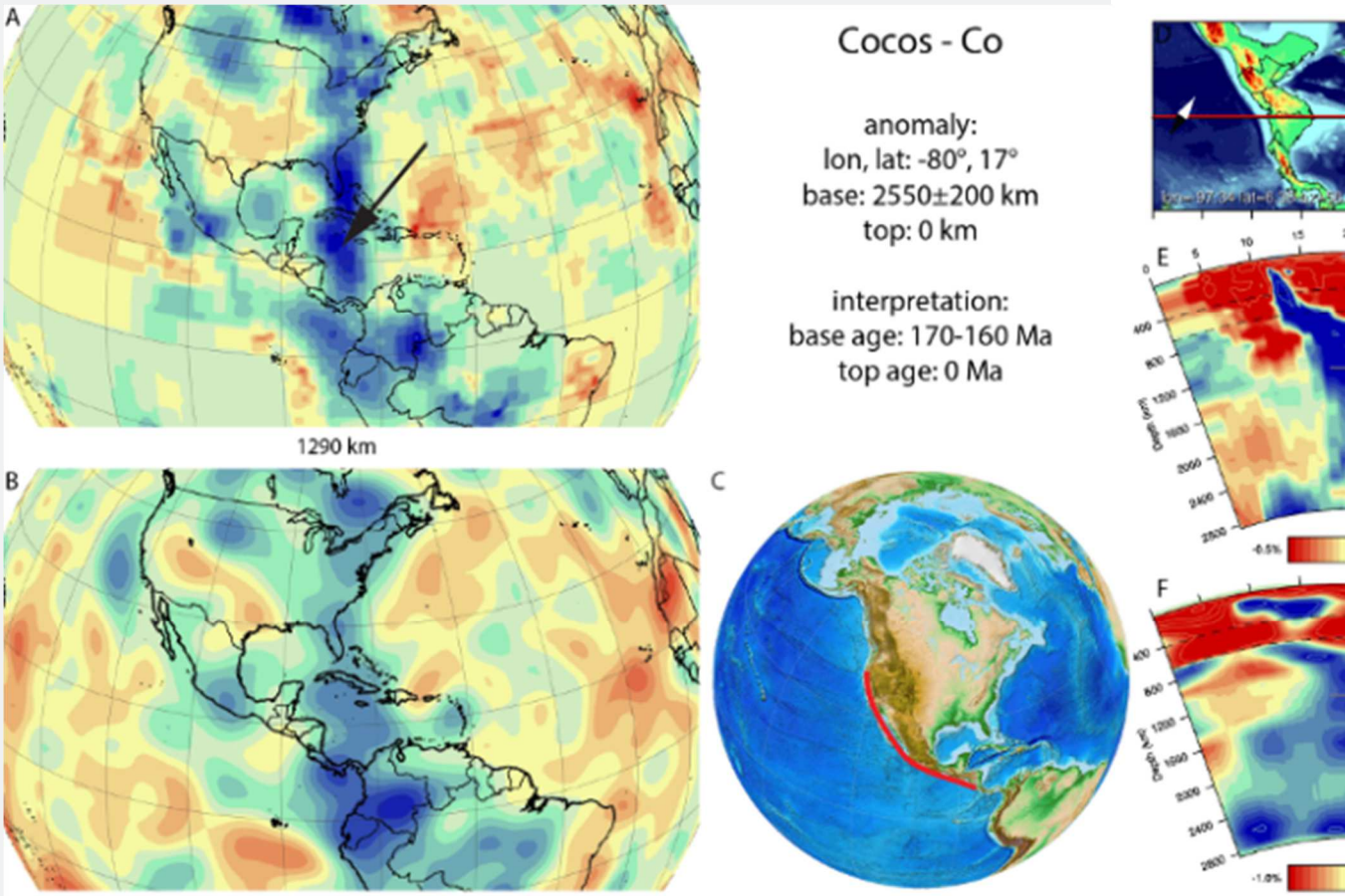
19 November 2017 3:21 AM

South Korean surgeon Lee Cook-Jong, who operated on North Korean soldier and his gunshot wounds, speaks about the condition of the soldier at Ajou University Hospital in Suwon, south of Seoul, 15 Nov 2017.

SEOUL, SOUTH KOREA —
Parasitic worms found in a North Korean soldier, critically injured during a desperate defection, highlight nutrition and hygiene problems that experts say have plagued the isolated country for decades. https://www.voanews.com/a/north-korean-defector-health-hygiene/4125169.html

The Earth's interior is teeming with dead plates

We finally have a map of Earth's former surface, which now resides in the mantle.



Last week, scientists released a monumental interactive catalog that tracks 94 ancient tectonic plates lurking deep within Earth's mantle, a resource they're calling an "Atlas of the Underworld."

Although scientists have known for decades that tectonic plates plunge into the Earth's interior at subduction zones, until recently, those plates disappeared off the geological map once they stopped generating earthquakes, which happens after they're around 670km below the surface. In the last few years, seismic tomography, which uses waves from earthquakes to make images of the planet's interior, has restored their visibility. It has revealed subducted plates sinking in the mantle all the way down to the core-mantle boundary, 2,900km below Earth's surface.

https://arstechnica.com/science/2017/10/scientists-release-an-atlas-of-the-underworld/

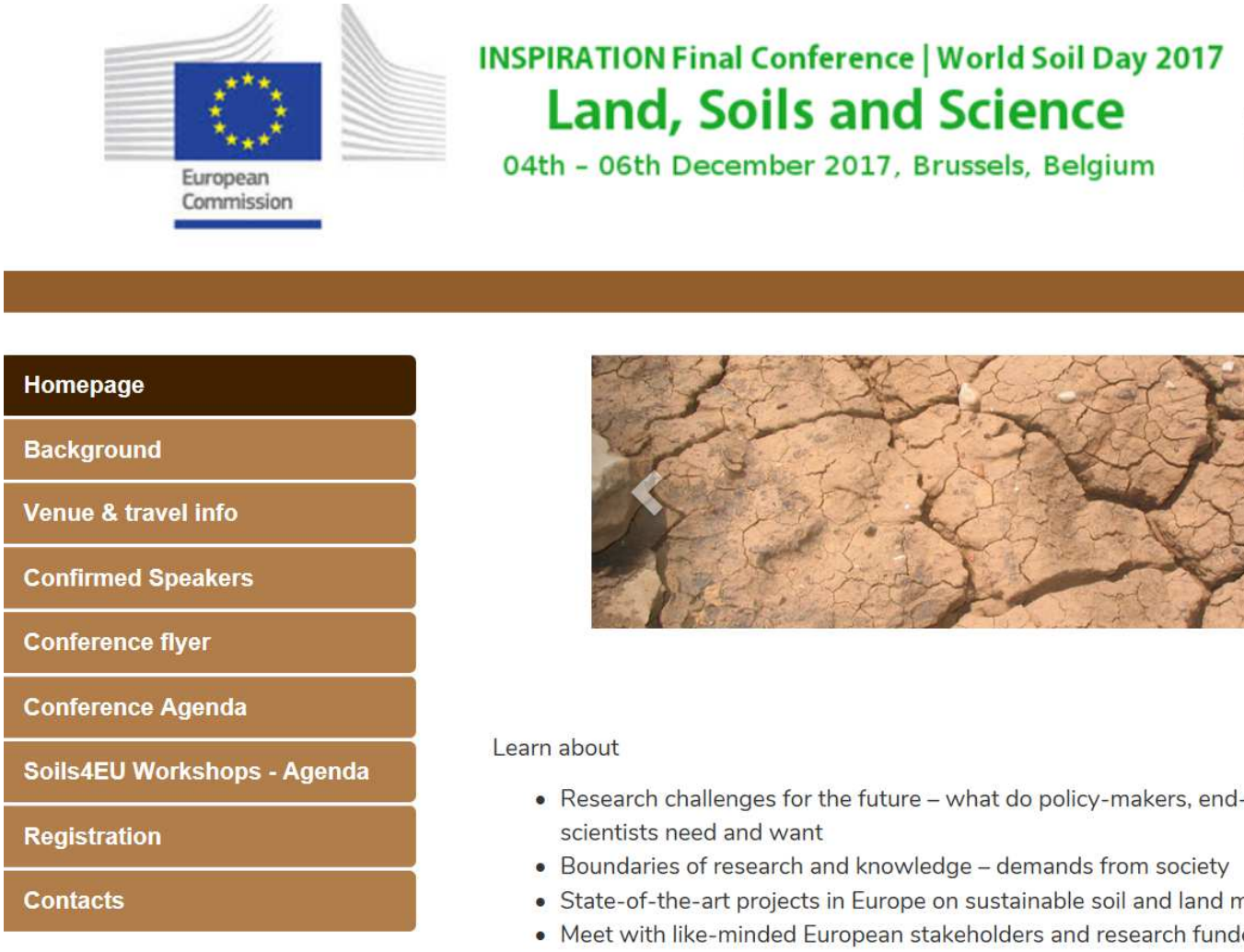
The geological state of the nation

The world's oldest known material is from Western Australia, but for much of Australia's geological past, the eastern states simply didn't exist. Alan Collins, Bo Yang and Grant Cox report.

The continent of Australia is a mixture of land masses of differing ages.
ALAN COLLINS, AUTHOR PROVIDED

We think of Australia as a solid landmass. But it’s actually more like a jigsaw puzzle that has been put together over many millions of years.

The problem with working out how Australia formed is that the evidence is often buried, making access to geological materials quite difficult.
https://cosmosmagazine.com/geoscience/the-geological-state-of-the-nation



http://www.worldsoilday2017.eu/

Soil researchers quantify an underappreciated factor in carbon release to the atmosphere

Research team shows anaerobic microsites' crucial role

Date:
27 November 2017

Source:
University of Massachusetts at Amherst

Summary:
Soil plays a critical role in global carbon cycling, in part because soil organic matter stores three times more carbon than the atmosphere. Now scientists have, for the first time, provided evidence that anaerobic microsites play a much larger role in stabilizing carbon in soils than previously thought.

Soil plays a major role in global carbon cycling.

Credit: © Okea / Fotolia

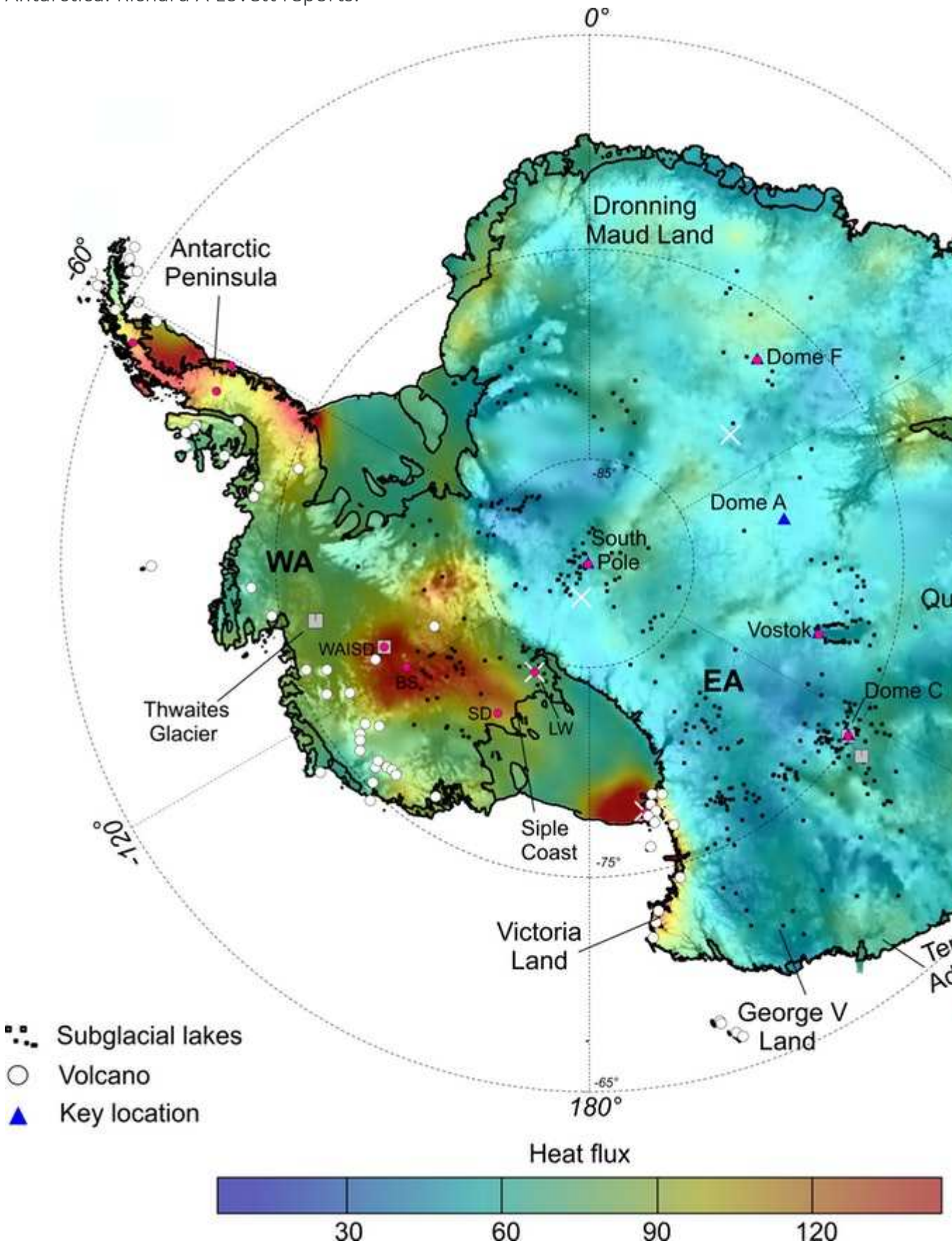
Soil plays a critical role in global carbon cycling, in part because soil organic matter stores three times more carbon than the atmosphere. Now biogeochemist Marco Keiluweit at the University of Massachusetts Amherst and colleagues elsewhere for the first time provide evidence that anaerobic microsites play a much larger role in stabilizing carbon in soils than previously thought.

Journal Reference:

1. Marco Keiluweit, Tom Wanzek, Markus Kleber, Peter Nico, Scott Fendorf. **Anaerobic microsites have an unaccounted role in soil carbon stabilization**. *Nature Communications*, 2017; 8 (1) DOI: 10.1038/s41467-017-01406-6
https://www.sciencedaily.com/releases/2017/11/171127091115.htm

Measuring the heat beneath the ice

NASA team combines data to uncover temperatures deep underground in Antarctica. Richard A Lovett reports.



A new map of Antarctica, showing the varying levels of heat flux below the surface of the ice.
MARTOS ET AL.

Scientists studying magnetic signatures in Antarctic rocks are peering beneath the frozen continent's ice sheets to make a detailed map of the amount of heat seeping from the Earth's interior at various locations beneath it.

In the process, they have not only bettered our picture of Antarctica's geology, but improved knowledge of how the escaping heat might affect the ice sheets' base layers, making them more or less slippery. That's important in understanding how the ice may react to climate change.
https://cosmosmagazine.com/geoscience/measuring-the-heat-beneath-the-ice

Nematodes as indicators of soil health

Effects of soil organic matter on nematode communities

AMERICAN SOCIETY OF AGRONOMY

Organic matter in soil is an important component of soil health. We usually think of dead and dying plant matter as soil organic matter. But another source of organic matter is the decaying bodies of soil-dwelling animals, both vertebrates and invertebrates.

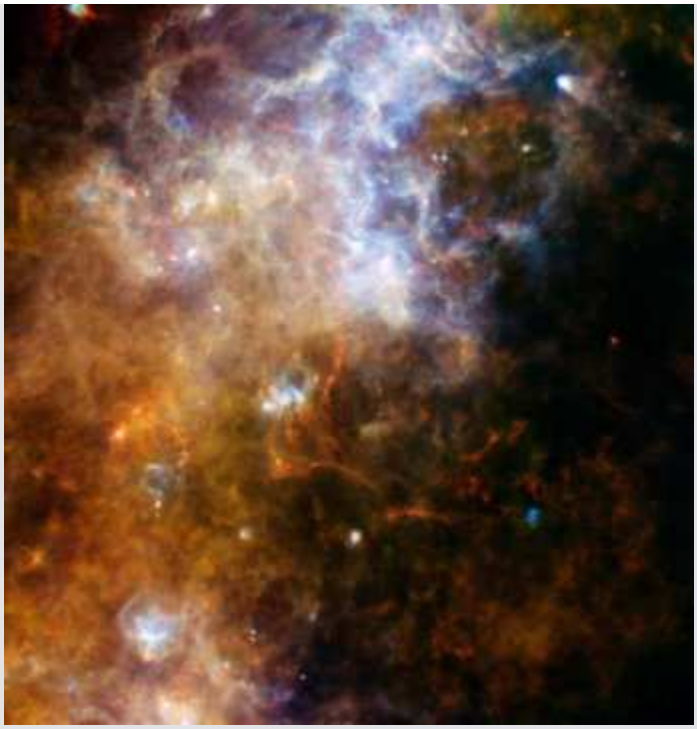
"Nematodes, in particular, are regarded as sentinel organisms that can describe the nature of a soil and its health," says Lois Taylor, University of Tennessee-Knoxville.

The "Nematode Community Succession: Decomposition Hot Spots" presentation at the Managing Global Resources for a Secure Future ASA, CSSA, SSSA International Annual Meeting in Tampa, FL, will address this important topic. The presentation will be held Monday, October 23, 2017, at 9:05 AM. The meeting is sponsored by the American Society of Agronomy, Crop Science Society of America, and the Soil Science Society of America.
https://www.eurekalert.org/pub_releases/2017-09/asoa-nai092117.php

https://www.youtube.com/watch?v=ZJEg5X5bKSg

Space dust may transport life between worlds, research suggests

Date:
20 November 2017
Source:
University of Edinburgh
Summary:
Life on Earth might have originated from tiny organisms brought to our planet in streams of fast-moving space dust, according to a new study.



Some of the coldest and darkest dust in space shines brightly in this infrared image from the Herschel Observatory.

Credit: ESA/NASA/JPL-Caltech

Life on our planet might have originated from biological particles brought to Earth in streams of space dust, a study suggests.

Journal Reference:

1. Arjun Berera. **Space Dust Collisions as a Planetary Escape Mechanism**. *Astrobiology*, 2017; DOI: 10.1089/ast.2017.1662
https://www.sciencedaily.com/releases/2017/11/171120111326.htm

http://www.publish.csiro.au/book/7811

10 Ways Agriculture is Getting Climate-Smart

As climate negotiations continue at COP23 in Bonn, Farming First takes a look at 10 stories of climate-smart agriculture in action in this latest supporter spotlight. Find out how Farming First supporters are helping farmers grow more, adapt to changing weather patterns and minimise their own carbon footprints.

https://farmingfirst.org/2017/11/10-ways-agriculture-is-getting-climate-smart/

BONARES Conference 2018: Soil as a Sustaina

November 6, 2017 Conferences, News Collaboration, Conferences, Soil Security, Sustainab

The BONARES Conference 2018: Soil as a Sustainable Resource will take place from the 26th to the 28t
lin, Germany. It brings together researchers from all disciplines of soil science to discuss the functiona
how to develop strategies towards sustainable soil management. A sustainable bioeconomy requires i
ty with a wide range of other soil functions including nutrient cycling, carbon storage, water retention a
the habitat of a myriad of organisms and their activities. For sustainable soil management, we need to
temic level and we need to assess their value in a socio-economic framework.

We welcome contributions (posters and oral presentations) to the following topics:

https://www.soilsecurity.org/bonares-conference-2018-soil-as-a-sustainable-resource/

Old, meet new: Drones, high-tech camera revamp archaeology

24 November 2017 by Michael Casey

In this Nov. 14, 2017 photo, Dartmouth's Chad Hill readies a drone to be flown over a site of a Shaker Village in Enfield, NH. Hill and his Dartmouth colleague Jesse Casana are using drones equipped with thermal imaging cameras to study a …more

Scanning an empty field that once housed a Shaker village in New Hampshire, Jesse Casana had come in search of the foundations of stone buildings, long-forgotten roadways and other remnants of this community dating to the 1790s.

Read more at: https://phys.org/news/2017-11-drones-high-tech-camera-revamp-archaeology.html#jCp

Soils support our planets biodiversity and they host a quarter of the total

- UNFAO 2015