

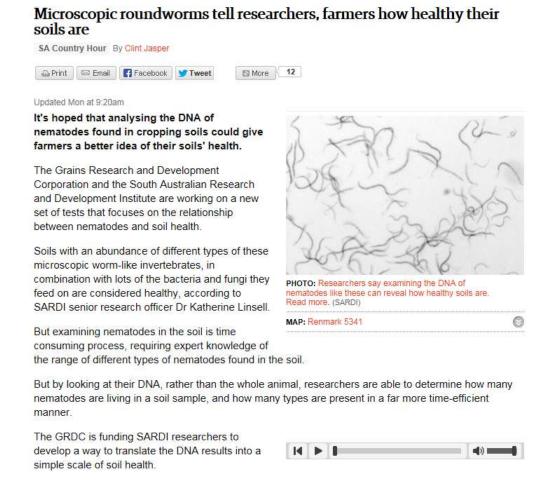
Hi All

#### Happy World Soil Day!!!

The 5th of December has been officially declared World Soil Day by the UN General Assembly. If you have wondered why the 5th December, it is because it corresponds to the official birthday of H.M. *King Bhumibol Adulyadej*, The King of Thailand, who has officially sanctioned the event.

Cheers

Brian



http://www.abc.net.au/news/2014-11-28/sach-nematode-test/5925312

#### Overcoming difficult soils

**GREGOR HEARD** 

29 Nov, 2014 03:00 AM



Soil constraints are our biggest issue

Faba beans play an important role in the rotation for Werneth farmers Evan (pictured) and Suzanne Lewis.

IT has been a constant frustration for Werneth farmers Evan and Suzanne Lewis that in spite of good annual rainfall and generally soft finishes, crops that were underwater in August could end up moisture-stressed in the spring.

http://www.theland.com.au/news/agriculture/cropping/general-news/overcoming-difficult-soils/2718083.aspx

## Cover crops can sequester soil organic carbon

A 12-year study shows that, although the use of cover crops does not improve crop yields, the practice does increase the amount of sequestered soil organic carbon using three different soil management systems.

These are no-tillage soybean plots with corn residue.

Credit: University of Illinois

A 12-year University of Illinois study shows that, although the use of cover crops does not improve crop yields, the practice does increase the amount of sequestered soil organic carbon using three different soil management systems.

#### **Journal Reference:**

 Kenneth Olson, Stephen A. Ebelhar, James M. Lang. Long-Term Effects of Cover Crops on Crop Yields, Soil Organic Carbon Stocks and Sequestration. Open Journal of Soil Science, 2014; 04 (08): 284 DOI: <u>10.4236/ojss.2014.48030</u>

http://www.sciencedaily.com/releases/2014/12/141202110651.htm

### Alaska shows no signs of rising Arctic methane

By Carol Rasmussen, NASA's Jet Propulsion Laboratory



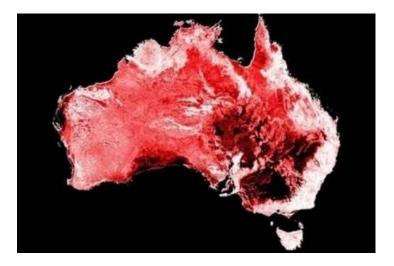
North front of Brooks Range along southern margin of central North Slope assessment area in the Arctic National Park and Preserve. Credit: U.S. Geological Survey

Despite large temperature increases in Alaska in recent decades, a new analysis of NASA airborne data finds that methane is not being released from Alaskan soils into the atmosphere at unusually high rates, as recent modeling and experimental studies have suggested. The new result shows that the changes in this part of the Arctic have not yet had enough impact to affect the global methane budget <a href="http://climate.nasa.gov/news/2187/">http://climate.nasa.gov/news/2187/</a>

#### **CSIRO** unearths clues about our soil

**CONRAD WALTERS** 

#### 27 Nov, 2014 06:28 AM



The information is essential for farmers managing crops, or guiding miners in their exploration

Red: The distance until soil reaches bedrock varies from 0 to 67.5 metres. Darker colours show greater depth.

IF the pun weren't so corny, you'd call the work groundbreaking. Suffice to say, a gargantuan effort headed by the CSIRO to map the state of Australia's soil is unique.

The project divides the continent into two billion 'pixels', each representing 90 square metres, and reveals what lies beneath our feet to a depth of two metres.

Known as the Soil and Landscape Grid of Australia, the maps are being launched at a national soil science conference in Melbourne next week.



Blue: Nationally, the soil's capacity to retain water within the top five centemetres varies from 0 to 17 per cent.

 $\underline{http://www.theland.com.au/news/agriculture/cropping/general-news/csiro-unearths-clues-about-our-soil/2718439.aspx}$ 

### Logging destabilizes forest soil carbon over time

Logging doesn't immediately jettison carbon stored in a forest's mineral soils into the atmosphere but triggers a gradual release that may contribute to climate change over decades, a new study finds.



Chelsea Petrenko, a doctoral candidate at Dartmouth College, is lead author of a study showing that logging triggers the gradual release of the carbon stored in a forest's mineral soils.

Credit: Dartmouth College

Logging doesn't immediately jettison carbon stored in a forest's mineral soils into the atmosphere but triggers a gradual release that may contribute to climate change over decades, a Dartmouth College study finds.

#### Journal Reference:

1. Chelsea L. Petrenko, Andrew J. Friedland. **Mineral Soil Carbon Pool Responses to Forest Clearing in Northeastern Hardwood Forests**. *GCB Bioenergy*, 2014; DOI: 10.1111/gcbb.12221

http://www.sciencedaily.com/releases/2014/12/141202161503.htm

### **How Does Contaminated Soil Effect the Environment?**



Unfortunately, soil contamination is a common occurrence. As a result, the amount of knowledge regarding the leachability, relative toxicity and mobility of chemicals in contaminated soil is growing. Studies have been performed on numerous contaminated sites, such as this one study, which concentrates on Perlis, Malaysia's smallest city: Assessment of Heavy Metal Pollution in Malaysia's Smallest State: Perlis.

- See more at: http://www.envirotech-online.com/news/health-and-safety/10/breaking\_news/how\_does\_contaminated\_soil\_effect\_the\_environment/32583/#sthash.vkVKkjiZ.dpuf

#### Five basic principles increase soil health

25 Nov. 2014 at 10:30 p.m.

Editor's note: This article is the fourth installment of a six-part series on grazing management.

Are you a cattle manager, a grass manager or a soil manager?

Many cattlemen view livestock as their base crop through the sale of beef.

Others view grass as their base crop. While management of breeding, vaccinations and marketing is important, all livestock need forage to produce pounds of beef. <a href="https://www.victoriaadvocate.com/news/2014/nov/25/five-basic-principles-increase-soil-health/">https://www.victoriaadvocate.com/news/2014/nov/25/five-basic-principles-increase-soil-health/</a>

http://www.egu.eu/newsletter/geoq/12.pdf

# Grassland plants change without tiny soil animals

Yale University -Original Study



(Credit: Dunnock D/Flickr)



"When you next look out at a meadow or forest, remember that the tiny animals immediately beneath your feet are likely responsible for much of what you see," says Mark Bradford.

(Credit: Benjmain Dobson/Flickr)



(Credit: <a href="mailto:schizoform/Flickr">schizoform/Flickr</a>)

Removing tiny creatures like earthworms and beetles in the soil from replicated Scottish sheep meadows reveals their importance in grassland ecosystems.

During a three-year study, researchers found that the loss of these small animals altered the plant species that grew in the ecosystem, reduced overall productivity, and produced plants that were less responsive to common agricultural management, such as fertilization. http://www.futurity.org/soil-animals-insects-778272/

#### Potassium plan for pasture growth

Thursday, 27 November 2014, 2:23 pm Press Release: <u>Ballance Agri-Nutrients</u>

27 November 2014

#### Potassium plan for pasture growth

Potassium (K) is an essential nutrient to deliver good pasture growth, particularly during summer, and a three year trial by Ballance Agri-Nutrients shows one size does not fit all for application rates.

New Zealand's Central Plateau and Bay of Plenty regions may be famous with tourists, but they are also renowned for coarse pumice free-draining soils which leach K.

Ballance Science Extension Officer, Jeff Morton, said farmers on these pumice soils should consider small K fertiliser applications, often, while their farming counterparts on ash or sedimentary soils could apply K in larger, less frequent applications. Mr Morton was presenting the research findings at the recent Grasslands Association Conference in Alexandra. <a href="http://www.scoop.co.nz/stories/SC1411/S00077/potassium-plan-for-pasture-growth.htm">http://www.scoop.co.nz/stories/SC1411/S00077/potassium-plan-for-pasture-growth.htm</a>

# Soil microbe secrets could help halt superbugs

Washington University in St. Louis →Original Study



"We suspect that one of the primary factors that drives the sharing of antibiotic resistance genes is exposure to new antibiotics," says Gautam Dantas. "Because soil bacteria need many thousands of years to develop new antibiotics, the bacteria in that community don't encounter these threats anywhere near as

often as disease-causing bacteria, which we regularly treat with different antibiotics." (Credit: <u>Ian</u> Sane/Flickr)

Microbes in soil may help identify ways to reduce gene-sharing among infectious bacteria, which could slow the spread of drug-resistant superbugs.

Drug-resistant bacteria annually sicken 2 million Americans and kill at least 23,000. A driving force behind this growing public health threat is the ability of bacteria to share genes that provide antibiotic resistance. <a href="http://www.futurity.org/soil-knows-halt-superbug-spread/">http://www.futurity.org/soil-knows-halt-superbug-spread/</a>

### Another endorsement for landfarm activities

Thursday, 27 November 2014, 4:48 pm Press Release: <u>Taranaki Regional Council</u>

Another endorsement for landfarm activities

27 November 2014

A new study shows that soil ecology and health are not threatened by land-based bioremediation of drilling wastes under the consent conditions imposed by the Taranaki Regional Council.

The report, *Biological response of earthworms and soil microbes associated with drilling mud wastes*, by Landcare Research, includes both the results of new investigations into drilling muds, and a review of relevant international scientific literature. Its findings include:

• The environmental effects of drilling mud can be explained by the amount of salt present in the mixtures. In simple terms, drilling muds show the toxicity of salt.

 $\underline{http://www.scoop.co.nz/stories/AK1411/S00670/another-endorsement-for-landfarm-activities.htm}$ 



http://www.youtube.com/watch?v=OWXoRSIxyIU&list=LLeiYXex\_fwgYDonaTcSIk6w

# NASA's SMAP may clarify link from wet soil to weather

By Carol Rasmussen, NASA's Earth Science News Team



Northern India is one of the soil moisture hot spots found in Koster's study. Credit: Wikimedia Commons

Anyone who spends time outdoors knows that weather influences soil moisture — the moisture locked in soils that allows plants to grow — through temperature, wind and, of course, rain and snowfall. But in our complex, interlocking Earth system, there are almost no one-way streets. How does soil moisture influence weather in return?

http://climate.nasa.gov/news/2192/

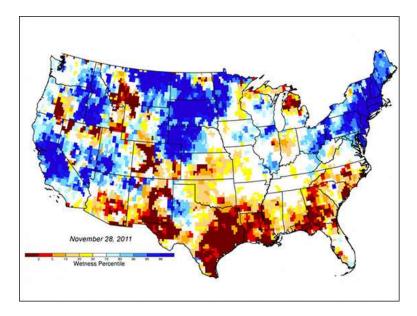
# How soil microorganisms get out of step through climate change

8 hours ago

Scientists at Helmholtz Zentrum München, in collaboration with colleagues from the TU München and the Karlsruhe Institute of Technology (KIT), have studied how soil microorganisms react to climatic change. Their result: Extreme weather events such as long periods of drought and heavy rainfall have a strong impact on the metabolic activity of microbes. This may lead to a change in the nutrient balance in soils and, in extreme cases, may even increase greenhouse gas emissions like nitrous oxide to the atmosphere concentrations.

Read more at: http://phys.org/news/2014-12-soil-microorganisms-climate.html#jCp

#### NASA's Grace helps monitor U.S. drought



New groundwater and soil moisture drought indicator maps produced by NASA are available on the National Drought Mitigation Center's website. They currently show unusually low groundwater storage levels in Texas. The maps use an 11-division scale, with blues showing

wetter-than-normal conditions and a yellow-to-red spectrum showing drier-than-normal conditions. Image credit: NASA/National Drought Mitigation Center

By Kelly Helm Smith, National Drought Mitigation Center and Adam Voiland, NASA's Earth Science News Team

The record-breaking drought in Texas that has fueled wildfires, decimated crops and forced cattle sales has also reduced groundwater levels in much of the state to the lowest levels in more than 60 years, according to new national maps produced by NASA using data from the NASA/German Aerospace Center Gravity Recovery and Climate Experiment (Grace) mission. The map are distributed by the National Drought Mitigation Center at the University of Nebraska-Lincoln. <a href="http://climate.nasa.gov/news/632/">http://climate.nasa.gov/news/632/</a>

#### Protect the world's deltas





WHOI Geologist Liviu Giosan and colleagues call for maintenance efforts to be started now to avert the loss of vast expanses of coastline, and the consequent losses of ecological services, economic and social crises, and large-scale migrations. Credit: Tom Kleindinst, Woods Hole Oceanographic Institution

Read more at: http://phys.org/news/2014-12-world-deltas.html#jCp

### Chemists identify role of soil in pollution control

#### 2 Dec 2014



Credit: Alfred Palmer/Wikipedia

Scientists have long known that air pollution caused by cars and trucks, solvent use and even plants, is reduced when broken down by naturally occurring compounds that act like detergents of the atmosphere. What has not been well understood until now are the relative contributions of all the processes producing such compounds.

Read more at: http://phys.org/news/2014-12-chemists-role-soil-pollution.html#jCp

### Chemists identify role of soil in pollution control

Scientists have long known that air pollution caused by cars and trucks, solvent use and even plants, is reduced when broken down by naturally occurring compounds that act like detergents of the atmosphere. What has not been well understood until now are the relative contributions of all the processes producing such compounds. A new study shows a key component of the process is the soil beneath our feet.

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#### **Journal Reference:**

 Trevor C. VandenBoer, Cora J. Young, Ranajit K. Talukdar, Milos Z. Markovic, Steven S. Brown, James M. Roberts, Jennifer G. Murphy. Nocturnal loss and daytime source of nitrous acid through reactive uptake and displacement. Nature Geoscience, 2014; DOI: 10.1038/ngeo2298

http://www.sciencedaily.com/releases/2014/12/141202132405.htm



# Australian government taken to international tribunal over Great Barrier Reef

Sara Phillips ABC Environment 4 Dec 2014



The management of the Great Barrier Reef will be considered by environmentalists and lawyers. *Credit: iStockphoto* 

An Australian environment law group will present evidence the government is mishandling threats to the Great Barrier Reef at a new international tribunal.

THE AUSTRALIAN GOVERNMENT'S handling of the dangers facing the Great Barrier Reef will be brought before an international tribunal in Lima, Peru on Saturday. It is one of 12 cases being heard at the <u>International Tribunal for the Rights of Nature</u>.

http://www.abc.net.au/environment/articles/2014/12/04/4141624.htm

### Parasites and the evolution of primate culture

6 hours ago



Learning from others and innovation have undoubtedly helped advance civilization. But these behaviours can carry costs as well as benefits. And a new study by an international team of evolutionary biologists sheds light on how one particular cost - increased exposure to parasites - may affect cultural evolution in non-human primates

Read more at: <a href="http://phys.org/news/2014-12-parasites-evolution-primate-culture.html#jCp">http://phys.org/news/2014-12-parasites-evolution-primate-culture.html#jCp</a>

#### Irrigators angry at surprise Federal Government water buyback in the Murray-Darling Basin



http://www.abc.net.au/news/2014-12-01/nrn-surprise-buyback/5931360

### Height better than age when predicting fire fuel load

1 Dec 2014 by Lily Yeang



Bradford, is not happy, but stops short of calling it

Plant height can be used to estimate fuel load

when managing prescibed burns, like this one at Beekeeper's Nature Reserve on the Eneabba sandplain. Credit: Vanessa Westcott

Plant height is a stronger predictor of fuel load than fuel age in diverse shrublands, a West Australian study has found.

Read more at: <a href="http://phys.org/news/2014-12-height-age-fuel.html#jCp">http://phys.org/news/2014-12-height-age-fuel.html#jCp</a>

# Loss of elephants (and their poop) devastates forests

<u>University of Florida</u> <u>-Original Study</u>



"The message that 'guns kill trees, too' should help put overhunting at the top of the conservation agenda, where it deserves to be," says Richard Corlett. (Credit: <u>iStockphoto</u>)

#### Posted by Gigi Marino-Florida

Elephants in Thailand have traditionally been hunted, mostly for fabled properties of their organs, teeth, and tusks. But a new study shows that overhunting has been disastrous for their tropical forest habitats. <a href="http://www.futurity.org/elephants-forest-hunting-807412/">http://www.futurity.org/elephants-forest-hunting-807412/</a>

#### Population of world's rarest marsupial more than triples in WA

2 December 2014



A 20-year celebration will be held in honour of Gilbert's Potoroo. Photo: DPW

The success of a small population of quokka-like animals in Western Australia - at one stage thought to be extinct for a century - will be celebrated on Tuesday, 20 years on from the rediscovery of what is the world's rarest marsupial.

Monitoring of the Gilbert's potoroo has revealed small populations are continuing to respond well to recovery efforts. <a href="http://www.smh.com.au/wa-news/population-of-worlds-rarest-marsupial-more-than-triples-in-wa-20141202-11ya52.html">http://www.smh.com.au/wa-news/population-of-worlds-rarest-marsupial-more-than-triples-in-wa-20141202-11ya52.html</a>

#### MI finishes \$50m Lake Wyangan project, another \$150m in water saving works to go

Updated Wed at 6:19am

Murrumbidgee Irrigation (MI) has finished what it calls the biggest infrastructure project since the Murrumbidgee Irrigation Area (MIA) scheme was built.

The \$50m Lake Wyangan upgrade involved replacing 17 kilometres of concrete channel, 13 kilometres of new pipes, and new outlets.

Executive Operations Manager, Matt Thorpe, says the water to be saved could be in the hundreds of megalitres, but the exact amount will not be known until the new Wyangan irrigation system has run for a year.

"There's sufficient savings in water to actually generate the funding from the federal government



PHOTO: Channel upgrades have been part of Murrumbidgee Irrigation's \$50m Lake Wyangan project. (Laurissa Smith)

MAP: Lake Wyangan 2680



http://www.abc.net.au/news/2014-12-02/wyangan-done/5932870

#### Video: How to Keep Food Healthy, Nutritious and Safe



Farming First interviewed John McDermott, Director of the International Food Policy Research Institute's Program on Agriculture for Nutrition and Health (<u>A4NH</u>) to learn how the numerous challenges facing food safety in the developing world can be overcome.

 $\frac{\text{http://www.farmingfirst.org/2014/11/video-how-to-keep-food-healthy-nutritious-and-safe/?utm\_source=feedburner&utm\_medium=email&utm\_campaign=Feed%3A+FarmingFirst+%28Farming+First%29}{\text{rst\%29}}$ 



http://www.abc.net.au/news/2014-12-04/nt-bushfire-above-average-season/5937186

## Hotter, weirder: How climate has changed Earth

2 Dec 2014 by By Seth Borenstein



In this 3 Aug. 2012 file photo, an Indian farmer shows a dry, cracked paddy field in Ranbir Singh Pura 34 kilometers (21 miles) from Jammu, India. Meteorologists at NOAA's National Climatic Data Center said it's almost a sure thing that 2014 will go down as the world's hottest year in 135 years of record keeping, because January through October has been so record warm. (AP Photo/Channi Anand, File)

In the more than two decades since world leaders first got together to try to solve global warming, life on Earth has changed, not just the climate. It's gotten hotter, more polluted with heat-trapping gases, more crowded and just downright wilder.

Read more at: <a href="http://phys.org/news/2014-12-hotter-weirder-climate-earth.html#jCp">http://phys.org/news/2014-12-hotter-weirder-climate-earth.html#jCp</a>

#### Methane study: EPA study to drill down into emissions



The CSIRO has begun its first study of rogue methane leaks. Photo: Ryan Osland

The state's chief environmental regulator has quietly begun a year-long study of fugitive methane emissions in a bid to calm community concerns about the coal seam gas industry.

Believed to be the first of its kind, the CSIRO study is tracking methane emissions across the seasons from 12 NSW sites, ranging from wetlands and landfills to the three main CSG gas fields and coalmines. <a href="http://www.smh.com.au/environment/methane-study-epa-study-to-drill-down-into-emissions-20141201-11v9a7.html">http://www.smh.com.au/environment/methane-study-epa-study-to-drill-down-into-emissions-20141201-11v9a7.html</a>

# Scientists may be cracking mystery of big 1872 earthquake

27 Nov 2014 by Sandi Doughton, The Seattle Times



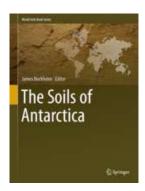
Aerial photo of the San Andreas

Fault in the Carrizo Plain, northwest of Los Angeles. Credit: Wikipedia.

Geologists may be close to cracking one of the biggest seismological mysteries in the Pacific Northwest: the origin of a powerful earthquake that rattled seven states and provinces when Ulysses S. Grant was president.

Read more at: http://phys.org/news/2014-11-scientists-mystery-big-earthquake.html#jCp

#### The Soils of Antarctica



Series: World Soils Book Series

Bockheim, James (Ed.)

2014, 290 p. 201 illus., 144 illus. in color.

http://www.springer.com/environment/soil+science/book/978-3-319-05496-4

# 55 percent of carbon in Amazonian indigenous territories and protected lands may be at risk

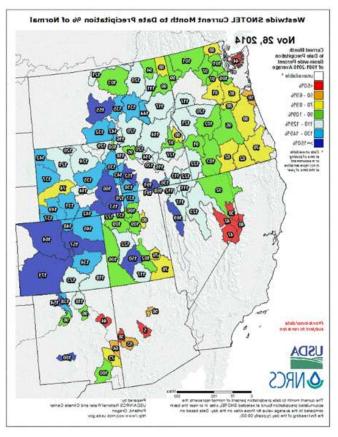
2 Dec 2014

A new peer-reviewed study, released today at the start of the UN climate conference in Peru, reveals the unprecedented amount of carbon stored within the nine-nation network of Amazonian indigenous territories and protected natural areas. Accepted for publication in *Carbon Management*, the paper entitled, "Forest Carbon in Amazonia: The Unrecognized Contributions of Indigenous Territories and Protected Natural Areas," suggests that protecting the vast amount of carbon stored above ground in the forests of indigenous and protected lands - totaling 55% of the Amazon - is critical to the stability of the global climate as well as to the cultural identity of forest-dwelling peoples and the health of the ecosystems they inhabit.

Read more at: <a href="http://phys.org/news/2014-12-percent-carbon-amazonian-indigenous-territories.html#jCp">http://phys.org/news/2014-12-percent-carbon-amazonian-indigenous-territories.html#jCp</a>

# Rocky Mountain precipitation well above average; Sierra Nevada remains very dry

Weekly Water and Climate Update 26 November 2014



The National Water and Climate Center produces this weekly report, in cooperation with the National Drought Mitigation Center and other Federal agencies. The report focuses on snow, precipitation and temperature conditions in the western U.S., and includes a national drought summary.

The western U.S. mountain Snow Telemetry (SNOTEL) precipitation percent of normal map for the month to date shows that most of the Rocky Mountains from Montana to New Mexico have well above normal precipitation, whereas the Sierra Nevada has below to much below normal precipitation. Read more >>

#### Australia's first cane toad sniffer dog dies



http://www.abc.net.au/news/2014-11-27/cane-toad-sniffer-dog-nifty-dies/5922180

# **Erosion Resistance at 'Pink Cliffs' at Base of Martian Mount Sharp**



This small ridge, about 3 feet long, appears to resist wind erosion more than the flatter plates around it. Such differences are among the traits NASA's Curiosity Mars rover is examining at selected rock targets at the base of Mount Sharp. Curiosity's Mastcam acquired this view on 7 Oct 2014.

http://mars.jpl.nasa.gov/msl/multimedia/images/?lmageID=6786&NewsInfo=59C884BFF2B8E0EFC EDA00B94F94BA55AC4A8F96030079DACB4B50FDAEDFDC97C58ED5D9F6DFC45EC64090E5D6F9 8B0FCDC7C70AD9441DE8D1719F8B0E399E6E44

"World Soil day celebrates the importance of soil as a critical component of the natural system and as a vital contributor to the human commonwealth through its contribution to food, water and energy security and as a mitigator of biodiversity loss and climate change."

- International Union of Soil Science (IUSS)