

GK BULLETIN (MARCH 2016)

Budget 2016's measures focus on the poor and rural classes. **Finance minister Arun Jaitley**, in his third budget, attempted to counter criticism that PM Modi's is a "suit-boot ki sarkar". Jaitley allocated ₹ 35,984 crores for farmers' welfare, ₹ 8,500 crores for rural electrification and raised the ceiling of tax rebate for those earning up to ₹ 500,000 per annum to ₹ 5,000 from ₹ 2000, among other measures.

Leonardo DiCaprio has finally won a 'Best Actor' Oscar.

Mukesh Ambani is the 36th richest person in the world. The Reliance Industries chairman has a net worth of \$20.6 billion, according to [Forbes's annual ranking of billionaires](#). Forbes said Ambani, 58, retained his position as India's richest person despite his oil business having been hit due to lower oil prices. Microsoft co-founder Bill Gates continues to be the world's richest person with a net worth of \$75 billion.

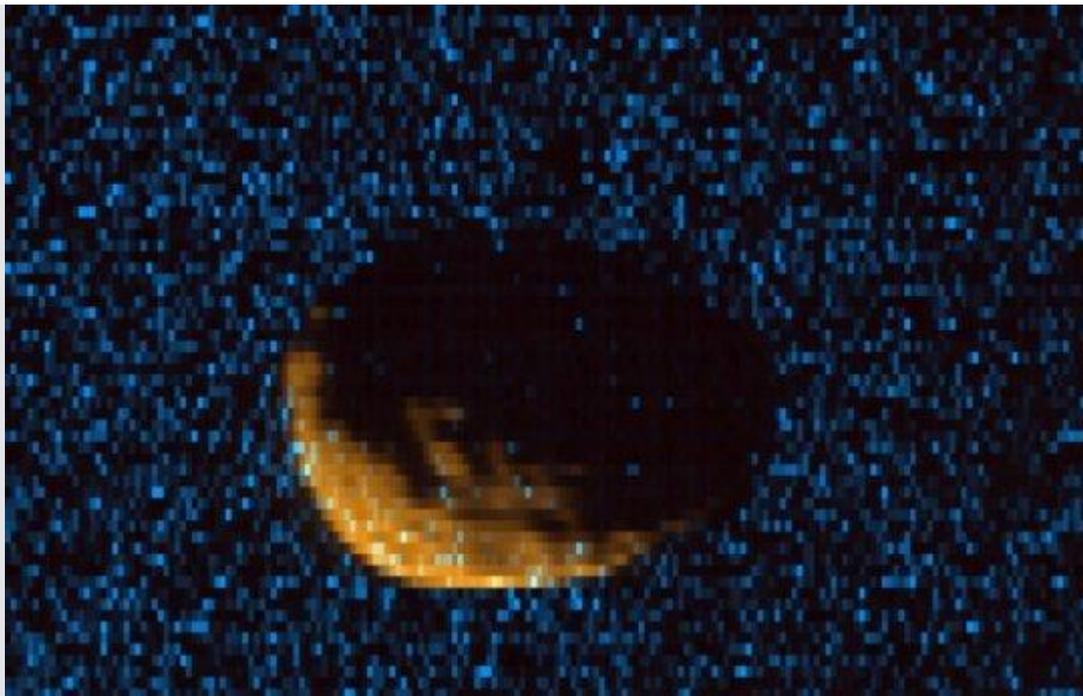
Science news

Scientists are closer to solving the mystery of how Mars' moon Phobos formed: Phobos in the mid- and far-ultraviolet

Date: February 29, 2016

Source: NASA/Goddard Space Flight Center

Summary: In late November and early December 2015, NASA's Mars Atmosphere and Volatile Evolution (MAVEN) mission made a series of close approaches to the Martian moon Phobos, collecting data from within 300 miles (500 kilometers) of the moon.



Phobos as observed by MAVEN's Imaging Ultraviolet Spectrograph. Orange shows mid-ultraviolet (MUV) sunlight reflected from the surface of Phobos, exposing the moon's irregular shape and many craters. Blue shows far ultraviolet light detected at 121.6 nm, which is scattered off of hydrogen gas in the extended upper atmosphere of Mars. Phobos, observed here at a range of 300km, blocks this light, eclipsing the ultraviolet sky.

Credit: CU/LASP and NASA

The origins of the universe

Date: March 1, 2016

Source: Department of Energy, Office of Science

Summary: *An in-depth look at the origins of matter and the environmental conditions that helped shape the universe today.*

A long time ago in a galaxy far, far away...

The Big Bang

Everything we know in the universe – planets, people, stars, galaxies, gravity, matter and antimatter, energy and dark energy – all date from the cataclysmic Big Bang. *While it was over in fractions of a second, a region of space the size of a single proton vastly expanded to form the beginnings of our universe.*

Understanding what happened in the first few microseconds is crucial to knowing how the universe came to look and behave as it does today. And our understanding is increasingly shaped by re-creating the very events that constituted the Big Bang and by studying the primordial soup of fundamental particles of the very early universe. One of the best science tools for this is the Relativistic Heavy Ion Collider (RHIC), a DOE Office of Science User Facility at Brookhaven National Laboratory. At RHIC, over a thousand scientists from all over the world come to study the behaviors of matter as it is thought to have acted microseconds after the Big Bang.

The findings at RHIC and LHC have taught us a lot about what we are made of and where we came from (and how the universe makes French onion soup!). And though we now know more about the particles of matter that make up our universe, as well as the many different types of matter created by our universe, I look forward to learning "what matters" next.

Department of Energy, Office of Science. "The origins of the universe." ScienceDaily. ScienceDaily, 1 March 2016. <www.sciencedaily.com/releases/2016/03/160301175455.htm>.

Drinking more water associated with numerous dietary benefits, study finds

Date: March 1, 2016

Source: University of Illinois at Urbana-Champaign

Summary:

A new study has examined the dietary habits of more than 18,300 US adults, and found the majority of people who increased their consumption of plain water by 1 percent reduced their total daily calorie intake as well as their consumption of saturated fat, sugar, sodium and cholesterol.

People who increased their consumption of water by one, two or three cups daily decreased their total energy intake by 68 to 205 calories daily and their sodium intake by 78 to 235 grams, according to a paper by University of Illinois kinesiology and community health professor Ruopeng An.

An calculated the amount of plain water each person consumed as a percentage of their daily dietary water intake from food and beverages combined. Beverages such as unsweetened black tea, herbal tea and coffee were not counted as sources of plain water, but their water content was included in An's calculations of participants' total dietary water consumption.

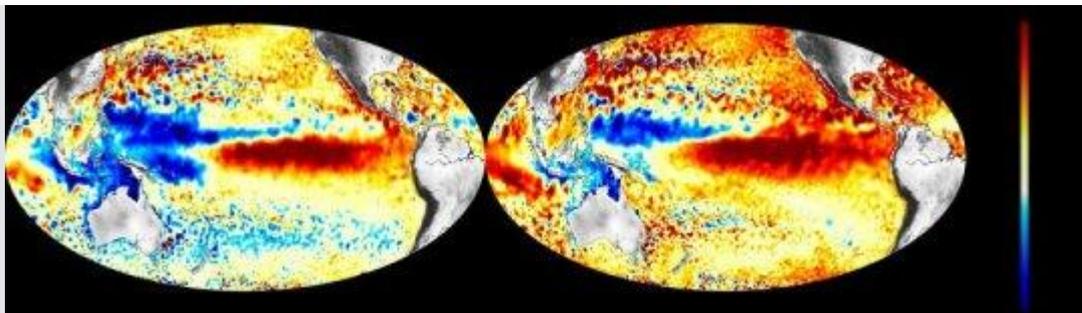
University of Illinois at Urbana-Champaign. "Drinking more water associated with numerous dietary benefits, study finds." ScienceDaily. ScienceDaily, 1 March 2016. <www.sciencedaily.com/releases/2016/03/160301174759.htm>.

Cholera-like disease 'piggybacking' on El Niño to reach new shores

Date: March 1, 2016

Source: University of Bath

Summary: *Waterborne diseases are being spread by El Niño, say researchers. El Niño describes the unusual warming of surface waters along the tropical west coast of South America. These events tend to occur every 3 - 7 years; something many suggest have become more regular and extreme in recent years, as a result of climate change.*



The 2016 El Niño 'Godzilla' -- comparing data from 1997 with 2015 highlights the 'extraordinary effects' of El Niño over recent times.

Credit: Study Authors and Institutions.

New research just published has highlighted how El Niño could be transporting and spreading waterborne diseases like cholera thousands of miles, across oceans, with significant impacts for public health.

The study, published in the journal Nature Microbiology from a team of international researchers in the UK and US, explores how the arrival of new and devastating Vibrio diseases in Latin America has concurred in both time and space with significant El Niño events.

El Niño describes the unusual warming of surface waters along the tropical west coast of South America. These events tend to occur every 3 -- 7 years; something many suggest have become more regular and extreme in recent years, as a result of climate change.

Over the past 30 years, coinciding with the last three significant El Niño events in 1990/91, 1997/98 and 2010, new variants of waterborne pathogens emerged in Latin America.

These included a devastating cholera outbreak in Peru in 1990, leading to over 13,000 deaths, as well as two instances in 1997 and 2010 where new variants of the bacterium *Vibrio parahaemolyticus* led to widespread human illness through contaminated shellfish.

Lead author from the University of Bath's Milner Centre for Evolution and Department of Biology & Biochemistry, Dr Jaime Martinez-Urtaza explains: "Through our findings we suggest that so-called vibrios -- microscopic bacteria commonly found in seawater -- can attach to larger organisms such as zooplankton to travel oceans. Numerous previous studies have shown how such vibrios bind to and use these larger organisms as a source of energy and through this mechanism, we suggest, they are essentially able to piggyback to travel such enormous distances, driven by ocean currents.

"The effects of El Niño events and their impacts on local weather, fisheries and the risk of more extreme meteorological events are already well-documented. Now understanding the role the ocean currents are also playing in transporting these disease has huge significance for public health campaigns in those countries."

University of Bath. "Cholera-like disease 'piggybacking' on El Niño to reach new shores." ScienceDaily. ScienceDaily, 1 March 2016. <www.sciencedaily.com/releases/2016/03/160301174130.htm>.

Impact of climate change on public health

Health consequences of climate change: Doctors urge action to help mitigate risks and prepare for new challenges

Date: March 1, 2016

Source: Elsevier Health Sciences

Summary: Doctors warn of the impending public health crisis brought on by climate change and call for action to help prepare the world for what is ahead.

Climate change is already having a noticeable impact on the environment and global health. Around the world extreme weather events, increased temperatures, drought, and rising sea levels are all adversely affecting our ability to grow food, access clean water, and work safely outdoors. Soon in some areas, the transformation will be so drastic and devastating that native populations will be displaced and forced to find new homes as environmental refugees. In a review published in the *Annals of Global Health*, doctors warn of the impending public health crisis brought on by climate change and call for action to help prepare the world for what is ahead.

Public health problems resulting from climate change continue to increase, and yet, we are slow to react. With the most vulnerable populations among us set to sustain the most damage, this review in the *Annals of Global Health* urges swift and decisive action to protect poor people, women, children, older people, and other vulnerable populations from the health consequences of climate change now and in the future.

"The global climate crisis threatens most people and their human rights," concluded Dr. Patz. "The adverse consequences of climate change will worsen. Addressing climate change is a health and human rights priority, and action cannot be delayed. Mitigation and adaptation measures must be equitable, respecting, protecting and promoting human rights."

Elsevier Health Sciences. "Impact of climate change on public health: Health consequences of climate change: Doctors urge action to help mitigate risks and prepare for new challenges." ScienceDaily. ScienceDaily, 1 March 2016. <www.sciencedaily.com/releases/2016/03/160301144807>.