



## NEWS ALERT

*Forum for Indian Science Diplomacy*

RIS's Science Diplomacy News Alert is your fortnightly update on Indian and global developments in science research, technological advancements, science diplomacy, policy and governance. The archives of this news alert are available at <http://fisd.in>. Please email your valuable feedback and comments to [science.diplomacy@ris.org.in](mailto:science.diplomacy@ris.org.in)

### GLOBAL

#### **[What to expect in 2019: Some Clues from Nature](#)**

According to Nature an international journal, major research in polar regions, thrust on open access, China's increasing emphasis on S&T, and, experiments in geoengineering are likely to be key developments in 2019. It further states that they will have an impact on research. Of these controversial applications like gene editing, geoengineering are likely to result in global initiatives to regulate them.

#### **[COP 24 adopts the Paris rulebook but defers some key issues](#)**

UNFCCC's 24th Session of the Conference of Parties (COP-24) concluded late on 15 December evening in Katowice, Poland, after two weeks of intense negotiations. The deadline was met for the Paris Agreement "rulebook", which is needed when the Agreement enters into force in 2020. This step marks a new international climate regime under which all countries will have to report their emissions, and progress in cutting them, every two years from 2024. COP-24 is also considered to be a breakthrough in efforts to implement Paris Agreement. The Katowice rules are expected to result in accountability and better flow of information and facilitate implementation of the Agreement. However the rules for voluntary market mechanisms were deferred to next year's COP25 in Chile.

#### **[US government shutdown to affect a number of science research agencies](#)**

The partial shutdown of the US government began on Dec 22nd 2018, after President Trump and lawmakers in Congress could not agree on a short-term funding deal. It is the third shutdown of the year and is likely to scramble operations of a number of research agencies including the National Science Foundation (NSF), NASA, the National Oceanic and Atmospheric Administration (NOAA), the US Geological Survey and the Agricultural Research Service. Past shutdowns have proved costly and disruptive; therefore, this event is raising alarm among the US science groups.

#### **[Gatwick incident highlights need for better regulation of use of drones](#)**

Holiday air travel at London's Gatwick Airport was seriously disrupted on December 20, after a pair of industrial-sized drones were spotted over the runway. More than 10,000 travellers were affected, including 4,000 people stuck at Gatwick (and other) airports.

Drone-aircraft collisions have the potential to cause serious damage. Aircraft wings, communications systems, engines and cockpit glass are vulnerable to drone strikes and collision between drones and planes has to be avoided. While this incident highlights issues in regulating drones, given the various applications drones could be put to, developing regulations within a short time is not possible.

### [New class of planets, named Super-Earths discovered](#)

Researchers from the University of Zurich have discovered a new, exotic class of planets outside our solar system. These so-called Super-Earths were formed at high temperatures close to their host-star and contain high quantities of calcium, aluminium and their oxides. Unlike Earth, these planets do not possess massive iron core but shine like rubies and sapphires because of the presence of aluminium and calcium oxides.

### [Saturn is losing its iconic rings under the influence of its magnetic field](#)

New NASA research confirms that Saturn is losing its iconic rings at the maximum rate estimated from Voyager 1 & 2 observations made decades ago. These rings are mostly chunks of water ice ranging in size from microscopic dust grains to boulders several yards across. Research reveals that the rings are being pulled into Saturn by gravity as a dusty rain of particles under the influence of its magnetic field. It has been estimated that the entire ring system will be gone in 300 million year.

### [Electron behaviour during chemical reaction observed for the first time](#)

MIT scientists have designed a system that could store renewable energy and deliver it back into an electric grid on demand. This concept called the Thermal Energy Grid Storage-Multi Junction Photovoltaics (TEGS-MPV) involves passing electric current through a heating element instead of using field of mirrors and a central tower to concentrate heat. The researchers estimate the newly designed system to be vastly more affordable and viable than the traditional lithium-ion batteries.

### [New AI method can train on medical records without revealing patient data](#)

Researcher from MIT, have developed a new technique for training machine-learning models while keeping the data confidential. Split Neural Network, as the method is called, allows one person to start training a deep-learning model and another person to finish. The method requires significantly fewer computational resources to train and produce models with much higher accuracy and also designed to keep patient data safe.

## INDIA

### [ISRO's 'angry bird'- the GSAT-7A launched](#)

The communication satellite GSAT-7A soared into the sky from the Satish Dhawan Space Centre in Sriharikota on Dec 19th 2018. The satellite is meant to enhance the communication infrastructure of the Indian Air Force and was carried into the sky by GSLV-F11 with an indigenous cryogenic stage engine. GSAT-7A will interlink all the ground-based radars, airbases and AEW&C aircraft for surveillance and to maintain air superiority. It will also enhance KU band communication System.

### [IIT Hyderabad uses recycled material to reduce virgin asphalt for roads](#)

A team of researchers from IIT Hyderabad have come up with an innovative, environment-friendly material to lay roads. This material- Reclaimed Asphalt Pavement (RAP) uses a mixture of fly ash and reclaimed asphalt concrete and is also stronger than asphalt. In this method, fly ash is at first treated with sodium hydroxide, an alkali; thereby converting fly ash into a polymer which binds the RAP particles, rendering it stronger.

### **[Indian and Russian scientists make pathbreaking discovery in mining industry](#)**

Russian scientists from the Tomsk Polytechnic University (TPU) together with their Indian counterparts from IIT Bombay have been studying one of world's largest deposits of iron ore, the Bakchar ironstone deposit located in the Tomsk oblast, Russia. The most common theory of iron being transported into the sea by the erosion of ancient mountainous areas by the river systems have been refuted by the new study. The current research results also give an indication that most iron ore in Russia was formed within a short period, in geologic time, in Cretaceous and Palaeogene. The findings could be of help in locating iron ore deposits.

### **[Process to treat industrial waste by researchers from the North Eastern University](#)**

Researchers from the North-Eastern Hill University (NEHU), Shillong have patented a fast, energy-efficient and low-cost process for treatment and bio-detoxification of industrial effluents contaminated with harmful azo-dye. The process is environmentally benign and thus likely to be non-toxic to the flora and fauna.

### **[Krithi Karanth bags Women of Discovery Award](#)**

Krithi Karanth- the Chief Conservation Scientist, Centre for Wildlife Studies (CWS) has been chosen for the 2019 Women of Discovery Award by the WINGS Worldquest. The award recognises and supports extraordinary women in science and exploration. Krithi's work encompasses macro-level studies, land use change, patterns of species distribution and extinction and understanding human-wildlife interactions. She's also an adjunct faculty at the Duke University and the National Centre for Biological Sciences.

### **[President Inaugurates Centre of Excellence for Blood Disorders](#)**

President of India Shri Ram Nath Kovind, inaugurated the Centre of Excellence for Sickle Cell Anaemia, Thalassemia and Other Genetic Blood Disorders at the Prathima Institute of Medical Sciences in Karimnagar, Telangana on 22nd December 2018. In his address, he pointed out that as per estimates, about 1,50,000 children have Thalassemia major, millions of carriers have the genetic trait for Thalassemia major; he stressed the need for creating awareness and the devise combat these diseases effectively.

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