



Current Affairs - December 2017 to February 2018

Month Type



- **70** Current Affairs were found in **Last Three Months** for Type - **Science and Technology**.

Science

- ▶ 2 new ant species *Tetramorium krishnani* and *Tetramorium jarawa* discovered in islands of Andaman, named after late scientist K.S. Krishnan of NCBS, and Jarawas – indigenous people of Andaman.
- ▶ Government launched Noxeno, a nasal foreign body removal device developed by start-up InnAccel Technologies, under Biodesign program. Noxeno is first dedicated tool for anterior nasal foreign body (NFB) removal that allows doctors in any setting to quickly and safely remove objects that people (mostly children aged 2 to 10 years) put into their noses.
- ▶ A long-lost NASA satellite - *Imager for Magnetopause-to-Aurora Global Exploration (IMAGE)* has been spotted back.
 - ▶ Engineers from NASA's Goddard Space Flight Center used NASA's Deep Space Network which consists of a series of ground-based radio telescopes to study signals, only to discover that these signals were from IMAGE satellite.
 - ▶ IMAGE satellite was launched in March 2000, and exceeded its initial 2 year mission by operating through 2005. NASA lost contact with it in December 2005.
- ▶ A new LIGO (Laser Interferometer Gravitational-Wave Observatory) gravitational wave detector will be built in India by 2025 (world's 3rd after 2 in USA).
 - ▶ In 2016, LIGO detectors discovered gravitational waves produced by two giant merging blackholes. LIGO detector in India will help to pinpoint origin of gravitational waves that are detected in future.
- ▶ A new endangered flowering plant species named 'Primula Zhui' has been discovered by scientists in Yunnan Province of China, known in Chinese as Zhu Hua Baochun.
- ▶ A new research at Bhopal's Indian Institute of Science Education and Research (IIS) has proved D - 29 virus as capable of destroying cancer cells. The research is led by Scientist Soumya Kamilla. Now challenge is to transmit this virus to cancerous cells in body. Upon success in this, the method can be much more successful than Chemotherapy in eliminating cancer.
- ▶ According to a new study by Swedish scientists, small molecules that specifically restrain a selenium-containing enzyme in the human body may become an important tool to fight cancer. Researchers at Karolinska Institute (Sweden) treated cancer in mice with these molecules and observed rapid tumor-killing effects.
 - ▶ Selenium is a chemical element that is an essential micronutrient. A selenium-containing enzyme, called TrxR1, can be used to support growth of various cells and protect them from oxidative stress (*imbalance between production of free radicals, which are highly reactive with other molecules, and body's ability to counteract or repair resulting damage*).
- ▶ According to new NASA study, our solar system's Planet Pluto may have liquid water oceans beneath their surface, as heat generated by gravitational pull of moons formed from massive collisions could extend the lifetimes of liquid water oceans beneath its surface.
- ▶ According to study based on data from India's Chandrayaan-1 mission and NASA's Lunar Reconnaissance Orbiter (LRO), Moon's water may be widely distributed across its surface and not confined to particular region. It contradicts earlier studies that suggested that more water was detected at Moon's polar latitudes.
 - ▶ Researchers after analyzing data from Moon Mineralogy Mapper spectrometer onboard Chandrayaan-1 spacecraft, suggested that water may be present primarily as OH, a more reactive form of normal water (H₂O). OH also called hydroxyl does not stay in its form for long, and attaches itself chemically.
- ▶ Acer launched *Acer Swift 7*, that claims to be the world's thinnest laptop, priced at \$1,699. It has thickness of 8.98mm and is powered by Intel Core i7 processor.

11. ▶ As per new study at University of Colorado (USA) based on 25 years of satellite data, It is found that global sea level rise rate is accelerating a little every year.
 - ✎ Sea level rate is increasing by about 0.08 millimeters per year (mm/year). It means annual rate of sea level will rise to 10 mm/year by 2100, mainly driven by rapid melting in Antarctica and Greenland.
 - ✎ If oceans keep on to growing at this pace, sea level will rise 65cm by 2100, causing trouble for several coastal cities.
12. ▶ Australian Researchers discovered a new water-adapted species of spiders named 'Desis bobmarleyi' in Queensland, named after noted singer and songwriter Bob Marley.
13. ▶ Australian scientists of University of New South Wales (UNSW) discovered a new species of marsupial lion which has been extinct for at least 19 million years. Named *Wakaleo schouteni*, it was a predator about the size of a border collie dog.
14. ▶ Botanical Survey of India (BSI) scientists discovered two new species of Ginger - *Hedychium chingmeianum* (Nagaland) and *Caulokaempferia dinabandhuensis* (Manipur).
15. ▶ CSIR - National Institute of Oceanography Goa announced discovery of methane gas flares and active cold seeps from seabed in Krishna Godavari basin in Bay of Bengal, distributed over water depth of 900 - 1900 metres. Gas hydrates are a potential source of alternate energy.
16. ▶ California Institute of Technology, USA (CALTECH) scientists made world's smallest recreation of Leonardo da Vinci's Mona Lisa, through a technique dubbed as *DNA origami*. Scientists folded DNA into desired self-assembling structures using 64 tiles, which were 100 nanometers wide.
17. ▶ China launched world's largest human genome research project to document genetic makeup of 1 lakh people, to detect genetic links between health and sickness and use that information to generate precision medicines for future.
18. ▶ China tested its first photovoltaic (solar) highway in Shandong province, becoming 2nd country (after France) to construct a photovoltaic highway.
 - ✎ China's photovoltaic highway is constructed using solar panels with thin sheet of transparent concrete on top of them.
 - ✎ The photovoltaic panels of the highway are built to transfer energy to electric vehicles passing on top of them.
 - ✎ Tested 1 KM segment of solar highway can generate 817.2 KW of electricity and can generate 1 million KW hours of electricity yearly.
19. ▶ China will build a Martian village (simulating environmental conditions on Mars) in Qinghai Province, in red rock area of the Qaidam basin in western Qinghai.
20. ▶ China's Three Gorges Corp. started building world's biggest floating solar power plant in Anhui Province, expected to be launched by May 2018.
21. ▶ China's AG600n (also known as Kunlong), world's largest amphibious aircraft took off its first flight from Zhuhai City. It has huge wingspan of 38.8 metres and can land and take off from water.
22. ▶ Chinese scientists for first time have successfully cloned two identical long-tailed macaques (monkeys), named Zhong Zhong and Hua Hua using same technique that produced Dolly sheep two decades ago. This makes them world's first primates (*order of mammals that includes monkeys, apes and humans*) to be cloned from non-embryonic cell.
 - ✎ These identical long-tailed macaques were cloned using process called somatic cell nuclear transfer (SCNT), that involves transferring the nucleus of cell, which includes its DNA, into egg whose nucleus is removed.
 - ✎ Similar work in primates earlier, had always failed, leading some scientists to wonder if primates were resistant.
23. ▶ H-BOTS, Hyderabad-based artificial intelligence (AI) and machine learning start-up unveiled a prototype of a smart policing robot, which weighs 43 kg and is made of nylon plastic. H-BOTS is planning to produce 700 such units a year by 2020.
24. ▶ Health-tech startup mCURA launched *Smart OPD* as India's first integrated mobility platform that reduces waiting time in counters and provides e-prescriptions. It helps patients to escape long queues at admission and billing counters, labs, pharmacies and hospitals.
25. ▶ India has been declared free from infective Trachoma which is a contagious bacterial infection of the eye, that causes inflamed granulation on inner surface of lids. It was stated in National Trachoma Survey Report 2014-17 released by Minister of Health and Family Welfare J P Nadda.
26. ▶ Indian Scientist Satish Tailor has developed a new thermal spray coating technology for use in gas turbine engine in spacecraft, called controlled segmented Ytria-Stabilised Zirconia (YSZ)-Plasma sprayed coating technology. It can reduce thermal spray coating cost by 50%.
 - ✎ Current costly techniques such as SPS or EB-PVD develop cracks through very expensive processes and are not controllable, while YSZ develops vertical cracks (segmentation) in coating, beneficial for gas turbine engine application used in spacecraft. It can be industrially adopted to make a strain-tolerant coating more economical.
27. ▶ Indian Space Research Organisation (ISRO) launched 31 satellites along with Cartosat-2 surveillance satellite (weighing total 1383 KG), onboard 42nd Polar Satellite Launch Vehicle (PSLV-C40) rocket.
 - ✎ Among 31 satellites, 3 belong to India and rest 28 are of six other countries.

✎ Cartosat-2 series Satellite weighs 710 KG, making it heaviest satellite that PSLV has carried till now. It will beam high-quality images for cartographic, urban and rural applications, coastal land use and utility management.

28. ▶ Indian Space Research Organisation (ISRO) will build igloos (referred to as lunar habitats) on Moon, by sending robots and 3D printers to Moon. It aims to help astronauts spend more time on moon.

29. ▶ Indian Space Research Organisation (ISRO) will launch Chandrayan-2 Mission in April 2018 as India's second lunar mission. It will cost approx INR 800 Crores.

✎ ISRO is also planning to launch India's second space observatory, AstroSat-2, to help observe distant planets, galaxies and other astronomical objects more clearly than from Earth. Currently, only USA, Japan, Russia, Europe and India have their own space observatories. AstroSat-1 was launched in September 2015 with life span of 5 years.

30. ▶ India's fastest and first multi-petaflops (PF) supercomputer named Pratyush (meaning *Sun*) unveiled at Pune-based Indian Institute of Tropical Meteorology (IITM). It will enable better weather related forecasts including monsoon, cyclones, tsunamis, earthquakes, lightning etc.

✎ Pratyush has 6.8 PF computational power installed at two MoES Institutes. 4.0 Peta Flops HPC facility at IITM, Pune and 2.8 Peta Flops facility at NCMRWF, Noida.

✎ Pratyush is fourth fastest supercomputer in world for weather and climate research, after supercomputers in Japan, US and UK.

✎ It will enable mapping regions in India at resolution of 3 km and globe at 12 km.

✎ Fastest Supercomputers in world -

Supercomputer	Peak speed (Rmax)	Location
TaihuLight (<i>Sunway</i>)	93.01 PFLOPS	China
Tianhe-2 (<i>NUDT</i>)	33.86 PFLOPS	China
Piz Daint (<i>Cray</i>)	19.59 PFLOPS	Switzerland
ZettaScaler (<i>Gyokou</i>)	17.14 PFLOPS	Japan
Titan (<i>Cray</i>)	17.59 PFLOPS	USA

31. ▶ Japan Aerospace Exploration Agency (JAXA) launched world's smallest rocket with ability to put a tiny satellite into orbit. It carried a microsatellite TRICOM-1R, a three-unit CubeSat weighing about 3 kilograms.

32. ▶ Mainstream space agencies in world proposed creation of a climate observatory to combine acquired data and share it with scientists around globe, during *One Planet Summit* in Paris (France).

33. ▶ NASA tested a new technology that allows aircraft to fold their wings between zero and 70 degrees while in flight. Built from a shape memory alloy, it operates without a hydraulic system, reducing wing weight by up to 80%.

34. ▶ NASA will launch Parker Solar Probe in 2018 to explore sun's outer atmosphere, onboard Delta IV Heavy launch vehicle. It aims at tracing how energy and heat move through solar corona and what accelerates solar wind as well as solar energetic particles.

35. ▶ NASA will launch SuperTIGER Balloon in Antarctica, to study heavy cosmic particles, collect information on cosmic rays that enter Earth's atmosphere every day.

✎ SuperTIGER stands for Super Trans-Iron Galactic Element Recorder (SuperTIGER) and is balloon-borne instrument to study rare heavy nuclei, which hold clues about where and how cosmic rays attain speeds up to nearly the speed of light.

36. ▶ NASA's Hubble and Spitzer space telescope discovered *SPT0615-JD* as farthest known galaxy in universe so far (2,500 light-years away). It is a cluster of 500 million year-old stars. SPT0615-JD was found in Hubble's Reionization Lensing Cluster Survey (RELICS) and companion S-RELICS Spitzer programme.

37. ▶ National Aeronautics and Space Administration (NASA) will soon launch two missions - GOLD (*Global-scale Observations of the Limb and Disk*) and ICON (*Ionospheric Connection Explorer*), to explore ionosphere (96 km above Earth's surface).

✎ ICON will be launched in low-Earth orbit (LEO) located at 560 km above Earth and GOLD will be launched in geostationary orbit over Western Hemisphere (about 35,398 km above earth).

✎ It will help in full-disk view of ionosphere and upper atmosphere beneath it every half hour.

38. ▶ New species of blind fish "Schistura larketensis" has been discovered in East Jaintia Hills district of Meghalaya. The fish had lost its pigments and eye sight after living in darkness of the cave.

39. ▶ Oil and Natural Gas Corporation (ONGC) will introduce carbon dioxide (CO₂) injection technology in its Gandhar oil field in Gujarat, as first large scale CO₂-injected project in Asia. It aims to recover extra 20 million barrels of crude oil under enhanced oil recovery (EOR) programme.

✎ CO₂ injection technology is a proven concept in West, especially USA and Canada. Under it, CO₂ gas is injected with residual oil in ageing field in which total oil production has been declining. It reduces its viscosity and makes it easier to displace oil from rock

pores.

40. ▶ Paleontologists from Chinese Academy of Sciences discovered approx 300 fossilised eggs of Pterosaurs, a group of extinct winged dinosaur. It is world's first such mass dinosaur egg discovery.
41. ▶ Researchers discovered 161 million-year-old fossils of a tiny bird-like dinosaur named Caihong juji from China that sported flashy rainbow feathers and a bony crest on its snout to attract mates.
42. ▶ Researchers from Bombay Natural History Society (BNHS) discovered a new species of moth, scientifically named *Elcysma Ziroensis* in Talley Wildlife Sanctuary in Arunachal Pradesh.
43. ▶ Researchers from University of California and University of Illinois confirmed existence of new form of matter called excitonium, made up of excitons and exhibits macroscopic quantum phenomena just like a superconductor.
 - ✎ Technique called momentum-resolved electron energy-loss spectroscopy (M-EELS) was used by researchers to prove existence of excitonium.
44. ▶ Researchers identified a new shark species in Atlantic Ocean, named *Atlantic sixgill shark*. They are very different from ones in Indian and Pacific Oceans on a molecular level. New species of sharks have six-gill slits, while most sharks have five-gill slits.
45. ▶ Rotavac became first Indigenously developed vaccine from India to be pre-qualified by World Health Organisation (WHO), enabling selling it internationally. Rotavac is first vaccine entirely developed in India to get this WHO status in safety and efficacy.
 - ✎ Rotavac is developed by Hyderabad-based Bharat Biotech Limited and protects against childhood diarrhoea caused by rotavirus. It was developed under collaboration between India and USA.
46. ▶ Samsung developed world's smallest 8-gigabit DRAM chip, with improved energy efficiency and data processing performance. In these chips, only 1 transistor and a capacitor are required per bit, compared to 4 to 6 in SRAM.
47. ▶ Scientists at University of California (USA) stated that increase in warmer global temperatures and dryer weather conditions could pose a threat to survival of fragile cocoa plant, leading to disappearance of chocolate by 2050. To avoid this, gene-editing technology CRISPR must be used to evolve crops that can survive environmental challenges.
48. ▶ Scientists confirmed discovery of nearly 100 new exoplanets outside our solar system based on data from second mission of NASA's Kepler Space Telescope (K2 mission) released in 2014. With this, number of exoplanets found using NASA's K2 mission has reached almost 300.
49. ▶ Scientists discovered 4 new balsam species from various locations in Eastern Himalayas in Arunachal Pradesh. They are - *Impatiens haridasanii*, *Impatiens pseudocitrina*, *Impatiens nilalohitae* and *Impatiens roingensis*.
50. ▶ Scientists discovered massive reserves of mercury hidden in permafrost (*thick subsurface layer of soil that remains below freezing point throughout the year, occurring primarily in polar regions*).
 - ✎ Study says that that all frozen and unfrozen soil in northern permafrost regions contain a combined 1656 gigagrams of mercury, making it largest known reservoir of mercury on planet.
 - ✎ This discovery may have significant implications on human health and ecosystems worldwide as exposure to mercury can cause serious health problems. There would be severe environmental problems if these reservoirs do not remain frozen, as evident by Warming temperatures. Melting permafrost could release a large amount of mercury that could potentially affect ecosystems around the world.
51. ▶ Scientists discovered new scorpion species named Schaller's wood scorpion (*Liocheles schalleri*) from at Trishna Wildlife Sanctuary, Tripura. It has been named in honour of celebrated wildlife biologist George Schaller who has studied wildlife across world.
52. ▶ Scientists discovered new species of frog named Mewa Singh's night frog (*Nyctibatrachus mewasinghi*) in Kozhikode's Malabar Wildlife Sanctuary, Kerala in Western Ghats.
53. ▶ Scientists found a small population of Red Handfishes (*Thymichthys politus*), walking along seabed off Australia's south coast in Tasmania. This species is only found in isolated island state of south-eastern Tasmania. In this small habitat within radius of 20 metres, fishes walk on seabed, instead of swimming.
54. ▶ Scientists from Botanical Survey of India (BSI) identified new plant species named *Drypetes kalamii* from Buxa and Jaldapara National Parks in West Bengal, named after former President Dr. APJ Kalam. It is close relative of medicinal plant known in Sanskrit as Putrajivah.
55. ▶ Scientists from Britain and USA for first time grew human eggs in laboratory from earliest stages in ovarian tissue all way to full maturity. This is first time human eggs have been developed outside human body. It can widen scope of available fertility treatments and can help in developing regenerative medicine therapies and new infertility treatments.
56. ▶ Scientists from Duke University in North Carolina (USA) for first time have developed working human skeletal muscle from stem cells in lab.
 - ✎ Stem cells are undifferentiated biological cells that can differentiate into specialized cells and can divide to produce more stem cells, found in multicellular organisms.

- Scientists developed human skeletal muscle using adult skin or blood cells that were reprogrammed into a juvenile, versatile state. This may benefit several people suffering of degenerative muscular diseases. It will allow scientists to grow endless amount of functioning muscle in lab to test to test drugs and gene treatments for degenerative diseases.
57. ▶ Scientists from Indian Institute of Science (IISc) Bengaluru indigenously developed country's first super critical carbon dioxide (S-CO₂) Brayton Test Loop facility. It is first test loop technology coupled with solar heat source in world that will generate clean energy from power plants, including solar thermal, as part of Indo-US consortium- Solar Energy Research Institute for India and United States (SERIUS).
- It uses supercritical CO₂ (SCO₂) instead of steam to generate more power. Supercritical refers to state of CO₂ above its critical temperature of 31 C and critical pressure of 73 atmospheres, which makes it twice as dense as steam.
 - This Next generation and waterless super critical CO₂ Brayton cycle test loop for power generation will be useful for meeting energy needs. It has potential to replace steam based nuclear and thermal power plants, reducing carbon foot print significantly.
58. ▶ Scientists from Massachusetts Institute of Technology (USA) found a novel way to induce plants to give off dim light by embedding specialised nanoparticles into their leaves.
- It has great significance as it will make plants function as a desk lamp, powered by energy metabolism of the plant itself and not by electricity connection.
 - To create glowing plants, scientists has used to luciferase, an enzyme that gives fireflies their glow. Luciferase acts on molecule called luciferin, causing it to emit light.
59. ▶ Scientists from Rockefeller University (USA) discovered of a new class of antibiotics called malacidins, produced by microorganisms living in soil and dirt and is capable of killing off several antibiotic-resistant pathogens.
- Malacidins are distinctive class of antibiotics that are commonly encoded in soil microbiomes. They have never been reported in culture-based NP (Natural Products) discovery efforts. This discovery could be a useful weapon in field of medicines.
60. ▶ Scientists from USA's Lawrence Berkeley National Laboratory discovered a new material for next-generation smart windows that will not only get a tinted look when Sun is too bright but will also convert solar energy into electricity. Researchers discovered a form of perovskite that works well as a stable and photoactive semiconductor material that can reversibly switch between transparent and non-transparent state, without degrading its electronic properties.]
61. ▶ Scientists from University of Michigan (USA) developed a new type of neural network chip using reservoir computing system to improve efficiency of teaching machines to think like humans.
- Network developed using this system can predict words before they are said during conversation and help predict future outcomes based on present.
62. ▶ Scientists from Zoological Survey of India (ZSI) discovered 3 new species of eel along northern Bay of Bengal coast - *Gymnothorax pseudotile*, *Gymnothorax visakhaensis* and *Enchelycore propinqua*.
- There are about 1,000 species of eels identified so far across the world. In India, there are around 125 species of eels identified.
63. ▶ Scientists from Zoological Survey of India (ZSI) discovered new frog species in the fast flowing streams in Talle Valley Wildlife Sanctuary (WLS) in Lower Subansiri district of Arunachal Pradesh. It is named *Odorana arunachalensis*.
64. ▶ USA based National High Magnetic Field Laboratory tested world's strongest superconducting magnet 32 T, producing 32 teslas (a unit of magnetic field strength), 33% stronger than previous record.
- 32 T will allow physicists studying materials to explore how electrons interact with each other and their atomic environment.
65. ▶ USA based SpaceX for first time ever has successfully launched used Dragon spacecraft with a used Falcon 9 rocket, as part of resupply mission to International Space Station (ISS). It was SpaceX's 13th of 20 Missions under a \$1.6 billion contract with National Aeronautics and Space Administration (NASA).
66. ▶ USA space flight company SpaceX launched he world's most powerful operational rocket 'Falcon Heavy' into space, carrying a red Tesla Roadster car belonging to SpaceX and Tesla founder Elon Musk.
- The car was outfitted with a mannequin dressed in a spacesuit, a high-data storage unit containing Isaac Asimov's science fiction book series, Foundation Trilogy, and a plaque bearing names of 6000 SpaceX employees.
67. ▶ USA's NASA discovered 8th planet in Our Solar System, circling Kepler-90, a Sun-like star which is 2545 light-years far from Earth.
- Newly-discovered planet Kepler-90i was discovered in data from NASA's Kepler Space Telescope, using Machine Learning from Google.
68. ▶ World Health Organisation (WHO) has given its pre-qualification to Tybbar Typhoid Conjugate Vaccine (TVC) developed by Hyderabad based Bharat Biotech for global use.
- Tybbar TCV is world's first typhoid vaccine clinically proven to be administered to children from six months of age to adults, and confers long-term protection against typhoid fever.

69. ▶ World's biggest flooded cave has been discovered in Mexico, after researchers connected 2 underwater caverns in eastern Mexico to reveal biggest flooded cave on planet. It is significant discovery as it could shed new light on ancient Maya civilization. The total length of cave is 347-kms, after connecting cave system named Sac Actun (262 km) with 83-km long Dos Ojos cave system.
70. ▶ World's heaviest bony fish ever caught weighing 2,300 kilograms has been identified in Japan, confirmed by researchers from Hiroshima University. Bony fish have skeletons made of bone rather than cartilage.

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