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Indo-French Space Collaborations

- Indian Space Research Organisation (ISRO) and French space agency Centre National dEtudes Spatiales (CNES) are working on their third joint satellite mission.
- **TRISHNA** - ISRO and CNES have completed the feasibility study to realise the earth observation satellite mission with TRISHNA, thermal infrared imager.
- Thermal infraRed Imaging Satellite for High resolution Natural resource Assessment (TRISHNA) will monitor the water cycle to help in properly utilizing it.
- **ARGOS** of CNES will be integrated into ISRO's OCEANSAT-3 satellite.
- ARGOS is the global satellite-based data collection and location system of its kind dedicated to studying and preserving the environment.
- ISRO-CNES **Human Space Programme** (HSP) Working Group had discussed about medical aspects of human spaceflight and is finalising an arrangement to formalise cooperation in the field of space medicine.
- There are discussions on establishing 'NavIC' (an independent regional navigation satellite system developed by India) reference station in France and CNES 'Scintillation' receivers in India.

Previous Joint Satellite Missions

- **MEGHA-TROPIQUES** (2011) - This Indo-French joint satellite mission that was launched to study the tropical atmosphere and climate related to aspects such as monsoons, cyclones, etc.
- **Satellite for ALTIKA and ARGOS (SARAL)** (2013) - This mission was launched to study the ocean from space using altimetry.

Russia's Satellites Launch

- Russian space agency Roscosmos' Soyuz-2.1a carrier rocket with the Fregat upper stage launched the 38 foreign satellites from 18 countries into orbit from Baikonur cosmodrome, Kazakhstan.
- Among them was the Challenge-1, the first satellite made completely in Tunisia, which was created by the Telnet telecommunications group.
- In 2018, a Soyuz rocket carrying a Russian cosmonaut and a NASA astronaut

failed mid-flight, forcing the crew to carry out an emergency landing.

Asteroid 2001 FO32

- Asteroid 2001 FO32 is the largest asteroid passed by Earth in 2021.
- It was discovered 20 years ago by Lincoln Near-Earth Asteroid Research (LINEAR) program in Socorro, New Mexico in 2001.
- When it is at its closest to Earth, it is at a distance of 2 million km (Equal to 5¼ times the distance from Earth to the Moon). So, it has been designated as a "potentially hazardous asteroid".
- There is no threat of a collision with Earth now or for centuries to come.
- The reason for the asteroid's unusually speedy close approach is its highly eccentric orbit around the Sun, an orbit that is tilted 39° to Earth's orbital plane.
- This orbit takes the asteroid closer to the Sun than Mercury, and twice as far from the Sun as Mars.

Candida Auris

- Researchers found Candida Auris on remote beaches of Andaman and Nicobar Islands that can potentially bring next pandemic.
- Candida Auris, a multidrug-resistant fungus, has become a 'superbug' as it is able to resist main anti-fungal treatments.
- C. Auris survives on the skin before entering the body through wounds.
- Once in the bloodstream, it causes severe illness and can lead to sepsis - a condition that kills up to 11 million people a year globally.
- **Spread** - C. auris spreads from one patient to another in hospitals, targeting people with weakened immune systems.
- It spreads through contact with contaminated environmental surfaces or equipment. It is difficult to identify with standard lab methods.
- **Symptoms** may not be noticeable, as patients infected with C. auris are often patients in the hospital with another serious illness or condition.

Air Independent Propulsion

- Defence Research and Development Organisation's (DRDO's) Naval Materials Research Laboratory (NMRL) is developing Air Independent Propulsion (AIP) System.
- This is crucial for both the conventional diesel electric submarines and nuclear submarines of the Indian Navy.
    1. Nuclear-powered submarines - Key assets for deep sea operations,
    2. Conventional diesel electric submarines - Vital for coastal defence and operations close to the shore.

- With the AIP system on board, these submarines will need to take in oxygen only once a week.
- So, they will be required to surface much less frequently, thus increasing their lethality and stealth multi-fold.
- These fuel cell-based AIPs of NMRL generate hydrogen onboard. This makes it unique from other AIP systems of the world.
- The project aims at fitting the technology on India's Scorpene class submarine INS Kalvari around 2023.

Naval Materials Research Laboratory

- Naval Materials Research Laboratory (NMRL), one of the DRDO laboratories, is the Centre of Excellence for Development of Materials for Naval Applications & Energy Systems.
- It pursues basic research and technology development in several areas - Metallurgy, Polymer, Ceramics, Coating, Corrosion and Electrochemical Protection, Marine Biotechnology, Environmental Sciences.
- Mission
    1. To develop Air Independent Propulsion (AIP) system for Naval Submarine & Fuel Cell technologies.
    2. To provide scientific solutions for all categories of materials & related technologies for Indian Navy.
    3. To undertake research projects on strategic materials for Indian Navy.

Pradhan Mantri Swasthya Suraksha Nidhi

- The Pradhan Mantri Swasthya Suraksha Nidhi (PMSSN) is a single non-lapsable reserve fund for health in the Public Account.
- This fund will have the proceeds of 4% Health and Education Cess levied under Section 136-b of Finance Act, 2007.
- The administration and maintenance of the PMSSN is entrusted to the Ministry of Health & Family Welfare (MoHFW).
- The accruals into the PMSSN will be utilized for the flagship schemes of the Health Ministry.
- In any financial year, the expenditure on such schemes would be initially incurred from the PMSSN and thereafter, from Gross Budgetary Support (GBS).
- **Benefits** - Enhanced access to universal and affordable health care through availability of earmarked resources.

Source: The Hindu, The Indian Express, Business Line