

Recent Developments in Space Research

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From lauding ISRO for their incessant toil in 'Chandrayaan-3' mission to planning the prospects of future in space with 'Gaganyaan 2022' mission, space research has forged ahead unlike anything. From embedding 'Artificial Intelligence' in humanoids and sending them into space to launching applications for geospatial navigation, space research is the new buzz. The journey of years of persistent research has proved to be fruitful when we witness the heroics of scientists, astronauts, researchers and many others who have bolstered innovation in the field of 'Space'.

The 'Gaganyaan 2022' mission would truly mark a renaissance for India in the sphere of advancement in space research. This indigenous mission is a revelation as India would become the fourth country in the world to send humans in a space-flight after Russia, the United States of America and China respectively. Geosynchronous Satellite Launch Vehicle GSLV Mk III, the satellite developed by ISRO would be used to send three astronauts into space for at least seven days as a part of the Indian Human Spaceflight Programme. This satellite is enough to suffice the payload and the rocket boosters used by the launcher provide enough thrust required to lift-off. According to G Madhavan Nair, former ISRO chief: "The mission will enable ISRO to achieve higher levels of reliability in launch and satellite technology. It will help in employing 15,000 people and out of them, 861 will be from ISRO".

Gaganyaan has a budget of 10,000 crores and is expected to launch by December 2021, at a center in Bangalore. The astronauts would receive module-specific training for this mission through simulations. However, before orbiting astronauts go into space, ISRO would send half-humanoid, a lady robot 'Vyom Mitra' into an unmanned spacecraft in December 2020. ISRO chairman K Sivan told the half humanoid will simulate human functions in space and also interact with the environment control life support system. "It will be simulating exactly the human functions there (in space). It will check whether the system is right. This will be very useful to simulate as if a human is flying," he added. Microgravity experiments encompassing factors like bacterial, oxygen levels, temperature, medical examinations, and environmental monitoring would be conducted. Another breakthrough that could dramatically decrease the hazards of loss of domestic goods, fisheries and cargo, the revolutionary innovation designed by ISRO, is the 'NavIC' messaging system. Indian Regional Navigation Satellite System (IRNSS) popularly known as 'NavIC' is fundamentally devised for terrestrial, aerial and marine navigation. Vehicle Tracking, Fleet Management, visual and voice navigation and a myriad of other features are just the icing on the cake. It provides accurate positional information service to users in India as well as to regions extending 1500 KMs from its boundary. The application is integrated with mobile phones to make it accessible and portable. Fishermen, travelers, hikers, ship-captains could use this for navigational purposes and disaster management. It broadcasts warning messages about emergencies like high tides, tsunamis, cyclones, and earthquakes. Recent researches about celestial bodies orbiting the Earth, which includes comets, meteorites, asteroids and other heavenly bodies have claimed that the biggest asteroid of 2020, would be orbiting in extreme proximity to the earth's orbit on April 29. Although the satellite is not expected to collide with the Earth, NASA has classified it as a potentially hazardous object. The asteroid '1998 OR2' a humongous asteroid with a diameter ranging from 2-4 km, would orbit at a distance of about 62 lakh kilometers from the Earth, moving at 8.69 kilometers per second. The distance of the Earth from the asteroid is 16 times the distance of the Earth from the moon. The asteroid is considerably huge and reasonably big, hence it has been classified as potentially hazardous. 22 celestial bodies have been classified as Potentially Hazardous and have their trajectories in the critical collision path of the Earth. Observers would see this asteroid as a slow-moving star.

For the avid astrophysicists, or the keen observers who wander in the land of stars, or for the thousands of inspiring women-scientists who taught us what real women empowerment meant, space research is a blooming area and we have an incredible journey ahead!