

Launch of OCEANSAT

OCEANSAT, the first satellite built chiefly for oceanic applications, was launched by the Indian Space Research Organisation on 26 May 1999.

This is an important topic in the Science and Technology segment of the UPSC Syllabus.

Background of OCEANSAT

- OCEANSAT, also known as IRS-P4 or OCEANSAT-1, was launched by Indian Space Research Organisation (ISRO) from its SHAR Centre in Sriharikota.
- The satellite weighed 1050 kg and was launched by a Polar Satellite Launch Vehicle (PSLV-C2).
- The satellite was placed in a polar sun-synchronous orbit at a distance of 720 km.
- It was the first Indian satellite that had a chief objective of **conducting oceanographic studies**.
- The payload it carried were an Ocean Colour Monitor (OCM) and a Multi - frequency Scanning Microwave Radiometer (MSMR).
- The OCM was a solid-state camera which operated in the push-broom scanning mode. It used linear array CCDs as detectors in order to create ocean biological parameters.
- The OCM had eight spectral bands for measuring biological and physical oceanographic parameters. The MSMR operated at 21, 18, 10.65 and 6.6 GHz frequencies with H and V polarisations. The spatial resolutions it operated at the respective frequencies were 50 km, 50 km, 75 km and 150 km.
- The size of the satellite was 2.8 m X 1.98 m X 2.57 m.
- It had an inclination of 98.28 degrees and a Period of 99.31 minutes. The Repetitivity cycle was 2 days.
- When fully deployed, the OCEANSAT had a dimension of 11.67 m.
- The attitude and orbit control were achieved by 3-axis body-stabilised using Reaction Wheels, Hydrazine Thrusters and Magnetic Torques.
- The satellite's power was supplied by a solar array having a size of 9.6 m² that generated 750 W. It also had two 21 Ah Ni-Cd batteries.
- The OCEANSAT boosted India's IRS satellite system. The other satellites in this series are: IRS-1B, IRS-1C, IRS-P3 and IRS-1D.
- The satellite completed its mission on 8th August 2010 after serving for 11 years and 2 months.
- The next in the series, OCEANSAT-2 was launched in 2009 and is now operating.

What does the payload of the OCEANSAT consist of?

The scientific payload contains three instruments. Two are from ISRO and the other one is from the Italian Space Agency (ISA).

- **Ocean Colour Monitor-2 (OCM-2)** is an 8-band multispectral camera operating in the Visible – Near-infrared spectroscopy spectral range. This camera provides an instantaneous geometric field of view of 360 metres and a swath of 1420 km. OCM-2 can be tilted up to +20 degrees along the track.
- **Scanning Scatterometer (SCAT)** is an active microwave device designed and developed at ISRO/SAC, Ahmedabad. It will be used to determine ocean surface level wind vectors through estimation of radar backscatter. The scatterometer system has a 1-m parabolic dish antenna and a dual feed assembly to generate two pencil beams and is scanned at a rate of 20.5 rpm to cover the entire swath.