



PROBA-3 MISSION – SCIENCE & TECHNOLOGY

NEWS: Recently, the union minister of Science and Technology said that India will launch the European Space Agency's Proba-3 mission early next month from the spaceport at Sriharikota.

WHAT'S IN THE NEWS?

Overview of ESA's Proba-3 Mission

The Proba-3 mission, spearheaded by the European Space Agency (ESA), represents a groundbreaking venture in space technology and solar observation. As ESA's first mission dedicated to precision formation flying, Proba-3 aims to enhance our understanding of the Sun's corona through an innovative approach involving two spacecraft working in concert.

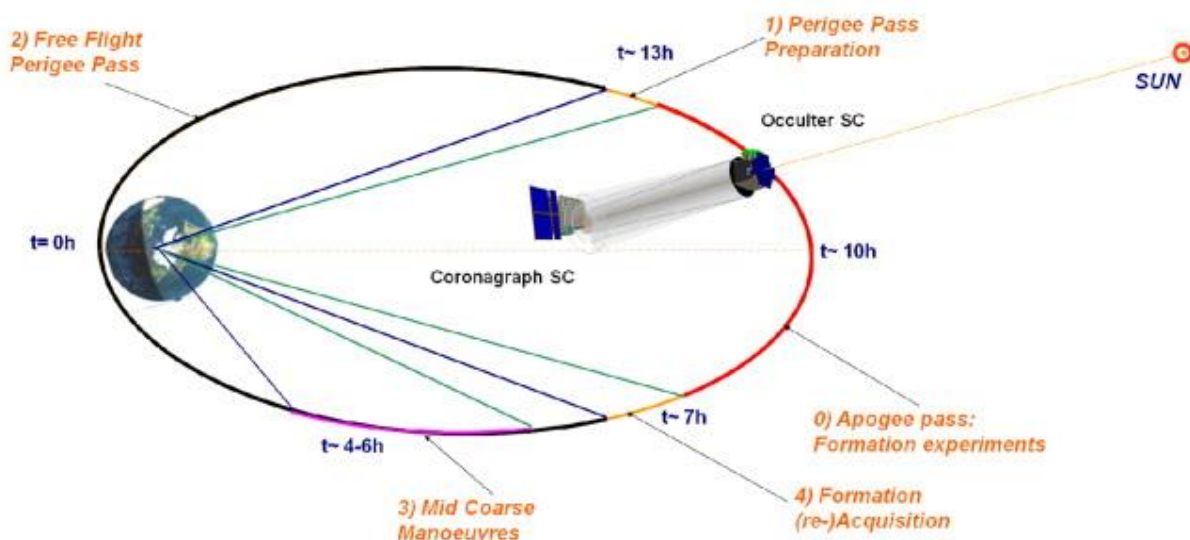
Mission Design and Components

Proba-3 consists of two small satellites:

- **Coronagraph Spacecraft:** Equipped to image the Sun's corona.
- **Occulter Spacecraft:** Shaped like a solar disc, its primary function is to block the Sun's intense light, simulating an eclipse.

How Proba-3 Works

- **Formation Flying:** The two satellites will maintain a precise distance of approximately 150 meters from each other. Through this tight formation, the Occulter will cast a shadow over the Coronagraph's telescope, effectively creating an artificial eclipse.
- **Observation Capabilities:** This setup allows the Coronagraph to capture images of the solar corona in visible, ultraviolet, and polarized light without the interference of the Sun's bright light. Such observations can last for extended periods, providing continuous and detailed solar imaging.





Scientific Objectives

- **Study of the Solar Corona:** By simulating an eclipse, Proba-3 will allow scientists to observe the solar corona in unprecedented detail. This region of the Sun, while typically obscured by its brightness, is crucial for understanding solar dynamics and the solar atmosphere.



- **Insights into Coronal Mass Ejections (CMEs):** The mission will focus on the origins and properties of CMEs, which are significant eruptions of solar material. Understanding CMEs is vital for assessing their potential impacts on satellites, communication systems, and power grids on Earth.
- **Solar Irradiance Measurements:** Proba-3 will also track total solar irradiance, providing valuable data on the Sun's energy output. Changes in solar irradiance are important for models of Earth's climate, as they can influence global temperature and weather patterns.

source: <https://economictimes.indiatimes.com/news/science/india-to-launch-esas-proba-3-spacecraft-in-december-jitendra-singh/articleshow/114980789.cms?from=mdr>