Biomass Mission

Prelims – *Current events of national and international importance| General Science.*

Mains (GS III) – *Awareness in the fields of IT & Space.*

Why in News?

Biomass mission will lift off soon aboard the Vega C rocket from Europe's spaceport in French Guiana.

- Biomass is an ***Earth explorer satellite*** mission to map the world's forests.
- **Launched by** - European Space Agency (ESA).
- **Aim** – It will provide information about the state of the planet's forests and how they are changing, which will help expand the knowledge about the role forests play in the carbon cycle.
- It will also observe the movement of ice sheets in Antarctica, and generate digital models of terrains covered by dense vegetation.
- **Orbit -** It will be placed in a ***sun-synchronous orbit (SSO),*** a type of orbit in which satellites are in sync with the Sun at an altitude of around 666 km.
- **Instrument used -** *Synthetic aperture radar (SAR)*, a satellite imaging technique which uses radar waves to map the Earth's surface.
- This SAR sensor will operate in the long-wave P-band frequency range, with a wavelength of 70 cm.
- Therefore, unlike other shorter-wave SAR sensors, the P-band SAR will be able to peer down through forest canopies to assess how much carbon is stored on the floor and branches of the trees in the world's forests and to assess how levels are changing.
- The sensor will also estimate the amount of forest biomass.
- Biomass is the 1st satellite in the world to ***host a P-band SAR.***
- Biomass will address the huge technical challenge of mapping forest biomass from space.

Earth Explore program

- The satellites launched under this program are meant to provide essential information about Earth's interior, cryosphere (frozen parts), hydrosphere, atmosphere, ionosphere and land surface.
- **Gravity field and steady-state Ocean Circulation Explorer (GOCE) -** The first spacecraft mission took off in 2009 and worked till 2013.
- The mission helped further research in areas of ocean circulation, physics of Earth's interior, etc.
- **Earth Cloud Aerosol and Radiation Explorer (EarthCARE) mission -** Launched in May 2024.

- It contributes to a better understanding of Earth’s radiative balance in climate, among other things.

Reference

The Indian Express | Biomass Mission