

5. Gravity Recovery and Climate Experiment Follow on (GRACE-FO)

Prelims Syllabus: Space Technology

Mains Syllabus: GS-III Science and Technology - developments and their applications and effects in everyday life Achievements of Indians in Science & Technology; Indigenization of Technology and developing New Technology.

Why in News?

- Recently, a new satellite-based, weekly global maps of soil moisture and groundwater wetness conditions were developed by US space agency National Aeronautics and Space Administration (NASA) and the University of Nebraska-Lincoln (UNL) on March 31, 2020.

About GRACE- FO Mission:

- It is a partnership between NASA and the German Research Centre for Geosciences (GFZ).
- It is a successor to the original GRACE mission, which began orbiting Earth. The GRACE missions measure variations in gravity over Earth's surface, producing a new map of the gravity field every 30 days.
- It will continue the work of tracking Earth's water movement to monitor changes in underground water storage, the amount of water in large lakes and rivers, soil moisture, ice sheets and glaciers, and sea level caused by the addition of water to the ocean.
- These discoveries provide a unique view of Earth's climate and have far-reaching benefits to society and the world's Population.

About the Global Maps produced by GRACE-FO Mission:

- Its global maps are derived with data available from NASA and German Research Center for Geosciences'
- It provides the satellite-based observations of changes in water distribution were integrated with other data within a computer model that simulated water and energy cycles.
- It also produces other outputs, such as the time-varying maps of the distribution of water at three depths **Surface soil moisture, root zone soil moisture (roughly the top three feet of soil) and shallow groundwater.**
- Its map has a resolution of up to 8.5 miles, providing continuous data on moisture and groundwater conditions across the Landscape.

Significance of the Data:

- The data available through this project would fill existing gaps in understanding the full picture of wet and dry conditions that can lead to drought.
- It is absolutely a critical tool to helping us address and offset some of the impacts anticipated, whether it is from population growth, climate change or just increased water consumption in general.
- It would also help in managing the selection of appropriate agricultural crops and Predicting Yields.

