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## Important Facts for Prelims (31st August 2018)

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### Water Spotted at Jupiter's Great Red Spot

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- NASA scientists have found water above Jupiter's deepest clouds using ground based Telescopes.
- The pressure of the water, combined with the measurements of another oxygen-bearing gas (carbon monoxide), imply that Jupiter has two to nine times more oxygen than the sun.
- The findings support theoretical and computer-simulation models that have predicted abundant water (H<sub>2</sub>O) on Jupiter.
- This will supplement the information being gathered by the NASA's Juno spacecraft.

### Jupiter

- Jupiter is the fifth planet from the sun. Its atmosphere is made up of hydrogen and helium and packed with so much radiation that it would be over 1,000 times the safety level for a human.
- The gas giant is also enshrouded in the strongest magnetic field in the solar system.
- Jupiter is perhaps best known for its Great Red Spot, which is actually a massive storm, bigger than the Earth, that has been raging for hundreds of years.
- The planet is marked by cold, windy clouds of ammonia and water that appear as reddish, brown and beige stripes and swirls.

### Juno

- Juno is a NASA space probe orbiting the planet Jupiter which was launched in 2011.
- The Juno spacecraft uses a microwave radiometer instrument to measure water, essentially a radio receiver that can help the Earth-bound scientists "see" inside the Jupiter's atmosphere.
- The amount of water inside Jupiter is crucial to understanding how the solar system formed because it can explain how Jupiter formed.

- The spacecraft will also rotate as it revolves around Jupiter, providing something like a three-dimensional CAT scan.
- The spacecraft will also study Jupiter's gravitational field, magnetic field and interior.

## Ice, Cloud and Land Elevation Satellite-2

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- NASA is set to launch the most advanced laser instrument into the space to measure the changes in the heights of Earth's polar ice in unprecedented detail.
- ICE-SAT-2 will measure the average annual elevation change of land ice covering Greenland and Antarctica, capturing measurements every second.
- It will advance the knowledge of how the ice sheets of Greenland and Antarctica contribute to the rise in sea level.
- As ICESat-2 circles Earth from pole to pole, it will measure ice heights along the same path in the polar regions four times a year, which provides seasonal and annual monitoring of ice elevation changes.
- Beyond the poles, ICESat-2 will measure the height of ocean and land surfaces, including forests.
- Its Advanced Topographic Laser Altimeter System (ATLAS) measures height by timing how long it takes individual light photons to travel from the spacecraft to Earth and back.
- ATLAS, designed to measure both the tops and the ground below of trees, combined with existing datasets on forest extent — will help researchers estimate the amount of carbon stored in the world's forests.