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Map manipulation

- Arunachal Pradesh and North Ladakh (Aksai Chin) which belong to India are included in the new Chinese national map released by China is a proof that the country is acting with intention.

McMahon Line

- The McMahon Boundary Line between Tibet and British India was defined by the pre-independence (1914) Tibet-British Intergovernmental Agreement.
- After independence, northern Ladakh became part of Jammu and Kashmir on that basis, which China did not accept from the start
- China occupied the area in 1962 and named it Aksai Chin. Its area is 38,000 sq km. India lost 3,000 soldiers in the Sino-Indian War

Panchsheel Agreement

- The second provision of the Panchsheel Agreement was that no country should invade another country. This treaty was signed in Beijing in 1954
- In the next few years China showed its true colours
- After that the demarcation line called Line of Actual Control came into force
- But China has not given up occasional cross-border mischief
- India and China share a border of about 4057 km. It has become a routine for China to make a fuss in these areas from time to time

Southern Tibet

- China also claims the northeastern state of Arunachal. China infamously invaded Tibet in 1959 and made it a part of its country
- Since then, China claims Arunachal Pradesh as Southern Tibet
- Arunachal area of about 90,000 square kilometers is named Zangnan. Not only that, it is a perverse idea that China has named many areas in Arunachal Pradesh and published a map
- The last time in 2017, the Jinping government had the pleasure of giving Chinese names to 32 places

India China Conflict

- In 2017, China invaded and threatened the Doklam plateau, a tri-junction between India, Bhutan and China.
- Due to the determined action of the present Government of India, the situation became normal there
- In December 2022, Chinese troops invaded and occupied Yangtse in the Tawang Valley of Arunachal Pradesh.

Appointment of Jaya Varma Sinha as the first woman chairman in the 105-year history of the Railway Board

- A student of Allahabad University, Jaya Varma Sinha joined the Indian Railway Traffic Service in 1988.
- She was the face of the railways in explaining the complex signaling system in press conferences during the recent tragic train accident in Odisha's Balasore district.
- Jaya Varma Sinha worked for 4 years as a Railway Counselor at the Indian Embassy in Dhaka, the capital of Bangladesh.
- She was instrumental in launching the Maitree Express service between Kolkata and Dhaka.

Aditya L1

- Following the success of Chandrayaan-3, interest in Aditya L1 has grown across the country
- After landing on the moon, ISRO sends the spacecraft to explore the sun
- Some wonder how a spaceship can land on the sun, which is a sphere of fire
- The spacecraft will be stationed at the Lagrange point between the Earth and the Sun

Lagrange point

- Both Earth and Sun have a gravitational force. At some point in a straight line between the Earth and the Sun, the gravity of the two is equal. That gravitational equilibrium point is the Lagrange point
- This point is located at a distance of about 15 lakh kilometers from the Earth towards the Sun
- The distance between earth and sun is 1510.7 lakh kilometers. This means that the spacecraft will stop at one hundredth of the distance between the Earth and the Sun

Benefits

- The spacecraft at this point orbits the Sun along with the Earth as it is equally pulled by the gravitational pull of both the Sun and the Earth. So every moment this spaceship will remain between the Earth and the Sun
- First, when a solar storm or solar cyclone occurs, it can sense and give us an early warning of a magnetic storm. We can make security arrangements in advance

Solar wind and storm

- The natural motion of the Sun changes from time to time and becomes agitated. Solar cyclones, solar storms, and solar flares are three major storms that cause magnetic storms to impact Earth.
- In the normal motion of the Sun, a stream of ion particles with an electric current mixed with a magnetic field called the solar wind is taking place from the outer corona.
- This wind blows in interplanetary space at a speed of about 200 to 400 kilometers per second
- As the Sun revolves around itself, its magnetic field lines periodically twist. This winding cuts off when it crosses a certain threshold
- Sometimes the particles flow at a speed of 800 kilometers per second. This is a solar cyclone

Another probe on the rover confirmed the presence of sulfur on the moon

- The Pragyan rover, which was launched from the Vikram lander to the lunar surface, is exploring the South Pole region
- Orbiting within 500 meters of the lander, Pragyan is studying the moon's soil, rocks, nature, elements and chemical composition.

APXS

- The rover's APXS instrument is probing what's on the moon's surface by analyzing the elements and confirming their chemical composition to tell what kinds of elements are present.

LIBS

- Similarly, the LIBS instrument on the rover is examining the soil and rocks on the surface of the moon to see if they contain minerals such as magnesium, aluminium, silicon, potassium, calcium, tin and iron.
- This instrument has already confirmed the presence of sulfur on the moon
- Meanwhile, APXS, another scientific instrument mounted on the Pragyan rover, has confirmed the presence of sulfur on the moon

- Sometimes the twisted magnetic field lines break and get a new connection. Then a large amount of light, X-rays, gamma rays etc. will be emitted with great energy. This is a solar storm
- A coronal mass ejection is when the twisted magnetic field flares up at the surface of the Sun
- During all these three events the solar wind speed increases strongly. A magnetic storm will occur on Earth

What is the danger of magnetic field storm?

- There is no danger to humans and animals as a result of magnetic storm
- An intense magnetic storm can shake up the ionosphere around Earth. As a result, ripple radio communication will be affected
- Cross-country airplanes, cargo ships, etc. use ripple transmission. Electrons spread over satellites in space, creating static charges that affect electronic equipment
- The solar panels on the satellite will be affected
- The Global Positioning System data has an accuracy error of several meters. This can create high currents in power distribution transformers on Earth, disabling them and even causing temporary blackouts.

Space weather

- Space weather is the study of changes in the magnetic field near the Earth, the speed of the solar wind coming from the Sun, etc.
- Thousands of satellites orbit the earth. So early detection of space weather changes today can help protect satellites such as GPS and communications on Earth

An enduring mystery

- The surface temperature of the Sun is about 5600 degrees Celsius. But beyond that, the temperature in the atmospheric region called the corona, which surrounds the sun, is several hundred thousand degrees Celsius
- The heat decreases with distance. The great mystery is that the Sun's corona is at a very, very high temperature. Aditya L 1 will conduct a study on this also

Equipments

- By measuring the energy the Sun emits in the ultraviolet, the Solar Ultra Violet Imaging Telescope can study solar flares.
- Visible emission line coronagraph instrument that captures the eruption of solar volcanoes, Solar Low-energy X-ray Spectrometer, High Energy L1 Orbiting X-ray Spectrometer, etc.
- All three instruments will study solar motion
- Apart from this, Aditya Solarwind Particle Experiment (ASPEX), Plasma Analyzer Package for Aditya (PAPA) etc. are on board the spacecraft to monitor space weather.
- These examine the speed, direction, charge etc. of the solar wind at that point
- We can know if a solar storm or solar cyclone is passing through
- It is also possible to know in advance through a magnetometer if a magnetic storm is occurring.
- So far, only the US, European Space Agency, Japan, and China have sent space telescopes to study the Sun. India will become the fifth country if this initiative succeeds.