



Dark Sky Reserve in Ladakh

Why in News?

Recently, in a first-of-its-kind initiative, the [Department of Science & Technology \(DST\)](#) has announced the setting up of **India's first Dark Sky Reserve in Hanle, Ladakh.**

What is Dark Reserve?

- A Dark Sky Reserve is a **designation given to a place that** has policies in place to ensure that a tract of land or region **has minimal artificial light interference.**
- The International Dark Sky Association is a U.S.-based non-profit that **designates places as** International Dark Sky Places, Parks, Sanctuaries and Reserves, depending on the criteria they meet.

What are the Key Highlights of the Dark Reserve in Ladakh?

- **MoU for Setting up Dark Reserve:** There was a three-way Memorandum of Understanding was signed among the **Union Territory administration, [Ladakh Autonomous Hill Development Council \(LAHDC\), Leh,](#) and the **Indian Institute of Astrophysics (IIA), Bengaluru,** which uses and maintains the telescopes, for launching the Dark Space Reserve.
 - It will have activities to help in boosting local tourism and the economy through interventions of science and technology.**
- **Promote Tourism:** To promote **Astro-tourism,** villages around Hanle will be encouraged to promote homestays equipped with telescopes that visitors can use to view the night sky.
 - Villagers and residents will also be **trained to help visitors with astronomical observations.**
 - There will be delineators on roads like you do outside observatories. People can come, park, observe the sky and stay in homestays.
- **Wildlife Awareness:** A visitor centre would also be set up to inform people not only about astronomy but also about the **wildlife and plant life in the adjoining Changthang Wildlife Sanctuary.**

Why was Ladakh chosen for Setting up the Dark Reserve?

- **Cold Desert with Sparse Population:** The Indian Astronomical Observatory, the high-altitude station of IIA, is situated to the north of the Western Himalayas, at an altitude of 4,500 metres above mean sea level.
 - Located atop **Mt. Saraswati in the Nilamkhul Plain in the Hanle Valley of Changthang,** it is a **dry, cold desert** with a sparse human population and has the Hanle monastery as its nearest neighbour.
- **Clear Skies:** The cloudless skies and low atmospheric water vapour make it one of the best sites in the world for optical, infrared, sub-millimetre, and millimetre wavelengths.
- **Other Telescopes situated in Hanle Observatory:** The Himalayan Chandra Telescope (HCT), High Energy Gamma Ray telescope (HAGAR), the Major Atmospheric Cherenkov Experiment Telescope (MACE) and GROWTH-India are prominent telescopes located at the Hanle observatory.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Consider the following phenomena: (2018)

1. Light is affected by gravity.
2. The Universe is constantly expanding.
3. Matter warps its surrounding space-time.

Which of the above is/are the prediction/predictions of Albert Einstein's General Theory of Relativity, often discussed in media?

- (a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (d)

Exp:

- **Space-time is a mathematical model that joins space and time into a single idea called a continuum. This four-dimensional continuum is known as Minkowski Space.** According to this model, Einstein held that matter warps its surrounding space-time. **Hence, 3 is correct.**
- Gravitational Lensing states that gravity bends light. When we observe distant galaxy, gravity of matter between earth and galaxy causes the light rays to bend into different paths. When the same light reaches to telescope multiple images are observed in the galaxy. **Hence, 1 is correct.**
- In 1917, Einstein applied his Theory of General Relativity and suggested a model of a homogenous, static, and spatially curved universe. The problem with the model was that, if gravitation was the only active force, then the universe would collapse - an issue which Einstein addressed by introducing the cosmological constant. By 1932, Einstein accepted and adopted a model of an expanding universe. **Hence, 2 is correct. Therefore, option (d) is the correct answer.**

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