



India's Maiden Winter Arctic Research

For Prelims: [National Centre for Polar and Ocean Research \(NCPOR\)](#), Indian Institute of Tropical Meteorology (IITM), [Climate Change](#), Space Weather, [Sea-Ice](#), [Ocean Circulation Dynamics](#), [Ecosystem](#), [Himadri](#), [Intergovernmental Panel on Climate Change](#), [Inter Tropical Convergence Zone](#)

For Mains: Significance of India's Winter Arctic Research, Arctic Region.

Source: [PIB](#)

Why in News?

Recently, the Union Minister of Earth Sciences flagged off India's first **winter scientific expedition to Himadri**, the nation's **Arctic Research Station** situated in **Ny-Ålesund** within the Norwegian archipelago of Svalbard in the [Arctic](#).

- The first batch of the maiden Arctic winter expedition comprises researchers from the host [National Centre for Polar and Ocean Research \(NCPOR\)](#), Indian Institute of Technology (IIT) Mandi, Indian Institute of Tropical Meteorology (IITM) and [Raman Research Institute](#).

What is the Importance of The Winter Arctic Scientific Expedition?

- Indian scientific expeditions to the **Arctic** during the **winter** will allow researchers to conduct unique scientific observations during **polar nights**, where there is **no sunlight for nearly 24 hours** and **sub-zero temperatures**.
- It opens more avenues for India to expand our scientific capabilities in Earth's poles.
- This will aid in expanding understanding of the Arctic, especially [climate change](#), **space weather**, [sea-ice](#) and [ocean circulation dynamics](#), [ecosystem adaptations](#), etc. which affect [weather](#) and **climate** in the tropics, including monsoons.
- India has operated a research base in the Arctic named [Himadri](#) since **2008**, which has been mostly hosting scientists during the summer (April to October).
- Priority research areas include [atmospheric](#), [biological](#), [marine](#), and [space sciences](#), **environmental chemistry**, and **studies on cryosphere, terrestrial ecosystems, and astrophysics**.
- India will join a small group of countries that operate their Arctic research bases through the winter.
- In recent years, **climate change and global warming research** has been attracting scientists to the **Arctic region**.

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What is the Impact of Warming on the Arctic?

- Temperatures in the **Arctic region** have risen by about **4 degree Celsius** on average over the last 100 years 2023 was the warmest year on record.
- The extent of **Arctic sea-ice** has been declining at the rate of **13%/ decade**, according to **the Intergovernmental Panel on Climate Change**.
- The **melting sea ice** can have global impacts reaching beyond the **Arctic region**.
- **Rising sea levels** can influence **atmospheric circulation**.
- An increase in **tropical sea surface temperatures** could lead to increased precipitation in the tropics, a shift in the **Inter Tropical Convergence Zone** and high chances of an increase in **extreme rainfall events**.
- Milder weather due to **global warming** could make the Arctic a more habitable and a less hostile place.
- There could be a rush to explore and exploit the **Arctic's resources**, including its minerals, and countries will seek to control trade, navigation and other strategic sectors in the region.

Note

- **Dakshin Gangotri in Antarctica** was set up much earlier in **1983**. **Dakshin Gangotri** is now submerged under ice, but India's two other stations, **Maitri** and **Bharti**, are in use.
- **Indian scientific expeditions** to the Earth's poles (the Arctic and the Antarctic) are facilitated under the **PACER (Polar and Cryosphere) scheme** of the **MoES**, solely through the aegis of the **National Centre for Polar and Ocean Research (NCPOR), Goa**, an autonomous institution of the **MoES**.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. The term 'IndARC', sometimes seen in the news, is the name of (2015)

- (a) an indigenously developed radar system inducted into Indian Defence
- (b) India's satellite to provide services to the countries of Indian Ocean Rim
- (c) a scientific establishment set up by India in Antarctic region
- (d) India's underwater observatory to scientifically study the Arctic region

Ans: (d)

Mains

Q.1 Why is India taking keen in resources of Arctic region? **(2018)**

Q.2 What are the economic significances of discovery of oil in Arctic Sea and its possible environmental consequences? **(2015)**

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