

India's 1st Ever Winter Expedition To Arctic Base

Why In News

- Maintaining a **constant human presence** in one of the coldest regions of the world has been a difficult task for long.
- However, India will have around-the-year manning of the Arctic with the launch of the first-ever winter expedition in this region.
- With this, **India's Himadri will be only the fourth research station** in the Arctic to be manned around the year.

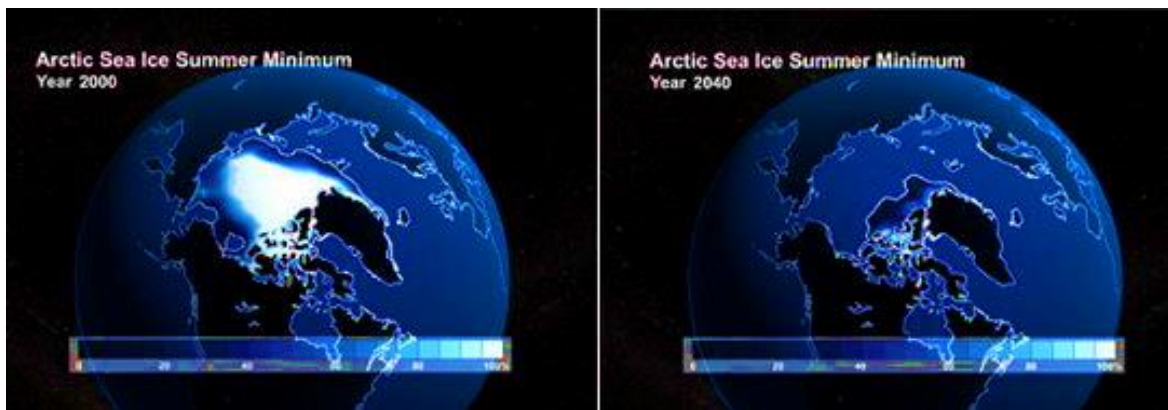


Why It Is Needed

- Scientific evidence has shown that the **Arctic ice and the sea ice** have the potential **to affect humans outside** the Arctic region, as sea levels rise, and to influence atmospheric circulations.
- Climate experts have found that on average, temperatures in the Arctic region have **risen by 4 degrees Celsius** over the last 100 years.



- The Arctic sea-ice extent (the ice formed by the freezing of seawater) is **declining at a rate of 13 per cent per decade**.
- At this rate, the Arctic Ocean could go ice-free sometime during the summer of 2040.
- Studies have demonstrated that the **increased Arctic sea-ice loss** could lead to a greater tropical sea surface temperature, increased precipitation in the tropics, and a shift in the position of the Inter Tropical Convergence Zone.



- With such unprecedented changes **owing to global warming**, the Arctic could become a more habitable and less hostile place.
- In no time, there could be a rush to explore and **exploit the region's resources and minerals**, and to gain supremacy over the trade, navigation and other geo-economic and strategic sectors.

What Are The Challenges

- First, there are challenges related to the environment.
- At the research base **Ny-Ålesund in Svalbard, Norway**, the mean temperature in February – the year's coldest month – is minus 14 degrees Celsius. On the other hand, the mean temperature during the warmest month, July, is 5 degrees Celsius.
- Due to such a hostile environment, **performing both outdoor and indoor scientific observations** or sampling has remained largely limited to the summer months. So far, only three research stations have had permanent staff deployment in the Arctic round-the-year.
- Further, **Eight Arctic countries** – Canada, the Kingdom of Denmark, Finland, Iceland, Norway, Russia, Sweden and the USA – form the Arctic Council. It is an intergovernmental forum of Arctic countries for promoting cooperation. **India has 'Observer' status here.**



First Winter Expedition To The Arctic

- On December 18, a **team of four scientists** will embark on India's first-ever **winter expedition** to the Arctic.
- It is being funded by the Union **Ministry of Earth Sciences**. Scheduled between **December 19, 2023, and January 15, 2024**, the expedition comprises researchers from the Indian Institute of Tropical Meteorology, Pune, IIT-Mandi, Raman Research Institute, Bengaluru, and Goa-based National Centre for Polar and Ocean Research, the nodal agency for India's polar explorations.



- The winter expedition covers a **range of research areas**, from atmospheric sciences, astronomy and astrophysics to climate studies. The focus will be on studying lightning over the Arctic in the winter, the role of precipitation on climate change, the characterisation of radio frequency environment and the role of aerosols on climate change.
- The team will be stationed at **Himadri, India's only research station** located in Ny-Ålesund. It is located about 1,200 kilometres from the North Pole.



- Starting this season, Himadri has been specially equipped for researchers to perform observations during **polar nights** (nights longer than 24 hours), with special winter gear/clothing, transport and logistics support from the Norwegian agencies.



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