



## PACER Scheme

**For Prelims:** India's Antarctic and Arctic Missions, PACER Scheme, National Centre for Polar and Ocean Research (NCPOR), IndARC, Ocean Services, Technology, Observations, Resources Modelling and Science (O-SMART) ACROSS Scheme

**For Mains:** Achievements of Indians in Science & Technology, Polar research

### Why in News?

Recently, the **Polar Science and Cryosphere (PACER) scheme** has been approved for continuation by the **Union Cabinet from 2021 to 2026**.

### What is PACER Scheme?

- PACER encompasses the following six components.
  - **Construction of polar research vessel**
  - **Construction of the third research base in [Antarctica](#)**
  - **Indian scientific endeavours in the [Arctic](#)**
  - **Polar expeditions-Antarctica**
  - **[Southern Ocean Expedition](#)**
- It is implemented through the **National Centre for Polar and Ocean Research (NCPOR)**.

### What are the Major Works under this Scheme?

- **Understanding of Biogeochemical Processes:** Field-based studies were conducted in the lakes of [Larsemann Hills](#), [East Antarctica](#) for the understanding of biogeochemical processes in supraglacial environments.
- **IndARC System:** The [IndARC mooring system](#) along with the Hydrophone system was successfully retrieved and deployed in Kongsfjorden, Svalbard.
- **Research Studies in Himalayas:** Glaciological field campaigns were carried out in [six benchmark glaciers in Chandra basin of Lahaul-Spiti region of Western Himalaya](#).
  - Winter snow accumulation over the glaciers was recorded using snow pits and snow corners.
- **Automatic Weather Station (AWS) Systems:** Two new [Automatic Weather Station \(AWS\) systems](#) were installed at **Baralacha La**, a high elevation site in the arid Spiti region to strengthen infrastructure across the Chandra basin.
- **Southern Ocean Expedition :**The [11<sup>th</sup> Indian Southern Ocean Expedition](#) was executed successfully

### What is the National Centre for Polar and Ocean Research (NCPOR)?

- It is an autonomous institute under the **Ministry of Earth Sciences**.
- Its responsibilities include:
  - Management and upkeep of the Indian Antarctic Research Bases "**Maitri**" and "**Bharati**",

**and the Indian Arctic base “Himadri”.**

- Management of the Ministry’s research vessel **Ocean Research Vehicle (ORV) Sagar Kanya** as well as the other research vessels chartered by the Ministry.
    - The **ORV Sagar Kanya** is a versatile ocean observing platform equipped with technologically advanced scientific equipment and related facilities.
  - Playing a facilitatory role in the scientific research activities being undertaken by several national institutions and organisations in **Antarctica, the Arctic and in the Indian Ocean sector of the Southern Ocean.**
  - Playing a lead role in the geoscientific surveys of the country’s **Exclusive Economic Zone (EEZ)** and its extended continental shelf beyond 200m, deep-sea drilling in the Arabian Sea basin through the **International Ocean Discovery Program (IODP)**, exploration for ocean non-living resources such as gas hydrates and multi-metal sulphides in mid-ocean ridges.
- It is located in the **state of Goa.**

## **What are Other Major Initiatives of the Ministry of Earth Sciences?**

- **IndARC**
- **[Ocean Services, Technology, Observations, Resources Modelling and Science \(O-SMART\)](#)**
- **[ACROSS Scheme](#)**

## **What are India’s Arctic Missions?**

- India launched its **first scientific expedition** to the Arctic Ocean in 2007.
- India opened a research base named **“Himadri” in Svalbard, Norway** in July 2008 to carry out studies in disciplines like **Glaciology, Atmospheric sciences & Biological sciences.**

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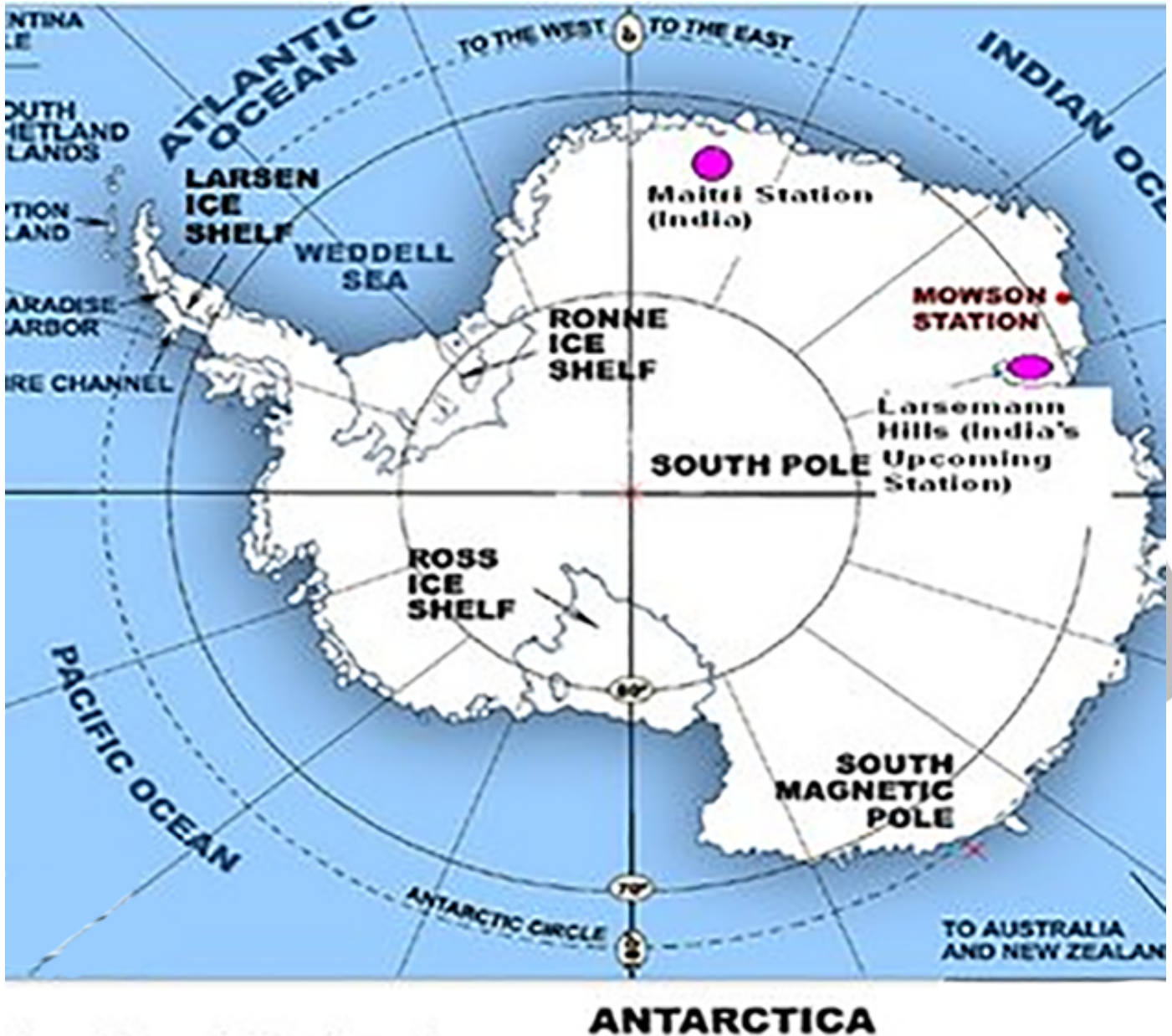




## What are India's Antarctic Missions?

- India officially acceded to the [Antarctic Treaty System](#) on 1<sup>st</sup> August 1983.
- On 12<sup>th</sup> September 1983, India became the **fifteenth Consultative Member of the Antarctic Treaty.**
- India is expanding its **infrastructure development in Antarctica.**
- The **newest base commissioned in 2015 is Bharati.**
- India is **rebuilding its station, Maitri**, to make it bigger and last for at least 30 more years.
- **Dakshin Gangotri**, the first Indian base established in 1984, has weakened and become just a supply base.

- **Sagar Nidhi:** In 2008, India commissioned the Sagar Nidhi, for research.
  - It is an **ice-class vessel**, it can cut through the thin ice of 40 cm depth and is the first Indian vessel to navigate Antarctic waters.



## UPSC Civil Services Examination, Previous Year Questions (PYQs)

**Q. Consider the following countries: (2014)**

1. Denmark
2. Japan
3. Russian Federation
4. United Kingdom
5. United States of America

Which of the above are the members of the 'Arctic Council'?

- (a) 1, 2 and 3
- (b) 2, 3 and 4
- (c) 1, 4 and 5
- (d) 1, 3 and 5

**Ans: (d)**

**Exp:**

- The **Arctic Council** includes Canada, the Kingdom of Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden and the United States as its members.

**Source: PIB**

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