

PREFIRE Polar Mission

May 17, 2024 • vajiramandravi.com



About PREFIRE Polar Mission:

- The **Polar Radiant Energy in the Far-InfraRed Experiment(PREFIRE)** polar mission consists of **twin satellites**, each carrying one instrument and measuring the poles about six hours apart.
- **Objective:** The objective of the mission is to reveal the **full spectrum of heat loss from Earth's polar regions** for the first time, making climate models more accurate.
- **Aim :**
 - The data from the PREFIRE mission is aimed at addressing the gap in knowledge and provide data to improve predictions of **climate change and sea level rise**.
 - Provide new information on how Earth's atmosphere and how **ice influences** the amount of heat being radiated out to space from **the Arctic and Antarctic**.
- **How will the satellites work?**
 - The mission with cube satellites about the size of a shoebox will be launched aboard an Electron launch vehicle.
 - It is equipped with technology proven on Mars, and will measure a "**little-studied portion**" of the **radiant energy** emitted by Earth.

- Two satellites carrying a **thermal infrared spectrometer** will be in **asynchronous near-polar orbits** and will be passing over a given spot on Earth at different times. To maximize coverage, they will be overlapping every few hours near the poles.
 - The instruments weighing less than 6 pounds (3 kilograms) each will make readings using a **device called a thermocouple**, similar to the sensors found in many household thermostats.
 - **The mission will help in**
 - Understand why the Arctic has warmed more than 2½ times faster than the rest of the planet since the 1970s.
 - Give scientists a better idea of how **efficiently far-infrared heat** is emitted by matter like snow and sea ice, and how clouds influence the amount of far-infrared radiation that escapes to space.
 - It will help researchers better predict how the **heat exchange** between **Earth and space** will change in the future, and how those changes will affect phenomena like ice sheet melting, atmospheric temperatures, and global weather.
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Q1: What is Electromagnetic Spectrum?

The electromagnetic spectrum is a continuum of all electromagnetic waves arranged according to frequency or wavelength. It is fundamental to understanding how energy is transmitted across space.

Source: [NASA's new mission to study polar regions' heat loss to launch on May 22: All you need to know](#)

Source: <https://vajiramandravi.com/current-affairs/prefire-polar-mission/>

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