New Approach to Detecting Solar Particle Events

Prelims: *Current events of National and International Importance| Science and Technology*

Why in News?

Scientists at the Indian Institute of Geomagnetism (IIG) have demonstrated that compact ground-based gamma-ray detectors at India's polar stations in Ny-Ålesund (Arctic) and Maitri (Antarctica) can detect rare Ground-Level Enhancement (GLE) solar particle events, offering a more cost-effective way to expand global space-weather monitoring.

- **Event Detected–** GLE #77 on November 11, 2025, triggered by an intense X-class solar flare and a fast coronal mass ejection (CME).
- **Technology Used–** Sodium iodide thallium-activated—NaI(Tl)—scintillation gamma-ray detectors installed by IIG, compared against neutron monitors and GOES satellite data.
- **Key Advantage–** NaI(Tl) detectors are smaller and less expensive than traditional neutron-monitor installations, making it easier to deploy wider networks across more locations.
- **Research Team & Publication–** Conducted by IIG researchers and published in *The Astrophysical Journal Letters*.



Reference

PIB| New approach to detecting solar particle



SHANKAR
IAS PARLIAMENT
Information is Empowering