

Title of the abstract for User Interaction Meet-2026

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Abstract (max 750 words, Single line space, Times New Roman-12pt)

Viksit Bharat envisions India as a technologically advanced and self-reliant nation, with space science and observations playing a pivotal role in national development. Space-based observations enable continuous monitoring of the Earth, and near-Earth environment, supporting climate studies, agriculture, disaster management, communication and navigation. Indigenous development of advanced space instrumentation and observation missions strengthens scientific capability while fostering innovation, capacity building, and global collaboration. In the context of Viksit Bharat, sustained space observations contribute not only to fundamental scientific understanding but also to societal resilience, strategic autonomy, and data-driven governance, reinforcing India's leadership in space science and technology.

This paper presents space-based measurements obtained from Earth-orbit satellite mission, with emphasis on instrument performance, data processing and data analysis. The NASA-ISRO Synthetic Aperture Radar (NISAR) mission is a joint Earth observation satellite designed to systematically monitor Earth's land and ice surfaces using dual-frequency L-band and S-band radar. NISAR will provide high-resolution, all-weather, day-and-night observations to study ecosystem dynamics, ice-sheet evolution, natural hazards, and crustal deformation. The mission represents a major milestone in international collaboration and advances global capability for continuous, precise Earth surface monitoring.

In the framework of Viksit Bharat, data analytics and cloud computing plays a strategic role in transforming space-based observations into actionable societal benefits, by enabling efficient processing, storage, and dissemination of large-scale Earth observation datasets. In the context of the NASA-ISRO NISAR mission, cloud-based analytics platforms allow handling of high-volume radar data, supporting near-real-time insights into natural hazards, agriculture, infrastructure stability, and climate processes. The convergence of indigenous cloud infrastructure, scalable analytics, and NISAR data strengthens data-driven decision-making, enhances societal resilience, and promotes self-reliant, technology-enabled national development. These advanced techniques are essential for understanding and handle the high resolution and large volume of data from upcoming or future sensors, which will strengthen country's ability with International synergy.

Keywords (4 to 6 words): Viksit Bharat, Space-based measurements, Space technology, NISAR, Data analytics, Cloud computing