



Centenary Guest Lecture on the topic: Planetary Remote Sensing & Cryosphere

Planetary remote sensing has revolutionized cryospheric research by delivering high-resolution multispectral, hyperspectral, lidar and radar data that reveal the composition, dynamics and energy balance of ice deposits on Earth and across the Solar System. The data showcases detailed insights from terrestrial ice to Martian polar caps and Europa's suspected saline shells, emphasizing albedo feedbacks, dust-ice interactions and sub-surface layering. On Earth, remote sensing supports the assessment of glacier mass balance, snow/ice evolution, and permafrost degradation. On extraterrestrial bodies, these techniques reveal volatile transport, dust-ice layering, and signatures of past climate oscillations. Integration with laboratory spectroscopy and numerical modeling enables detailed interpretation of observed reflectance and emissivity spectra. Such multi-disciplinary approaches are essential for reconstructing cryo-climatic histories, understanding surface-atmosphere coupling, and identifying potential astrobiological niches in extraterrestrial icy environments.

About Speaker

Dr. Deepak Singh is currently working as an Assistant Professor at CSRE, IIT Bombay. He has an Integrated Master's degree in Applied Geophysics from ISM Dhanbad. He has completed his MS & PhD at the University of Michigan in Atmospheric, Oceanic, and Space Sciences. Later, he joined PRL, Ahmedabad, as a postdoc and INSPIRE Faculty. His research areas include the cryosphere-climate interaction of planets in our solar system, modeling of planetary snow/ice and its impact on planets' energy budget, and understanding the behavior of various ices in our solar system and beyond.



Prof. Deepak Singh
Assistant Professor at CSRE,
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Date: July 07, 2025 Time: 05 PM

Venue: Conference Room, 5th floor, New Academic Complex, Department of Applied Geophysics

Coordinator: Prof. Mohit Agrawal, Associate Professor, AGP

Prof. S. K. Pal, HOD (AGP)