

# Processing & Analysis Of Multiple Chandrayaan-2 TMC Datasets Over A Lunar Cold Spot crater



Name: Palakben Pratikkumar Mahida

**Designation: Research Intern** 

Institution: ISTAR-CVM UNIVERSITY

External Guide: Sri. Rohit Nagori

Contact e-mail: rohitnagori@sac.isro.gov.in

**Internal Guide: Dr. Krunal Suthar** 

Contact e-mail: krunal.suthar@cvmu.edu.in

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02 DEC 2024 to 01 APR 2025

### **MAJOR OBJECTIVES:**

- 1. Analyze photometric properties by examine how light interacts with the surface of the cold spot crater to understand its reflectance and albedo characteristics, using several TMC-2 datasets.
- 2. Process the TMC images to create phase angle and radiance factor images, which help in understanding surface reflectance characteristics.
- 3. Compare the reflectance and surface roughness of the cold spot with nearby lunar terrain.

# **METHODOLOGY FLOW CHART:**

- Data acquisition from TMC-2
- Co-registration and seleno-referencing of the data for all the three views and if there is no significant shift then make the FCC of the data
- Generate the emergence and incidence angle and then phase angle is calculated using local incidence angle, incidence azimuthal angle, local emergence angle and emergence azimuthal angle
- Generation of Radiance factor, reflectance factor and phase factor image

# **RESULTS/MAJOR FINDINGS:**

- Done the processing of multiple TMC-2 datasets to study the interested lunar cold spot crater which lies near Balmer R crater. Generated phase angle and radiance factor images, which helped analyse the reflectance properties of the surface.
- Compared thermal and photometric properties of the cold spot with surrounding lunar terrain.
- The cold spot exhibited unusual photometric and thermal properties, suggesting recent surface modifications.

## **CONCLUSION:**

This study confirms that the cold spot crater near Balmer R is a geologically young feature with high rock abundance, minimal space weathering, and distinct photometric traits. The results suggest recent surface disturbance and highlight the need for further analysis using multi-angle TMC-2 data and other lunar instruments.