



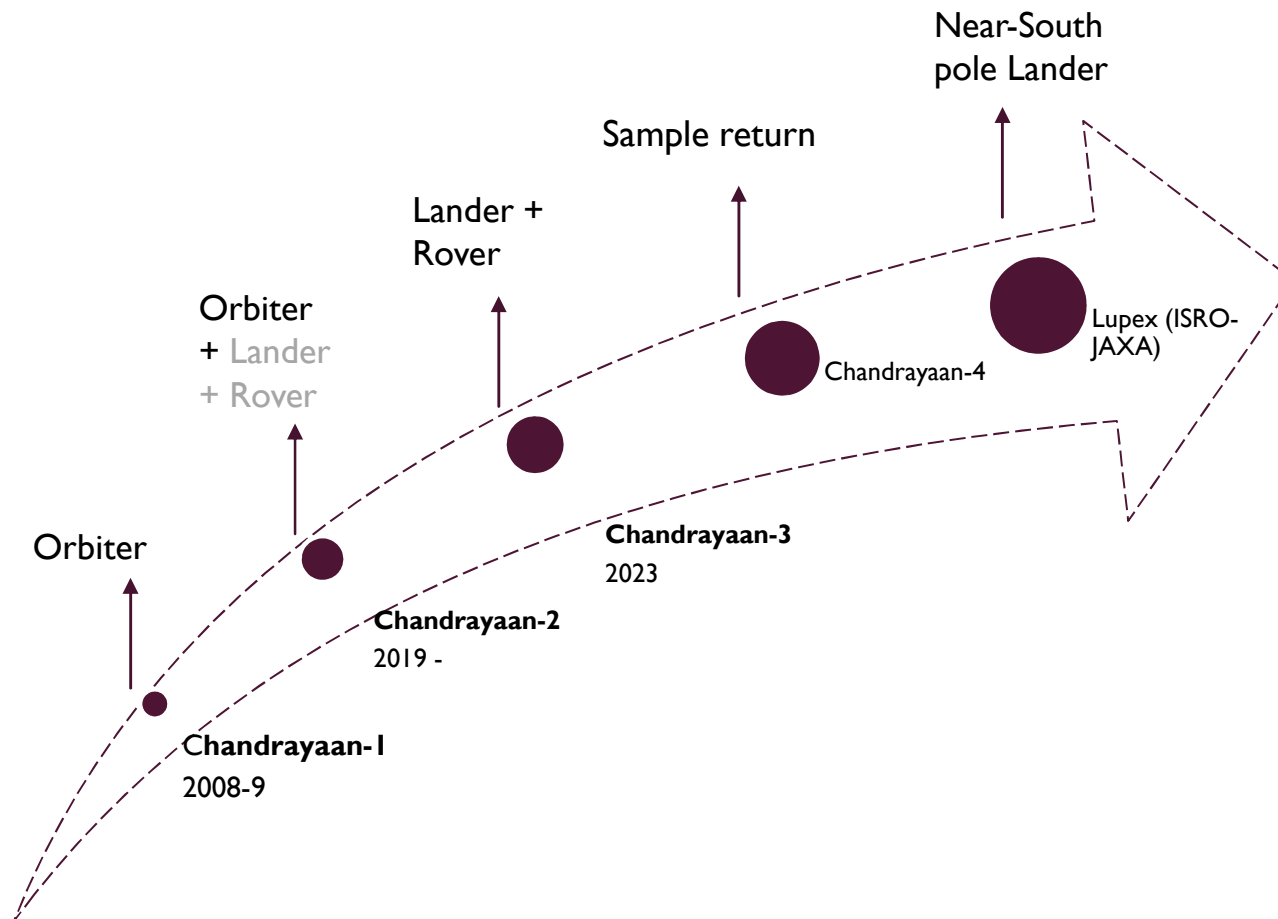
# ISRO'S PLANETARY PROGRAMS

SHYAMA NARENDRANATH

U R RAO SATELLITE CENTRE

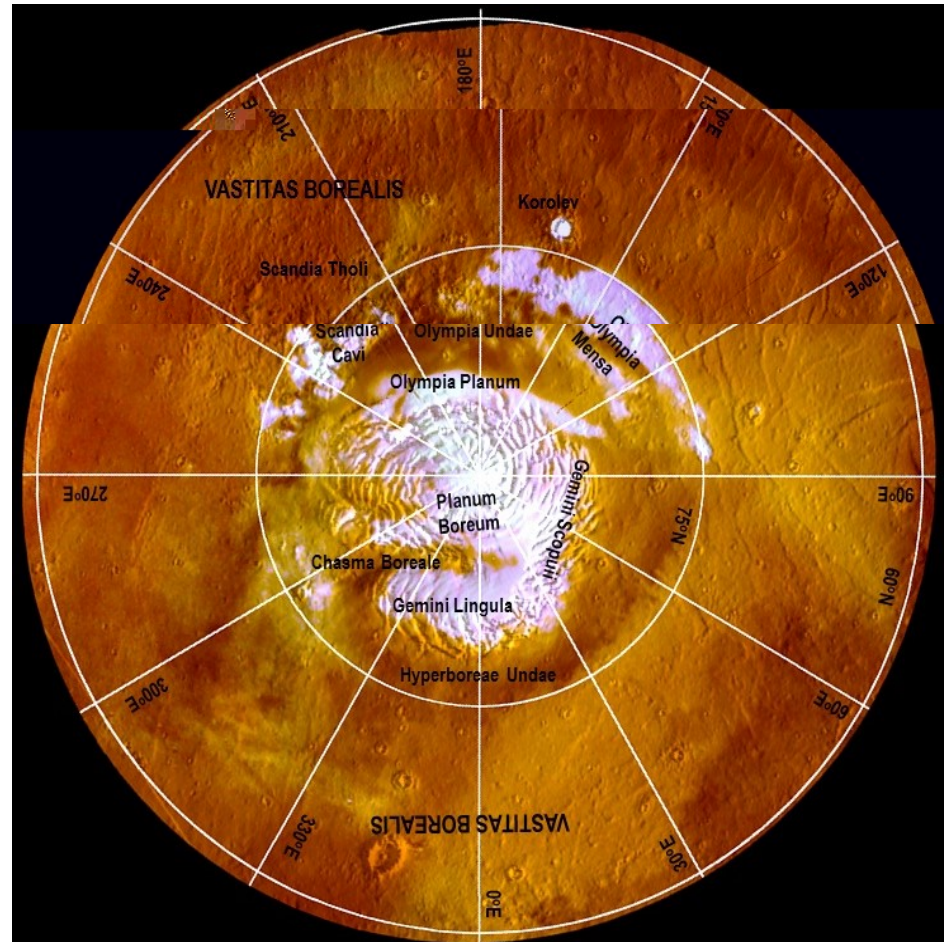
INDIAN SPACE RESEARCH ORGANISATION (ISRO)

# ISRO'S LUNAR EXPLORATION PROGRAM



# MARS (2013-2022)

Orbiter in a highly elliptical orbit  
of  $\sim 71000 \times 300$  km



Polar Ice caps imaged by the Mars Color Camera

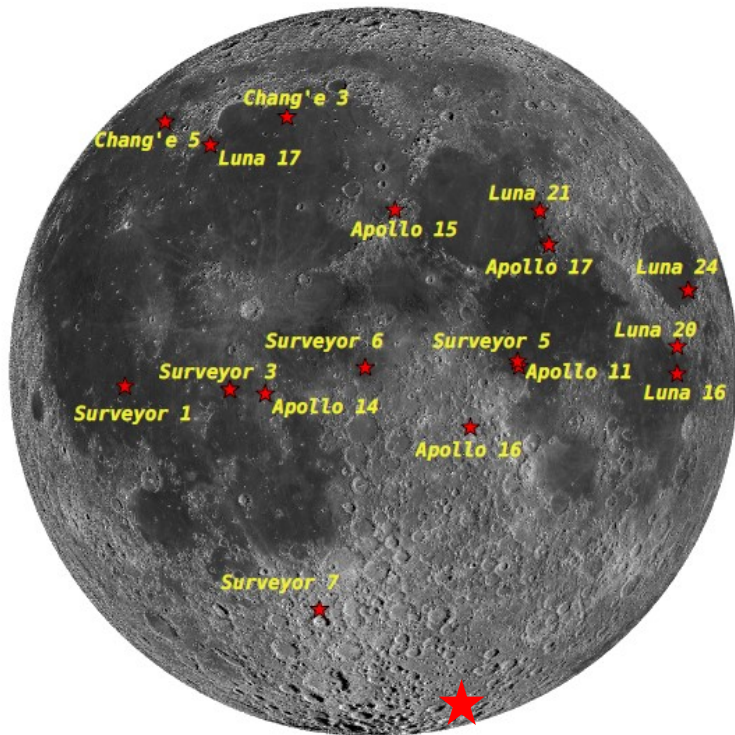
# ISRO'S PLANETARY MISSION CATEGORIES



- Past and Current missions
  - Chandrayaan-1 and 2- Category II (Orbiters)
  - Chandrayaan-3 : Category II a (Lander)
  - MOM- Category III (Orbiter)
- Future missions under feasibility study
  - Mars- Category IV (Lander)
  - Moon- Category V , unrestricted Earth return (Sample return)

# CHANDRAYAAN-3

Landing at -69.3733, 32.3204



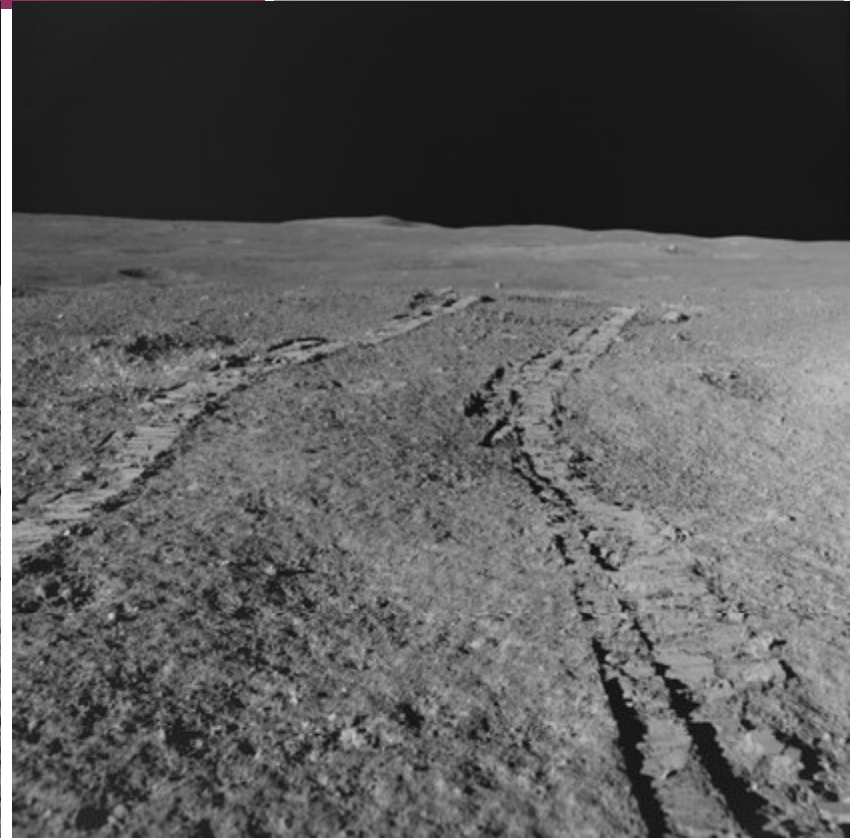
## Experiments

- Composition
- Near lunar surface plasma
- Seismic measurements
- Vertical profile of temperature and its variation

## PLANS : PLANETARY PROTECTION

- Mission in the near term
  - Impact probability on target body
  - Organic inventory from propulsion system
- Beyond
  - Microbial population (bioburden)
  - Extraterrestrial sample handling

*Evolving*



THANK YOU FOR YOUR ATTENTION