



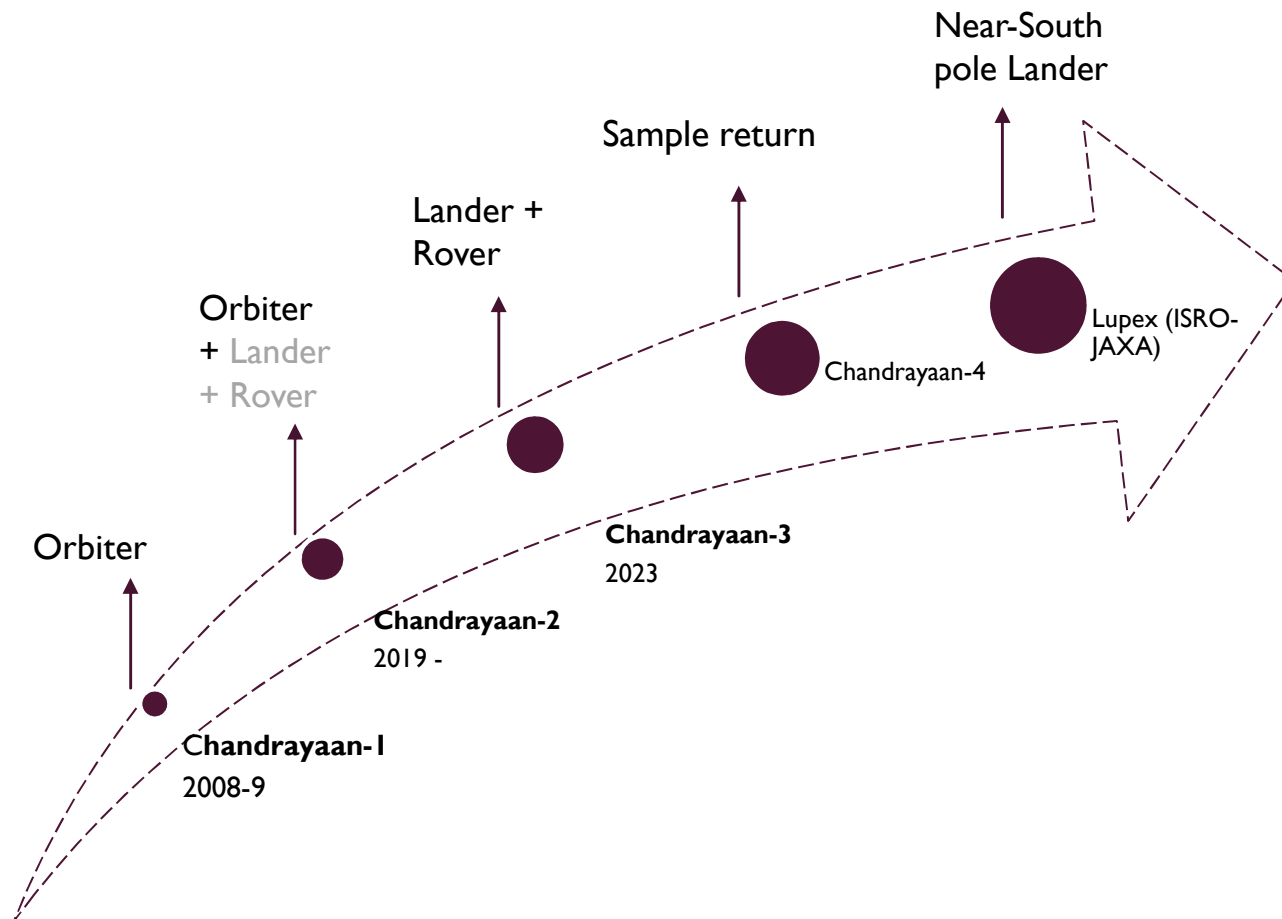
ISRO'S PLANETARY PROGRAMS

SHYAMA NARENDRANATH

U R RAO SATELLITE CENTRE

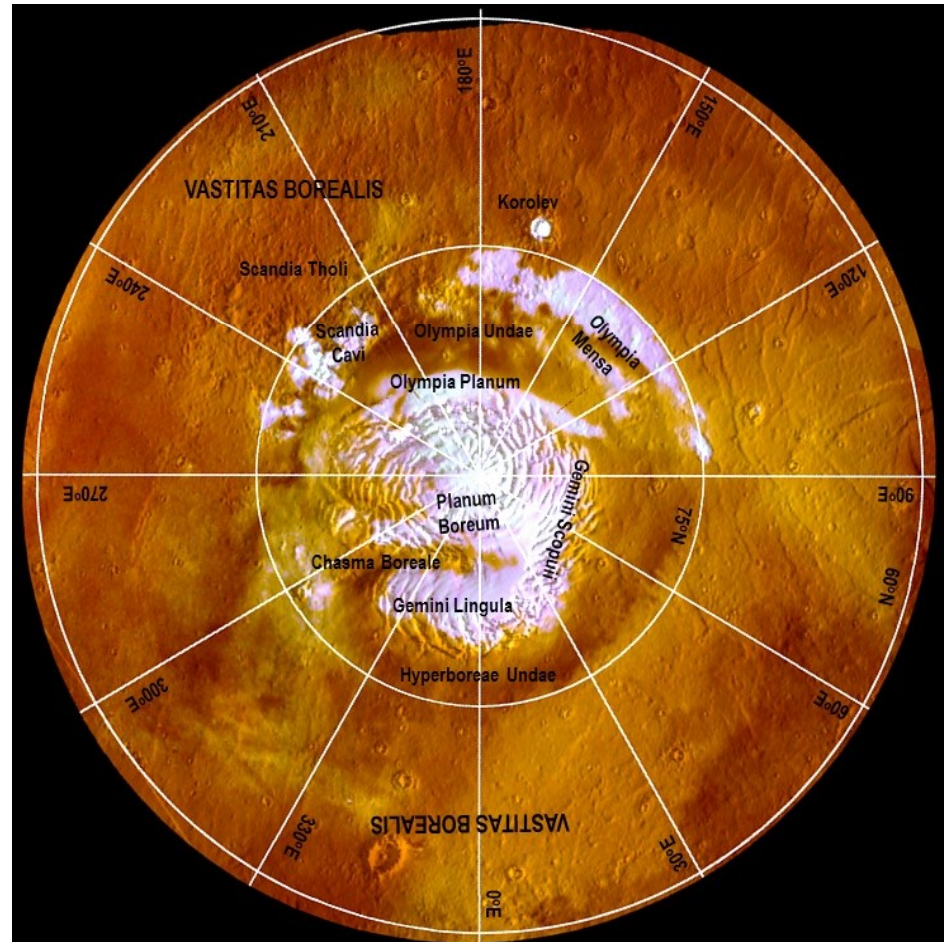
INDIAN SPACE RESEARCH ORGANISATION (ISRO)

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

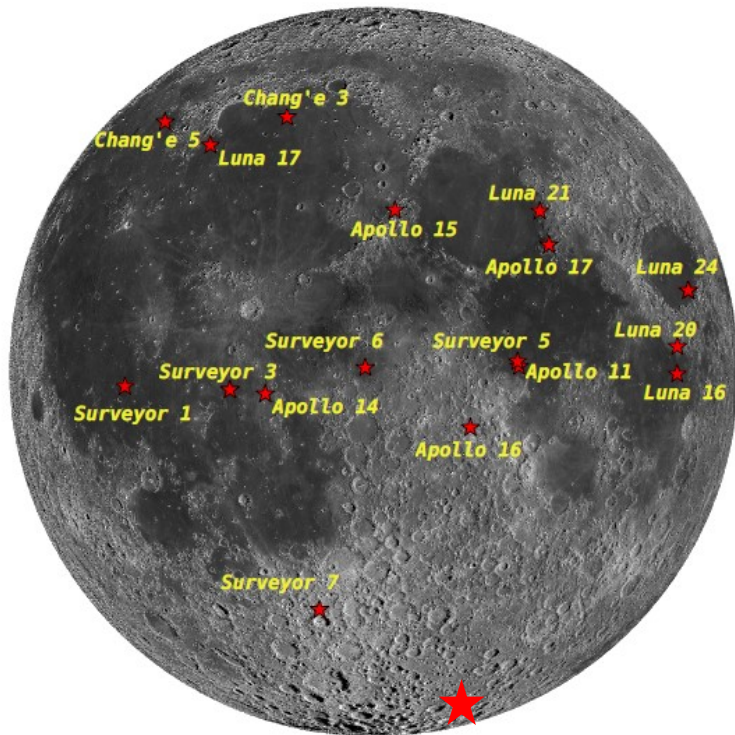
ISRO'S PLANETARY MISSION CATEGORIES



- 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 $-69.3733, 32.3204$



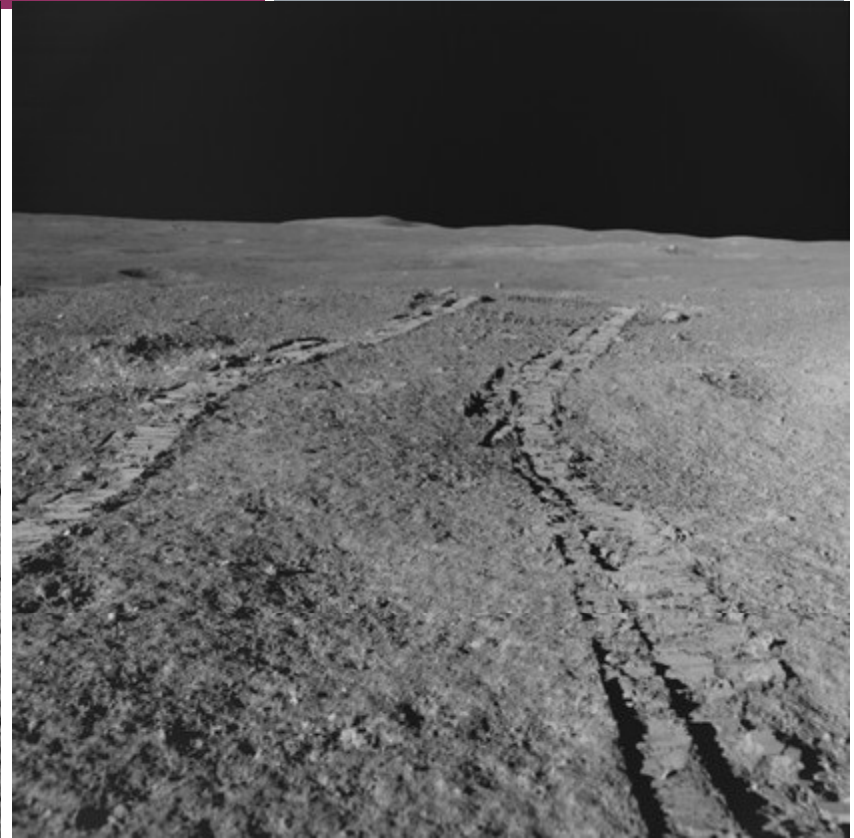
Experiments

- 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