

# Planetary Science (mostly atmospheres) at Boston University

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Planetary Science Decadal Survey  
Town Hall Meeting

Boston University  
2011.03.26

# Selected people



Supriya  
Chakrabarti



John  
Clarke



Dave  
Marchant



Michael  
Mendillo

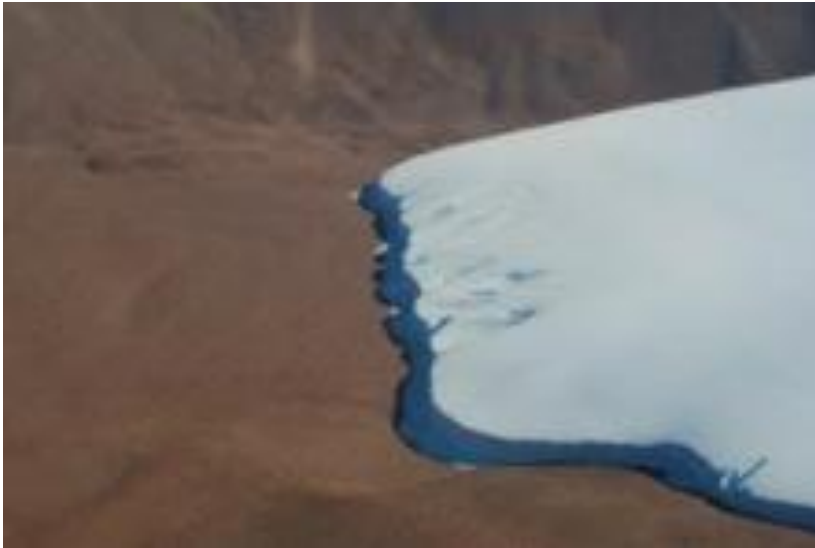


Luke  
Moore

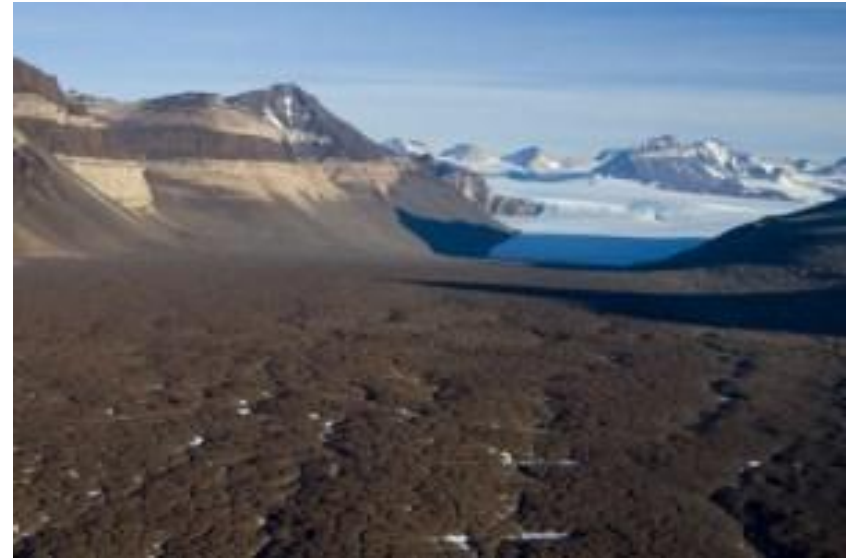


Paul  
Withers

# Antarctic analogues for Mars geology



Dry valleys of Antarctica

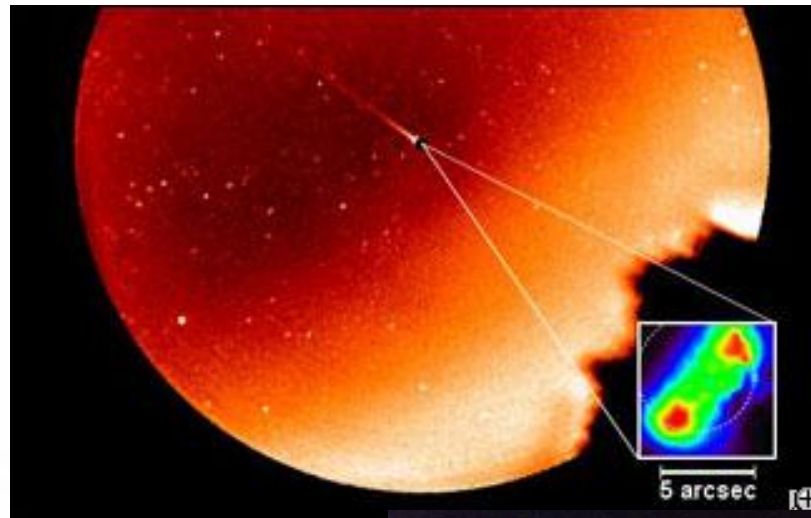
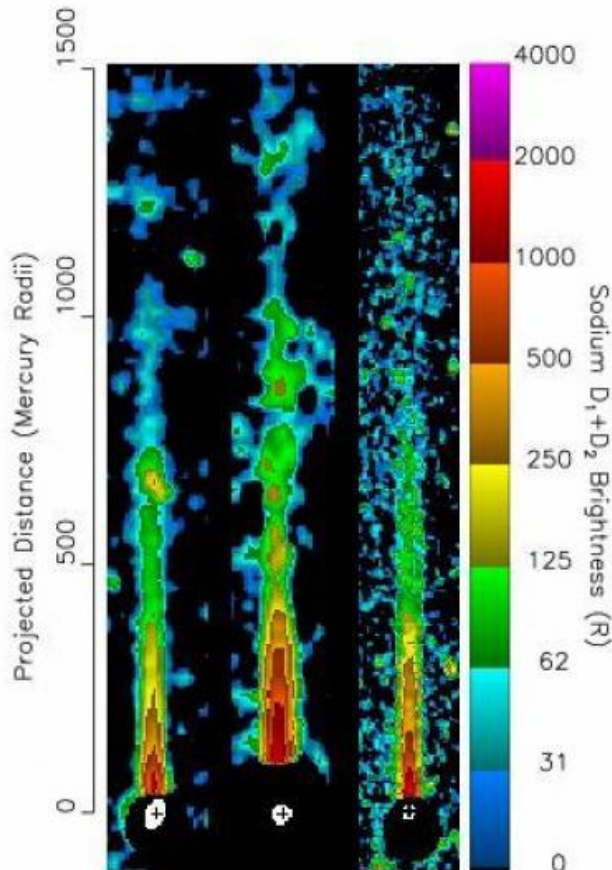


Dry valleys of Antarctica

Marchant and colleagues

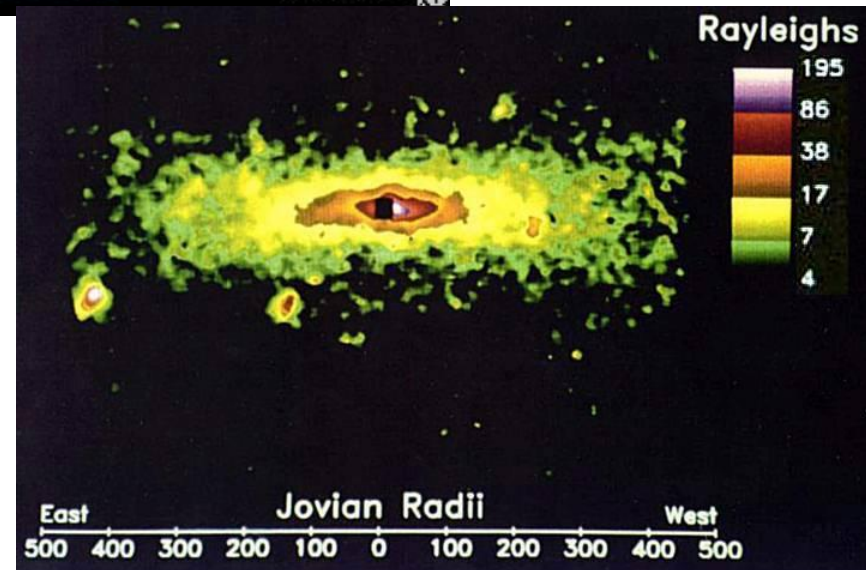
# Ground-based observing

Surface-bounded exospheres like Mercury, Moon, Io and torus



Mercury  
(left and above)

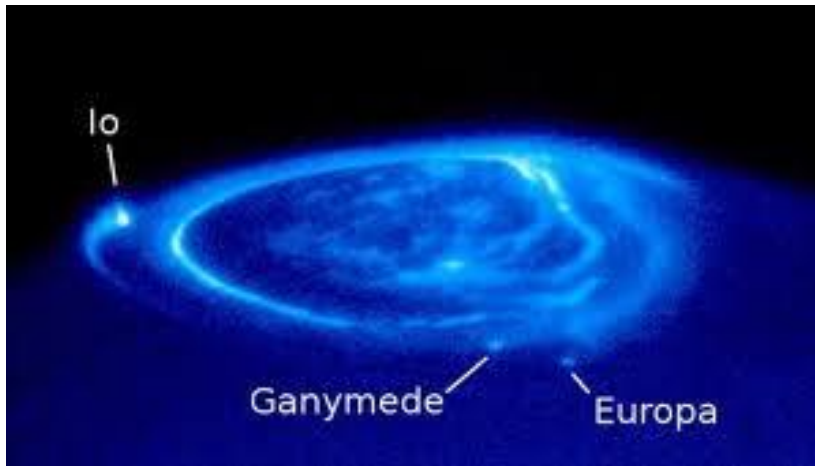
Jupiter



Mendillo and colleagues

# Space-based observing

UV observations of aurora and coronas of hot atoms



Jupiter



Saturn

Clarke and colleagues

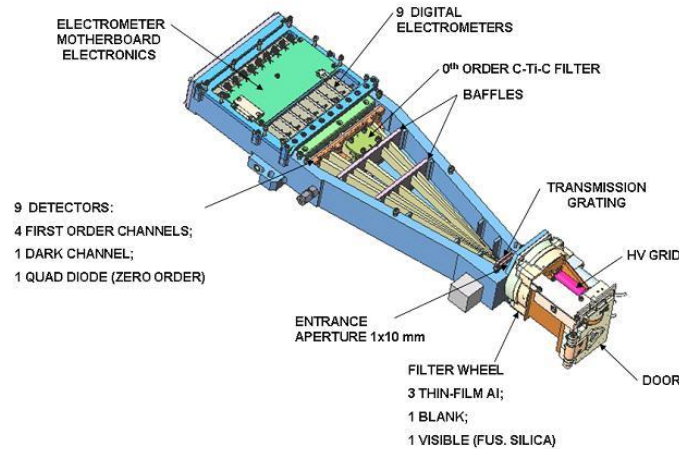


# Sounding rocket instrumentation

UV spectrometers, optical interferometers, probably more



Black Brant rocket  
White Sands



A random UV spectrometer

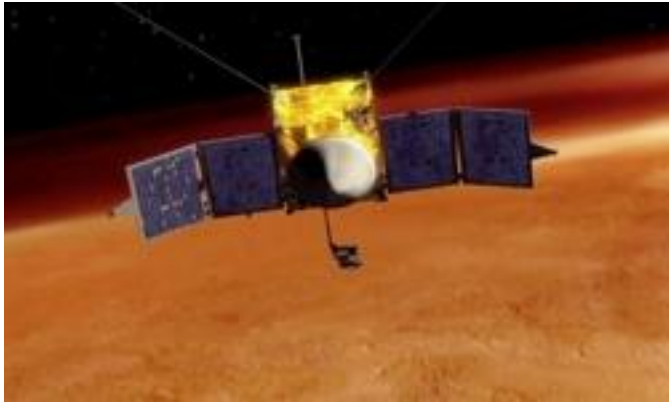
Venus atmospheric D/H ratio



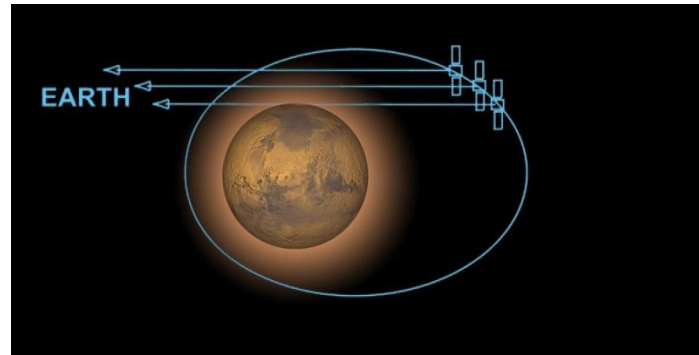
Nulling interferometer for  
imaging extrasolar planets

Chakrabarti, Clarke and colleagues

# Spaceflight instrument teams



MAVEN UV spectrometer



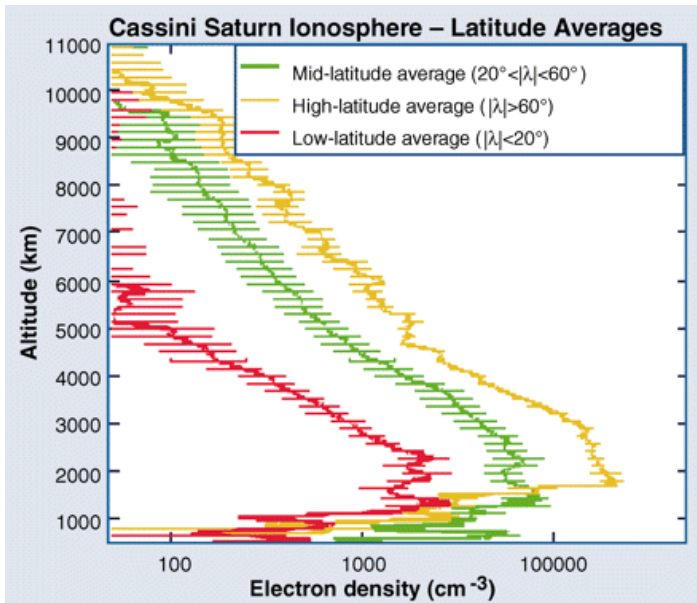
Mars Express  
and Venus  
Express  
radio science

Accelerometer  
instruments  
on aerobraking  
orbiters and  
atmospheric entry  
probes



Clarke, Withers and colleagues

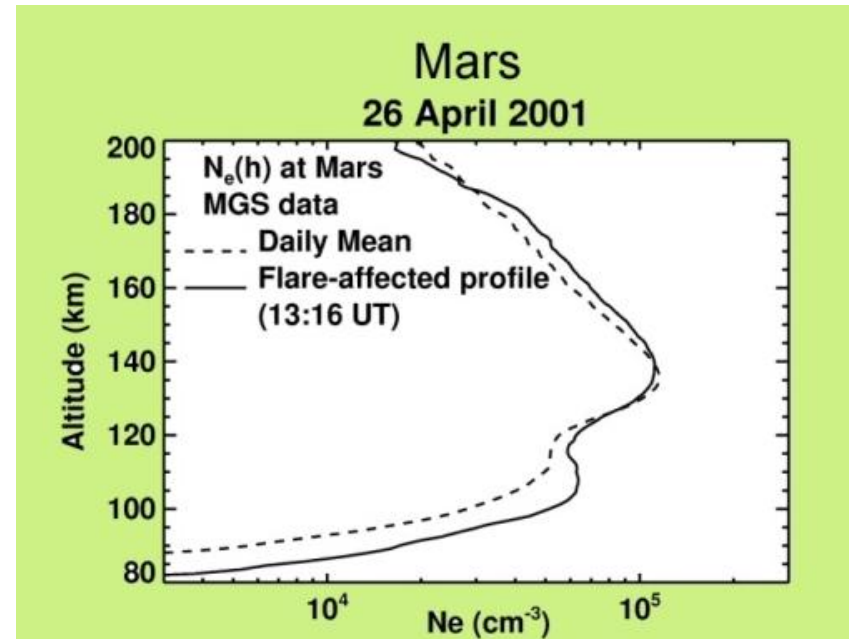
# Numerical ionospheric models



Saturn ionosphere

Effects of ring-shadowing  
Causes of unusual vertical structure

Moore, Withers and colleagues



Mars ionosphere

Response to solar flares  
Effects of unusual magnetic fields



# Planetary atmospheres

- Ground-based observing
  - Surface-bounded exospheres like Mercury, Moon, Io and torus
- Space-based observing
  - HST observations of Jupiter and Saturn aurora
  - HST observations of Mars hot corona
- Sounding rocket instrumentation
  - UV observations of D/H at Venus
- Spaceflight data and projects
  - MAVEN UV spectrometer
  - Mars Express radio science
  - Venus Express radio science
  - Accelerometer data from aerobraking and entry spacecraft
- Models

# Selected people

- Professor Supriya Chakrabarti
  - Space-based optical and UV instruments, including exoplanet imaging
- Professor John Clarke
  - Planetary atmospheres and aurora, UV instrumentation
- Professor Dave Marchant
  - Antarctica as a geological Mars analogue, fieldwork
- Professor Michael Mendillo
  - Surface-bounded exospheres and ionospheres, ground-based optical imaging
- Research Scientist Luke Moore
  - Observations and models of Saturn's ionosphere
- Professor Paul Withers
  - Planetary atmospheres and ionospheres, accelerometer and radio science instrumentation