Planetary Science
(mostly atmospheres)
at Boston University

Paul Withers
withers@bu.edu

Planetary Science Decadal Survey
Town Hall Meeting

Boston University
2011.03.26
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

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

Accelerometer instruments on aerobraking orbiters and atmospheric entry probes

Mars Express and Venus Express radio science

Clarke, Withers and colleagues
Numerical ionospheric models

Saturn ionosphere
Effects of ring-shadowing
Causes of unusual vertical structure

Mars ionosphere
Response to solar flares
Effects of unusual magnetic fields

Moore, Withers and colleagues
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