

Bruce Allan Campbell

Smithsonian Institution, Center for Earth and Planetary Studies
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Education

Ph.D., Geology and Geophysics, 1991, University of Hawaii, Honolulu, Hawaii.
B.S., Geophysics, 1986, Texas A&M University, College Station, Texas.

Employment and Experience- Smithsonian Institution (1992-present):

I. Geophysicist/Senior Scientist

Major Research Interests:

Radar remote sensing of the Earth and planets

- Moon, Venus, and Mars radar imaging using the Arecibo and Green Bank Telescopes.
- Extensive experience with NASA/JPL AIRSAR data.
- Developed focused processing algorithms for high-resolution lunar radar imaging.
- Focused processing and ionospheric compensation algorithms for SHARAD data.

Instrument and mission design for planetary exploration

- Leading development efforts for Mars radar imaging mission.
- Managed NASA Planetary Instrument Program 1996-1998.

Understanding the link between surface properties and remote sensing data

- Extensive field measurements of natural terrain topography.
- Development of quantitative approach to surface characterization with fractal methods.
- Theoretical studies of radar scattering and comparison to field measurements.
- Analysis of radar echo polarization properties and compact polarimetry approaches.
- Correlation of roughness effects on radar scattering and optical shadowing.

Planetary geology and geophysics

- Venus volcanic deposits and their role in the recent history of the planet.
- Surface-atmosphere processes on Venus.
- Studies of lunar impact crater, basin, and volcanic deposits.
- Characterization of possible lunar resources in polar areas and pyroclastic deposits.
- Characterization of sedimentary, glacial, and volcanic units on Mars.

II. Curator, NASM Exploring the Planets Gallery (2003-present)

Oversight of gallery upgrades and renovation planning, coordination of science, exhibit, and educational efforts related to the gallery, and acquisition of external funding. Completed major renovation of Mars exhibit content in 2010.

III. Department Chairman (1998-2002)

Supervised all activities of a physical sciences research unit of the Smithsonian. Responsible for science oversight, budget planning, personnel supervision, development of long-range funding goals, and coordination of exhibit and outreach activities.

IV. Discipline Scientist, NASA

Planetary Instrument Definition & Development Program (1996-1998)

Managed competitive \$7 M research and analysis program for development of advanced spacecraft instruments and new remote sensing technologies - detailed program and budget planning, assessment of new directions in planetary science, and selection of funded programs.

Professional Societies

AGU (Planetology Division Secretary, 1996-1998), DPS/AAS, IEEE

Research Grants, Mission Involvement, and Awards

Missions:

NASA MRO Shallow Subsurface Radar Sounder Team Membership (SHARAD)

Research Grants as PI:

NASA "Mars Scout Radar" Feasibility Study (2001-2002)

NASA Planetary Geology and Geophysics Program (1993-Present)

NASA Planetary Astronomy Program (1998-1999; 2006-2010)

NASA Lunar and Asteroid Data Analysis Program (1996-1997)

NASA Venus Data Analysis Program (1993-1994)

ESA ERS-1 Program (1994-1997)

Awards:

NASA Group Achievement Award, JIMO Science Definition Team

NASA Group Achievement Award, SHARAD Instrument Development

NASA Group Achievement Award, SHARAD Data Visualization

Post-Doctoral Associates

Dr. Michael K. Shepard (1994-1995)

Dr. Mark H. Bulmer (1996-2001)

Dr. Rebecca R. Ghent (2002-2006)

Dr. David W. Leverington (2003-2004)

Dr. Lynn M. Carter (2004-2010)

Dr. Gareth Morgan (2010-present)

Advisory Panel Service

NASA Planetary Geology & Geophysics Management Operations Working Group 1993-1997

NASA Venus Mapping Steering Group 1995-1996

NASA Terrestrial Planets Campaign Strategy Working Group 1998-1999

NASA Solar System Exploration Technology Assessment Group 2001-2002

Smithsonian Science Commission 2001-2003

NASA Science Definition Team, Jupiter Icy Moons Orbiter (JIMO) Mission 2003-2004

NASA Solar System Exploration Subcommittee 2003-2005

NASA Lunar Reconnaissance Orbiter Objectives/Requirement Definition Team 2004

NASA Moon-Mars Science Linkage Steering Group 2004

NASA MSO Science Analysis Groups I and II 2006-2007

Arecibo Observatory Visiting Committee 2008-2010

NASA Venus Science and Technology Definition Team 2008-2009