

## Elizabeth P. Turtle

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### Education:

Doctor of Philosophy in Planetary Sciences, 1998

University of Arizona, Tucson

Dissertation Title: Finite-Element Modeling of Large Impact Craters: Implications for the Size of the Vredefort Structure and the Formation of Multiple Ring Craters

Dissertation Advisor: Prof. H. Jay Melosh

Bachelor of Science in Physics, 1989

Massachusetts Institute of Technology

Thesis Title: Dependence of the Signal-to-Noise Ratio on Observational Parameters

Thesis Advisor: Prof. James L. Elliott

### Professional and Research Experience:

Assistant Research Scientist: July 2003 - present (part-time: 75%)

Senior Research Associate: February - June 2003 (part-time: 75%)

Lecturer, September 2005 - present (part-time: 20%)

Dept. of Planetary Sciences, University of Arizona

- Teaching: graduate Titan seminar; graduate field trip; undergraduate introductory course
- Numerical simulations of impact craters and other landforms on icy satellites to constrain subsurface properties.
- Finite-element modeling of the formation and evolution of mountains on Io.
- Coordinating ISS observations for *Cassini's* encounters with Titan.

Research Scientist: June 2002 – present (part-time: 5%)

Planetary Science Institute, Tucson, Arizona

- Investigation of landform modification on Mars by viscous creep deformation of ground ice.

Research Associate: July 1998 – January 2003 (June 2002 - January 2003, part-time: 75%)

Dept. of Planetary Sciences, Univ. Arizona; Advisor: Prof. Alfred S. McEwen

- Numerical simulations of impact cratering on Europa to constrain ice thickness.
- Finite-element modeling of the formation and evolution of mountains on Io.
- Investigation of the formation mechanism for European double ridges.
- Coordinated SSI observations for *Galileo's* Io encounters and *Cassini's* Titan encounters.
- Coordinated public outreach for *Galileo's* Io encounters

November 2002

14th Annual Beckman Frontiers of Science Symposium

National Academy of Sciences

August 1999

NASA PG&G Volcanology Field Workshop: Large-scale volcano tectonics

Leader: Scott Rowland

Graduate Research Associate: August 1993 – July 1998

Dept. of Planetary Sciences, Univ. Arizona; Advisor: Prof. H. Jay Melosh

- Dissertation: Finite-element modeling of large impact craters on Earth and Europa.
- Modeled lithospheric flexure and stress and gravity anomalies due to large Martian volcanoes.

August 1997

JPL Project Design Center; Advisors: Robert E. Oberto, Richard A. Wallace, Robert Gershman, JPL

- Participated in a workshop on space science project design with JPL's Advanced Projects Design Team (Team X) as project manager for AMBASSADOR, a mission to study and return a sample from a main belt asteroid.

April 1997

Dept. of Planetary Sciences, Univ. Arizona

- Coordinated and led a planetary geology field trip for graduate students to sites in New Mexico, including Carlsbad Caverns, the Carrizozo lava flow and the Potrillo maar volcanoes.

August 1996

JPL Planetary Science Summer School: "Instrumentation in Planetary Exploration"

August 1996

JPL Project Design Center; Robert W. Rowley, Robert Gershman, JPL

- Participated in a workshop on space science project design with JPL's Advanced Projects Design Team (Team X) as systems engineer for a mission to explore the lower atmosphere and surface of Venus using an aerobot.

Graduate Teaching Associate: January 1994 - May 1994

Dept. of Planetary Sciences, Univ. Arizona; Advisor: Prof. Jonathan I. Lunine

- Undergraduate course in planetary sciences titled "Planet Earth: Evolution of a Habitable World"

Graduate Research Assistant/Associate: August 1989 - December 1993

Dept. of Planetary Sciences, Univ. Arizona; Advisors: Prof. C. C. Porco, Prof. W. B. Hubbard

- Modeled the orbital dynamics of Saturn's narrow, eccentric rings.
- Reduced photometry and imaging data from the July 1989 occultation of 28 Sgr by Saturn.

Undergraduate researcher: January 1986 - May 1989

Massachusetts Institute of Technology

- Thesis: Examined the effects of observational parameters on signal-to-noise ratios (in preparation for the 28 Sgr occultation by Saturn in July 1989).
- Reduced multi-spectral (UVBRI) photometry data of an occultation by Uranus in 1987. Advisor: Prof. James L. Elliot, Dept. of Earth, Atmospheric and Planetary Sciences, MIT
- Acquired and reduced CCD images of comets to analyze the species in their comae. Advisors: Dr. David Schleicher, Lowell Observatory, Prof. James L. Elliot, MIT
- Reduced CCD data and developed C programs for observational support. Advisors: Dr. George R. Ricker, Dr. Roland Vanderspeck, Center for Space Research, MIT

## **Memberships:**

American Geophysical Union  
American Astronomical Society Division of Planetary Sciences  
Association of Women in Science, Southern Arizona Chapter  
2001-2003, Program Coordinator  
2004, Acting president  
University of Arizona Association for Women Faculty  
2004, Board member

## **Service and other activities:**

PG&G Review panel, Geophysics Group Chief, 2002, 2005  
Member of Titan Working Group for the Outer Planets Assessment Group (OPAG)  
LPSC Program Committee, 2004, 2005  
OPR Review panel, 2004  
Guest editor for *Icarus* special section on the results from *Galileo's* final flybys of Io, 2003  
PG&G Review panel, 2001  
Coordinated a special session at the 2001 Fall AGU meeting:

"Galileo's Polar Io Flybys: Magnetospheric and Geologic Observations"

### Invited colloquium and guest lectures:

UC Santa Cruz, 22 April 2005, "Exploring Titan with *Cassini* Imaging"  
Lunar and Planetary Lab., 22 March 2005, "*Cassini* Imaging of the Saturnian Satellites"  
Southwest Research Institute, 21 February 2005, "Exploring Titan with *Cassini* Imaging"  
NOAO, 4 February 2005, "Exploring Titan with *Cassini* Imaging"  
UCLA, 13 January 2005, "Exploring Titan with *Cassini* Imaging"  
Lunar and Planetary Institute, 14 Nov. 2003, "Modeling the deformation of landforms on Mars by creep of ground ice"  
Univ. of Alaska, Fairbanks, 29 May 2003, "Building Mountains on Io"  
Univ. of Arizona, 12 Nov. 2002, "Planetary Applications of Finite-Element Analysis: Modeling Mountain Formation on Io and Landform Deformation on Mars"  
Univ. of Arizona, 26 Mar. 2002, "Impact Cratering on Europa: Implications for Ice Thickness"  
UC Santa Cruz, 12 Oct. 2001, "Penetration of a European Ice Shell During Impact Cratering: A Lower Limit for the Ice Thickness"  
UC Santa Cruz, 12 Oct. 2001, "*Galileo* Observations of Io"  
UCLA, 15 Feb. 2001, "Mountains on Io: Observations and Formation Models"

## Spacecraft Mission Support:

2004-present *Lunar Reconnaissance Orbiter: LRO Camera* Team Co-I  
2002-present *Cassini*: planning and analysis of *Cassini* ISS observations of Saturn's satellites  
1998-2002 *Galileo*: planned observations during Io encounters and playback thereof

## Classes taught:

PTYS 699: Graduate Titan Seminar (Fall 2004)  
PTYS 594A: Graduate Fieldtrip Practicum (Fall 2005)  
NATS 201: Undergraduate introductory course (co-teaching; Fall 2005)

## Outreach:

2005 Interviews with The Science Channel, Discovery Channel Canada ("Target Titan") and several other TV, radio and print media reporters  
2004, 2005 Interviews with Arizona Illustrated  
2001-2005 Mentor for four undergraduate students through the SpaceGrant Program

2003 Mentor for an undergraduate student, Nievita Bueno, through the McNair Program  
2002 Mentor for an undergraduate student, Jane Greenham, through Caltech's SURF program  
Presentation about *Cassini's* discoveries about Titan and the other Saturnian satellites for a JPL  
CHARM (Cassini-Huygens Analysis and Results of the Mission) telecon (28 June 2005)  
Presentation of *Cassini* Titan results to Tucson Amateur Astronomy Association (6 May 2005)  
Presentation at Univ. Arizona Daughters on Campus Day (29 April 2005)  
Presentation about *Cassini's* images of Enceladus for a JPL CHARM (26 April 2005)  
Presentation of *Cassini* Titan results to Cosmos Club, Tucson (15 April 2005)  
Presentation to Littleton High School (NH) class about the *Cassini* mission (1 Dec. 2004)  
Presentation to St. Paul's summer school about the *Cassini* mission (28 July 2004)  
Presentation about *Cassini's* images of Phoebe for a JPL CHARM telecon (27 July 2004)  
Public lecture about *Cassini's* first images of Titan for a JPL Solar System Ambassadors'  
"Titan: World of Mystery" event (10 July 2004)  
Public lecture about *Galileo's* discoveries at Europa for a JPL Solar System Ambassadors'  
"Goodbye Galileo" event (21 Sept. 2003)  
1999-2002 Coordinated NASA/JPL releases of Galileo's Io images  
1998-present Conducted several tutorials of the finite-element code TEKTON