

Jay David Goguen

Space Science Institute

Education

Ph.D., Astronomy & Space Sciences, Cornell University (1981). Thesis: *A Theoretical and Experimental Investigation of the Photometric Functions of Particulate Surfaces*. (J. Veverka).

M.S., Astronomy & Space Sciences, Cornell University (1977)

B.S., Physics, University of Massachusetts, Magna Cum Laude, Honors Program, (1974)

Research Interests

Modeling radiative transfer in planetary surfaces

Quantitative interpretation of photometry, polarimetry and spectroscopy of solar system objects

Measurement and analysis of the thermal emission from Io volcanos and Enceladus fissures

Applications of photometry to practical problems in solar system exploration by spacecraft

Physics and chemistry of ices and their relationship to remote sensing measurements

Professional Experience

Space Science Institute, 2019-present

Jet Propulsion Laboratory (1986 – 2019)

Research Scientist, Asteroids, Comets and Planetary Satellites Group (1988 – 2019)

National Research Council Resident Research Associate, JPL (1986 – 1988)

Assistant Astronomer, Institute for Astronomy, University of Hawaii (1981-1986)

Professional Activities

Manager, Planetary Science Research & Analysis Program Office, JPL, May 2014 – June 2019.

Acting Group Supervisor, 3224 Asteroids, Comets and Satellites Group

Discipline Program Manager for NASA Planetary Astronomy, Planetary Atmospheres, Outer Planets Research, Discovery Data Analysis, Near Earth Object Observations, Jupiter Data Analysis, and Cassini Data Analysis Programs (1994-2014).

Science Team, NASA Infrared Telescope Facility Collision of Comet Shoemaker-Levy 9 with Jupiter Observing Campaign.; JPL Palomar Time Allocation Committee, 2006-2013

Project Experience

Mars 2020 – LCAM Team Associate (2017-2018); Mars Exploration Rover – Descent Image Motion Estimation System (DIMES), Lead Scientist, Photometry Working Group, 2001-2004; Comet Nucleus Sample Return, Mission Study Lead Scientist, 1999 – 2000.

Galileo Photopolarimeter/Radiometer Team Associate, 1996-1997; Voyager Neptune Encounter, Imaging Team Associate, 1988-1989.

Selected Awards

NASA Exceptional Service Medal, 2014; NTR, Software Available for Public Release, Mars Exploration Rover – Descent Image Motion Estimation System (DIMES), 2004; NASA Group Achievement Award: Voyager/Neptune Teams, 1990; Editor's Letter of Commendation for Reviewing, *Icarus* 1990; National Research Council Postdoctoral Fellowship (1986 - 1988); JPL Mariner Bonus Awards 2009 & 2012.

Selected Publications

Escobar-Cerezo, J., O. Muñoz, ... **J.D. Goguen**, et al 2018. Experimental Scattering Matrix for Lunar regolith Simulant JSC-1A at visible wavelengths. *Astrophys. J. Suppl.* **235**:19 (<https://doi.org/10.3847/1538-4365/aaa6cc>).

- Goguen, J.D.** 2014. Planetary surface photometry and imaging: progress and perspectives. *Reports on Progress in Physics* **77**, 104901. doi:10.1088/0034-4885/77/10/104901
- Donnellan, A, ... **J. Goguen**, et al 2014 Studying mountain glacier processes using a staring instrument. Aerospace Conference IEEE, DOI: 10.1109/AERO.2014.6836284
- Goguen, J.D.**, B. J. Buratti, R.H. Brown, R. N. Clark, P. D. Nicholson, M. M. Hedman, R. R. Howell, C. Sotin, D. P. Cruikshank, K. H. Baines, K.J. Lawrence, J. R. Spencer, D. G. Blackburn (2013). The Temperature and Width of an Active Fissure on Enceladus Measured with *Cassini* VIMS during the 14 April 2012 South Pole Flyover. *Icarus* **226**,1128-1137
- Johnson, P.V, R.H.Hodyss, V.F. Chernow, D.M. Lipscomb, **J.D. Goguen**, I. Kanik. (2012). Ultraviolet Photolysis of Amino Acids. *Icarus* **221**, 800-805. Hodyss, R., H.R. Howard, P.V. Johnson, **J.D. Goguen**, and I. Kanik (2011). Formation of radical species in photolyzed CH₄:N₂ ices. *Icarus* **214**, 748-753, (doi: 10.1016/j.icarus.2011.05.023).
- Goguen, J.D.**, Stone,T.C., Kieffer,H.H., Buratti (2010) A New Look at Photometry of the Moon. *Icarus* **208**, 548.
- Wolff, M.J., R.T. Clancy, **J.D.Goguen**, M.C. Malin (2010). Ultraviolet Dust Aerosol Properties as Observed by MARCI. *Icarus* **208**, 143-155.
- Hodyss, R., C.D. Parkinson, P.V. Johnson, J.V. Stern, **J.D. Goguen**, Y. Yung, I. Kanik (2009). Methanol on Enceladus. *Geophys. Res. Lett.* **36**, L17103, doi:10.1029/2009GL039336.
- Hodyss, R., P.V. Johnson, J.V. Stern, **J.D. Goguen**, I. Kanik (2009). Photochemistry of Methane-water Ices. *Icarus* **200**, 338-342.
- Hodyss, R., **J. D. Goguen**, P.V. Johnson, C. Campbell, I. Kanik (2008). Release of N₂, CH₄, CO₂, and H₂O from surface ices on Enceladus. *Icarus* **197**, 152-156.
- Hodyss, R., P.V. Johnson, G.E. Orzechowska, **J. D. Goguen**, I. Kanik (2008). Carbon dioxide segregation in 1:4 and 1:9 CO₂:H₂O ices. *Icarus* **194**, 836-842.
- Johnson, A., R. Willson, Y. Cheng, **J. Goguen**, C. Leger, M. SanMartin, L. Matthies (2007). Design Through Operation of an Image-Based Velocity Estimation System for Mars Landing. *International J. Computer Vision*, **74**, 319-341.
- Orzechowska, G.E., **J. Goguen**, P. Johnson, A. Tsapin, I. Kanik (2007). Ultraviolet Photolysis of Amino Acids in a 100K Water Ice Matrix: Application to the Outer Solar System Bodies. *Icarus* **187**, 584-591.
- G. Orton, ... **J. Goguen**, ...et al. (1996). Preliminary Results of Earth-Based Observations of the Galileo Probe Entry Site. *Science* **272**, 839-840.
- G. Orton,...,**J. Goguen**,...et al. (1995). The NASA Infrared Telescope Facility investigation of Comet Shoemaker-Levy 9 and its collision with Jupiter: Preliminary results. *Science* **267**, 1277-1282.
- Veeder, G. J., D. L. Matson, T. V. Johnson, D. L. Blaney, **J. D. Goguen** (1994). Io's Heat flow from Infrared Radiometry: 1983-1993. *J. Geophys. Res. Planets* **99**, 17095-17162.
- Brown, R.H., T.V. Johnson, **J.D. Goguen**, G. Schubert, M.N. Ross (1991). Triton's Global Heat Budget. *Science* **251**, 1465-1467.
- Goguen, J.D.** and W.M. Sinton (1985). Characterization of Io's Volcanic Activity by Infrared Polarimetry. *Science* **230**, 65-69.