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Moffett Field, CA 94035

Education

B.A. (History) University of Oklahoma, Norman, OK, May 1975
B.S. (General Geophysics) University of Oklahoma, Norman, OK, May 1983
M.S. (Geology) Arizona State University, Tempe, AZ, May 1986
Ph. D. (Geology) Arizona State University, Tempe, AZ, December 1990

Current Position

Research Scientist, NASA Ames Research Center, Moffett Field, CA (1999 - present)

Professional Experience

1999-Present	Research Scientist NASA Ames Research Center Moffett Field, CA. 94035
1992-1999	Research Scientist SETI Institute Mountain View, CA. 94043
1991-1992	NRC Research Associate NASA Ames Research Center Moffett Field, CA 94035
1983-1990	Graduate Research Associate Department of Geology Arizona State University Tempe, AZ 85287-1404
1983	Summer Intern National Severe Storms Laboratory (NOAA) Norman, OK 73069
1980-1983	Research Assistant School of Geology and Geophysics University of Oklahoma Norman, OK 73019
1978-1980	Emergency Room Extern Moore Municipal Hospital Moore, OK 73153
1975-1978	Lieutenant (Tank Platoon Leader and Battalion Staff Officer) United States Army

Background

Dr. Jeffrey M. Moore is a Research Scientist at NASA Ames Research Center. Dr. Moore is Imaging Node Leader for NASA's New Horizons Mission to the Jupiter system, the Pluto system, and the Kuiper Belt. He is a Mars Exploration Rover (MER) Science Team member, specializing in the physical properties of the rocks and soil and also serves as a MER Long Term Planning Lead. Dr. Moore also is a science advisor to the Robotic Lunar Exploration Program Office. Dr. Moore's research has focused on a range of topics relating to the geologic evolution of planetary landscapes and crustal materials. He has published a number of papers on the geomorphology, stratigraphy, and sedimentology of, as well as explored the roles of impact cratering, volcanology, and tectonism on, terrestrial planets and outer planet satellites. He has conducted extensive laboratory simulations of Martian geologic processes, including his dissertation laboratory experiment on the sublimation of ice beneath lags of dust and sand under Mars-like conditions. Dr. Moore is the PI of two ongoing Mars-related, NASA-funded investigations: (1) the geomorphic and sedimentological evolution of ancient Martian highlands and basins; and (2) a laboratory investigation into the formation of evaporites and brines under Mars-like conditions. He also heads an investigation into the nature of erosion of the moons of Jupiter under the NASA Outer Planet Research Program. Dr. Moore conducted research on the implications of impact craters on Europa for a sub-surface ocean, and surface volatile migration and landform degradation on the icy Galilean Satellites as part of his nine-year association with the *Galileo* SSI (imaging) Team.

Professional Societies

American Geophysical Union
 American Astronomical Society's Division for Planetary Sciences
 Geological Society of America

Publications

Refereed Journal Articles

Submitted 2006:

Moore, J.M., M.A. Bullock, T.P. Sharp, and R. Quinn (2006) Laboratory simulations of Mars evaporite geochemistry, *J. Geophys. Res.*, submitted.

Bullock, M.A. and J.M. Moore (2006) Atmospheric Conditions on Early Mars and the lack of carbonate deposits, *Science*, submitted.

Bullock, M.A. and J.M. Moore (2006) Aqueous alteration of basaltic glass under Mars-like conditions, *Geophys. Res. Lett.*, submitted.

Dalton, J.B. and J.M. Moore (2006) Compositional Analysis of a Fluvial Deposit on Mars, *Geophys. Res. Lett.*, submitted.

S.A. Wilson, A. Howard, and J.M. Moore (2006) The geomorphic and stratigraphic analysis of Terby Crater and layered deposits north of Hellas Basin, Mars. *J. Geophys. Res.*, submitted

2006:

Catling, D.C., S.E. Wood, C. Leovy, D.R. Montgomery, H.M. Greenberg, C.R. Glein, and J.M. Moore (2006) Light-toned layered deposits in Juventae Chasma, Mars, *Icarus*, 181, 26-51.

2006, Continued:

Grotzinger, J., J. Bell III, K. Herkenhoff, J. Johnson, A. Knoll, E. McCartney, S. McLennan, J. Metz, J. Moore, S. Squyres, R. Sullivan, O. Aharonson, R. Arvidson, B. Joliff, K. Lewis, M. Golombek, K. Lewis, T. Parker, J. Soderblom (2006) Sedimentary textures formed by aqueous processes, Erebus Crater, Meridiani Planum, Mars, *Geology*, Vol. 34 #12.

Kraal, E.R., E. Asphaug, J.M. Moore, and R.D. Lorenz, (2006) Quantitative geomorphic modeling of Martian bedrock shorelines, *J. Geophys. Res.*, 111, E3, doi: 10.1029/2005JE002567.

S.W. Squyres, O. Aharonson, R.E. Arvidson, J.F. Bell III, P.R. Christensen, B.C. Clark, J.A. Crisp, W. Farrand, T. Glotch, M.P. Golombek, J. Grant, J. Grotzinger, K.E. Herkenhoff, J.R. Johnson, B.L. Jolliff, A.H. Knoll, S.M. McLennan, H.Y. McSween, J.M. Moore, J.W. Rice Jr., and N. Tosca (2006) Bedrock formation at Meridiani Planum, *Nature*, Vol. 443, 7.

2005:

Moore, J.M. and A.D. Howard, (2005) Large Alluvial Fans on Mars, *J. Geophys. Res.*, 110, E04005, doi: 10.1029/2004JE002352.

Howard, A.D., Moore, J.M., and Irwin, R.P. III, (2005) An intense terminal epoch of widespread fluvial activity on Early Mars: 1. Valley Network incision and Associated Deposits, *J. Geophys. Res.*, 110, E12, doi: 10.1029/2005JE002459.

Irwin, R.P. III, Howard, A.D., Craddock, R.A., and Moore, J.M. (2005) An intense terminal epoch of widespread fluvial activity on Early Mars: 2. Increased runoff and paleolake development, *J. Geophys. Res.*, 110, E12, doi: 10.1029/2005JE002460.

2004:

Moore, J.M., (2004) Blueberry fields forever, *Nature*, 428, 711-712.

Moore, J.M., P.M. Schenk, L. S. Bruesch, E. Asphaug, and W.B. McKinnon, (2004) Large Impact Features on Middle-Sized Icy Satellites, *Icarus*, 171, 421-443.

Moore, J.M., B. Dalton, E.B. Bierhaus, C.R. Chapman, F.C. Chuang, R.N. Clark, R. Greeley, C.A. Hibbitts, J. Klemaszewski, P.M. Schenk, J.R. Spencer, and R. Wagner, (2004) Callisto in *Jupiter: The Planet, Satellites and Magnetosphere*, F. Bagenal, T. Dowling & W. McKinnon (eds), Cambridge University Press.

Bullock, M.A. and J.M. Moore, (2004) Aqueous alteration of Mars-analog rocks under an acidic atmosphere, *Geophys. Res. Lett.*, 31, L14701, doi: 10.1029/2004GL019980.

Howard, A.D and J.M. Moore, (2004) Scarp-bounded benches in Gorgonum Chaos, Mars: Formed beneath an ice-covered lake? *Geophys. Res. Lett.*, 31(1), L01702, doi: 10.1029/2003GL018925.

Bullock, M.A., J.M. Moore, and M.T. Mellon, (2004) Laboratory simulations of Mars aqueous geochemistry, *Icarus*, 170, 404-423.

Sutter, B., J.M. Moore, and A.P. Zent, (2004) Examining the sediments and soils of Gusev Crater with the Athena science payload, *J. Geophys. Res.*, 109, E04002, doi: 10.1029/2003JE002157.

2004, Continued:

Pappalardo R.T., G.C. Collins, J.W. Head, P. Helfenstein, T. McCord, J.M. Moore, L.M. Procter, P.M. Schenk, and J. Spencer, (2004) Geology of Ganymede, in *Jupiter: The Planet, Satellites and Magnetosphere*, F. Bagenal, T. Dowling & W. McKinnon (eds), Cambridge University Press.

Schenk, P.M., C. Chapman, K. Zahnle, and J.M. Moore (2004) Ages and interiors: The cratering record of the Galilean satellites, in *Jupiter: The Planet, Satellites and Magnetosphere*, F. Bagenal, T. Dowling & W. McKinnon (eds), Cambridge University Press.

2003:

Moore, J.M., A.D. Howard, W.E. Dietrich, and P.M. Schenk, (2003) Martian Layered Fluvial Deposits: Implications for Noachian Climate Scenarios, *Geophys. Res. Lett.*, 30, 24, 2292.

Catling, D.C. and J.M. Moore, (2003) The nature of coarse-grained crystalline hematite and its implications for the early environment of Mars, *Icarus*, 165, 277-300.

Cabrol, N.A., E.A. Grin, M.H. Carr, B. Sutter, J.M. Moore, J.D. Farmer, R. Greeley, R.O. Kuzmin, D.J. DesMarais, M.G. Kramer, H. Newsom, C. Barber, I. Thorsos, K.L. Tanaka, N.G. Barlow, D.A. Fike, M.S. Urquhart, B. Grigsby, F.D. Grant, and O. de Goursac, (2003) Exploring Gusev Crater with Spirit: Review of science objectives and testable hypotheses, *J. Geophys. Res.*, 108, NO. E12, 8076, doi: 10.1029/2002JE002026.

2002:

Head, J., R. Pappalardo, G. Collins, M.J.S. Belton, B. Giese, R. Wagner, H. Breneman, N. Spaun, B. Nixon, G. Neukum, and J. Moore, (2002) Evidence for Europa-like tectonic resurfacing styles on Ganymede, *Geophys. Res. Lett.*, 29, 24, 2151.

2001:

Moore, J.M. and D.E. Wilhelms (2001) Hellas as a possible site of ancient ice-covered lakes on Mars, *Icarus*, 154, 258-276.

Moore, J.M., R.J. Sullivan, F.C. Chuang, J.W. Head III, A.S. McEwen, M.P. Milazzo, B.E. Nixon, R.T. Pappalardo, P.M. Schenk, and E.P. Turtle (2001) Landform degradation and slope processes on Io: The Galileo view, *J. Geophys. Res.*, 106, 33223-33240.

Moore, J.M., E. Asphaug, M.J.S. Belton, B. Bierhaus, H.H. Breneman, S.M. Brooks, C.R. Chapman, F.C. Chuang, G.C. Collins, B. Giese, R. Greeley, J.W. Head III, S. Kadel, K.P. Klaasen, J.E. Klemaszewski, K.P. Magee, J. Moreau, D. Morrison, G. Neukum, R.T. Pappalardo, C.B. Phillips, P.M. Schenk, D.A. Senske, R.J. Sullivan, E.P. Turtle, and K.K. Williams (2001) Impact features on Europa: Results of the Galileo Europa Mission (GEM), *Icarus*, 151, 93-111.

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2000:

Schenk, P.M. and J.M. Moore (2000) Stereo topography of the south polar region of Mars: Volatile inventory and Mars Polar Lander landing site, *J. Geophys. Res.*, 105, 24529-24546.

2000, Continued:

Fanale, F.P., J.C. Granahan, R. Greeley, R. Pappalardo, J. Head III, J. Shirley, R. Carlson, A. Hendrix, J. Moore, T.B. McCord, M. Belton, and the Galileo NIMS and SSI Instrument Teams (2000) Tyre and Pwyll: Galileo orbital remote sensing of mineralogy versus morphology at two selected sites on Europa, *J. Geophys. Res.*, *105*, 22647-22656.

Greeley, R., P.H. Figueredo, D.A. Williams, F.C. Chuang, J. Klemaszewski, S.D. Kadel, L. Prockter, R. Pappalardo, J.W. Head III, G.C. Collins, N. Spaun, R. Sullivan, J.M. Moore, D. Senske, B.R. Tufts, T.V. Johnson, M.J.S. Belton, and K. Tanaka, (2000) Geologic mapping of Europa, *J. Geophys. Res.*, *105*, 22559-22578.

Kadel, S.D., F.C. Chuang, R. Greeley, J.M. Moore, and the Galileo SSI Team (2000) Geological history of the Tyre region of Europa: A regional perspective on European surface features and ice thickness, *J. Geophys. Res.*, *105*, 22657-22669.

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1999:

Moore, J.M. and M.A. Bullock (1999) Experimental studies of Mars-analog brines, *J. Geophys. Res.*, *104*, 21925-21934.

Moore, J.M., E. Asphaug, D. Morrison, J.E. Klemaszewski, R.J. Sullivan, F. Chuang, R. Greeley, K.C. Bender, P.E. Geissler, C.R. Chapman, P. Helfenstein, C.B. Pilcher, R.L. Kirk, B. Giese, and J.R. Spencer (1999) Mass movement and landform degradation on the icy Galilean satellites: Results from the Galileo nominal mission, *Icarus*, *140*, 294-312.

Pappalardo, R.T., M.J.S. Belton, H.H. Breneman, M.H. Carr, C.R. Chapman, G.C. Collins, T. Denk, S. Fagents, P.E. Geissler, B. Giese, R. Greeley, R. Greenberg, J.W. Head, P. Helfenstein, G. Hoppa, S.D. Kadel, K.P. Klaasen, J.E. Klemaszewski, K. McGee, A.S. McEwen, J.M. Moore, W.B. Moore, G. Neukum, C.B. Phillips, L.M. Prockter, G. Schubert, D.A. Senske, R.J. Sullivan, B.R. Tufts, E.P. Turtle, R. Wagner, and K.K. Williams (1999) Does Europa have a subsurface ocean? Evaluation of the geological evidence, *J. Geophys. Res.*, *104*, 24015-24055.

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Moore, J.M., E. Asphaug, R.J. Sullivan, J.E. Klemaszewski, K.C. Bender, R. Greeley, P.E. Geissler, A.S. McEwen, E.P. Turtle, C.B. Phillips, B.R. Tufts, J.W. Head III, R.T. Pappalardo, K.B. Jones, C.R. Chapman, M.J.S. Belton, R.L. Kirk, and D. Morrison (1998) Large impact features on Europa: Results from the Galileo nominal mission, *Icarus*, *135*, 127-145.

Carr, M.H., M.J.S. Belton, C.R. Chapman, M.E. Davies, P. Geissler, R. Greenberg, A.S. McEwen, B.R. Tufts, R. Greeley, R. Sullivan, J.W. Head, R.T. Pappalardo, K.P. Klassen, T.V. Johnson, J. Kaufman, D. Senske, J.M. Moore, G. Neukum, G. Schubert, J.A. Burns, P. Thomas, and J. Veverka, (1998) Evidence for a subsurface ocean on Europa, *Nature*, *391*, 371-373.

1998, Continued:

Greeley, R., R. Sullivan, M.D. Coon, P.E. Geissler, B.R. Tufts, J.W. Head III, R. T. Pappalardo, and J.M. Moore (1998) Terrestrial sea ice morphology: Considerations for Europa, *Icarus*, 135, 25-40.

Greeley, R., R. Sullivan, J. Klemaszewski, K. Homan, J.W. Head III, R.T. Pappalardo, J. Veverka, B.E. Clark, T.V. Johnson, K.P. Klaasen, M. Belton, J.M. Moore, E. Asphaug, M.C. Carr, G. Neukum, T. Denk, C.R. Chapman, C.B. Pilcher, P.E. Geissler, R. Greenberg, and R. Tufts (1998) Europa: Initial Galileo geological observations, *Icarus*, 135, 4-24.

Pappalardo, R.T., J.W. Head, R. Greeley, R.J. Sullivan, C. Pilcher, G. Schubert, W.B. Moore, M.H. Carr, J.M. Moore, M.J.S. Belson, D.L. Goldsby, (1998) Geological evidence for solid-state convection in Europa's ice shell, *Nature*, 391, 365-368.

Pappalardo, R.T., J.W. Head, G.C. Collins, R.L. Kirk, G. Neukum, J. Oberst, B. Giese, R. Greeley, C.R. Chapman, P. Helfenstein, J.M. Moore, A. McEwen, B.R. Tufts, D.A. Senske, H.H. Breneman, and K. Klaasen (1998) Grooved terrain on Ganymede: First results from Galileo high-resolution imaging, *Icarus*, 135, 276-302.

Prockter, L.M., J.W. Head, D.A. Senske, R.T. Pappalardo, G. Neukum, R. Wagner, U. Wolf, J. Oberst, B. Giese, J.M. Moore, C.R. Chapman, P. Helfenstein, R. Greeley, H.H. Breneman, and M.J.S. Belton (1998) Dark terrain on Ganymede: Geological mapping and interpretation of Galileo Region at high resolution, *Icarus*, 135, 317-344.

Sullivan, R., R. Greeley, K. Homan, J. Klemaszewski, M.J.S. Belton, M.H. Carr, C.R. Chapman, R. Tufts, J.W. Head III, R. Pappalardo, J.M. Moore, P. Thomas, & The Galileo Imaging Team (1998) Episodic plate separation and fracture infill on the surface of Europa, *Nature*, 391, 371-373.

1997:

Schenk, P.M. and J.M. Moore (1997) Geologic landforms and processes on icy satellites, in *Solar System Ices*, B. Schmitt, C. de Bergh, F. Foucau, eds., pp 551-578, Kluwer Academic Publishers, Dordrecht, The Netherlands.

McEwen, A.S., J.M. Moore, and E.M. Shoemaker (1997) The Phanerozoic impact flux: Evidence from the Farside of the Moon, *J. Geophys. Res.*, 102, 9231-9242.

Cruikshank, D.P., T.L. Roush, J. M. Moore, M. Sykes, T.C. Owen, M.J. Bartholomew, R.H. Brown, and K.A. Tryka (1997) The surfaces of Pluto and Charon, in *Pluto*, S.A. Stern and D.J. Tholen, eds., pp 221-267, University of Arizona Press, Tucson.

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Moore, J.M., M.T. Mellon and A.P. Zent (1996) Mass wasting and ground collapse in terrains of volatile-rich deposits as a solar system process: The pre-Galileo view, *Icarus*, 122, 63-78.

Asphaug, E., J.M. Moore, D. Morrison, W. Benz, and R.A. Sullivan (1996) Mechanical and geological effects of impact cratering on Ida, *Icarus*, 120, 158-184.

1996, Continued:

Belton, M.J.S., J.W. Head III, A.P. Ingersoll, R. Greeley, A.S. McEwen, K.P. Klaasen, D. Senske, R. Pappalardo, G. Collins, A.R. Vasavada, R. Sullivan, D. Simonelli, P. Gleissler, M.H. Carr, M.E. Davies, J. Veverka, P.J. Gierasch, D. Banfield, M. Bell, C.R. Chapman, C. Anger, R. Greenberg, G. Neukum, C.B. Pilcher, R.F. Beebe, J.A. Burns, F. Fanale, W. Ip, T.V. Johnson, D. Morrison, J. Moore, G.S. Orton, P. Thomas, and R.A. West (1996) Galileo's first images of Jupiter and the Galilean satellites, *Science*, 274, 337-385.

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Schenk, P.M. and J. M. Moore (1995) Volcanic constructions on Ganymede and Enceladus: Evidence from stereo images and photogrammetry, *J. Geophys. Res.*, 100, 19009-19022.

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Moore, J.M. and K.S. Edgett (1993) Hellas Planitia, Mars: Site of net dust erosion and implications for the nature of basin floor deposits, *Geophys. Res. Lett.*, 20, 1599-1602.

1992:

Spencer, J.R. and J.M. Moore (1992) The influence of thermal inertia on temperature and frost stability on Triton, *Icarus.*, 99, 261-272.

1990:

Moore, J.M. (1990) Nature of the mantling deposit in the heavily cratered terrain of northeastern Arabia, Mars, *J. Geophys. Res.*, 95, 14279-14289.

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1986:

Moore, J.M., A.S. McEwen, E.F. Albin, and R. Greeley (1986) Topographic evidence for shield volcanism on Io, *Icarus*, 67, 181-183.

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Moore, J.M., V.M. Horner, and R. Greeley (1985) The geomorphology of Rhea: Implications for geologic history and surface processes, *J. Geophys. Res.*, 90, C785-C795.

1984:

Moore, J.M. (1984) The tectonic and volcanic history of Dione, *Icarus*, 59, 205-220.

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