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Professional Positions

University of Arizona – Lunar and Planetary Laboratory, 8/2013 - Present
Associate Professor & Director: Space Imagery Center

University of Arizona – Lunar and Planetary Laboratory, 8/2007 – 8/2013
Assistant Professor & Director: Space Imagery Center

University of Arizona – Lunar and Planetary Laboratory, 9/2005 – 8/2007.
Research Associate – with HiRISE team.

Massachusetts Institute of Technology, 12/2003 – 9/2005.
Postdoctoral Scholar – with Professor Maria Zuber.

California Institute of Technology, 6/2003 – 12/2003.
Assistant Scientist – with Professor Bruce Murray.

California Institute of Technology, 8/1998 – 6/2003.
Graduate Research Assistant – with Professors Murray and Ingersoll.

Education

California Institute of Technology, Pasadena, CA. 1998-2003
Ph.D. Planetary Science, with minor in Astronomy (2003)
Advisors: Professors Bruce C. Murray and Andrew P. Ingersoll
M.S. Planetary Science, with minor in Astronomy (2001)

University of Cardiff, Cardiff, United Kingdom 1994-1998
Master of Physics. Astrophysics (1998)

Planetary Mission Involvement

- High Resolution Science Experiment (HiRISE) – Co-Investigator.
- High-Resolution Stereo Color Imager (HiSCI) (2010-2012) – Deputy-PI.
- Chronos Mars-scout proposal (2006) – Co-Investigator.
- MOSAIC Mars-scout proposal (2006) – Co-Investigator.
- Boreale Explorer Mars-scout proposal (2006) – Co-Investigator.
- Mars Orbiter Laser Altimeter (MOLA) (2002-2006).
- MIT manned lunar exploration initiative (2004-2005).
- Landing site selection, Mars Polar Lander (1999).

Academic and Teaching Honors

Caltech Planetary Science, Pasadena, CA
Excellence in teaching award for 'Planetary Surfaces' (2001).

University of Cardiff, Cardiff, United Kingdom
Received award for highest academic standing, 1995, 1996, 1997 & 1998

Service and Professional Memberships

- Member: American Geophysical Union
American Astronomical Society – Division of Planetary Science
- NASA: Director of Space Imagery Center
A NASA Regional Planetary Image Facility
Planetary Cartography and Geologic Mapping Working Group
PG&G review panel
MDAP, MFRP, PG&G, CDAP, NESSF external reviewer
- Conferences: Session convener – AGU 2008
Science organization committee: DPS 2011
Science organization committee: Mars Polar Science 2011
- Session Chair: American Geophysical Union – Fall Meeting
International conference on Mars polar science and exploration
Lunar and Planetary Science Conference
- Reviewer for: Nature, Science, Journal of Geophysical Research, Geophysical Research Letters, Icarus, Planetary and Space Science, The Mars Journal, Annals of Glaciology, Geology.

Classes Taught

- U. of Arizona, PTYS 554: Evolution of Planetary Surfaces
- U. of Arizona, PTYS 594: Planetary Geology Field Studies
- U. of Arizona, PTYS 411/511: Geology and Geophysics of the Solar System
- U. of Arizona, PTYS 395A: Mercury: Open Questions and New Data.
- U. of Arizona, PTYS 395B: The Moon.
- U. of Arizona, PTYS 206: Our golden age of planetary exploration
- *Contributed lectures:*
 - U. of Arizona: PTYS442/542: Mars
 - MIT, EAPS 12.601: Essentials of Planetary Science
 - Caltech, Ge151: Fundamentals of Planetary Surfaces
 - Caltech, Ge158: Applications of Remote Sensing in the Field

Peer-Reviewed Publications

Christian, S., J.W. Holt, **S. Byrne** and K.E. Fishbaugh, Integrating Radar Stratigraphy with High Resolution Visible Stratigraphy of the North Polar Layered Deposits, Mars, Icarus, In Press, 2013.

Clifford, S. M., K. Yoshikawa, **S. Byrne**, W. Durham, D. Fisher, F. Forget, M. Hecht, P. Smith, L. Tamppari, T. Titus, and R. Zurek, Introduction to the fifth Mars Polar Science special issue: Key questions, needed observations, and recommended investigations, Icarus, 225, 864-868, 2013.

Hansen, C.J., **S. Byrne**, G. Portyankina, M. Bourke, C. Dundas, A. McEwen, M. Mellon, A. Pommerol and N. Thomas, Observations of the northern seasonal polar cap on Mars: I. Spring sublimation activity and processes, Icarus, 225, 881-897, 2013.

Daubar, I., A. McEwen, **S. Byrne**, M. Kennedy and B. Ivanov, The Current Martian Cratering Rate, Icarus, 225, 506-516, 2013.

- Molaro, J., and **S. Byrne**, Rates of Temperature Change of Airless Landscapes and Implications for Thermal Stress Weathering, *J. Geophys. Res.*, 117, E10011, 2012.
- Caudill, C.M., L.L. Tornabene, A.S. McEwen, **S. Byrne**, L. Ojha and S. Mattson, Layered Megablocks in the Central Uplifts of Impact Craters, *Icarus*, 221, 710-720, 2012.
- Hvidberg, C.S., K.E. Fishbaugh, M. Winstrup, A. Svensson, **S. Byrne** and K. Herkenhoff, Reading the climate record of the Martian polar layered deposits, *Icarus*, 221, 405-419, 2012.
- Beyer, R.A., K.M. Stack, J.L. Griffes, R.E. Milliken, K.E. Herkenhoff, **S. Byrne**, J.W. Holt and J.P. Grotzinger, An Atlas of Mars Sedimentary Rocks as seen by HiRISE, *Society for Sedimentary Geology Special Publication*, 102, 49-96, 2012.
- Dundas, C.M., S. Diniega, C.J. Hansen, **S. Byrne** and A.S. McEwen, Seasonal Activity and Morphological Changes in Martian Gullies, *Icarus*, 220, 124-143, 2012.
- Sharma, P., and **S. Byrne**, Comparison of Titan's north polar lakes with terrestrial analogs, *Geophys. Res. Lett.*, 38, L24203, 2011.
- McEwen, A.S., and 9 colleagues, Seasonal Flows on Warm Martian Slopes, *Science*, 333, 740-743, 2011.
- Hansen, C.J., and 11 colleagues, Seasonal Erosion and Restoration of Mars' Northern Polar Dunes, *Science*, 331, 575-578, 2011.
- Phillips, R.J., and 17 colleagues, Massive CO₂ Ice Deposits Sequestered in the South Polar Layered Deposits of Mars, *Science*, 332, 838-841, 2011.
- Diniega, S., **S. Byrne**, N.T. Bridges, C.M. Dundas and A.S. McEwen, Seasonality of Present-day Martian Dune-Gully Activity, *Geology*, 38(11), 1047-1050, 2010.
- Sharma, P., and **S. Byrne**, Constraints on Titan's topography through fractal analysis of shorelines, *Icarus*, 209(2), 723-737, 2010.
- Banks, M.E., **S. Byrne**, K. Galla, A.S. McEwen, V.J. Bray, K.E. Fishbaugh, C.M. Dundas, K.E. Herkenhoff, B.C. Murray and the HiRISE Team, Crater Population and Resurfacing of the Martian North Polar Layered Deposits, *J. Geophys. Res.*, 115, E08006, 2010.
- Reufer, A., N. Thomas, W. Benz, **S. Byrne**, V. Bray, C. Dundas and M. Searls, Models of high velocity impacts into dust-covered ice: Application to Martian northern lowlands, *Planet. Space Sci.*, 58(10), 2010.
- Diniega, S., K. Glasner and **S. Byrne**, Long-time evolution of models of aeolian sand dune fields: Influence of dune formation and collision, *Geomorphology*, 121, 55-68, 2010.
- Holt, J.W., K.E. Fishbaugh, **S. Byrne**, S. Christian, K. Tanaka, P. S. Russell, K.E. Herkenhoff, A. Safaeinili, N.E. Putzig, and R.J. Phillips, The Construction of Chasma Boreale on Mars, *Nature*, 465, 446-449, 2010.
- Dundas, C.M., A.S. McEwen, S. Diniega, and **S. Byrne**, New and recent gully activity on Mars as seen by HiRISE, *Geophys. Res. Lett.*, 37(7), L07202, 2010.
- Fishbaugh, K.E., C.S. Hvidberg, **S. Byrne**, P.S. Russell, K.E. Herkenhoff, M. Winstrup, and R.L. Kirk, The first high-resolution stratigraphic column of the martian north polar layered deposits, *Geophys. Res. Lett.*, 37(7), L07201, 2010.

- Dundas, C.M., and S. **Byrne**, Modeling Sublimation of Ice Exposed by Recent Impacts in the Martian Mid-Latitudes, *Icarus*, 206(2), 716-728, 2010.
- Fishbaugh, K.E., S. **Byrne**, K.E. Herkenhoff, R.L. Kirk, C. Fortezzo, P.S. Russell and A. McEwen, Evaluating the meaning of 'layer' in the martian north polar layered deposits and the impact on the climate connection, *Icarus*, 205(1), 269-282, 2010.
- Hansen, C.J., N. Thomas, G. Portyankina, A. McEwen, T. Becker, S. **Byrne**, K. Herkenhoff, H. Kieffer, M. Mellon, HiRISE Observations of gas sublimation-driven activity in Mars' southern polar regions: I. Erosion of the Surface, *Icarus*, 205(1), 283-295, 2010.
- McEwen, A., and 65 colleagues, The High Resolution Imaging Science Experiment (HiRISE) during MRO's Primary Science Phase (PSP), *Icarus*, 205(1), 2-37, 2010.
- Byrne**, S., and 17 colleagues, Distribution of Mid-Latitude Ground-Ice on Mars from New Impact Craters, *Science*, 325, 1674, 2009.
- Byrne**, S., The polar deposits of Mars, *Ann. Rev. Earth Plan. Sci.*, 37, 2009.
- Russell, P., N. Thomas, S. **Byrne**, K. Herkenhoff, K. Fishbaugh, N. Bridges, C. Okubo, M. Milazzo, I. Daubar, C. Hansen, A. McEwen, Seasonally active frost-dust avalanches on a north polar scarp of Mars captured by HiRISE, *Geo. Phys. Lett.*, 35(23), L23204, 2008.
- Brown, A., S. **Byrne**, L.L. Tornabene and T. Roush, Louth crater: Evolution of a layered water ice mound, *Icarus*, 196(2), 433-445, 2008.
- Winebrenner, D.P., M.R. Koutnik, E.D. Waddington, A.V. Pathare, B.C. Murray, S. **Byrne** and J.L. Bamber, Evidence for ice flow prior to trough formation in the martian north polar layered deposits, *Icarus*, 195(1), 90-105, 2008.
- Byrne**, S., M. T. Zuber, G. A. Neumann, Interannual and Seasonal Behavior of Martian Residual Ice-Cap Albedo, *Planet. Space Sci.*, 56(2), 194-211, 2008.
- Herkenhoff, K.E., S. **Byrne**, P.S. Russell, K.E. Fishbaugh, and A.S. McEwen, Meter-Scale Morphology of the North Polar Region of Mars, *Science*, 317, 1711, 2007.
- McEwen, A.S., and 32 colleagues, A Closer Look at Water-Related Geologic Activity on Mars, *Science*, 317(5845), 1706, 2007.
- Koutnik, M., S. **Byrne**, B.C. Murray, A.D. Toigo, and Z.A. Crawford, Eolian controlled modification of the Martian south polar layered deposits, *Icarus*, 174, 490-501, 2005.
- Schaller, E., B.C. Murray, A.V. Pathare, J. Rasmussen, and S. **Byrne**, Modification of Secondary Craters on the Martian South Polar Layered Deposits, *J. Geophys. Res.*, 110, E02004, 2005.
- Jerolmack, D., D. Mohrig, M.T. Zuber, and S. **Byrne**, A minimum time for the formation of the Holden Northeast Fan, Mars, *Geophys. Res. Lett.*, 31, L21701, 2004.
- Byrne**, S., and A.B. Ivanov, The internal structure of the Martian south polar layered deposits, *J. Geophys. Res.*, 109, E11001, 2004.
- Piqueux, S., S. **Byrne**, and M.I. Richardson, The sublimation of Mars southern CO₂ ice cap and the formation of "spiders", *J. Geophys. Res.*, 108(E8), 5084, 2003.

- Byrne**, S., and A.P. Ingersoll, Martian climatic events on timescales of centuries: Evidence from feature morphology in the residual south polar cap, *Geophys. Res. Lett.*, 30(13), 2003.
- Byrne**, S., and A.P. Ingersoll, A Sublimation Model for Martian South Polar Ice Features, *Science*, 299, 1051-1053, 2003.
- Koutnik, M., S. **Byrne**, and B.C. Murray, South Polar Layered Deposits of Mars: The Cratering Record, *J. Geophys. Res.*, 107(E11), 5100, 2002.
- Byrne**, S., and B.C. Murray, North polar stratigraphy and the paleo-erg of Mars, *J. Geophys. Res.*, 107(E6), 5044, 2002.
- Murray, B.C., M. Koutnik, S. **Byrne**, L.A. Soderblom, K.E. Herkenhoff, and K.L. Tanaka, Preliminary Geological Assessment of the Northern Edge of Ultimi Lobe, Mars South Polar Layered Deposits, *Icarus*, 154, 80-97, 2001.