James W. Ashley, PhD, CPG
schedule of available presentations with descriptions

1. What Meteorites Found on Mars tell us about Martian Climate History
Presented at many venues across the country and abroad, including invited talks in Grand Rapids and Houghton, Michigan and Boulder, Colorado (Southwest Research Institute); and at science meetings in Pasadena, California (Caltech/JPL); Houston, Texas, San Francisco, California, Tempe and Tucson, Arizona, Washington, D.C. (Smithsonian Institution), Matsue, Japan, and Greenwich, England.
The pursuit of an answer to the time-honored question 'Are we alone in the universe?' leads scientists down many paths that cross a multitude of disciplines. In the planetary sciences, the quest often results in the careful engineering of robotic spacecraft designed to answer specific questions about the habitability of the planets they are sent to explore. Mars is a world that is both easily accessible at reasonable costs and potentially habitable. We are interested in the role that water may have played in Mars' geologic history because of its importance to astrobiology. Among the many discoveries made during the Mars Exploration Rover and Mars Science Laboratory missions are 23 meteorites that show dramatic signs of water interaction near the martian equator at three spacecraft landing sites. We will take a close look at these rocks and discuss their significance to climate on the Red Planet.

2. Near Earth Objects and the Impact Hazard
Presented at many venues throughout the United States and in Wellington, New Zealand.
In February 2013 a 17-meter diameter asteroid detonated in the atmosphere over Chelyabinsk, Russia, sending more than 1,500 people to hospitals for treatment from the effects of shattered glass windows. A small increase in the mass, velocity, or entry angle of this object could have resulted in a dramatic increase in the impact energy and resulting destruction. Is there anything that can be done to prevent such events from occurring in the future? Dr. James Ashley has consulted for and appeared in Discovery Channel's "Cosmic Collisions," Discovery Science Channel's Meteorite Men series, and the History Channel's "Meteors" and "Comets" documentary programs discussing these issues, and will outline our current state of understanding, risk assessment strategies, and available technologies for impact mitigation.

3. Comets through the Ages — What They Meant to History, What They Mean to Science
Presented as Osher Lifelong Learning Institute class
Dr. Ashley will examine the historical fear of comets, list some of the famous comets of the last few centuries, talk about the latest scientific understanding of what comets are and what they mean to research, and end with a discussion of Comet ISON.

4. The Lunar Reconnaissance Orbiter Camera — New Visions of Underground Living and Exploration on the Moon
Invited presentation for Roger B. Chaffee Scholarship Fund Annual Banquet and Award Ceremony, Grand Rapids, Michigan; and at the STEAM Moon to Main Street Event, Paradise Valley Community College, Paradise Valley, Arizona.
While the relatively short-duration activities of the Apollo missions regarded radiation, micrometeorites, solar wind, temperature extremes, and the vacuum of space as acceptable occupational hazards, any long-term human presence on the Moon will require greater management of these risks. Fortunately, protection from most surface hazards may be found naturally and inexpensively inside accessible subsurface voids (i.e. caverns) when shielding from a few meters of ceiling rock is present. Regarded as mere possibilities for at least 125 years, candidates for such caves have been appearing in new images collected by the Lunar Reconnaissance Orbiter Cameras (LROC) operated by the LROC Science Operations Center at

Arizona State University. Dr. Ashley will explore some of these images and discuss possible mechanisms for cave formation (speleogenesis) on the Earth and Moon.

5. Planetary Exploration using Robotic Spacecraft
Scheduled for Spring 2014 presentation as a Osher Lifelong Learning Institute class
Robotic spacecraft have become the “eyes and ears” of the human species for exploring the Solar System. This course will walk through Dr. Ashley’s research at ASU with the Thermal Emission Imaging System on board the Mars Odyssey spacecraft, the two Mars Exploration Rover spacecraft (Spirit and Opportunity), and the Lunar Reconnaissance Orbiter Cameras. Each of the four sessions will be devoted to a project with one spacecraft and its instruments.

6. Desert Stargazing in Arizona
Scheduled for Spring 2014 presentation as a Osher Lifelong Learning Institute class
Arizona is the 'astronomy capital' of the United States. Here the sky is always a source of spectacle, inspiration, and discussion. Visible through a small backyard telescope, a pair of binoculars, or even the unaided human eye are countless wonders that can inspire the viewer to ponder the deepest questions of material existence, the origins of life, the magnitude of infinity, and the vast distances of space. What are the origins of the Universe, and how did its contents evolve over time? What are we learning from the professional world of advanced telescopic and microscopic instruments, and from robotic planetary spacecraft? What mysteries remain to be solved? It all starts when you look into a raven-black Arizona sky. We will explore some of the most frequently asked questions, and open the floor to a lively discussion afterward.

7. The Science of Magic
Scheduled for Spring 2014 presentation as a Osher Lifelong Learning Institute class
The art of deception achieves entertainment status in the world of stage and parlor illusion. What does science tell us about the way the human mind has evolved to fall prey to professional conjuring, and how might this information be used in our daily lives to avoid 1) misperceptions and misidentifications of natural phenomena, 2) fraudulent advertising, and to 3) distinguish reality from the products of our own thinking? Dr. Ashley will use several effects of the magician to demonstrate various principles of observation and show where the trip-ups occur.

8. To One Account or Other - Muslin and Magic in the Regency Era
Presented in Breakout Session at Jane Austen Society of North America 2010 American General Meeting in Portland, Oregon
The use of muslin in theater for stage backdrops and cycloramas was well-known in Jane Austen’s time, and remains somewhat popular in contemporary theater and photography. However, in keeping with seasonal themes (Hallowe’en being the magician’s favorite holiday) we will explore some of the more esoteric applications for this sometimes semi-transparent material. In addition to being a common textile, other properties of muslin were considered trade secrets in the arsenal of the stage conjuror. We will examine these properties and their application to some of the more fashionable effects, such as The Mystery of Malabar, The Red Muslin Band Trick, The Buttonhole Rose, and the Illusion of Amphitrite; and contrast these with the use of muslin in trick “spirit” photography in the late 19th Century during the American spiritualism obsession.

9. 75th Anniversary of the Mercury Theatre on the Air “War of the Worlds” Radio Broadcast
Presented at Fountain Hills Public Library
October 30th 2013 marks the 75th anniversary of one of the most famous broadcasts in radio history: Orson Welles' Mercury Theatre on the Air Hallowe'en adaptation of H. G. Wells' novel The War of the Worlds. This program was memorable for its realism, which caused a large number of listeners to believe that planet Earth was actually under attack by aliens from the

planet Mars. Did people really commit suicide? Where there shots fired at water towers? Is a Martian invasion a real possibility? A life-long fan of the radio medium and War of the Worlds history, Dr. Ashley will present the facts of the case. This presentation will explore the origins of the story (partly based right here in Arizona), the history of The Mercury Theatre and Orson Welles, what made the show work dramatically, and the current scientific position of life on the planet Mars.

10. Anatomy of a Victorian Séance — Spirit Theatre for the True Believer
Presented as Osher Lifelong Learning Institute class, Phoenix, Arizona; and scheduled for the Fountain Hills Public Library in 2014.
In preparation for Halloween, we will explore the influence of the Fox Sisters on 19th century America's obsession with contacting departed souls. We will follow this evolution from its 1848 beginnings in a lonely Midwest farm house through its self-appointed mediums, slate effects, court room dramas, Ouija boards, and the great public debate between Harry Houdini, master magician and exposer of séance stagecraft, and Sir Arthur Conan Doyle, author of the Sherlock Holmes novels. Enter and be seated ... if you dare.

11. The Brilliancy of an Unclouded Night - Popular Astronomy in the Regency Era
Special Event at the Jane Austen Society of North America American General Meeting in Tucson, Arizona, and presented to JASNA Greater Phoenix
Learning about astronomy, geology, and other areas of "natural philosophy" was a popular pastime during and following the Age of Enlightenment. Enthusiasm for astronomy was energized by announcements of contemporary discoveries, and people were excited by the many mysteries remaining to be solved, confident that science would succeed in solving them. That Jane Austen was personally acquainted with the night sky is evident in her writing, and she no doubt allowed herself to become inspired by its mysteries. James Ashley will examine astronomy in the Regency era, compare it to our current understanding of the Universe, and then lead us outdoors (weather and clouds permitting) to gaze upon the same stars that Fanny and Edmund pondered.

The following additional talks were prepared for amateur astronomical organizations.

12. Lion's Share — The Great Leonid Meteor Storm

13. A Star is Born — The First 100 Million Years of Solar System History

14. How do they Know it Came from Mars? — The SNC Meteorite Association

15. The Astrophysical Implications of Presolar Grains in Primitive Meteorites

16. Cosmic Impact, Mass Extinction, and the Nemesis Star

17. Introduction to Astrophotography

Oral Science Presentations at Professional Conferences, Workshops, and Science Team Meetings

Ashley J. W., C. Schröder, A. Tait, M. P. Golombek, M. A. Velbel, P. A. Bland, P-Y. Meslin, and J. R. Johnson (September 2019) In-situ Meteorite Study on Mars — Abundance and Usefulness as Martian System Research Tools, with Strategic Recommendations for Ongoing and Future Roving Missions. Geological Society of America meeting, Phoenix, Arizona, abstract No. 340375.

Ashley J. W. (2018) Science Activity Requests Submission and Prioritization Tool. InSight Science Team Meeting at mission launch, Buellton, CA.

Ashley J. W. (2017) Meteorites found on Mars as planetary research tools. NASA Hyperwall presentation, American Geophysical Union Fall Meeting, New Orleans, LA.

Ashley J. W., D. Banfield, D.W. Beaty, B.L. Carrier, S. Diniega, J.R. Johnson, and R.W. Zurek (2017) Major Discoveries Related to Early Mars as Input to Hypothesis-driven Mission Responses — Preparing for the Next Decadal Survey. 4th International Conference on Early Mars: Geologic, Hydrologic, and Climatic Evolution and the Implications for Life, Lunar and Planetary Institute, Flagstaff, AZ, Abstract No. 3049.

Ashley J. W., S. W. Ruff, P. R. Christensen, M. D. Smith, and J. Hill (June 2017) Long-term Effects of Dust Exposure on Optical System Performance — A Comparison Between Twin Miniature Thermal Emission Spectrometers in Opposite Martian Hemispheres. Dust in the Atmosphere of Mars and its Impact on Human Exploration, Lunar and Planetary Institute, Houston, TX, abstract No. 6032.

Ashley J. W. and K. E. Herkenhoff. (March 2017) Meteorite weathering on Mars — Updates on exogenic iron survivability biases and micro-mapping of Meridiani Planum Block Island MI mosaics. 48th Annual Lunar and Planetary Science Conference, The Woodlands, TX, abstract No. 2656.

Ashley J. W., M. P. Golombek, R. E. Otero*, F. J. Calef III, J. R. Michalski, and T. J. Parker. (June 2016) Terrain slope hazard characterization extrapolated from quantified analogs — training the human eye to see like a DTM for Mars 2020 landing site selection. International Planetary Probe Workshop 13; APL, Laurel, MD.

Ashley J. W., M. P. Golombek, and T. McCoy (February 2016), Analog studies of iron meteorites found on Mars — Features, processes, and comparisons. Mars Exploration Rover Science Team Meeting; JPL/California Institute of Technology, Pasadena, California.

Ashley J. W., M. P. Golombek, and C. Schröder (November 2015), Physical weathering features of Barberton Group cobbles at Meridiani Planum, Mars — implications for surface residence times. Geological Society of America meeting, Baltimore, MD, abstract No. 234-3.

Ashley J. W. (February 2015), Weathering-induced meteorite fragmentation on Mars, Mars Exploration Rover Science Team Meeting; JPL/California Institute of Technology, Pasadena, California.

Ashley J. W. (October 2014), Comparison of iron meteorites found at three Mars landing sites — similarities, differences, and implications for martian weathering processes. Geological Society of America meeting, Vancouver, British Columbia, abstract No. 246918.

Ashley J. W., et al. (December 2013), The Lassell Massif - A silicic Lunar volcano. American Geophysical Union Fall Meeting, San Francisco, CA, paper No. V51G-07.

Ashley J. W., et al. (July 2013), Morphology and spectroscopy of the Lassell Massif - Evidence for non-mare volcanism in Mare Nubium. NASA Lunar Science Virtual Forum.

Ashley J. W., et al. (March 2013), The Lassell Massif - Evidence for Complex Volcanism on the Moon. 44th Annual Lunar and Planetary Science Conference, The Woodlands, TX, abstract No. 2504.

Ashley J. W., et al. (January 2013), Micro-mapping meteorite surfaces at Meridiani Planum. Mars Exploration Rover Science Team Meeting; JPL/California Institute of Technology, Pasadena, California.

Ashley J. W., et al. (May 2012), King crater melt pond analysis. Lunar Reconnaissance Orbiter Camera Science Team Meeting; Arizona State University, Tempe, Arizona.

Ashley J. W., et al. (March 2012), LROC Imaging of Thin Layering in Lunar Mare Deposits. 43rd Annual Lunar and Planetary Science Conference, The Woodlands, TX, abstract No. 2115.

Ashley J. W., et al. (October 2011), Lunar caves in mare deposits imaged by the LROC Narrow Angle Cameras. First International Planetary Cave Research Workshop, Carlsbad, NM, abstract No. 8008.

Ashley J. W., et al. (July 2011), Geologic Mapping, Morphology, and Dating of the King Crater Region. National Lunar Science Institute meeting, NASA Ames, San Jose, CA.

Ashley J. W., et al. (2011), Geologic mapping of the King crater region with an emphasis on melt pond anatomy: evidence for subsurface drainage on the Moon, Lunar Reconnaissance Orbiter Camera Science Team Meeting; Arizona State University, Tempe, Arizona.

Ashley J. W., et al. (March 2011), Lunar Pits: Sublunarean Voids and the Nature of Mare Emplacement. 42nd Annual Lunar and Planetary Science Conference, The Woodlands, TX, abstract No. 2771.

Ashley J. W., et al. (May 2010), Surface process insights from study of weathered meteorites at Meridiani Planum, Mars Exploration Rover Science Team Meeting; JPL/California Institute of Technology, Pasadena, California.

Ashley, J. W. (October 2009), Chemical and physical weathering of meteorites on Mars, THEMIS Science Team Meeting, Arizona State University, Tempe, Arizona.

Schröder C., J. W. Ashley*, I. Fleischer, R. Gellert, G. Klingelhöfer, P. A. de Souza Jr. and the Athena Science Team (January 2009), Santorini, another meteorite on Mars and third of a kind," Mars Exploration Rover Science Team Meeting; California Institute of Technology, Pasadena, California.

Ashley, J. W. and P. R. Christensen (May 2009), A THEMIS VIS investigation into the potential for small meteoroid impacts associated with the orbital pass of near-Mars asteroid 2007 WD_5, THEMIS Science Team Meeting, Southwest Research Institute, Boulder, Colorado.

Ashley J. W. (September 2008), Meteorites on other planets: Litmus testing the martian environment, GSRP Symposium; Goddard Space Flight Facility, Greenbelt, Maryland.

Ashley J. W., et al. (July 2008), Effects of dust on thermal infrared reflectivity of iron meteorite candidates found by the Mars Exploration Rovers, 71st Annual Meeting for the Meteoritical Society; Matsue, Japan.

Ashley J. W. (February 2008), Thermal emission spectroscopy of iron meteorites: laboratory experiments for Heat Shield Rock, Mars Exploration Rover Science Team Meeting; Smithsonian Institution, Washington D.C.

Ashley J. W. and M. A. Velbel (August 2007), Passivation of metal oxidation by iron oxide production in ordinary chondrites weathered in a Mars analog environment, 70th Annual Meeting for the Meteoritical Society; Tucson, Arizona.

Ashley J. W. (July 2007), How altered is highly altered? Speculations on meteorite weathering in the temperate zones of Mars, Mars Exploration Rover Science Team Meeting; California Institute of Technology, Pasadena, California.

Ashley J. W. (February 2007), The utility of meteorites for probing Martian climatic history, Mars Exploration Rover Science Team Meeting; California Institute of Technology, Pasadena, California.

Ashley J. W., et al. (May 2005), Europa Reconnaissance Geophysical Orbiter Proposal Authorization Review, Project Manager's presentation for Arizona State University / University of Arizona student Team-X training;

Jet Propulsion Laboratory, Pasadena, California.

Ashley J. W. (March 2000), Topographic modification through solution and removal of gypsum in West Michigan, Great Lakes Region Geological Conference, East Lansing, Michigan.