



BUENAVENTURA AEROSPACE AND ELECTRONIC SYSTEMS SOCIETY

In the Blink of the Eye: What 10 Years at Mars Can Tell Us about the Planet

***By Dr. Leslie Tamppari, MRO Deputy Project Scientist
NASA-JPL***

Thu Sep 22, 2016

Pizza 6:30 pm – Talk at 7:00 pm

La Reina High School, 106 West Janss Road, Thousand Oaks, CA



Our eyes in the sky at Mars include the Mars Reconnaissance Orbiter (MRO), which has been orbiting Mars for 10 years. The orbiter has sent back thousands of high-resolution images and more data than all Mars missions combined. MRO has found evidence for a tiny amount of seasonal liquid water on present-day Mars and that the planet held diverse watery environments on early Mars, some more habitable than others. Present-day seasonal and interannual changes have been seen over the last decade, such as polar avalanches and gigantic dust storms.

On Aug. 12, 2005, the Mars Reconnaissance Orbiter lifted off from Kennedy Space Center in Cape Canaveral, FL. Seven months later, the orbiter arrived at Mars. Thus began an incredible journey of exploration, guided by the Mars Exploration Program's "follow-the-water" theme.

Originally slated for a two-year prime science mission followed by a two-year relay mission, MRO has logged more than a decade of science operations and support for surface missions. MRO has probed the planet's atmosphere, surface and subsurface with unprecedented spatial resolution and coverage. Its seven science investigations and six instruments have returned more than 250 terabits of data, enabling numerous discoveries.

At the same time, MRO has rendered invaluable service to landers and rovers at Mars. It not only delivered critical information for the selection of landing sites, but captured crucial data and historic images during the arrivals of the Phoenix lander and Mars Science Laboratory. Since then, MRO has frequently served as a relay for data and commands between those spacecraft and Earth. As NASA's Mars Exploration Program looks to the future, MRO continues to characterize and certify new landing sites for both NASA and the European Space Agency, while preparing to cover critical events and landed operations for the InSight lander, Mars 2020 rover, and future missions.

Our Guest Speaker:



Dr. Leslie Tamppari, MRO deputy project scientist at NASA JPL, graduated in 1990 from the University of Arizona, majoring in Applied Math. During her studies she had an internship with the Jet Propulsion Laboratory (JPL) in Pasadena, California. She worked as a programmer in a research group studying magnetic fields. In August, 1989, during her internship, JPL's Voyager spacecraft had its close flyby encounter of Neptune. During this encounter new moons were discovered, the surface of Neptune's moon Triton was seen for the first time, and details of the Neptune atmosphere were revealed. It was during this exciting experience that she discovered she wanted to make a career studying the planets.

After graduation from the U of A, Tamppari was hired back to JPL to work as an Investigation Scientist for the Photopolarimeter/Radiometer (PPR) Experiment aboard the Galileo spacecraft. Galileo was on its 7-year journey to the Jupiter system. It was a few years into this job that she returned to continue her education at University of California, Los Angeles where she received her PhD in Geophysics and Space Physics in 2000. Working on the PPR team, she began to conduct research, first on Venus and later on the Galilean satellites. She was fortunate enough to be given the opportunity by the team leader to work closely with the scientists interested in studying the Galilean satellites and to help plan the scientific experiments that the PPR conducted. Tamppari became interested in Jupiter's moon, Io, and settled on a dissertation topic studying Io's heat flow. As she learned, however, space is a risky business.

In October 1995, just two months prior to Galileo's arrival at Jupiter and its only planned close flyby of Io, the spacecraft had serious tape recorder problems. These problems prevented Tamppari from getting a critical data set needed for her dissertation. Like many problems, this turned out to be a blessing in disguise, as she then turned her attention to Mars. She began studying water-ice clouds in the Mars atmosphere, using the Viking orbiter data set. She was able to detect and map the clouds over the course of a Mars year, which showed for the first time that Mars has nearly constant widespread cloud cover.

Tamppari's diverse background led her to jobs in project proposal development. She was the science lead for many future mission proposals and studies including those for Mars, Europa, and Titan. Her Mars experience and desire to be a part of an active mission team again led her back to the Mars Program, working as the deputy project scientist for the Mars Science Laboratory (2000-2003). A few years into this job, Tamppari was invited to be Co-Investigator and Project Scientist for atmospheric studies on the Phoenix mission (2003-2008). At the conclusion of that mission, she served as Deputy Project Scientist for the short-lived U.S. portion of the European Trace Gas Orbiter mission. Since 2012, Tamppari has been the Deputy Project Scientist for MRO, has continued Mars atmospheric research, and has been engaged in future mission and instrument development activities.

Location

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