

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – missions current and future (3A)

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MARS EXPLORATION – SCIENCE, INSTRUMENTS AND TECHNOLOGIES

Abstract

The study of Mars, the fourth planet from the Sun, has been of great interest to both scientists and cosmologists for a long time. After Percival Lowell first claimed water on Mars in the 19th century, it was questioned whether Mars could be a second home for humanity. As technology advances, our ability to explore this planet increases, and new discoveries make Mars, with its similar geologic composition to Earth, an ideal location for studies of planetary formation, evolution, and habitability. A number of missions to Mars have been launched in recent years, each using a range of instruments and technologies to study the planet in greater detail. These missions have revealed a wealth of information about Mars, including its geology, atmosphere, and potential to support life. One of the most notable recent missions to Mars is the Perseverance Rover (Percy for short), which was launched in 2020 (January 12). So, from the 3 antennas on Percy to the world satellites orbiting Mars and from there to the "Deep Space Network" antennas located in 3 different places in the 2 hemispheres of the world, more than 5000 images were sent within 5 days. He also presented us with a few seconds of sound from the famous winds of Mars. Data collected by the rover has revealed much about the history and composition of Mars, as well as clues about the potential for life on the planet. Other missions to Mars have also made significant contributions to our understanding of the planet. For example, the Mars Odyssey spacecraft has been studying the planet's geology and radiation environment since 2001, and the Mars Reconnaissance Orbiter has been using high-resolution cameras to map the planet's surface since 2006. The Mars Curiosity Rover studied the planet's radiation, surface, and atmosphere in 2012 with a range of scientific instruments, including cameras, spectrometers, and radiation detectors. Overall, Mars exploration represents an important area of scientific research. In addition to the scientific discoveries made by the exploration of Mars, the study of this planet also has important implications for the future of space exploration and the search for life beyond Earth. As scientists continue to learn more about Mars using advanced tools and technologies, we can gain valuable insights into the potential for human habitation on the planet as well as the conditions necessary for life to exist elsewhere in the universe.