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## 2000 Sunsets: Three Years of Science from the Mars Exploration Rovers

by

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### ABSTRACT

Originally planned for missions lasting 90 days and covering distances up to 400 meters, the twin Mars Exploration Rovers have each spent well over 1000 sols (Mars days) and 1000 very cold nights on the surface of Mars and are still going strong. During this time Spirit and Opportunity have covered a combined distance of over 17 kilometers, sent back to Earth over 150,000 photographs, performed mineralogical analyses of scores of diverse rocks, and made key atmospheric and astronomical measurements. This presentation will describe the mission and focus on the unprecedented evidence that has been found for the protracted presence of liquid water on Mars' surface in the distant past, and on the implications for the geological and astrobiological history of the planet.

### BIOGRAPHY

*Bruce Banerdt is a planetary geophysicist who has been working at JPL since 1977. He grew up in Taft, overcoming this handicap to earn a BS in Physics and a PhD in Geophysics at USC (with a 2-year detour through Penn State). He was a member of the science team for the altimeter instruments (MOLA) on Mars Observer and its more fortunate successor, Mars Global Surveyor, which produced detailed topographic maps of Mars. He was also on the Magellan Radar Science Team, led the Seismometer instrument team on the (alas, cancelled) NetLander mission to Mars, and is a member of the Acoustic Sounder (SESAME) instrument team on the European Rosetta comet mission. He has been working for the past 18 years to send seismometers to Mars, and is currently working on proposals to reestablish seismic stations on the Moon. He has served on several National Academy of Sciences panels on space science, and is currently serving on COMPLEX (the Committee for Planetary Exploration) and the National Research Council panel advising NASA on Scientific Priorities for the Exploration of the Moon. He has been the Project Scientist for the Mars Exploration Rovers for just over a year. Dr. Banerdt's research interests are in geophysical investigations of the interiors of the terrestrial planets using mathematical analyses backed by geological information and gravity, magnetic, topography, and seismic measurements, and in the geologic history of Mars.*