

WELCOME TO MARS

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International

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CONTACT

Tom Koch, *Director*
WGBH International
125 Western Avenue
Boston, MA 02134 USA

TEL 617-300-3893
FAX 617-779-7900

tom_koch@wgbh.org
wgbh.org/international

Millions of viewers were glued to their sets on January 4, 2004, as NOVA covered the making of the most ambitious robotic space probes ever built, the Mars Exploration Rovers, closing with the spectacularly successful landing of the first of these robots on Mars the previous day. Exactly one year later, NOVA presents the startling findings of the two rovers in their nearly year-long investigation of the red planet on *Welcome to Mars*.

During these thrilling months of discovery, NOVA had unusual access to mission controllers and scientists at NASA's Jet Propulsion Laboratory in Pasadena, California, as they directed the rovers across millions of miles of space.

All was going smoothly after *Spirit's* touchdown on January 3, until the spacecraft unaccountably went haywire shortly before *Opportunity's* scheduled arrival on the opposite side of the planet. NOVA captures the tense scramble to decipher *Spirit's* erratic behavior and regain control of the unhinged rover, which succeeded just a few hours before *Opportunity* set down on January 24. The rovers were designed to answer questions that have puzzled planetary scientists since 1971, when a Mars-orbiting craft sent back photos that looked remarkably like river channels.

Mars is too cold and its atmosphere is too thin to support liquid water today. But rivers, lakes and possibly larger bodies of water appear to have formed in the past. Was there truly liquid water? If so, what is the history, and was Mars ever hospitable to life?

In the search for promising sites to shed light on these questions, *Spirit* set down in Gusev Crater, a probable former lake, while *Opportunity* landed at Meridiani Planum, where minerals detected from orbit hinted at a watery past. As luck would have it, *Opportunity* bounced to a stop in its airbag enclosure at the bottom of a shallow crater with a perfect exposure of bedrock. Scattered everywhere were BB-sized spherules that the scientists called "blueberries." *Opportunity* used its multispectral cameras, microscope, spectrometers and power grinder to analyze the chemistry of this geological gold mine.

The conclusion? "We think we're parked on what was once the shore of a salty sea on Mars. That's pretty cool," says Steve Squyres of Cornell University, who heads the rover science team.

Meanwhile, *Spirit* was having a harder time deciphering the mystery of its environs. Gusev Crater had almost certainly been wet at one time, but *Spirit* couldn't find the mineral evidence to pin down its history.

Spirit's quest for telltale bedrock led it on a three-month journey across the crater floor into an area called the Columbia Hills, which not only had the most spectacular view ever seen on another world, but also held ancient rocks that told another story of a planet very different from the one we see today—a wet world with conditions that may have supported life.

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NOVA

CREDITS

Executive Producer: Paula A. Apsell
Senior Series Producer: Melanie Wallace
Producer, Director, and Writer: Mark Davis

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