

# Spirit Finishes Pre-Winter Drives

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NASA's Mars Exploration Rover Spirit recorded this fisheye view with its rear hazard-avoidance camera after completing a drive during the 2,169th Martian day, or sol, of Spirit's mission on Mars (Feb. 8, 2010). Image credit: NASA/JPL-Caltech

(PhysOrg.com) -- NASA's Mars Exploration Rover Spirit is now parked for the winter. The rover team is commanding Spirit this week to make additional preparations for the Mars southern hemisphere winter season. The team does not plan further motion of the wheels until spring comes to Spirit's location beside the western edge of a low plateau called Home Plate.

On Sol 2169 (Feb. 8, 2010), the rover's last drive before [winter](#) changed the angles of its suspension system, but it did not produce a hoped-for improvement to the overall tilt of the [solar array](#) for catching winter sunshine. Drives since Sol 2145 (Jan. 15, 2010) moved Spirit 34 centimeters (13 inches) south-southeastward. However, a counterclockwise yawing of the rover during the drives prevented it

from reducing its southerly tilt.

Spirit will spend the coming winter tilted 9 degrees toward the south, an unfavorable attitude for the solar panels to catch rays from the sun in the northern sky. Spirit's parking positions for its previous three Martian winters tilted northward. Engineers anticipate that, due to the unfavorable tilt for this fourth winter, Spirit will be out of communication with Earth for several months.

Spirit may enter a low-power hibernation mode within a few weeks, shutting down almost all functions except keeping a master clock running and checking its power status periodically until it has enough power to reawaken. It may go in and out of this mode a few times at the beginning and at the end of an extended hibernation period.

This week the rover team is uploading schedules to Spirit for when to communicate with Earth or with the orbiting [Mars Odyssey](#) during the rest of this year and into 2011. Spirit will use these schedules whenever it has adequate power to wake up. Spirit will take a set of "before" images of surroundings from the parked position this week, for comparison with images in the Martian spring to study effects of wind. Images toward the south will also aid preparations for possible future drives, although, with only four of its six wheels still working, the rover is not expected to move farther than short repositioning drives. Other preparations for winter will include putting the robotic arm into a position for studies of atmospheric composition when power is available and changing the stow positions of the high-gain antenna and panoramic camera to minimize shadowing of the solar panels.

Spirit is more than six years into a mission originally planned for three months on [Mars](#). Its twin, Opportunity, is exploring an area halfway around the planet and closer to the equator, where that rover does not need to park for the winter.

Provided by JPL/NASA

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