

NASA SCIENCE FLEET PREPARES FOR MARS COMET

How NASA Assets Will Observe
COMET SIDING SPRING
Closest Approach to Mars on October 19, 2014

	BOPPS, sub-orbital balloon – Sept. 2014		Hubble – Oct. 2013, Jan., Mar., and Oct. 2014
	Infrared Telescope Facility – Jan., Sept. and Oct. 2014		Swift – since Nov. 2013
	Mars Recon. Orbiter – Oct. 2014		STEREO – ongoing
	Mars Odyssey – Oct. 2014		SOHO – ongoing
	ESA's Mars Express – Oct. 2014		NeoWISE – Jan., Jul. and Sept. 2014
	MAVEN – Oct. 2014		Spitzer – Mar. and Oct. 2014
	Opportunity Rover – Oct. 2014		Kepler – Oct. 2014
	Curiosity Rover – Oct. 2014		Chandra – Oct. 2014

<http://mars.nasa.gov/comets/sidingspring>
<http://cometcampaign.org>

#JOURNEYTOMARS

NASA's extensive fleet of science assets, particularly those orbiting and roving Mars, have front row seats to image and study a once-in-a-lifetime comet flyby on Sunday, 19 October.

Comet C/2013 A1, also known as comet Siding Spring, will pass within about 139,500 kilometres of the Red Planet -- less than half the distance between Earth and our moon and less than one-tenth the distance of any known comet flyby of Earth.

Siding Spring's nucleus will come closest to Mars hurtling at about 56 kilometres per second. This proximity will provide an unprecedented opportunity for researchers to gather data on both the comet and its effect on the Martian atmosphere.

This is a cosmic science gift that could potentially keep on giving, and the agency's diverse science missions will be in full receive mode. This particular comet has never before entered the inner solar system, so it will provide a fresh source of clues to our solar system's earliest days.

Siding Spring came from the Oort Cloud, a spherical region of space surrounding our sun and occupying space at a distance between 5,000 and 100,000 astronomical units. It is a giant swarm of icy objects believed to be material left over from the formation of the solar system. It will be the first comet from the Oort Cloud to be studied up close by spacecraft, giving scientists an invaluable opportunity to learn more about the materials, including water and carbon compounds, that existed during the formation of the solar system 4.6 billion years ago.

Some of the best and most revealing images and science data will come from assets orbiting and roving the surface of Mars. **In preparation for the comet flyby, NASA maneuvered its Mars Odyssey orbiter, Mars Reconnaissance Orbiter (MRO), and the newest member of the Mars fleet, Mars Atmosphere and Volatile Evolution (MAVEN), in order to reduce the risk of impact with high-velocity dust particles coming off the comet.**

The atmosphere of Mars, though much thinner than Earth's, will shield NASA Mars rovers Opportunity and Curiosity from comet dust, if any reaches the planet. Both rovers are scheduled to make observations of the comet. NASA's Mars orbiters will gather information before, during and after the flyby about the size, rotation and activity of the comet's nucleus, the variability and gas composition of the coma around the nucleus, and the size and distribution of dust particles in the comet's tail. Earth-based and space telescopes, including NASA's iconic Hubble Space Telescope, also will be in position to observe the unique celestial object. The agency's astrophysics space observatories -- Kepler, Swift, Spitzer, Chandra -- and the ground-based Infrared Telescope Facility on Mauna Kea, Hawaii -- will be tracking the event. And the agency's two Heliophysics spacecraft, Solar TERrestrial RELations Observatory (STEREO) and Solar and Heliophysics Observatory (SOHO) will image the comet. Images and updates of the comet flyby will be posted online.

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