

## Observing Comet Siding Spring at Mars

Transcript:

[ music ] Far beyond the orbit of Neptune, at the gravitational fringes of our solar system, sits a vast field of icy debris known as the Oort cloud. Extending nearly one light-year from the Sun, the Oort cloud is thought to be the reservoir of comets like C/2013 A1, better known as Comet Siding Spring. This chunk of frozen water and gas, with the estimated mass of a small mountain, left the Oort cloud's southern hemisphere millions of years ago. It was discovered by astronomers at Australia's Siding Spring Observatory in 2013, and is now approaching the plane of the solar system, set to make a remarkably close encounter with Mars. On October 19, Comet Siding Spring will come within 88,000 miles of the Red Planet, roughly one third of the distance from the Earth to the Moon. Anyone standing on Mars might be treated to a spectacular view, with the comet's long tail of gas and dust dominating the northern skies. At Gale Crater, NASA's Curiosity rover will turn its gaze skyward for several days surrounding the flyby. Curiosity's Mastcam will study the comet's general features, while the ChemCam instrument will look at its chemical makeup. Although Curiosity and its fellow rover Opportunity will be protected from comet dust by the Martian atmosphere, the same cannot be said for spacecraft orbiting above Mars. Scientists believe that the odds of hitting dust are low, but with particles moving at 33 miles per second, NASA isn't taking chances, and will position its orbiters behind Mars during the period of greatest danger. For orbiters like MAVEN, Comet Siding Spring is not just a risk, but also an opportunity to study a first-time visitor from the Oort cloud. MAVEN will join NASA's Mars Reconnaissance Orbiter and Mars Odyssey in observing the comet, looking at its composition and the effects of its coma on the Mars upper atmosphere. One planet over, the Hubble Space Telescope and other space and ground-based observatories will also be keeping an eye on Comet Siding Spring, as will legions of amateur astronomers armed with backyard telescopes, all excited to witness this historic close encounter between Mars and its icy visitor. [ music ]