

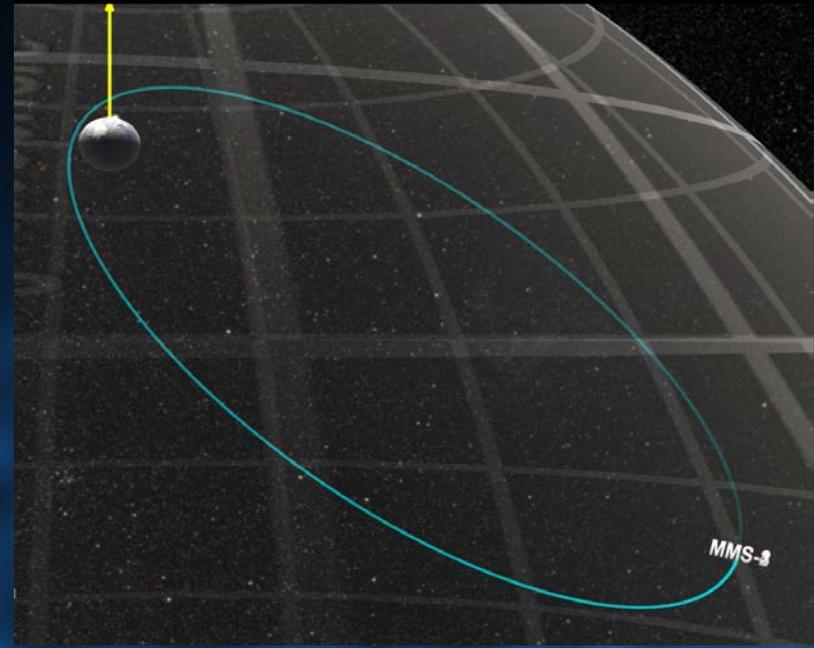
# MMS enters Phase 2b to study Magnetic Reconnection on Earth's Dark Side

On 9 February 2017, NASA's Magnetospheric Multi-Scale (MMS) mission began a three-month long journey into a new orbit **marking its transition into the second phase of its mission**. MMS flies in a highly elliptical orbit around Earth; the new orbit will take MMS twice as far out as it has previously flown and focus on collecting data on Earth's dark side.

MMS, *one of the most complicated missions in terms of flight dynamics* that has come out of the Goddard Space Flight Center, flies four individual satellites in a tetrahedron configuration only four miles apart on average to form a 3D picture of magnetic reconnection. No other mission has flown in such a tight flight formation.

Launched with 904 pounds of fuel, the spacecraft have only used about 140 pounds in their first two years of operation. However, sending MMS into a wider orbit for its second phase will consume about half the remaining fuel. Engineers plan to optimize the remaining fuel for extended mission studies.

In the first phase of the mission, MMS investigated the sun-side of Earth's magnetosphere, where the sun's magnetic field lines connect to Earth's magnetic field lines. In the second phase, *MMS will pass through the night side*, where magnetic reconnection is thought to trigger auroras.



A still capture of a visualization showing the new MMS phase 2b orbit.  
Credit: NASA GSFC/ Bridgman