NASA APP MISSION INFORMATION

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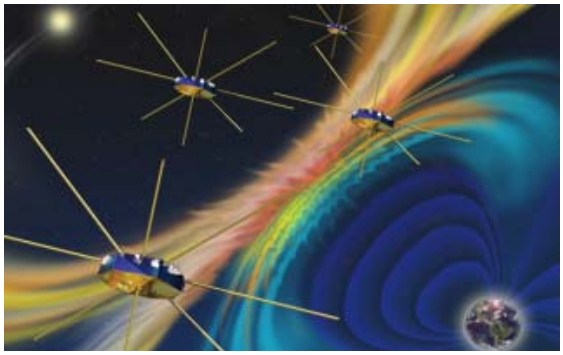
Mission Information Being Added to NASA App	
Mission Name:	Magnetospheric Multiscale Mission (MMS)
Website:	http://mms.gsfc.nasa.gov
Banner Image*: (320x100px leave left edge black)	
Detailed description of the mission: (Description can include images no larger then 320px but can be linked to larger images if provided. If already on website with no changes provide link.)	The Magnetospheric Multiscale (MMS) mission is a Solar Terrestrial Probes Program mission within NASA's Heliophysics Division. The MMS mission, consisting of four identically instrumented spacecraft, will use Earth's magnetosphere as a laboratory to study magnetic reconnection, a fundamental plasma-physical process that taps the energy stored in a magnetic field and converts it—typically explosivly—into heat and kinetic energy in the form of charged particle acceleration and large-scale flows of matter. Magnetic reconnection occurs universally in plasmas, the electrically conducting mixes of positively and negatively charged particles that account for an estimated 99% of the observable universe. It is the ultimate driver of the phenomena we know as "space weather." Eruptive solar flares, coronal mass ejections (CMEs), geomagnetic storms, and magnetospheric substorms all involve the release through reconnection of energy stored in magnetic fields. In addition to its central role in solar-terrestrial relations, magnetic reconnection has been invoked in theoretical models of a variety of astrophysical phenomena including star-accretion disk interactions, pulsar wind acceleration, and the acceleration of ultra-high-energy cosmic rays in active galactic nuclei jets. Reconnection also occurs in man-made settings such as fusion machines (tokamaks spheromaks) and laboratory reconnection experiments. The four MMS spacecraft will carry identical suites of plasma

	analyzers, energetic particle detectors, magnetometers, and electric field instruments as well as a device to prevent spacecraft changing from interfering with the highly sensitive measurements required in and around the diffusion regions. The plasma and fields instruments will measure the ion and electron distributions and the electric and magnetic fields with unprecedented high (millisecond) time resolution and accuracy. These measurements will enable MMS to locate and identify the small (10's of km) and rapidly moving (10-100 km/s) diffusion regions, to determine their size and structure, and to discover the mechanism(s) by which the plasma and the magnetic field become decoupled and the magnetic field is reconfigured. MMS will make the first unambiguous measurements of plasma composition at reconnection sites, while energetic particle detectors will remotely sense the regions where reconnection occurs and determine how reconnection processes produce large numbers of energetic particles. The four satellites will be launched together on a single launch vehicle and inserted sequentially into Earth orbit. As they explore the dayside and nightside reconnection regions, the spacecraft will fly in a tetrehedral (pyramid) formation, allowing them to capture the three-dimentional structure of the reconnection sites they encounter. Onboard propulsion will be used to adjust the separation among the spacecraft, from hundreds of kilometers to as close as 10 kilometers to achieve the optimum interspacecraft separation for probing the diffusion region.
Small picture*: (320px)	
Link to Twitter:	http://twitter.com/#!/NASA_MMS
Launch Date and Time:	August 2014
For all images, include here and also include as separate attachment. ***Email form & attachments to arc-dl-iphone@mail.nasa.gov***	