

MAVEN Magnetometer

Transcript:

[music] I'm Jack Connerney, I work at Goddard here in the magnetometer group. My name is Jared Espley, I'm a space scientist and I work in the Planetary Magnetospheres Lab. Magnetic fields can be measured in a variety of ways, and the most simple way is with a compass. The Earth's field is global in nature, so it has a north pole and a south pole, and wherever you go on the surface of the Earth with a compass, it will point to the north pole. But on Mars if you were to walk around with a compass, it would haphazardly point from one anomaly to the other as you walked across the surface, so it's not quite as useful as a compass on Earth. MAVEN is our next mission to Mars, it's an orbiter. It's designed to help us understand what happened to the Martian climate over time, how the climate has evolved over the lifetime of the solar system. We're looking at Mars today, and we're looking at how the solar wind strips away what little atmosphere there is today, and we'll try to roll that back in time and understand what an early Mars might have looked like, and whether a magnetic field like the Earth has could have protected that atmosphere from the solar wind. To measure the magnetic field at Mars then, we use an instrument called a magnetometer. MAVEN is carrying a pair of magnetometers. Now the spacecraft itself generates a magnetic field so we have to put those magnetometers as far from the spacecraft as we can, and we've done that by putting the sensors at the very outer end of the solar arrays. The magnetometers, even though they're small, simple looking instruments there's actually a great deal of sophisticated electronics and testing and calibration that goes into building them. They're so sensitive that we ask everyone to use non-magnetic tools when they're working on them. Even if you had a tiny little fleck of metal that came off of your screwdriver that would be enough to be noticeable and detected by the magnetometer. There's no Maytag repairman in space. So we punish these instruments before we pack them up and launch them, because we're not going to see them again and we have to make darn sure that they're going to work. As a scientist, as the person who will eventually be receiving this data and using it, it's very humbling and gratifying to see all these other people working very hard to try and make sure that we get the data that we would like to get here at Earth. [music] [sound effect]