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00:00:00,010 --> 00:00:04,020
[Reporter] NASA is getting ready to launch a new mission that is going to send 4 spacecraft

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00:00:04,040 --> 00:00:08,080
into the heart of magnetic storms around Earth. Here to tell

3
00:00:08,100 --> 00:00:12,090
us more about what we can learn from the mission is Dr. Holly

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00:00:12,110 --> 00:00:16,110
Gilbert from NASA's Goddard Space Flight Center in Greenbelt Maryland, thanks for joining us.

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00:00:16,130 --> 00:00:20,150
[Gilbert] Thanks for having me. [Reporter] NASA is getting ready to launch a new mission

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00:00:20,170 --> 00:00:24,160
in a couple hours, tell us about this mission. [Gilbert] The Magnetospheric Multiscale

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00:00:24,180 --> 00:00:28,180
Mission or MMS, is set to launch tonight at 10:44pm

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00:00:28,200 --> 00:00:32,230
eastern time. It is compromised of four identical

9
00:00:32,250 --> 00:00:36,240
spacecraft. Which are going to extend these very long wire booms

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00:00:36,260 --> 00:00:40,270
with very sensitive instruments on each of them.

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00:00:40,290 --> 00:00:44,310
in a formation, a pyramid formation to special regions around the Earth.

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00:00:44,330 --> 00:00:48,320
Where a very powerful process takes place called magnetic reconnection

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00:00:48,340 --> 00:00:52,350

and this process drives some of the most energetic events throughout the universe.

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00:00:52,370 --> 00:00:56,400
[Reporter] How do magnetic storms

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00:00:56,420 --> 00:01:00,420
affect us on the Earth? [Gilbert] The Sun and Earth interact

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00:01:00,440 --> 00:01:04,450
the Sun blows off solar storms that can sometimes be directed towards

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00:01:04,470 --> 00:01:08,500
the Earth and when they impact the Earth they can interact with the Earth's magnetic

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00:01:08,520 --> 00:01:12,510
field. Causing it to deform and twist and snap and then

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00:01:12,530 --> 00:01:16,540
accelerate particles at near the speed of light smashing them into

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00:01:16,560 --> 00:01:20,590
atmosphere of the Earth, which causes the beautiful aurora. but this also has very

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00:01:20,610 --> 00:01:24,600
negative effects, it can cause power grids to go out so we have blackouts that associates

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00:01:24,620 --> 00:01:28,620
with solar storms. Our satellites are susceptible to these storms, as our

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00:01:28,640 --> 00:01:32,680
astronauts and also airlines that are flying over the polar regions.

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00:01:32,700 --> 00:01:36,690
are more susceptible to this radiation so, space weather in general,

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00:01:36,710 --> 00:01:40,740
its very important to be able to predict and understanding the cause

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00:01:40,760 --> 00:01:44,790
this magnetic reconnection is extremely important.

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00:01:44,810 --> 00:01:48,800
[Reporter] Why is important to understand this phenomenon? [Gilbert] Well it doesn't only

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00:01:48,820 --> 00:01:52,840
happen near the Earth. It's a very universal process, very fundamental to many things.

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00:01:52,860 --> 00:01:56,890
It actually happens on the Sun. It drives space weather

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00:01:56,910 --> 00:02:00,910
solar flares, there's magnetic reconnection happening in

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00:02:00,930 --> 00:02:04,940
solar flares and larger storms that come from the Sun. But it also happens

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00:02:04,960 --> 00:02:09,000
in further objects like black holes, the jets that are coming out of

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00:02:09,020 --> 00:02:13,020
black holes are associated with this process because they have magnetic fields surrounding them.

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00:02:13,040 --> 00:02:17,070
So, if we can understand it here near the Earth, that will help us understand

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00:02:17,090 --> 00:02:21,120
the other phenomenon throughout the universe. [Reporter] What can we expect

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00:02:21,140 --> 00:02:25,150
from this mission? [Gilbert] What we really hope that it will help us better

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00:02:25,170 --> 00:02:29,190
understand space weather affects, so when these solar storms impact the Earth

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00:02:29,210 --> 00:02:33,200

how are they going to impact us, when are they going to occur and how dangerous are they going to be

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00:02:33,220 --> 00:02:37,220
to our technology. By getting lots of measurements

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00:02:37,240 --> 00:02:41,260
of the process where it is taking place, we will better be able to

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00:02:41,280 --> 00:02:45,270
hopefully to predict space weather effects right here at the Earth.

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00:02:45,290 --> 00:02:49,300
[Reporter] Where can we learn more about this mission? [Gilbert] Well you can go to our

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00:02:49,320 --> 00:02:53,320
website, to not learn about MMS, but a whole bunch of other missions

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00:02:53,340 --> 00:02:57,340
that are looking at how the Sun impacts the solar system. If you go to