News

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Scientists await technological fallout from giant solar flare

BY MELISSA HARRIS
The Orlando Sentinel

ORLANDO, Fla. - (KRT) - Scientists have predicted for a week that one of the most disruptive solar flares in history could spell trouble for global communication, transportation, electricity and television companies.

But late Wednesday, satellite controllers were still holding their breath for the fallout that hadn't materialized.

Although the solar storm - the fourth-largest recorded - never posed a threat to humans, thanks to the Earth's protective ozone layer, technology is not yet in the clear, according to forecasters with the National Oceanic and Atmospheric Administration.

"We're expecting severe (solar) storms for the next day and a half," said Warren Miller, a forecaster with NOAA, which monitors weather threats from space for industries that rely on satellites. "We could experience some radio interference."

The distance between the sun and the Earth makes it difficult to predict solar storms. It's like a meteorologist in California trying to predict a hurricane in Africa, Miller said.

The scorching ball of hot gases contains so much energy that a square centimeter of its surface emits as much light as a 6,000-watt light bulb.

Think of a solar flare as a contained gust of trash-filled wind hurtling toward Earth at 5 million mph.

They begin as volcanoes of hot plasma exploding from the sun's surface and, depending on their strength and direction, can wreak havoc on global communication or float by unnoticed.

Normally the Earth's magnetic field deflects these tiny particles from the sun to the north and south poles, just like a magnet under a piece of paper repels iron filings sprinkled on top. Under calm conditions, a few of those atoms traveling northward hit the atmosphere, creating the shimmering Northern Lights.

But the particles from solar flares sometimes create their own magnetic field,

which burrows a hole in the Earth's.

Instead of being deflected, the plume of particles penetrates the field, disrupting radio waves like turbulence agitating an airplane.

During a solar storm, communication signals can be bounced in the wrong direction or cut off, which could hamper emergency responders using those frequencies.

Worst-case scenario: blackout.

"The charged particles from the sun can and have wreaked havoc on satellites," said Alister Graham, an astronomy researcher at the University of Florida. "In 1995, they actually caused an electrical discharge that spontaneously changed a satellite's position by thrusting its rockets."

In 1989, a storm damaged electrical equipment in the eastern United States, and 6 million Canadians were left in the dark when the Hydro Quebec power grid malfunctioned.

In 1998, a solar storm was blamed for wrecking the Galaxy 4 satellite, halting news feeds and 45 million electronic pagers across North America for days.

Those storms were considerably weaker than the one that hit Wednesday, which was classified as a G5, or "extreme," and took only 19 hours to get here from the sun.

The current rash of flares has been a bit of an anomaly for reasons other than its strength.

Solar storms normally peak about once every 11 years, and in this case that would have been in late 2000. That makes this week's dose a bit like a December heat wave.

"We can't predict how the storm is going to evolve," said John Kohl, a lecturer in the astronomy department at Harvard University. "I expect it to pick back up and subside."

(Orlando Sentinel correspondents Greg Groeller and Todd Pack contributed to this report.)

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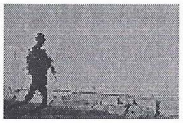

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Solar storm warning for today

By Melissa Harris
Sentinel Staff Writer

October 30, 2003, 4:09 PM EST

Some trans-Atlantic jets flew more southerly routes, high-frequency radio communications in northern areas faded to static and power companies from New Jersey to Europe braced for one of the planet's most disruptive solar flares in history Wednesday.

Scientists have predicted for a week that the flare, the fourth-largest recorded, could spell trouble for global communication, transportation, electricity and television companies.

But late Wednesday, satellite controllers were still holding their breath for the fallout that hadn't materialized.

Although the solar storm never posed a threat to humans, thanks to the Earth's protective ozone layer, technology is not yet in the clear, according to forecasters with the National Oceanic and Atmospheric Administration.

"We're expecting severe [solar] storms for the next day and a half," said Warren Miller, a forecaster with NOAA, which monitors weather threats from space for industries that rely on satellites. "We could experience some radio interference."

The Orlando Utilities Commission said it was monitoring the situation, given that the incoming storm could burn out power grids, but reported no major problems by late Wednesday.

Outside of Earth's atmosphere, astronauts at the international space station were moved into a wing of the module shielded from higher levels of radiation.

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Wire services were used in compiling this report. Greg Groeller and Todd Pack of the Sentinel staff contributed to this report. Melissa Harris can be reached at mharris@orlandosentinel.com or 407-420-6269.

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http://www.orlandosentinel.com/news/custom/science/sns-ap-solar-flare,0,959317.story?coll=orl-home-headlines

Japan Loses 2nd Satellite to Solar Flare

By Associated Press

October 30, 2003, 11:40 AM EST

TOKYO -- Japanese space agency officials, already forced to temporarily shut down one satellite, said Thursday they had lost contact with a second satellite that may have been affected by an electromagnetic storm caused by the largest solar flare observed in decades.

"We have completely lost touch with the Midori 2, and don't know what's going on with it," said Junichi Moriuma, a spokesman for the agency, known as JAXA. He said the agency is trying to restore communications.

"At this point, we don't know if there is a relation between this accident and the solar flare," he said. "We are still in the process of figuring out what caused the problems."

Midori 2 was launched in December 2002 and served as an environmental observation satellite.

Moriuma said communications with the satellite were lost on Saturday, amid the heightened solar flare activity. He said the solar flare is believed to be the second biggest ever observed and happens only once every couple of decades.

He said the agency's main concern is that the particles and radiation emitted in the flare might destroy computer sensors.

The agency said Wednesday that the communications satellite Kodama had malfunctioned and had been switched into a safe mode after being hit by the solar flare.

But officials said the satellite, used as a data relay point, was to be reactivated when the solar activity subsided and added that the outage wasn't causing any major communication disruptions.

The flare was believed to produce a particle cloud 13 times larger than Earth. The resulting geomagnetic storm was expected to be among the most powerful of its kind.

Kodama was launched on Sept. 10, 2002, from the southern Japan island of Tanegashima to transmit data between satellites and ground-based research facilities.

It was planned for seven years of operation.