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UNH Space Instrument Gets Zapped by Solar Storm
UNH Space Instrument Gets ZAPPED by Solar Storm

By Sharon Keeler
UNH News Bureau

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DURHAM, N.H. -- A University of New Hampshire scientific instrument launched into space last year to investigate the solar wind and the Earth's magnetosphere was temporarily knocked out of service by the very phenomenon it was designed to study.

The Composition and Distribution Function (CODIF) Analyzer that was affected is housed on a satellite called Rumba, which is part of the Cluster II mission. A cooperative venture between the National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA), Cluster II is designed to study the local effects triggered in the Earth's magnetosphere by the solar wind and activity on the Sun.

The Sun is at the peak of its 11-year cycle, which is called the solar maximum. Turbulent storms are taking place on the Sun's surface, spawning tremendous eruptions -- called solar flares and coronal mass ejections -- into its surrounding. These eruptions hurl billions of tons of electrified gas and radiation into space. It was one of these eruptions that crashed the UNH instrument.

"CODIF experienced a severe software crash after an intense radiation storm which was initiated in the Earth's magnetosphere after the strongest flare on record April 3. Ironically, the instrument was affected by the processes it has been designed to study," says Eberhard Moebius, professor of space physics in UNH's Institute for the Study of Earth, Oceans, and Space. He oversees the Cluster project with research professor Lynn Kistler.

Moebius explains that due to strong radiation, parts of CODIF's highly integrated electronics experienced a short-circuit. Because precautions against such
anticipated events have been designed into the instruments, no permanent damage was incurred. However, the instrument "turned blind to the particles it was supposed to observe, because its logic circuitry was messed up," he says.

After several diagnostic attempts, the instrument was finally reset last week by project engineer Claude Aoustim of the principal investigator institution in Toulouse, France. Since then, it is working again in nominal condition.

"What happened to the scientific instrument is a very likely scenario for the space assets that our high-tech society takes for granted, such as weather, GPS, communication and Earth-observing satellites," says Moebius.

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