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Cosmic chorus fills the Earth's magnetic field with a mysterious "hiss"

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Washington, May 8 (ANI): Scientists have determined that thousands of miles above our planet, a cosmic chorus is filling the Earth's magnetic field with a mysterious, low frequency "hiss."

According to a report in National Geographic News, that's the conclusion of scientists studying data from a set of NASA probes designed to monitor substorms-dramatic exchanges of energy among charged particles that spark the auroras at Earth's poles.

The charged particles come from the sun and get trapped in loops around our planet by Earth's magnetic field.

Knowing how the hiss influences the loops, known as Van Allen radiation belts, might help scientists predict their behavior-a good thing, because the belts can bombard satellites, spacecraft, and even spacewalking astronauts with dangerous radiation.

Although we're currently experiencing an unprecedented lull in solar activity, space is expected to get much stormier after 2012, when the sun should enter an active phase that will hurl more charged particles toward Earth.

The faint "shh" sound that scientists now call the plasmaspheric hiss is the result of an electromagnetic wave in Earth's radiation belts.

The hiss wave appears to reduce levels of dangerous electrons in the radiation belts by deflecting the particles from their stable trajectories and sending them into the dense upper atmosphere, where they are lost.

For more than four decades, scientists have been puzzled by what was generating the hiss wave, according to noted study leader Jacob Bortnik, of the University of California, Los Angeles.

A previous model had suggested that the hiss wave might evolve from a more distant radio wave called chorus, so named because its discoverers in the 1950s thought it sounded like "a rookery of birds heard from a distance," Bortnik said.

But, proving this idea presented a challenge.

By chance, one of Bortnik's students found exactly what they needed in data from two of NASA's five THEMIS satellites.

"We didn't think that we'd be lucky enough to get this kind of gift from nature," Bortnik said.

The probes showed a definite correlation between the two waves, confirming that the hiss wave comes from chorus.

Understanding the hiss wave's origins could allow scientists to build more accurate models of the radiation belts, which could ultimately help predict space weather. (ANI)

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