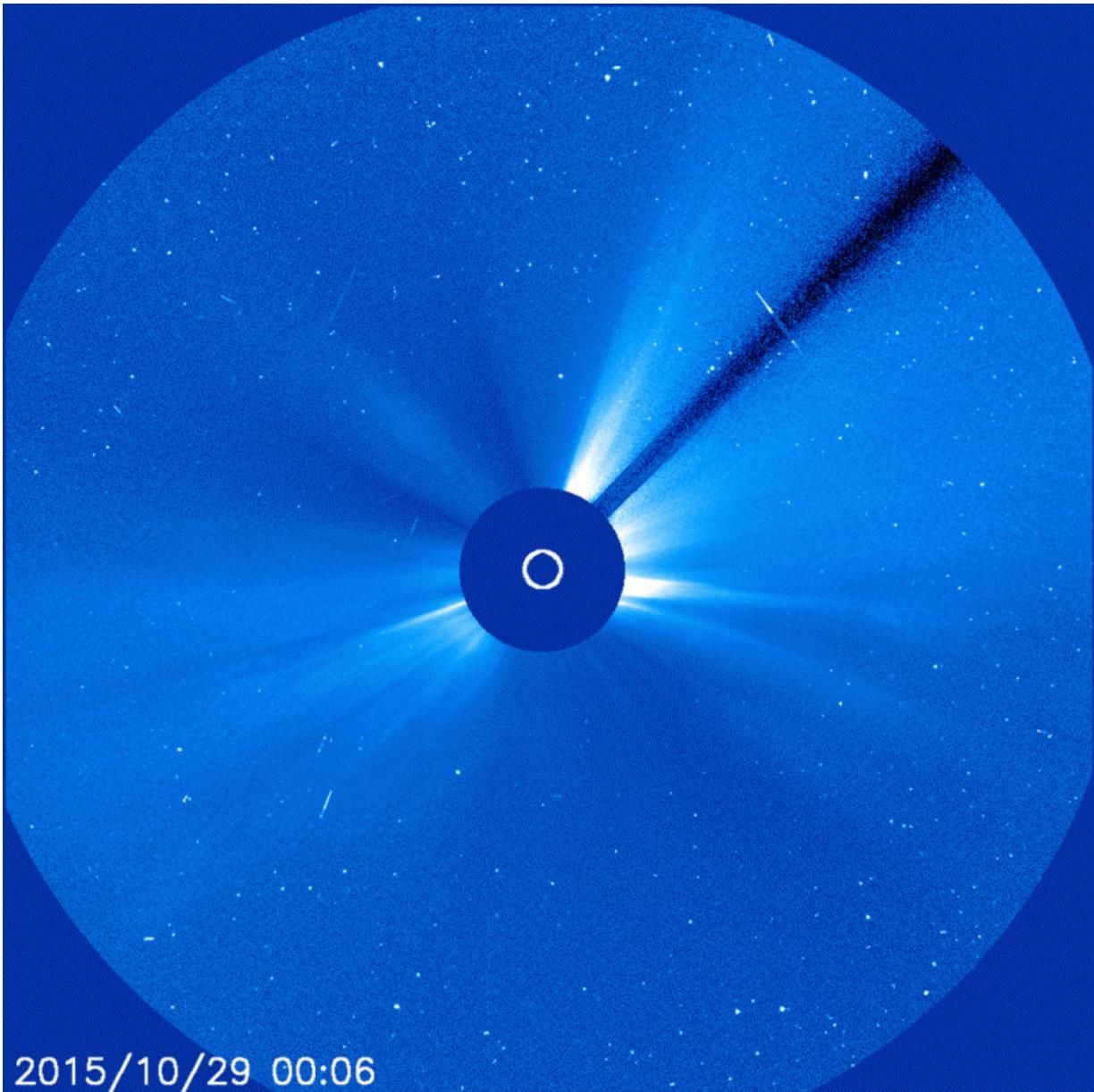


Image: Snowing in space?

November 2 2015, by Sarah Frazier



Credit: ESA/NASA/SOHO

The flurry of what looks like snow in this video is actually a barrage of energetic particles. This is what's known as a solar radiation storm, hitting an instrument onboard ESA/NASA's Solar and Heliospheric Observatory, or SOHO, on Oct. 29, 2015. These bursts of incredibly fast-moving protons and electrons are fairly common, but this particular event was interesting because they came from an unusual source: a low-level solar flare and two relatively slow coronal mass ejections, as opposed to the fast, strong eruptions that normally produce them.

Most [energetic particles](#) detected by our satellites—SOHO and NOAA's Geostationary Operational Environmental Satellite, or GOES—are accelerated by [coronal mass ejections](#), or CMEs, which are clouds of solar material hurtling out from the sun, and from extremely strong solar flares. When CMEs plow through space, they sweep up the particles in front of them, accelerating them up to incredible speeds.

In short, we expect strong particle storms from large and fast events. But in this case, the particles that flowed over SOHO in this image were accelerated by fairly slow CMEs, as well as a solar flare on the sun.

"Events on the sun can accelerate high-energy particles to very high speeds," said Yari Collado-Vega, a space physicist at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "These solar-accelerated particles can get up to 80 percent of the speed of light."

That these relatively small events caused such fast particles has to do, in part, with the fact that the active region that produced the flare on Oct. 28 is on the right side of the sun's disk, an area that has an almost direct magnetic connection to Earth – due to the fact that the sun's magnetic field lines curve as they extend away from the sun in conjunction with the sun's rotation.

The result? A barrage of fast-moving [particles](#) aimed directly at Earth. This radiation cannot pass through Earth's magnetic field and atmosphere to physically affect humans on the ground, however it does make for a fascinating fireworks show seen by our sun-watching SOHO.

Provided by NASA

Citation: Image: Snowing in space? (2015, November 2) retrieved 25 April 2024 from <https://phys.org/news/2015-11-image-space.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.