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A Fall of Moondust

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As early as the 16th century, astronomers reported seeing tiny puffs of light on the moon's surface. These reddish, blue, or white flashes have a fittingly nebulous name — transient lunar phenomena, or "TLPs" — given that scientists still can't decide whether they're real or the result of optical illusions and wild imaginations.

But Columbia astronomy professor Arlin Crotts insists that TLPs are no UFOs. Recently, he systematically reviewed 450 TLP sightings and found that they were invariably seen in spots where the moon's surface emits gas. The odds of the overlap is less than 1000 to 1, leading Crotts to theorize in a forthcoming paper that the mysterious flashes are caused by light reflecting off of dust that is kicked up when the radioactive gas such as radon bursts out of the moon's surface.

To arrive at his theory, Crotts studied TLP sightings documented by astronomers over several centuries, as well as by Apollo astronauts. He mapped their locations against gas eruptions on the lunar surface recorded by NASA's *Apollo* 15 mission in 1971 and the robotic Lunar Prospector in 1998. The locations of the TLPs correlate also with areas of the moon where scientists believe a violent lava stew bubbled billions of years ago, before the moon cooled and was pelted with meteors, coating its surface with dusty debris.

Crotts says the discovery could lead to the development of new imaging techniques that would help scientists understand the volatile gases percolating just below the moon's sleepy surface. But scientists had better hurry, he says, because when the United States sends a fleet of robotic spacecraft to the moon in a few years, the exhaust they generate could complicate future lunar observations.

"If we hope to study the moon in its pristine state," Crotts writes in the paper, "we must find out what we can early, even before we return to the moon."