A 1,000-mile cloud on Mars may reveal physics never seen in nature

Every morning during the Martian spring and summer, a thin and extremely long cloud emerges, only to disappear again. The wispy formation appears near the volcano Arsia Mons and gradually elongates until it reaches over 1,000 miles—about the distance from New York to Kansas City as the crow flies—before dissipating. This cycle then repeats for several months.

Since it was first recorded by a probe in 2018, scientists have been unable to find a plausible explanation for the existence of this cloud, often referred to as the Arsia Mons Elongated Cloud (AMEC). Until now. Recently, researchers successfully modeled the cloud's formation for the first time, their results suggesting that it may be driven by a physical process that has never been directly observed in any planet's atmosphere.

"We found that we needed to include some exotic physics… physics that, while included in textbooks, is treated as theoretical and usually thought not to happen in nature. It certainly hasn't been seen in action before," Jorge Hernández-Bernal, a planetary scientist at Paris' Sorbonne Université and lead author of the study, said in a press release. "Once we included this physics in our simulations, the AMEC emerged just as we hoped."

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