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The "Small Boy" nuclear test conducted in Nevada in 1962 GALERIE BILDERWELT/GETTY IMAGES

# Can nuclear fallout make it rain?

By Sid Perkins | May. 13, 2020 , 5:05 PM

Radioactive fallout is rarely a good thing. But new research suggests charged particles emitted from Cold War-era nuclear tests may have boosted rainfall thousands of kilometers away from the testing sites, by triggering electrical charges in the air that caused water droplets to coalesce.

The United States, Soviet Union, and other nations often tested nuclear weapons above ground in the 1950s and early 1960s. The fallout contained a devil's cocktail of radioactive elements that can have subtle effects

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scientist Giles Harrison and colleagues looked at Cold War–era rainfall records from a weather station on a remote island north of Scotland. They chose that locale because precipitation there was less likely to be affected by air pollution, which can also seed clouds and trigger rainfall, he notes.

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For measurements of the atmosphere’s natural electric field, the team used data gathered at a site near London, where such data were easier to obtain. The levels of radioactive fallout in the air at the two sites were likely similar because plumes of radiation from testing sites like Nevada and Kazakhstan would have diffused widely by the time they reached the United Kingdom, he notes.

The team’s analysis suggests a strong link between fallout and precipitation from 1962 through 1964, a period when fallout from above-ground testing of nuclear weapons was commonly present in the stratosphere. At the Scottish site, clouds were thicker, and **precipitation was 24% higher** on days when above-average levels of fallout were present (as inferred from measurements of the atmosphere’s electric field), the researchers report today in *Physical Review Letters*.

Typically, particles with opposite charges attract, and like charges repel. But larger objects like droplets can attract one another even if they have the same overall electrical charge, says Shubho Banerjee, a theoretical physicist at Rhodes College who was not involved in the research. That’s because when droplets come close to one another, charges can move such that the portions of the droplets closest to each other develop opposite—and thus attractive—charges.

The team’s findings could have implications for small-scale weather control, Banerjee says. By using spark generators or similar equipment to introduce substantial numbers of charged particles into clouds, researchers could coax droplets there to coalesce, he suggests. Harrison suggests it could also help astronomers better understand weather patterns on other planets like Jupiter and Neptune, whose atmospheres are filled with charged particles generated by lightning or the impacts of cosmic rays.

Posted in: [Chemistry](#), [Climate](#)  
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**Sid Perkins**

Sid is a freelance science journalist.

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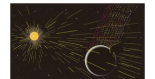


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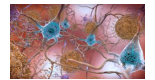
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