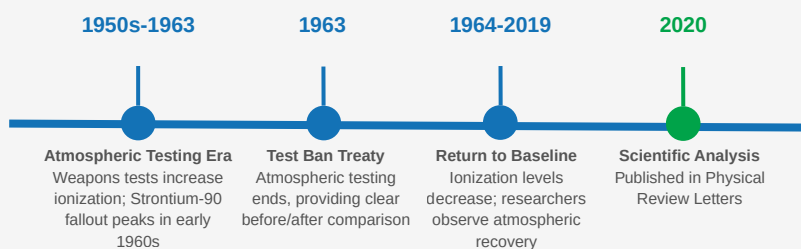


Nature's Proof

How the 1960s Nuclear Testing Era Validated Ionization Science

Sometimes the most compelling scientific evidence comes from circumstances that could never be ethically reproduced. In 2020, researchers Harrison, Nicoll, and Ambaum published a remarkable study in *Physical Review Letters*—one of the world's most prestigious physics journals—that used the atmospheric radioactivity from 1960s nuclear weapons testing as a natural experiment to prove that ionization measurably influences precipitation.

During the early 1960s, atmospheric nuclear weapons tests dramatically increased ionization rates across the Northern Hemisphere through radioactive fallout, particularly Strontium-90. This created what the researchers describe as a "disturbed atmospheric electrical environment"—essentially a large-scale ionization experiment that affected entire regions. By carefully analyzing multiple independent data sources from this era, the research team demonstrated clear connections between increased ionization, altered electrical conditions, modified cloud properties, and enhanced rainfall.



Why this matters now: While the circumstances were tragic, the data from this period provide irreplaceable evidence that atmospheric ionization affects precipitation at a scale and duration impossible to achieve in controlled experiments. The findings support the theoretical foundation for modern ionization technology—technology that can now be deployed safely and deliberately to enhance water resources without any of the harmful effects associated with radioactive fallout.

24%

Increase in Daily
Rainfall During High
Current Density
Periods

1960s

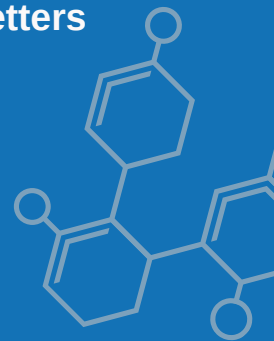
Natural Experiment Era
(Unrepeatable)

4

Independent Data
Sources Confirm Effect

2020

Published in *Physical
Review Letters*



Learn more at
rainenhancement.com

Key Scientific Findings

The research team carefully connected radioactive sampling, surface ionization measurements, air-earth current density data, cloud optical thickness observations, and rainfall records across multiple Northern Hemisphere sites. This multi-line evidence approach strengthens confidence in the findings and demonstrates that ionization effects on precipitation are measurable at atmospheric scales.

Sr-90

Fallout Substantially
Increased Ion Production

24%

Rainfall Increase Under High
Current Density

10e⁻

Electrons Per Droplet Can
Enhance Coalescence

What This Means for Modern Ionization Technology

- The 1960s data provides evidence of ionization effects at scales far larger than any controlled experiment could achieve, demonstrating that the principle works across entire regions and extended time periods.
- The study's findings are consistent with theoretical models showing that even small electrical charges on droplets (~10 electrons per droplet) can significantly enhance collision-coalescence efficiency and rainfall development.
- Today's ionization technology—using DC corona discharge or similar methods—can deliver the precipitation enhancement effect without any radioactive materials or harmful byproducts. The science is proven; the application is now safe and controllable.
- As the research team emphasized, atmospheric electricity is not a passive background process—it can actively impact cloud microphysics and precipitation formation. This validates the theoretical foundation for deliberate ionization as a water resource enhancement tool.

WHY THIS RESEARCH MATTERS

- **Strontium-90 Measurements:** Radioactive fallout data providing precise record of ionization source strength throughout the period
- **Air-Earth Current Density:** Direct measurements of atmospheric electrical conditions showing significant increases during peak fallout years
- **Cloud Optical Thickness:** Satellite and ground-based observations at Lerwick showing measurable cloud property modifications
- **Rainfall Distribution Analysis:** Long-term precipitation records demonstrating systematic shifts in rainfall patterns correlating with ionization levels
- **Physical Review Letters:** Publication in one of physics' most prestigious journals ensuring rigorous peer review and scientific credibility
- **Multiple Geographic Sites:** Data from various Northern Hemisphere locations providing broad geographic validation of the effect

THE RET CONNECTION

- **Proven Principle, Safe Deployment:** The 1960s natural experiment proved ionization affects rainfall at atmospheric scales. RET's ground-based systems harness this proven principle using safe, controllable corona discharge technology—delivering the enhancement effect without any of the hazards associated with radioactive materials.
- **Scientific Foundation:** Publication in Physical Review Letters—one of physics' most prestigious journals—provides the highest level of peer-reviewed scientific validation for the ionization-precipitation connection that underlies RET's technology.

*Source: Harrison, R.G., Nicoll, K.A., & Ambaum, M.H.P. (2020). Precipitation modification by ionization. Physical Review Letters, 124(19), 191102.

