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Light rain: Lasers could trigger downpours on demand

By [Claire Bates](#)

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People in drought-stricken countries could one day create rain clouds on demand thanks to laser technology.

Physicists have discovered that firing short laser bursts into the air can trigger the formation of water droplets. The breakthrough technique could help stimulate rainfall in the future.

Scientist Jerome Kasparian and his team from the University of Geneva wanted to find a more environmentally friendly alternative to cloud seeding. This 50-year-old process attempts to artificially induce showers.



A red laser pulse ionises the air and triggers the condensation of water droplets to create a cloud, which is illuminated by a green laser

Rockets carrying silver iodide particles are scattered in the sky. The particles act as 'condensation nuclei' around which water drops can form.

Dr Kasparian said cloud seeding is not an efficient method despite decades of development.

He added: 'There are also worries about how safe adding silver iodide particles into the air is for the environment.'

The researchers realised laser technology could be used to create an alternative technique.

They found firing an energy beam through an atmospheric cloud chamber created a channel of ionised nitrogen and oxygen molecules. These acted as condensation anchors in much the same way as silver iodide molecules.

The water drops along the damp channel nearly doubled in size from 50micrometres to 80 micrometres as they fused to the ions.



While rain on demand could be several years away, Dr Kasparian said the technique could be adapted to help weathermen predict when a downpour is due

Next, Dr Kasparian's team tested the same technique in real-world conditions. They fired a high-powered 'Teramobile laser' into the skies above Berlin over a number of nights.

They found condensation droplets again formed along the path of the laser when humidity was high.

Laser physics expert Roland Sauerbrey, from the FZD Dresden-Rossendorf Research Centre in Germany, was impressed with the results.

'This is the first time that a laser has been used to cause condensation outdoors,' he told Nature.com.

The researchers next plan to investigate whether they can create condensation in a wider area by sweeping their laser across the sky.

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The research appears in the latest edition of [Nature Photonics](#).

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- Meatwad-SSuppet, San Diego California, 04/5/2010 23:55

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