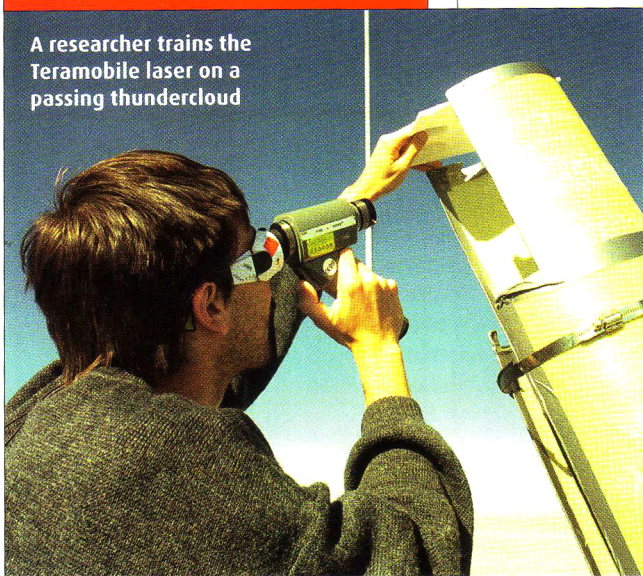




A researcher trains the Teramobile laser on a passing thundercloud



Supercharged laser lightning rod

» A powerful laser zapped at a thunder cloud has created the early stages of lightning for the first time. The portable laser generator – called Teramobile – was able to strike the cloud with the same power that is consumed by the entire US, albeit in short blasts. The brief discharges the laser created are a major step towards generating bolts of lightning on demand.

If scientists can generate lightning at the flick of a switch, it means they can study the mechanisms involved in strikes and test the resilience of aeroplanes, power lines and other critical systems – and gain insights on how to direct lightning away from vulnerable buildings.

In the past, researchers have had some success shooting rockets at clouds with wires spooling behind them. The lightning then runs down the wire. But this technique has only worked about 50 per cent of the time.

In the latest study, European scientists used the Teramobile laser – capable of generating brief four-terawatt pulses – to blast clouds during two storms over New Mexico, US. The lasers created short channels of ions – molecules with an electrical charge – in the air. These channels, known as plasma filaments, can conduct an electrical current, including lightning, just like a wire.

“We actually triggered electric events, small discharges that are the preliminary stage of lightning,” says Jérôme Kasparian, of the University of Lyon, France. “The problem is that conductivity vanishes within a few microseconds.”

Now the challenge is to generate plasma filaments long enough to conduct lightning to the ground. The team is working to increase the power of the laser by a factor of 10 in order to achieve this.

<http://tinyurl.com/6xyfvj>