



- [home](#)
- [search](#)
- [help](#)
- [feedback](#)

earth: Meteors come in with a bang

PHILIP BALL

[today's news](#)

[stories by category](#)

[stories by date](#)

[email this story](#)

[to a friend](#)

← [story](#) →

Exploding meteors bombarding the Earth from space could be mistaken for nuclear bomb tests, say seismologists of the Royal Netherlands Meteorological Institute. This could present problems for monitoring the Comprehensive Nuclear Test Ban Treaty (CTBT), which aims to halt the testing of all nuclear weapons.

Láslo Evers and Hein Haak detected a sonic boom from a meteor explosion with an instrument similar to those currently under construction for verification of the CTBT.

The explosion released energy equivalent to 1.5 kilotons of TNT, the researchers calculate. This is as big a bang as was made by several of the US nuclear tests of the early 1960s, and at the lower end of the estimated size of the Pakistani tests of 1998.

The future of the CTBT has been under a cloud since the US Senate decided not to ratify it in 1999. But many other nations have already done so, and plans are afoot for global detection systems that will alert the international community to secret nuclear weapons tests.

Underground tests send out shock waves that seismic monitoring stations designed for earthquake detection can pick up. And atmospheric tests create a kind of low-frequency ('infrasound') sonic boom which highly sensitive air-pressure meters (microbarometers) can register. A worldwide network of 60 infrasound detectors is being built for this purpose.

Situated near the village of Deelen in the Netherlands, the instrument Evers and Haak used is not designated for CTBT verification - it is primarily a meteorological device. But in November 1999, it registered a most unusual event.

At around four o'clock in the morning of the 8th November, a few early risers in Germany and the Netherlands saw a flash in the dark

sky above northern Germany. A meteor - a small chunk of space rock plunging through the atmosphere - had exploded at a height of about 20 kilometres.

The event was similar to a better-documented one that occurred in the middle of the afternoon over New Zealand the previous July. On that occasion, observers reported "a bright light, exactly like a flare", variously described as blue, red, orange or yellow. It was followed by a loud boom, and left behind a puff of brown smoke.

About one meteor detonates in the atmosphere every week. Most go unseen by human eyes, as they break apart very high in the sky. Only rarely does one strike or explode close to the planet's surface, such as the object that levelled trees over hundreds of square kilometres in Tunguska, Siberia, in 1908.

That event aside, the height of these explosions usually hides their tremendous ferocity. The explosion of November 1999 showed up on the Deelen microbarometer as an infrasound blip slightly greater than the background noise generated by ocean waves, which create a constant barrage of small atmospheric booms called microbaroms.

Reported in the journal *Geophysical Research Letters*¹, Evers and Haak's research highlights how crucial it will be for an infrasound network to be able to distinguish between meteor explosions and genuine nuclear blasts.

-
1. Evers, L. G. & Haak, H. W. Listening to sounds from an exploding meteor and oceanic waves. *Geophysical Research Letters* 28, 41-44 (2001).

© Macmillan Magazines Ltd 2000 - NATURE NEWS SERVICE



Nature © Macmillan Publishers Ltd 2000 Reg. No. 785998

England.