

Acid rain isn't off the hook by any means as the culprit in dying forests, but a new "villain" – or at least another villainous link in the chain of death, is reported in the

April 30, 1988 issue of **Science News** (Vol. 133, p. 285). University of Colorado geographer Lee Klinger, who works at the university's Institute for Arctic and Alpine Research, has looked at 100 regions in some 30 states experiencing forest dieback, and has found himself on the trail NOT of some deadly pollutant, but of *mosses*.

Mosses, says Klinger, are "terrestrial sponges" that can hold enough water to make the area right beneath them anaerobic. As tree feeder roots grow into this oxygen free zone, they die. In addition, mosses can kill mycorrhiza – the symbiotic fungi that help tree roots absorb nutrients.

Acid enters the picture again at this point. Mosses love acidic conditions– they acidify water passing through them. Once the water reaches a critical acidity, toxic aluminum in the soil becomes soluble and can be taken up by the trees. Working together, mosses and acid rain seem, according to Klinger, to accelerate this natural process of forest death.

Someone out there may be throwing snowballs at us.

Two studies reported in mid-May at the American Geophysical Union meeting in Baltimore, together with studies in Europe and Canada, support a controversial theory proposed two years ago by U/Iowa physicist Louis A. Frank. The theory is that all of the earth's oceans were filled with water from blackened snowballs that fall from space – 100-ton comets of ice coming in at us at the rate of 10 million a year.

Frank studied ultraviolet images taken from 1981 to 1986 by the Dynamics Explorer I satellite and found that the air glow around the earth showed unexplained holes punched through the atmosphere. He concluded the holes could only be made by huge ice balls that vaporize and eventually fall as rain.

One skeptical physicist – Clayne Yeates from the Jet Propulsion Lab in California, calculated that the snowballs would be moving at about 22,000 mph and would break up about 1,000 miles above the earth. Using a powerful space search telescope at the Kitt Peak Observatory in Arizona, Yeates actually captured photo views of the speeding comets approaching earth.

Another doubting Thomas – Thomas Donahue – a space physicist at U/Mich, sought to disprove Frank's theory by measuring the level of hydrogen atoms that would be released by the water vapor in the space about the earth. Ultraviolet data collected by the Voyager 2 spacecraft showed the hydrogen was much denser than expected – enough so to support Frank's theory.