

TECHNOLOGY NOTE**● Guiding Lightning**

By the time you finish reading this sentence, lightning will have flashed more than 500 times around the world. This common phenomenon can have devastating results. Each year in the United States alone, lightning kills almost a hundred people and causes several hundred million dollars in damage. While controlling this awesome outburst of Mother Nature may seem impossible, scientists around the world are searching for ways to reduce the destruction caused by lightning.

Behind the Bolts

Scientists have learned that during a normal lightning strike several events occur. First, electric charges build up at the bottom of a cloud. The cloud then emits a line of negatively charged air particles that zigzags toward the Earth. The attraction between these negatively charged air particles and positively charged particles from objects on the ground forms a *plasma channel*. This channel is the pathway for a lightning bolt. As soon as the plasma channel is complete, BLAM!—between 3 and 20 lightning bolts separated by thousandths of a second travel along it.

A Stroke of Genius

Armed with this information, scientists have begun thinking of ways to redirect these naturally occurring plasma channels. One idea is to use laser beams. In theory, a laser beam directed into a thundercloud can charge the air particles in its path, causing a plasma channel to develop and forcing lightning to strike.

By creating the plasma channels themselves, scientists can, in a way, catch a bolt of lightning before it strikes and direct it to a safe area of the ground. So scientists simply use lasers to direct naturally occurring lightning to strike where they want it to.

A Bright Future?

Laser technology is not without its problems, however. The machines that generate laser beams are large and expensive, and they can themselves be struck by misguided lightning bolts. Also, it is not clear whether creating these plasma channels will be enough to prevent the devastating effects of lightning.

Find Out for Yourself

Use the Internet or an electronic database to find out how rockets have been used in lightning research. Share your findings with the class.