Mapping the Lightning

A new group of satellites called the GOES-R series should help us use information about lightning to warn of dangerous incoming weather. An instrument on the satellites, called the Geostationary Lightning Mapper (GLM), will detect both in-cloud and cloud-to-ground lightning, almost as soon as it happens. These lightning observations will help alert people to dangerous and intensifying storms and may lead to new and better ways to predict and prepare for severe weather!

Rapid air movements cause ice particles to collide. Those collisions strip off electrons, creating a charge. The more air movement, the greater the charge.

Different areas of the cloud become charged because of all those stripped off electrons.

Lightning discharges energy that builds up in the clouds. If there's a big difference in the charges between two areas of a cloud, a sudden electrical current can form.

A sunny day suddenly darkens. Blue skies give way to billowing clouds. Flashes appear and the crackling sound of thunder echoes from the clouds. As you seek shelter, rain begins to fall and you wonder why you don't see any actual bolts of lightning hitting the ground.

Don't be fooled. The crackling sound you hear is actually coming from lightning within the cloud. Although in-cloud lightning goes from one part of the storm cloud to another, it's usually a warning sign that dangerous cloud-to-ground lightning will soon follow.

Lightning researchers have noticed that before many violent storms, in-cloud lightning suddenly increases. This "jump," which will be observed by the GOES-R series of satellites, can help warn of increasingly hazardous weather.