

DOES LIGHTNING COME FROM THE GROUND?

By Brandon Butcher

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Lightning does indeed come up from the ground. Even though we commonly view lightning as 'striking' the ground...the process of lightning is a bit more complex. The internals of a thunderstorm effectively separate electrical charges, with positive and negative charges accumulating in different parts of the cloud. These charges are still attracted to each other, despite being separated. In a thunderstorm, most often it will be the negatively charged ions at the base of a thunderstorm.

The Earth is charged as well, and in response to an increase in charge at the bottom of a thunderstorm cloud, the opposite charge will be climbing up anything it can find to get as close to the charge building in the cloud. In most cases, this would be large amounts of positive ions finding their way through the crowd, up sky scrapers and radio tures, sailboat masts (and even people) to get as close to the cloud as possible. This is a feedback process, which mutually encourages charges to increase in concentration toward a central location in both the cloud and on the ground.

Finally, the air itself can no longer insulate the electricity and breaks down ("ionizes" -- happens at a very high electric charge level)...The electric charge thus begins to travel in the air beneath the base of the cloud toward the positive ions on the ground, but only in about 50 meter 'steps', because it eventually encounters more air that has yet to be ionized. Since the electricity is in such a high quantity by this point when it gets to this lower air, it takes virtually no time at all to push this air beyond the breaking point and ionizes it. Each successive 'step' is a new voyage for the electric charge, and often creates crazy patterns in the sky of travel toward their end. Each time, lightning is attempting to be lazy; to get to the opposite charge at the ground as quickly and as easily as possible, though it often doesn't end up that way by it's stepped appearance. However, eventually (all happening in a fraction of a second), the lightning bolt makes it down toward the ground.

Now, the charges on the ground have been building as well, itching to make their move. When the electric charge from the cloud (normally negative ions) make it within 100 yards or so from the ground, all the positive ions that have been growing for a long time, think it's 'Go Time', and launch up from the ground toward the path illuminated by the ionized air. When the connection is made, there is a violent release of

pent-up electricity (that can match or even exceed the temperature of the Sun), and in a split second, multiple flashes and 'return strokes' go back and forth up that established channel (sometimes you can see it flicker), until the charges have been released enough for that ionized air-path to once again fall below the threshold for electrification. One other thing, when the air column along this path has been ionized, there's a loud sonic boom caused by its quick collapse, which is often loud: Thunder.