

Comment on "A Review of Thunderstorm Electrification Processes"

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A central problem in atmospheric electricity is that of determining the relative importance of the various processes that cause the water substance particles comprising the cloud to become electrified and produce lightning. The first portion of this valuable review by Saunders (1993) considers various theories, some based on particle collisions and others on ion attachment.

Later, ion attachment is ignored in the section that deals with particle charging processes. The ions introduced into the cloud by radioactivity, cosmic rays, point discharge, lightning, and the Wilson conduction current, inevitably become attached to cloud particles. Therefore, ion attachment is arguably one of the more important processes causing cloud particles to become electrified. It deserves to be included in any discussion of particle charging mechanisms.

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REFERENCES

Saunders, C. P. R., 1993: A review of thunderstorm electrification processes. *J. Appl. Meteor.*, **32**, 642-655.