Storm charge structure

- Dipole/tripole
  - Vertically separated, oppositely charged regions
  - Screening layer (layer of opposite polarity on upper cloud boundary)

Observations of Storm Electrification

Figure 11.10: Schematic diagram illustrating ground flash charge source levels and development in Florida and New Mexico summer thunderstorms and in Japanese winter storms. (From Krebs et al., 1983. Original artwork prepared by Mara Brenek. Copyright by A. Deepak Publishing.)
Chamber, 80 cm in diameter and 150 cm high.

Drops formed by cooling air with controlled CCN. Also could inject larger drops (50–100 microns) using a spray nozzle device.

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<table>
<thead>
<tr>
<th>Temperature</th>
<th>E field measured with Field Mill</th>
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<tbody>
<tr>
<td>Chamber, 80 cm in diameter and 150 cm high.</td>
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<td></td>
</tr>
</tbody>
</table>
Rotating vane field mill used to measure E field associated with charge separation.

Takahashi worked in Gauss units.

Charge is in esu, not Coulomb (Statcoulomb).

\[ \nabla \cdot \mathbf{E} = -4\pi p \]
\[ \nabla \cdot \mathbf{E} = \rho / \varepsilon_0 \]

Thermoelectric effect

Double or Faraday layer