Lecture 16

Chapters 19, 20
November 10, 2006
AOS 100-2
Professor Tripoli
Hail

Courtesy NOAA/NSSL photo library
The diagram shows the number of hailstones collected in eight hailshafts, categorized by equivalent diameter and shape (spheres and cones). The distribution is visualized with bars, where the height of each bar represents the number of hailstones collected within a specific diameter range.

Courtesy of the American Meteorological Society
Formation of Hail
Wet vs Dry Drowth

Courtesy of Charles Knight, National Center for Atmospheric Research
http://www.spc.noaa.gov/
HORIZONTALLY POLARIZED BEAM
Blue = Electric Field
Red = Magnetic Field

VERTICALLY POLARIZED BEAM
Blue = Electric Field
Red = Magnetic Field

RAINDROPS

Electric field for Horizontal polarization

Electric field for Vertical polarization

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A

B

C

Cloud
Drizzle
Light Rain
Moderate Rain
Heavy Rain
Hail
Rain Hail
Grapelike Rain
Grapelike Small Hail
Grapelike Large Hail
Ice Crystals
Supercooled Liquid
Warms Dripping
Insects
Balls
Bubbles
Ground Clutter

Courtesy of J. Vivekanandan and the American Meteorological Society
7 inches in Diameter!
18.75 inches in circumference!
Lightning
Charge in a Thunderstorm

Main accumulation of positive charge

Screening layer along cloud boundary

Main accumulation of negative charge

Screening layer along cloud boundary

Image charge on ground

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Interface charging

Induction charging

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Decay of sound (thunder) away from lightning

Sound waves refract upward.

That sounded like a bang!

That sounded like a rumble!

Nice Flash, but no thunder?