

TMARTSCIENCE YOUTUBE

METEOROLOGY

12 PRECIPITATION



Precipitation

Types and Formation

Precipitation on ground

- If *Dew Point* is above 0°C



Precipitation on ground

- If *Dew Point* below 0°C



Precipitation on ground



- Frost is NOT frozen dew...

Precipitation in the Air

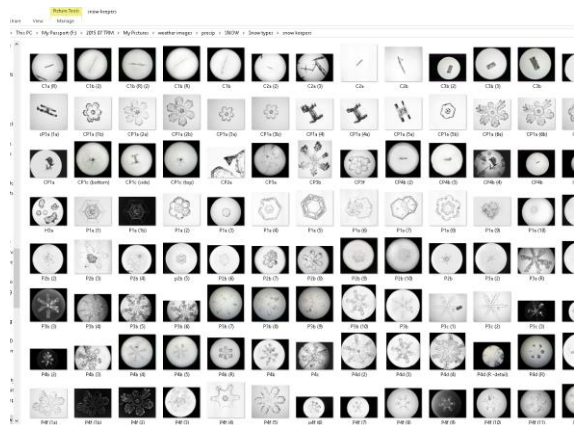
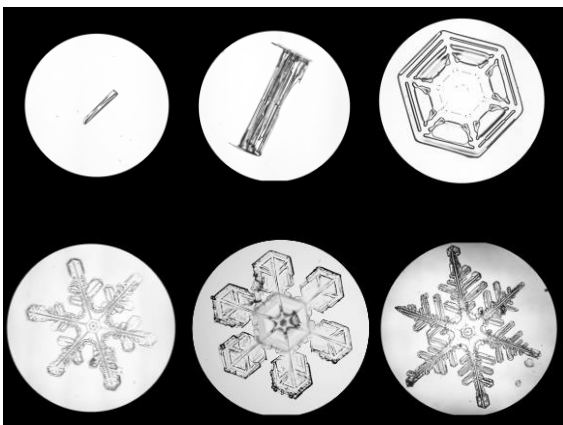
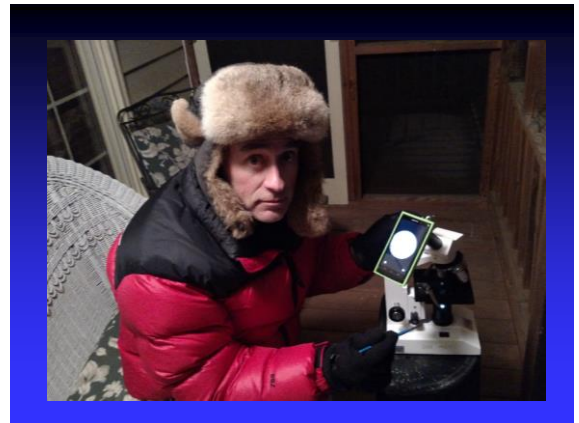
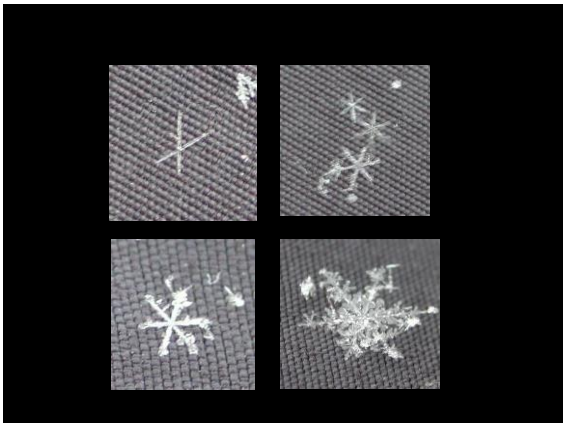
- Snow —most common form of solid precipitation





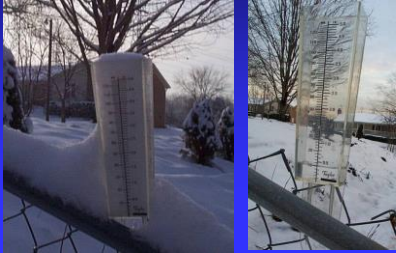
Precipitation in the Air

- Snow – the most common form of precipitation
 - ◆ Formed through *deposition*
 - ◆ Size of flake - temperature
 - ◆ flake size 1 mm to 2 cm



Snow

- ◆ Snow to water ratio approximately 10:1



Formation of Rain



Formation of Rain

◆ Snow

1. Cloud droplets rise above freezing level (super-cooled water forms)
2. Ice crystals form more easily than water droplets, super-cooled water evaporates, then deposits and forms snow

Rain

3. When snow falls through warmer air it melts and falls as rain

Formation of Rain

- ◆ *Coalescence* (Warm locations)
 - ◆ small drops coalesce (collect) to larger ones



Precipitation – Rain

- Condensation forms *Cloud droplets*
 - ◆ Droplets <0.02 mm (1/50 mm)
 - ◆ stay suspended due to **LIFT**
- Liquid Precipitation
 - ◆ *Drizzle* drops < 0.5mm
 - ◆ *Rain* drops 0.5mm to 5mm

Less frequent precipitation types



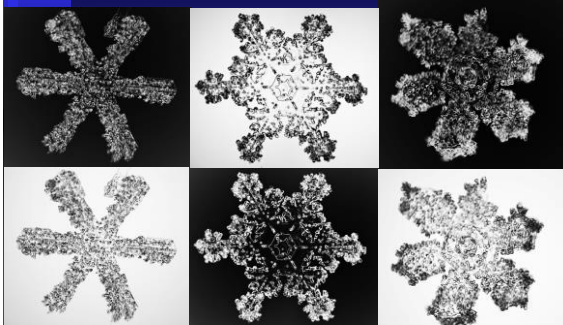
Rime Ice

- Super-cooled water in clouds freezes on surfaces.

WIND →



Rimed Snow Crystals



Other Liquid Precipitation

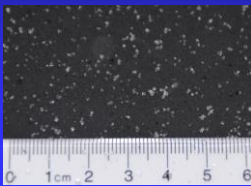
- Virga
 - ◆ Rain evaporates before reaching the ground



7/2009
Utah

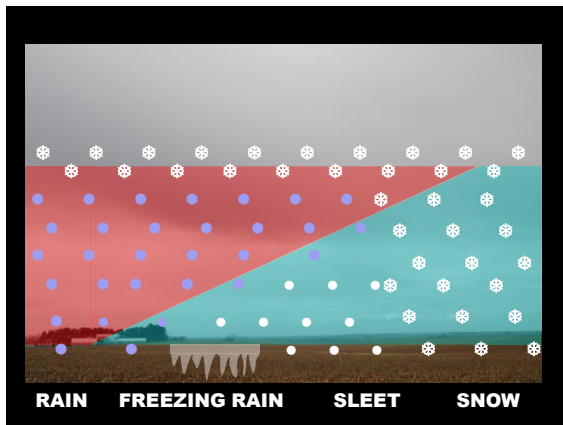
Other Frozen Precipitation

- Sleet
 - ◆ Rain falls through cold air ($< 0^{\circ}\text{C}$) freezes before reaching the ground



Other Frozen Precipitation



- Freezing rain (glaze ice)
 - ◆ Rain hits freezing surface.



Other Frozen Precipitation

- Hail



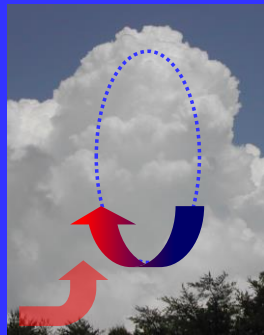

 A SEVERE THUNDERSTORM WARNING REMAINS IN EFFECT UNTIL 515 PM EDT FOR NORTHERN RANDOLPH, GUILFORD AND DAVIDSON COUNTIES. AT 417 PM EDT, TRAINED WEATHER SPOTTERS REPORTED HAIL UP TO 1.5 INCHES IN DIAMETER ACROSS NORTHERN GUILFORD COUNTY. ANOTHER SEVERE THUNDERSTORM WAS LOCATED NEAR ARCHAULE. BOTH STORMS WERE DRIFTING EAST AT 10 MPH.
 
 9 June 2011

Hail

- Ice formed in convection currents in cumulonimbus clouds.



- ◆ A new layer of ice is added each cycle



Citizen Science - CoCoRaHS

