Measuring Winter Precipitation
Before The First Flakes

Snowboards:
• Use at least two
• Site in an open area on level ground and away from obstructions (e.g. buildings, trees, etc.)

Rain Gauge(s):
• Remove inner measuring tube & funnel to increase catchment accuracy
What to Measure

• **Snowfall**
  – Maximum amount of new snow that has fallen since the previous observation

• **Snow Depth**
  – The total depth of ALL snow, including sleet, on the ground at 1200 UTC

• **Snowfall Water Content**
  – The liquid water content of new snow in the rain gauge since the previous observation (1200 or 0000 UTC)
When to Measure

• Snowfall
  – At least every 6 hours, *more frequently if it may melt (e.g. hourly)*
  – Always immediately after the snow ends

• Snow Depth
  – Once per day at 1200 UTC

• Snowfall Water Content
  – Once per day at 1200 UTC (8-inch gauge) or 0000 UTC (4-inch gauge)
Snowfall Timeline

Friday
7 AM
Snow Begins
10 AM
Snow Ends
2 PM

Saturday
7 AM
Measure as close to 2 PM as possible!

2.8 inches
Melting & settling occur
1.6 inches

Measure as close to 2 PM as possible!
Snowfall

- Use first snowboard for measuring snowfall
- Clean off snowboard after each measurement
- If blowing or drifting have occurred, take an average of several measurements
- Measure to the nearest tenth of an inch

Measure snow on grassy surfaces as a last resort!
**Special Situation**

- **Friday 6 AM**: 1.5 inches
- **Saturday 6 AM**: 2.6 inches

**24-hr Snowfall?**

1.5 inches + 2.6 inches = 4.1 inches
Snow Depth

- Use second snowboard for measuring depth
- Measure at 1200 UTC
- If blowing or drifting have occurred, take an average of several measurements
- Measure to the nearest whole inch
  - 0.4 inches ➔ T
  - 0.5 inches ➔ 1”
Average snow on covered and bare areas. Although the average is 0.5”, it rounds up to 1”

If more than half the ground is bare, report trace
Snowfall Water Content

- Liquid equivalent of the snow
- Melt the snow in gauge or take snow core
- Measure every 24 hours (1200 or 0000 UTC)
- Measure to the nearest hundredth of an inch
Melt Snow in Rain Gauge

Snow on rim?

Tap on rim of gauge with fly swatter

Clear snow away from rim. Only count what falls into the gauge
Melt Snow in Rain Gauge

1. Snow in outer cylinder
2. Add warm water to inner cylinder.
3. Measure how much you add to nearest hundredth of an inch!
4. Pour warm water into outer cylinder and allow snow to fully melt.
Carefully pour melted snow sample back into the inner tube.

Measure to the nearest hundredth of an inch.
Calculations

All liquid melted contents 0.95”
- Water added to inner tube 0.83”

Snow Liquid Equivalent 0.12”

Snow to Liquid Ratio (snow/liquid)
1” of snow with 0.12” liquid

$\text{SLR} = \frac{1}{0.12} = 8:1$ ratio
Measuring Ice Accretion

• Break off a small twig or tree branch that has ice on it

• Measure to the nearest tenth of an inch
  – If ice is different thicknesses on both sides, take an average of the two
  – Ice accretion less than 0.10” should be reported as a trace
<table>
<thead>
<tr>
<th>General Ruler Measurement</th>
<th>Ice Accretion Conversion</th>
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<tr>
<td>1/16</td>
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</tr>
<tr>
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<tr>
<td>15/16</td>
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</tbody>
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Average Ice Accretion
5/16” = 0.3”
Measuring Freezing Rain

Melt and measure the moisture accumulated *inside* of the rain gauge in exactly the same way as snowfall water content
Public Service Products

• Climate
  – Only Nashville will report any snowfall or snow depth on the CLIs
  – Clarksville and Crossville will be set to missing
Public Service Products

- Don’t hoard information!

- Winter precipitation amounts
  - Be proactive! Ask for reports on social media and pick up the phone to call EMs, law enforcement, etc.
  - Enter reports into ECLAIRS for LSRs
    - Any freezing rain or freezing drizzle
    - ≥0.25” of sleet
    - ≥0.50” of snow
    - ≥1” snow depth
    - Any ice storm
Public Service Products

• Generate summary LSR and/or PNS through ECLAIRS regularly during winter events
  – Always send well before the big newscasts start!

• Graphics for web and social media
  – Collect reports to generate snowfall maps
  – GIS snowfall map?