



Emerging Technologies Snow and Precipitation

by
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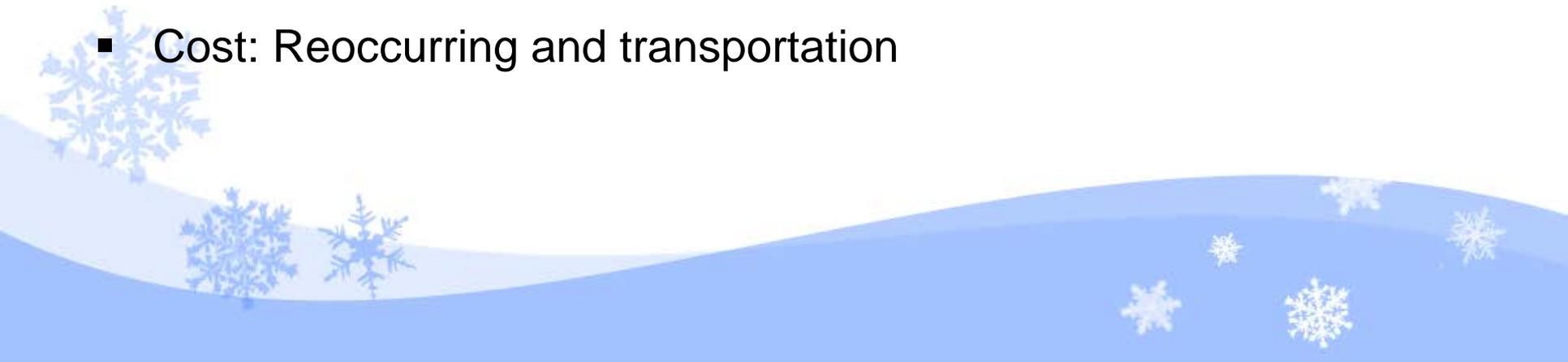
Outline

- Fluid – Access and Awareness
- Fluid - Measurements Inaccuracies
- Fluid-less Technologies
 - Snow
 - Precipitation
- Transitioning



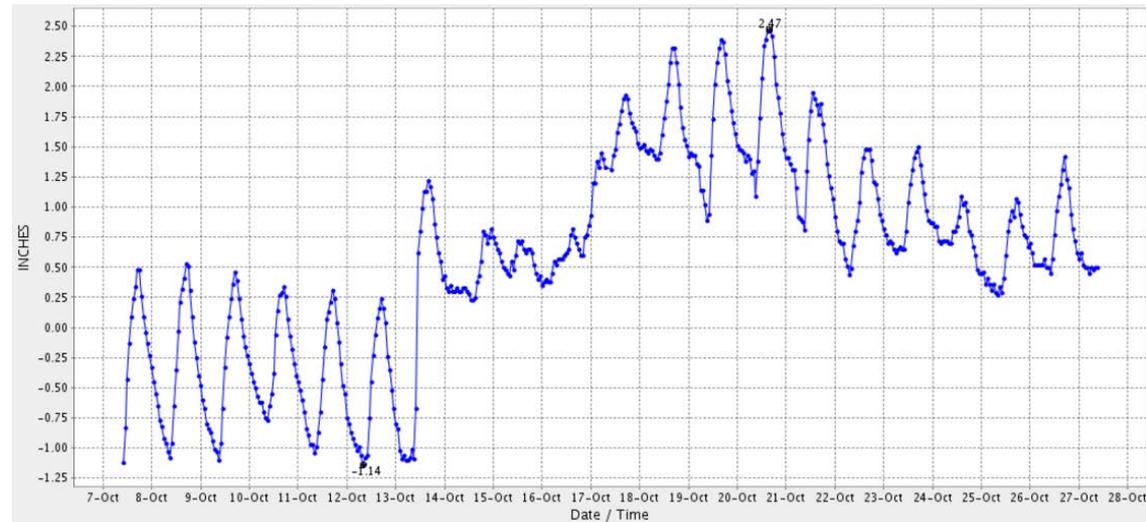
Anti-Freeze Complications

- Fluid Pillow Vulnerability
- Wilderness Access and Transportation (hazmat)
- Awareness
- Plant and Animal Toxicity
- Cost: Reoccurring and transportation



Fluid Measurements Inaccuracies

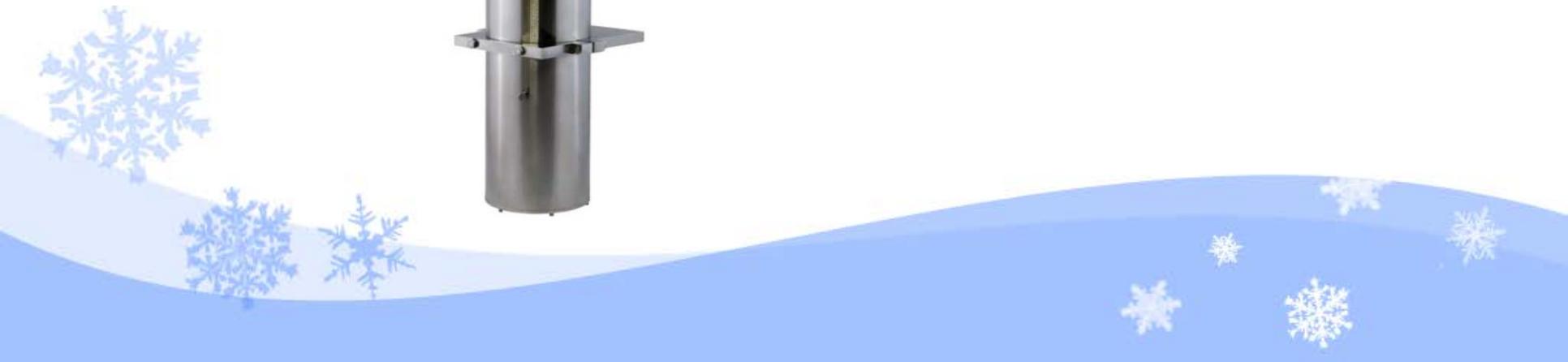
- Diurnal of Fluid
- Fluid Density
 - 9% 50/50 - .91
 - 3% 83/17 - 1.03
 - Added Precip
- Over-reading



Fluid-less Technologies

Snow

- Snow Scale (Pro/Con)
- Gamma



Fluid-less Technologies

Precipitation

- Heated Tipping Buckets
 - Benefits: Accuracy, low maintenance, fluid-less
 - Cons: Power and elevation limitations (site specific)
- Radar
 - Benefits: No calibration, Fluid-less
 - Cons: Unproven technology, power



Transitioning

The Steps: 5-10 Year Plan

- Step 1: Replacing fluid dependent devices with pure electronic sensors
- Step 2: Looking into other snow measuring devices that are non-ground based (gamma).
- Step 3: Continue to keep up and research the latest snow and precipitation measuring equipment



Questions?

