

## **3D Thermodynamic and Liquid Sensing**

- Example observations during cloud seeding operations
- Three dimensional supercooled liquid mapping
- Demonstrated accuracy during heavy snowfall using off-zenith methods



270

deg

225

deg

## MP-3048A 817m

## Boise Radiosonde 871m

Observation directions for Idaho Power cloud seeding operations



Temperature, humidity and liquid profiles at 270° azimuth, 15° elevation



Liquid profiles at 315°, 270°, 225° azimuth, 15° elevation



Radiometer (red) and radiosonde (blue) profiles; zenith (left) is degraded during heavy snow and off-zenith retrieval (right) is accurate