# A Rare Ice Storm in the Intermountain Western U.S.:
## Storm Morphology

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### Event Overview
- A winter storm on 09 January 2017 caused an unprecedented amount of freezing rain to fall across several valley locations in western Colorado and eastern Utah.
- An atmospheric river pushed precipitable water (PW) values to over 200% of the normal climatological mean at Grand Junction, Colorado for early January.
- Model performance on the depth of a warm layer aloft and cold boundary layer conditions was poor in the immediate 12 hours preceding the freezing rain event.
- Low-level boundary layer conditions became favorable for freezing precipitation after clearing skies and recent snowfall enhanced temperature inversions.

### Strength of Atmospheric River

- [Image: Cross-section from Cortez northeast to Craig showing a deepening layer of warm-air aloft near 700 hPa on 09 Jan 2017]

### Numerical Temperature Guidance

- [Image: Observed Temperatures]
- **Temperature Profile Analysis**
  - Entire temperature profile below 0°C
  - 1209 m elevated warm layer
  - Max temperature of 4.6°F aloft
  - Using Top Down Method (east of Rockies)
  - Temperature supports freezing rain as most likely meteor type
- **Significant Mountain Snowfall**
  - In addition to pockets of freezing rain, heavy snow was observed at several mountain locations across the area from 08 to 10 Jan 2017
  - Generally 30 to 61 cm (1 to 2 feet) of snow fell; 122 cm (4 feet) of new snow was recorded near Crested Butte, Colorado.