



A New Ground-based Snow-level Radar

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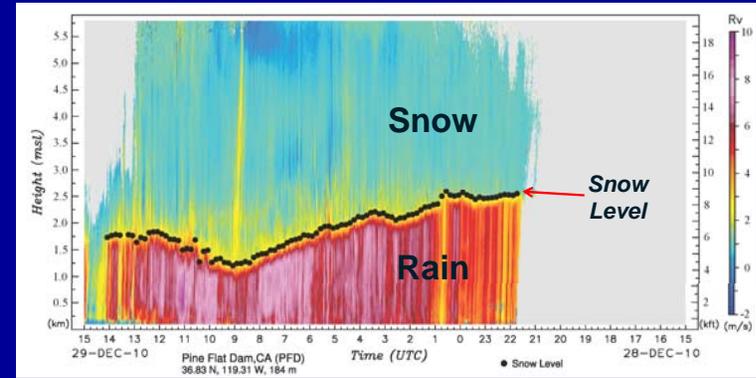


Plymouth State UNIVERSITY



What is a Snow-level Radar?

- A Snow-level Radar (SLR) detects the level in the atmosphere where snow changes into rain or where frozen precipitation melts. In the warm season, the radar can also detect the depth of the convective atmospheric boundary layer.
- The snow level is determined by a patented, automated algorithm that detects the radar bright band that results from the melting process.
- The SLR uses Frequency Modulated-Continuous Wave (FM-CW) technology that greatly reduces cost and power consumption compared to traditional radars.

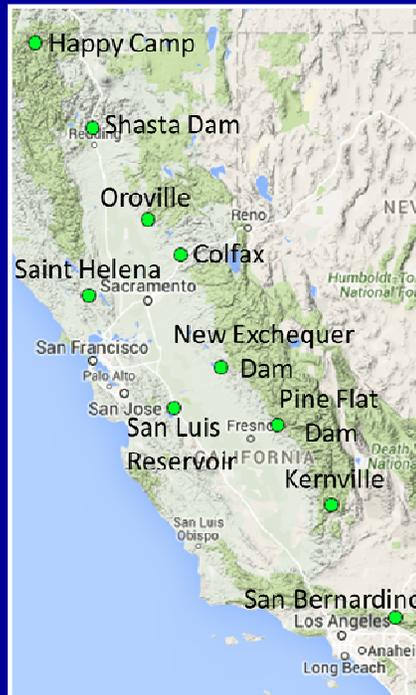


HOW DOES THE SLR HELP?

- The snow level is an important variable in mountain hydrology. The SLR can help determine the areal extent of a basin that will receive liquid precipitation, which ultimately helps calculate runoff and the potential for flooding.
- Detecting a melting layer aloft when the surface temperature is below freezing will indicate when sleet/freezing rain is occurring.
- Snow-level data can help prioritize which roads may need to be plowed or treated with deicing material.

HOW DOES SLR OBSERVE SNOW LEVELS?

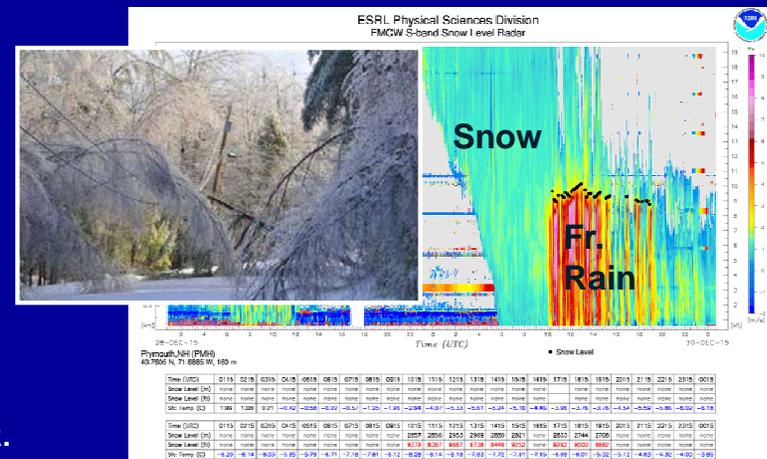
- The SLR produces a Doppler velocity spectrum every 30 seconds. The spectrum is analyzed to determine the radar reflectivity, Doppler vertical velocity, and spectral width every 40 meters from the surface to 10,000 meters above ground.
- Changes in the Doppler vertical velocity, as shown in the two data images to the right, help to identify locations of falling snowflakes, the snow level, and falling rain.



Network of ten SLRs deployed in major watersheds across California. Sponsored by CA-DWR.

WHY IS THE SLR IN PLYMOUTH, NEW HAMPSHIRE?

- SLR instrumentation has been deployed at multiple locations in California to aid with flood and water resource concerns but has not been extensively tested in the eastern U.S.
- Plymouth State U. (PSU) provides an ideal location for deploying and testing the SLR. The location will allow for study of frozen and mixed precipitation events.
- PSU students and faculty will get hands-on experience with SLR instrumentation and data.



Find more information and real-time data at <http://www.esrl.noaa.gov/psd/data/obs/datadisplay/>
<http://www.esrl.noaa.gov/psd/technology/snow-level-radar/>