Northwestern States to Plains Winter Storm
November 13th-15th, 2014
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Meteorological Overview:

An early season winter storm impacted locations from the Pacific Northwest to the central and northern plains from 13-15 November, 2014 (Fig. 1). A few days prior to the event, an anomalously cold arctic air mass originating in Canada set the stage for the storm as it nosed southward and entrenched itself well into the Rockies and northwestern U.S.. A 500 hPa shortwave trough initiated precipitation within the arctic air mass while it dropped southeastward over the Northwest and crossed through the Intermountain West and northern Rockies (Fig. 2). Widespread accumulating snows were reported from Oregon to Wyoming and southward into portions of the central Great Basin and central Rockies (Fig. 3). Once the leading edge of the shortwave energy ejected east of the Rockies, a developing surface low and trailing cold front became the focus for precipitation, bringing early season snows to portions of the Great Plains. The highest totals were over the Oregon Cascades, Sawtooth Range in Idaho, Absaroka and Teton Ranges in Wyoming, and the Sawatch Range in the Colorado Rockies, where additional lift from orographic effects produced 1 to 2 feet of snow along the favored slopes of the terrain (Fig. 3). Low-level moist flow off the Pacific Ocean helped fuel the precipitation, but also caused significant ice accumulations across Oregon early in the event as the the warm Pacific air overrode the arctic air mass in place (Table 1).

Impacts:

The early season winter storm caused widespread school delays and cancelations, road closures, and traffic incidents across Oregon, the Intermountain West, central Great Basin, and northern to central Rockies. As snow spread out into the Great Plains, several cities recorded their earliest snowfall on record. Morning commuters across the Portland metropolitan area battled slick sidewalks and streets from freezing rain early in the event. Also, power outages during the storm came right on the heels of widespread power outages from high winds during an arctic outbreak earlier in the week.

Images:

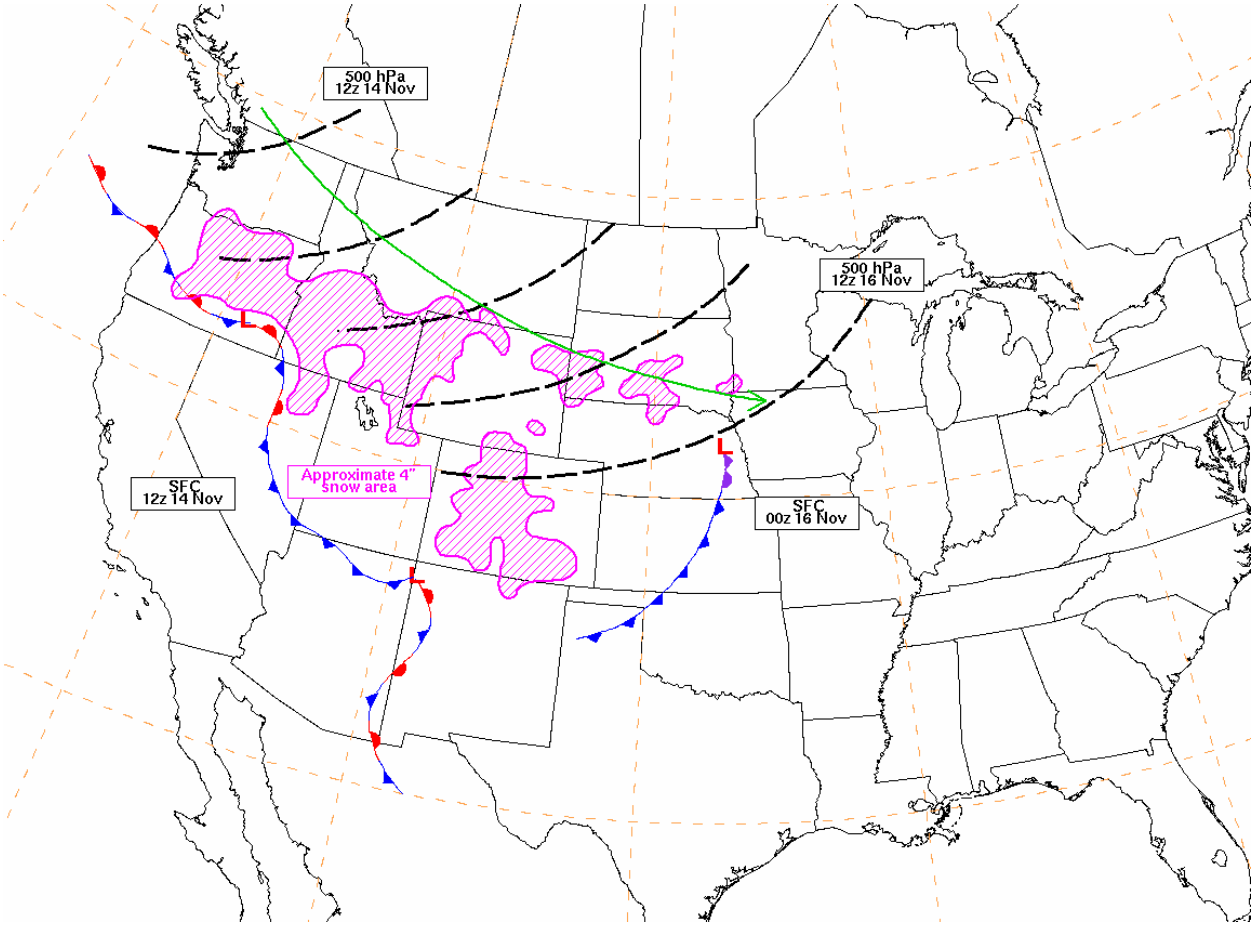

Figure 1: Summary of the Northwestern States to Plains winter storm (13-15 November, 2014) depicting the 500 hPa shortwave track every 12 hours (dashed black line and green arrow), approximate area of greater than 4 inches of snow (magenta), and select surface analysis during the event (12 UTC 14 November, 2014 and 00 UTC 16 November, 2014).

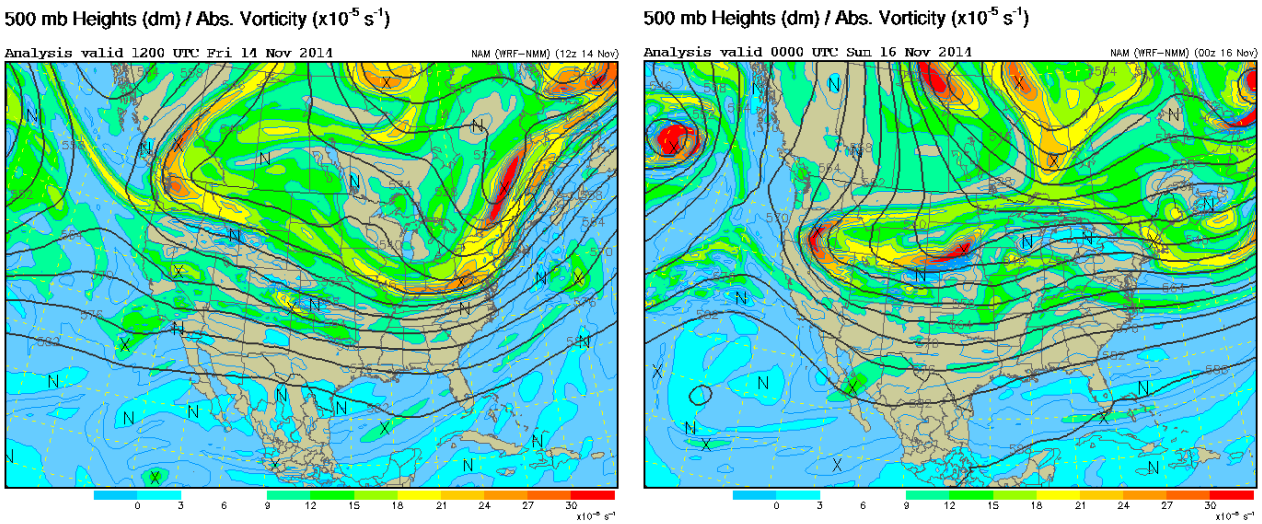

Figure 2: 500 hPa heights (dm) and absolute vorticity from (a) 12 UTC 14 November, 2014 and (b) 00 UTC 16 November, 2014 *(image courtesy of UCAR)*.

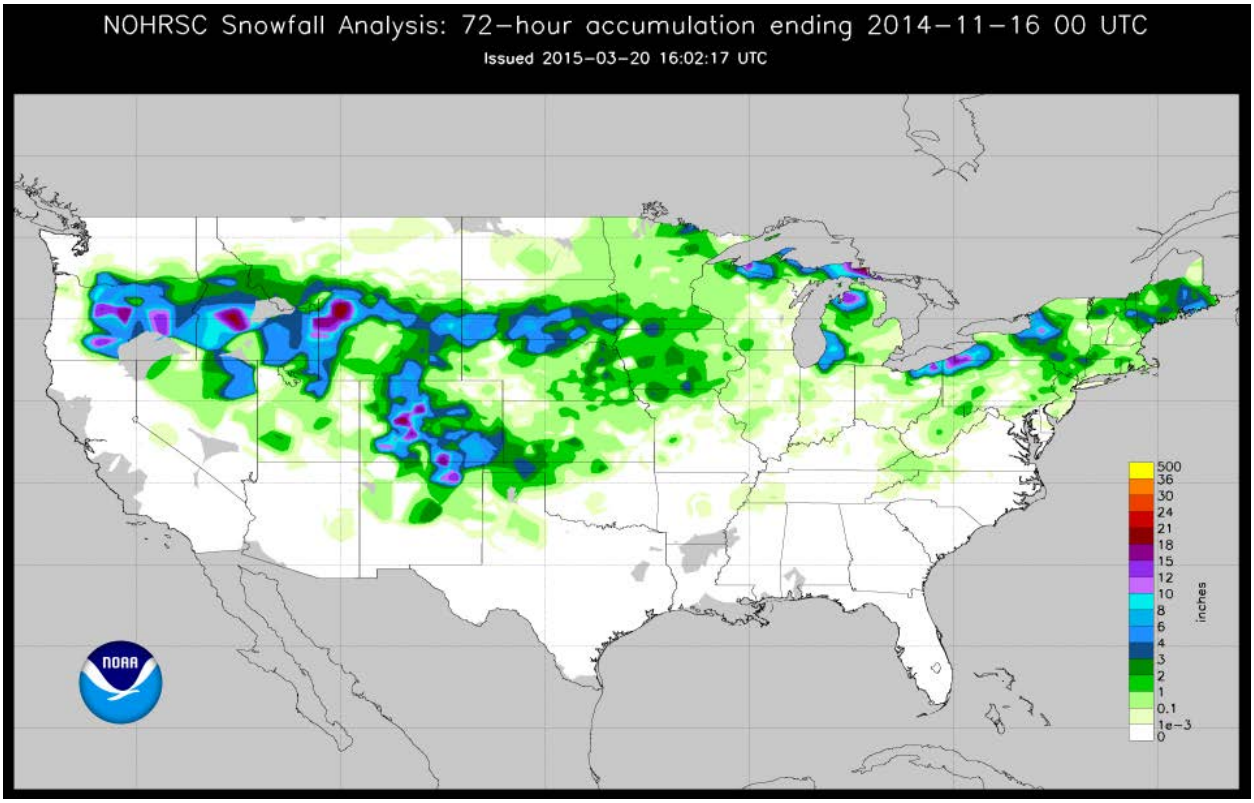

Figure 3: Snowfall analysis for 72 hours preceding 00 UTC 16 November, 2014 *(image provided by NOHRSC)*.

Oregon Freezing Rain Reports	
City	**Freezing Rain (inches)**
Bald Mountain	2.00
Eugene 5 S	0.50
Dallas	0.40
Summit 1 NW	0.40
Blodgett	0.38
Gresham	0.25

Table 1: Select freezing rain reports from the event *(observations courtesy of WPC)*.