



**WESTERN REGION TECHNICAL ATTACHMENT  
NO. 98-42  
DECEMBER 22, 1998**

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**UTILIZING GOES-10 HIGH DENSITY WINDS  
IN THE FORECASTING PROCESS**

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**Introduction**

An essential part of the forecast process is the ability to interpret the accuracy of model forecast data. GOES-10 high density winds can be an important tool in this process. Interpretation of the data can point out subtle or major differences in current conditions compared to model forecasts. Proper identification of the differences can lead the forecaster to adjust model forecasts, resulting in much improved forecasts in the short and long term. In addition, GOES-10 high density winds can act as a training tool, allowing the forecaster to identify different weather phenomenon as they occur or develop.

This Technical Attachment will document a case where the GOES-10 high density winds were utilized in the operational forecast process. The Eta was the model of choice based on comparison with the satellite data, but as shown, even the Eta had problems with this event. The GOES-10 high density winds pointed out differences in the current conditions compared to the model forecast leading to significant changes in the operational forecast.

**October 27-28, 1998 Event**

On October 27, 1998, the 1800 UTC Water Vapor imagery indicated a closed low over central Nevada (Fig. 1). The 27/1200 UTC Eta 6 hour forecast (valid 1800 UTC) indicated a 70 knot jet west of the low in central Nevada (Fig. 2). The 100-400 mb GOES-10 high density winds indicated only 30 knots in the same area (Fig. 1). Additionally, the strength of the jet max along the Utah/Colorado border depicted by the Eta model was not evident in the GOES-10 high density winds. This was an indication to the forecaster that the Eta model did not have a good handle on this system.

On October 28, 1998, the 1200 UTC Water Vapor imagery indicated a closed low over northeast Colorado (Fig. 3). The 28/1200 UTC Eta initialization indicated 50-70 knot winds stretching from northwest Nebraska through central Montana (Fig. 4). The 100-400 mb GOES-10 high density winds only indicated 30 - 50 knot winds in this area (Fig. 3). This was a further indication to the forecaster that the Eta model did not have a good handle on this system.

Comparing the GOES-10 high density winds to the Eta model forecasts and initialization, the forecaster determined that the upper low would not eject as fast as the Eta model forecast. The Eta QPF forecast was 0.20 inches during the 48-hour period ending on the morning of October 29, 1998 (Fig. 5). Based on the forecaster expectation of the slower movement of the system, the public forecast called for a longer period and a higher probability of rain. In fact, Billings received nearly double the Eta QPF forecast.

## **Conclusion**

This case illustrates the importance of utilizing GOES-10 high density wind data in the forecasting process. In this case, the GOES-10 high density winds indicated weaker upper-level winds associated with the system, thereby delaying its progression. Therefore, based on this information, the forecast that was issued called for a longer period and a higher probability of rain.

This case shows the importance of utilizing GOES-10 high density winds in the forecast process. Without the use of the GOES-10 high density winds, the forecaster might not have correctly forecasted the slower movement of the system. In addition, the GOES-10 high density winds can be used as a training tool aiding the forecaster in verifying the model initialization and forecasts.

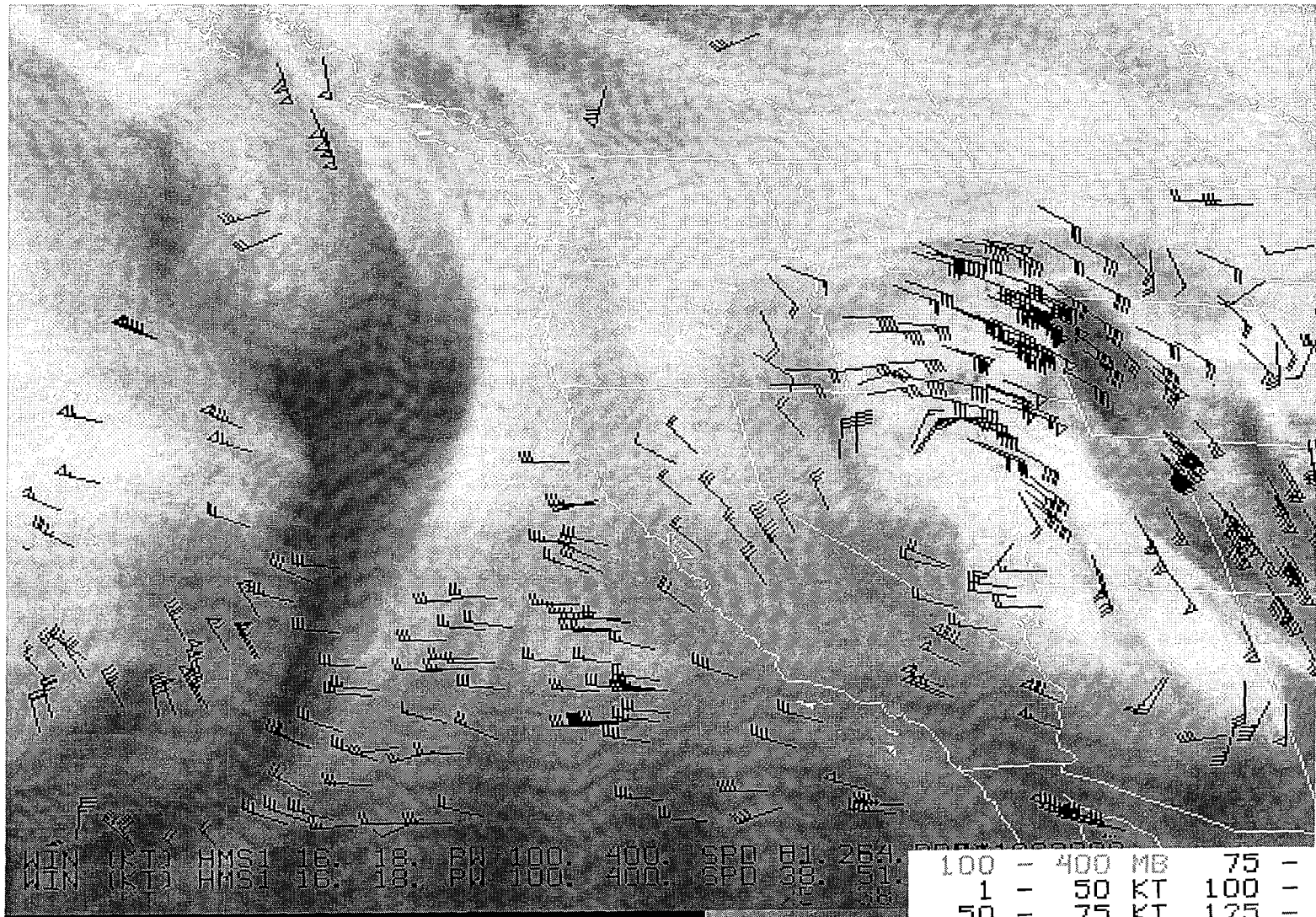


Figure 1. GOES-10 high density wind plots from 100-400 mb, overlaid on 16 km water vapor imagery for 1800 UTC 27 October 1998.



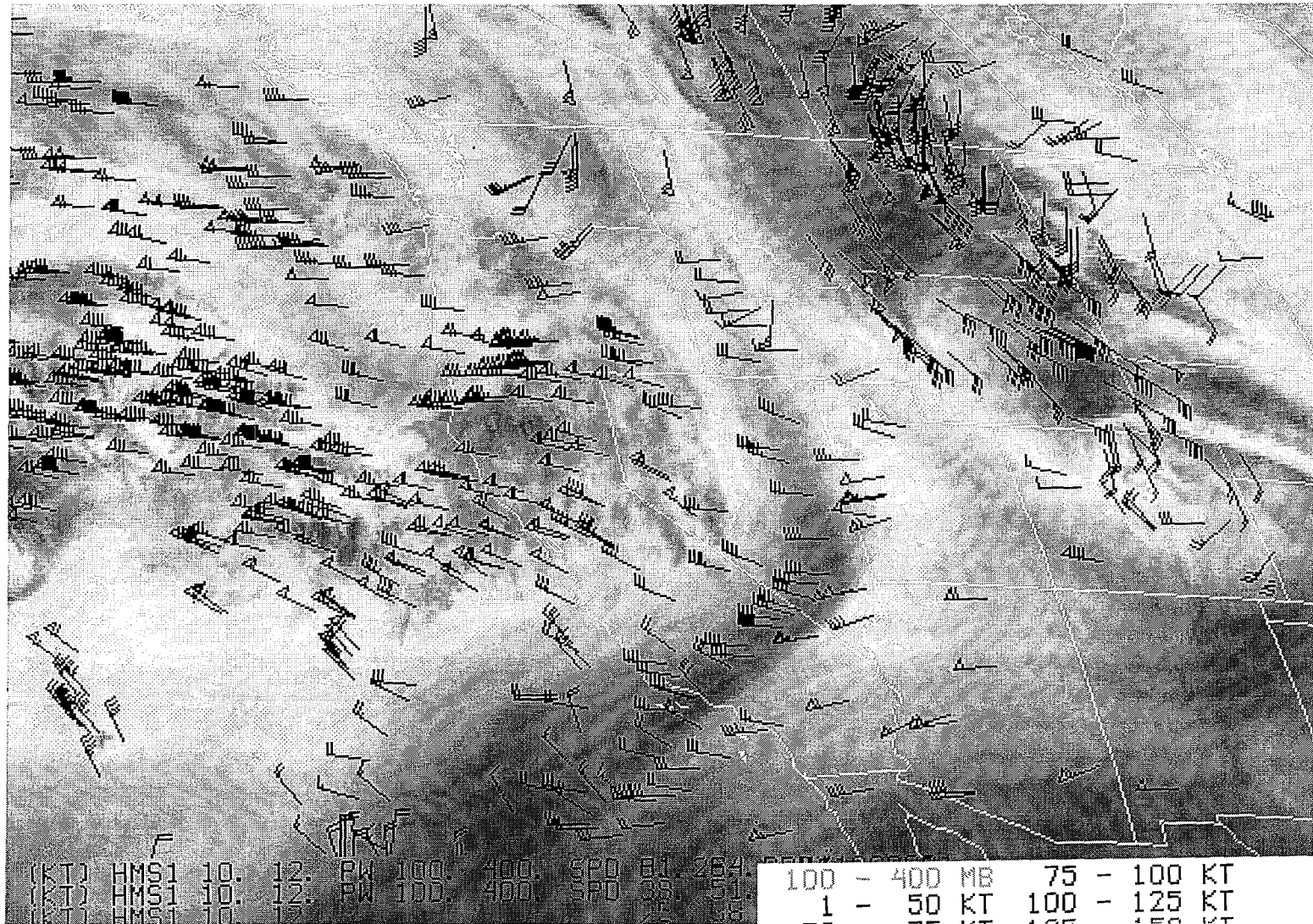
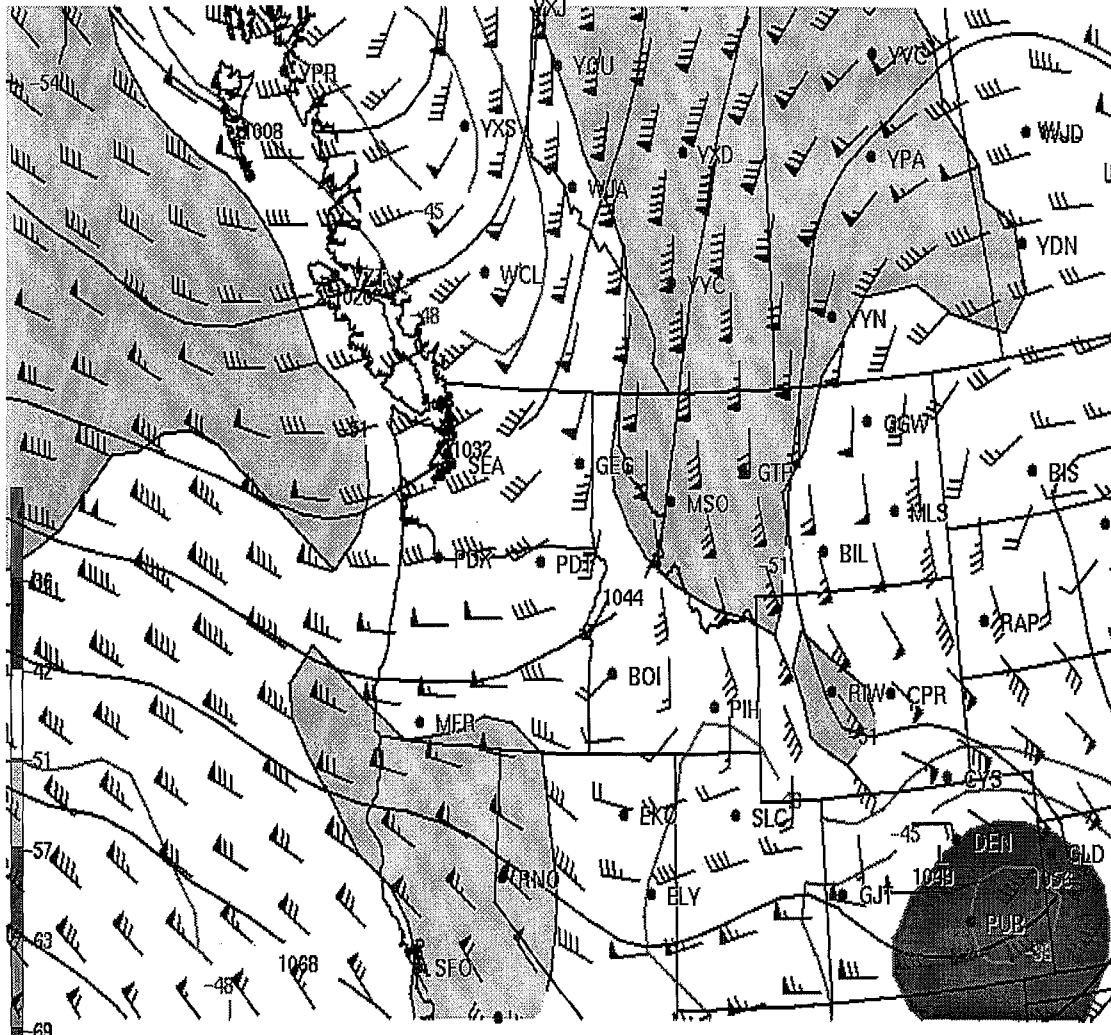


Figure 3. GOES-10 high density wind plots from 100-400 mb, overlaid on 16 km water vapor imagery for 1200 UTC 28 October 1998.



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Figure 4. Initialization of Eta valid 1200 UTC 28 October 1998 of 250 mb heights and winds. Shading every 20 kts beginning with 70 kts.

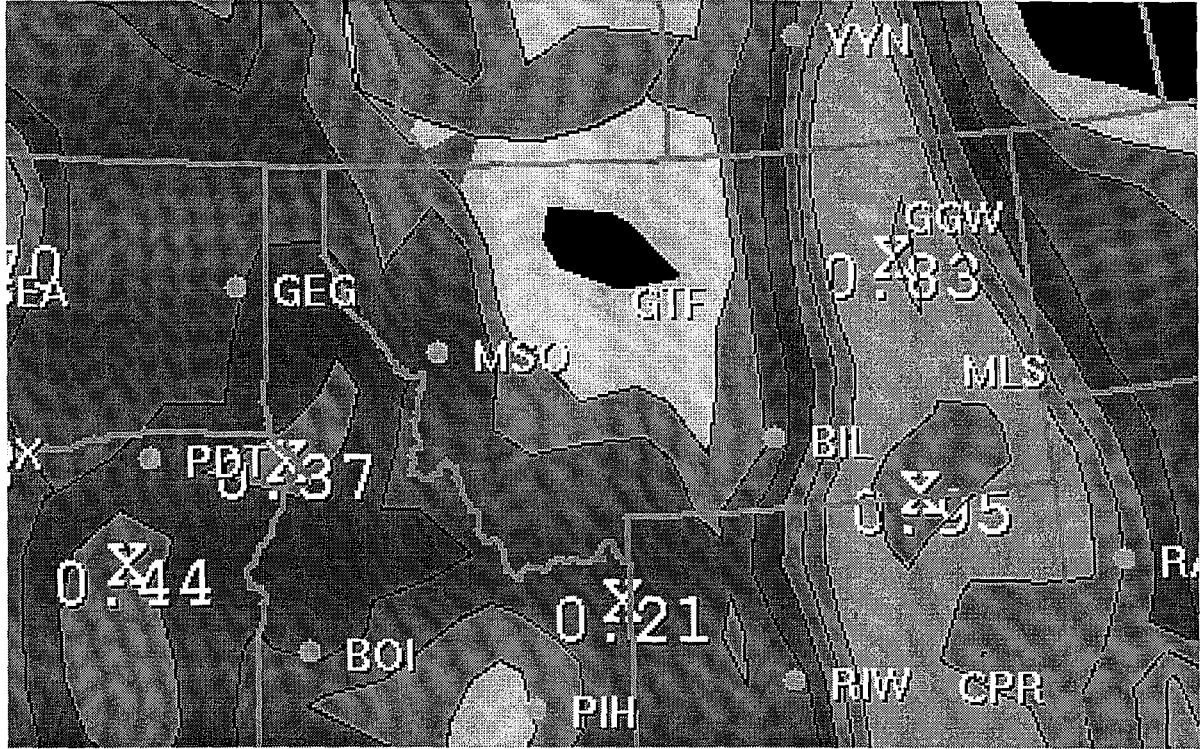


Figure 5. 48 hour Eta QPF forecast valid 1200 UTC 29 October 1998. Shading every .10", black is no QPF.