

The use of GOES sounder data to detect an area of potential thunderstorm formation on July 31, 1997

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GOES sounder data can be quite useful in detecting areas that have potential for convective development. In this case the GOES-9 sounder LI and PW images are used, as well as GOES-9 sounding retrievals.

[Figures 1-3](#) show a loop of the GOES-9 precipitable water product images (to see individual images, click here for [Figure 1](#), [2](#), [3](#)). This shows a moisture tongue advancing up the lower Colorado River valley just north of Yuma, AZ. PW values reach nearly 1 inch by 1424Z.

[Figures 4-6](#) show a loop of the GOES-9 lifted index product images (to see individual images, click here for [Figure 4](#), [5](#), [6](#)). These images indicate a rather rapid increase in instability. At 1224Z the maximum LI is about -1, while by 1424Z the LI has decreased to below -3. Plots of GOES sounding derived parameters show similar results (these can be found [on the WR homepage](#)).

[Figures 7-9](#) show a loop of the GOES-9 sounder derived CAPE (to see individual images, click here for [Figure 7](#), [8](#), [9](#)). CAPE values are above 500 J/kg in this region during this time (numbers in graphic are scaled by 100).

[Figures 10-12](#) show a loop of the GOES-9 sounder derived LI (to see individual images, click here for [Figure 10](#), [11](#), [12](#)). These images show LI in the -3 to -6 range in the Lower Colorado River valley north of Yuma, AZ.

[Figures 13-15](#) show a loop of the GOES-9 sounder derived SKEWTs from YUM (to see individual SKEWTs, click here for [Figure 13](#), [14](#), [15](#)). It is evident that the GOES sounder data is picking up on mid-level moisture that the ETA did not expect. The instability is also greater than predicted by the ETA.

[Figures 16-28](#) show 1 km VIS images centered on YUM (Yuma, AZ) with lightning data overlaid (to see individual images, click here for [Figure 16](#), [17](#), [18](#), [19](#), [20](#), [21](#), [22](#), [23](#), [24](#), [25](#), [26](#), [27](#), [28](#)). Lightning was first detected at 1330Z. Thunderstorm activity continued throughout the period to about 16Z as indicated by the lightning data.

This example shows the utility of the GOES-sounder data that is available via the [WR homepage](#).

Figure 1.

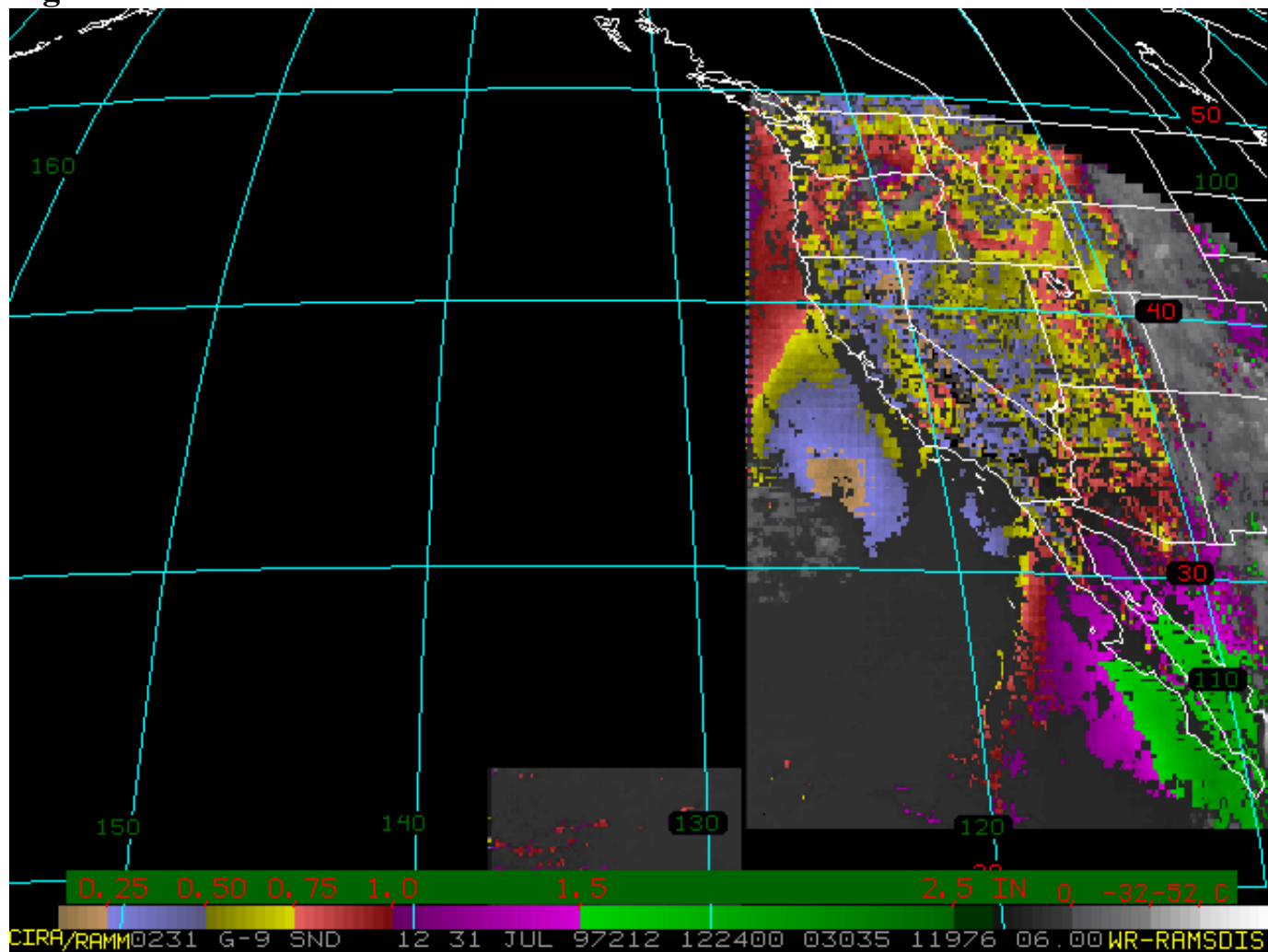


Figure 2.

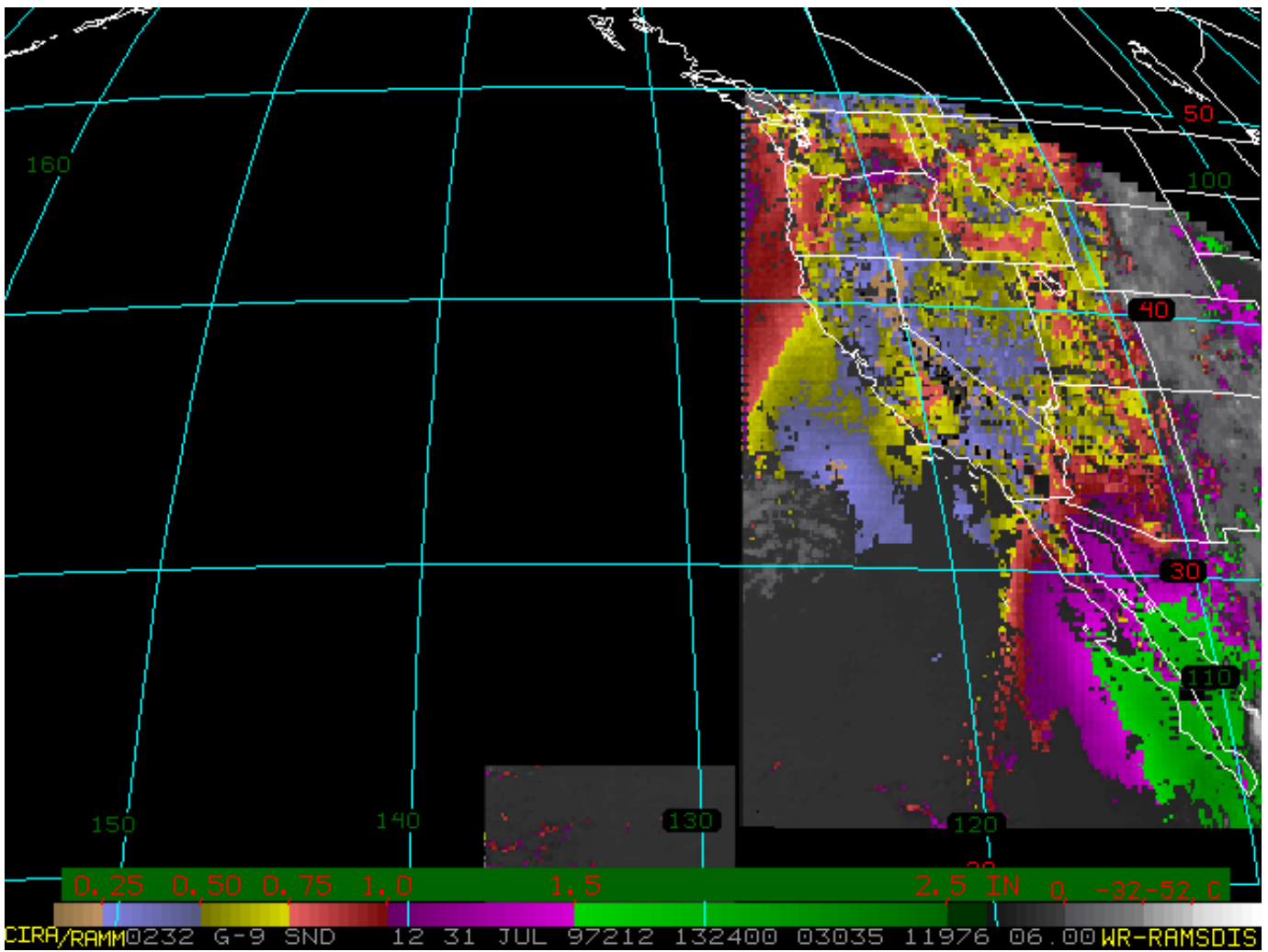


Figure 3.

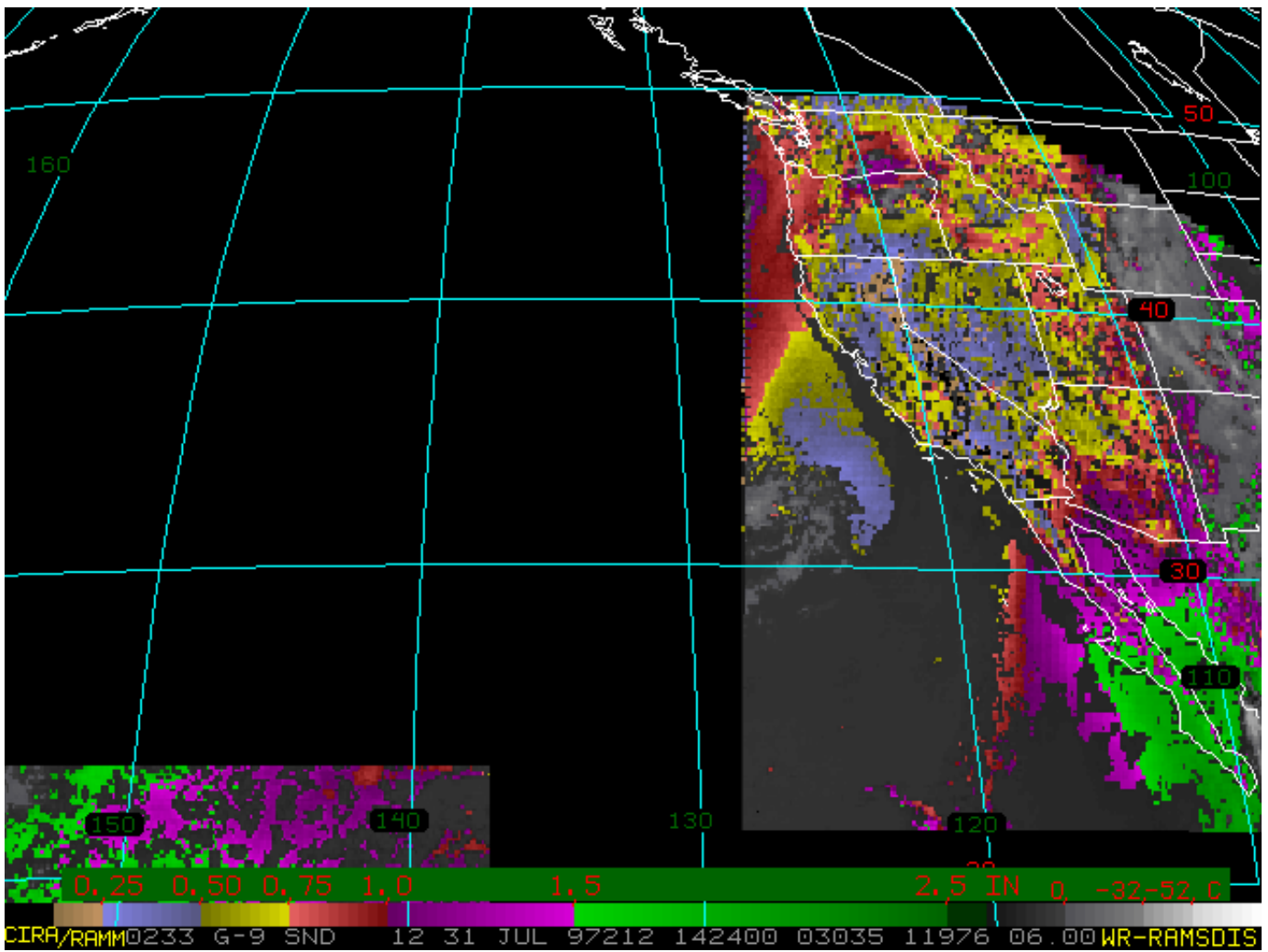


Figure 4.

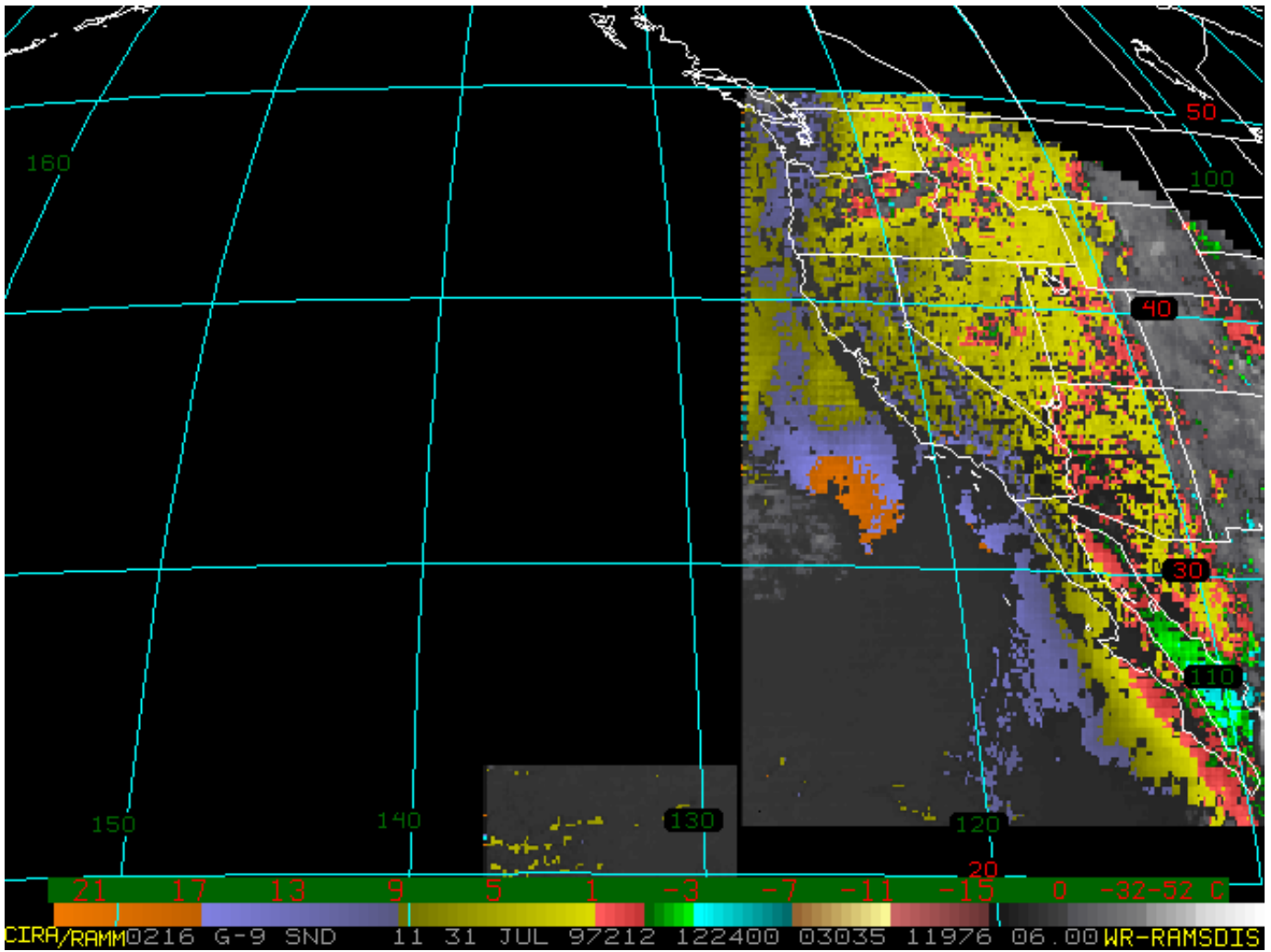


Figure 5.

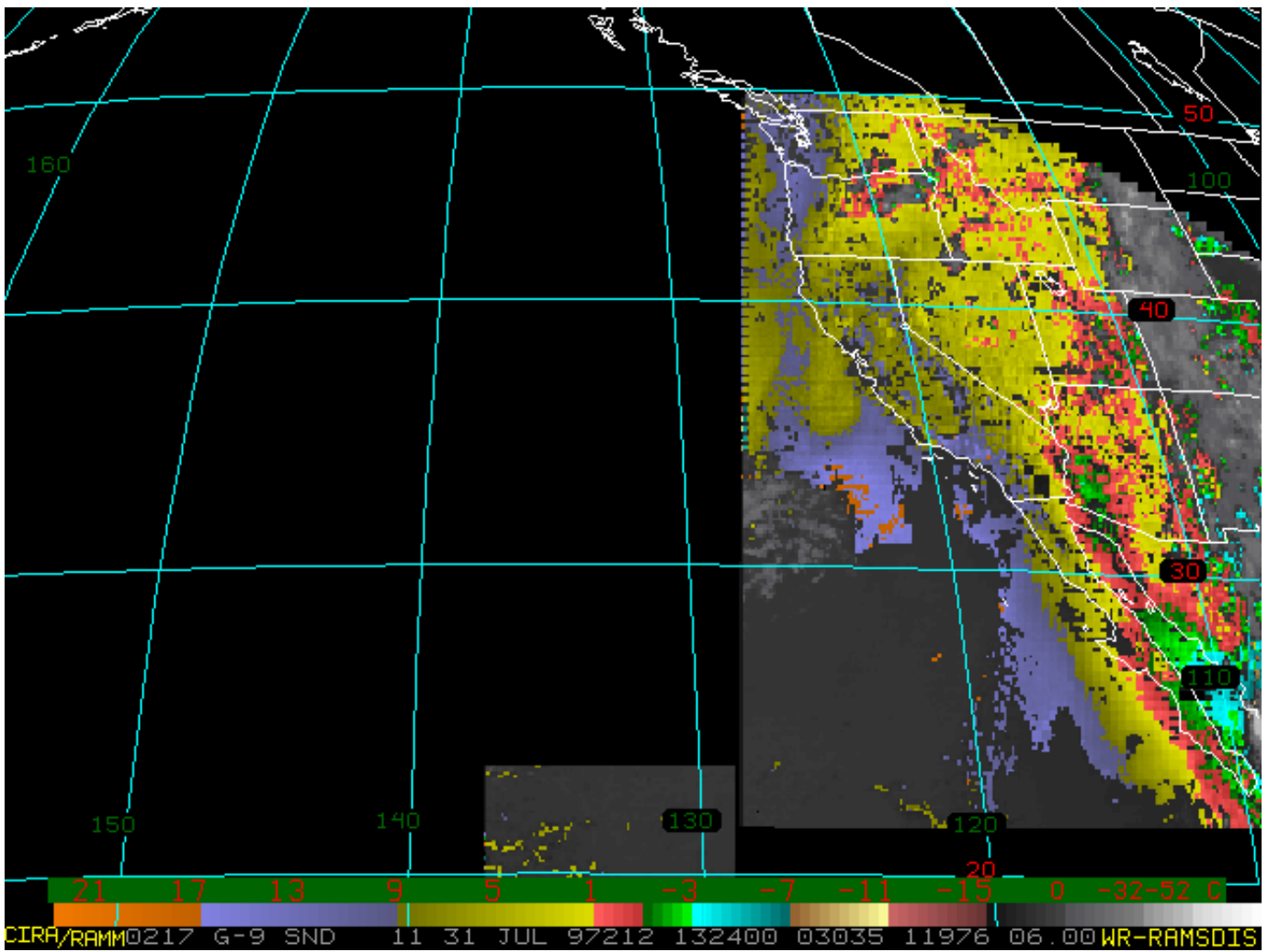


Figure 6.

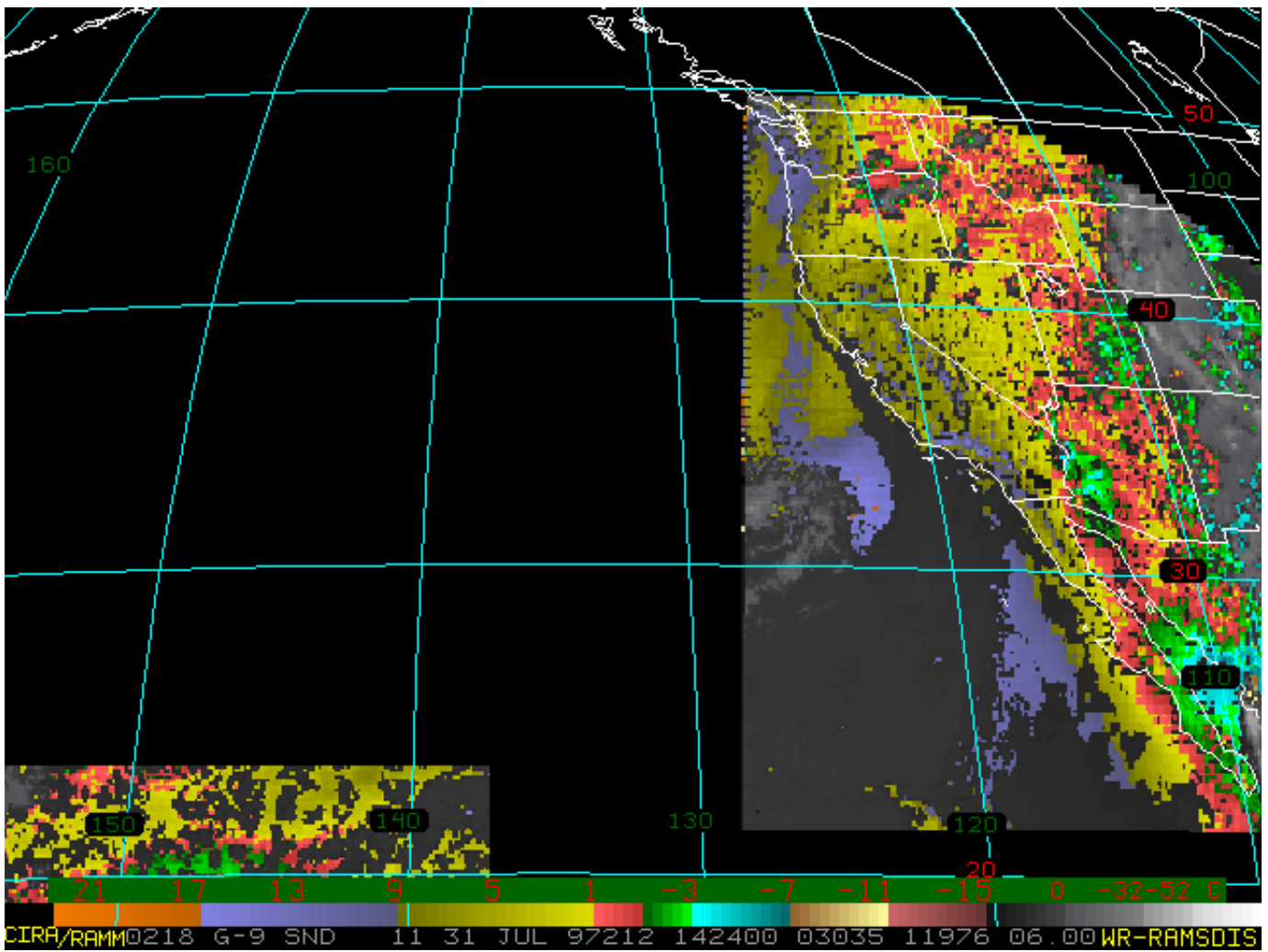


Figure 7.

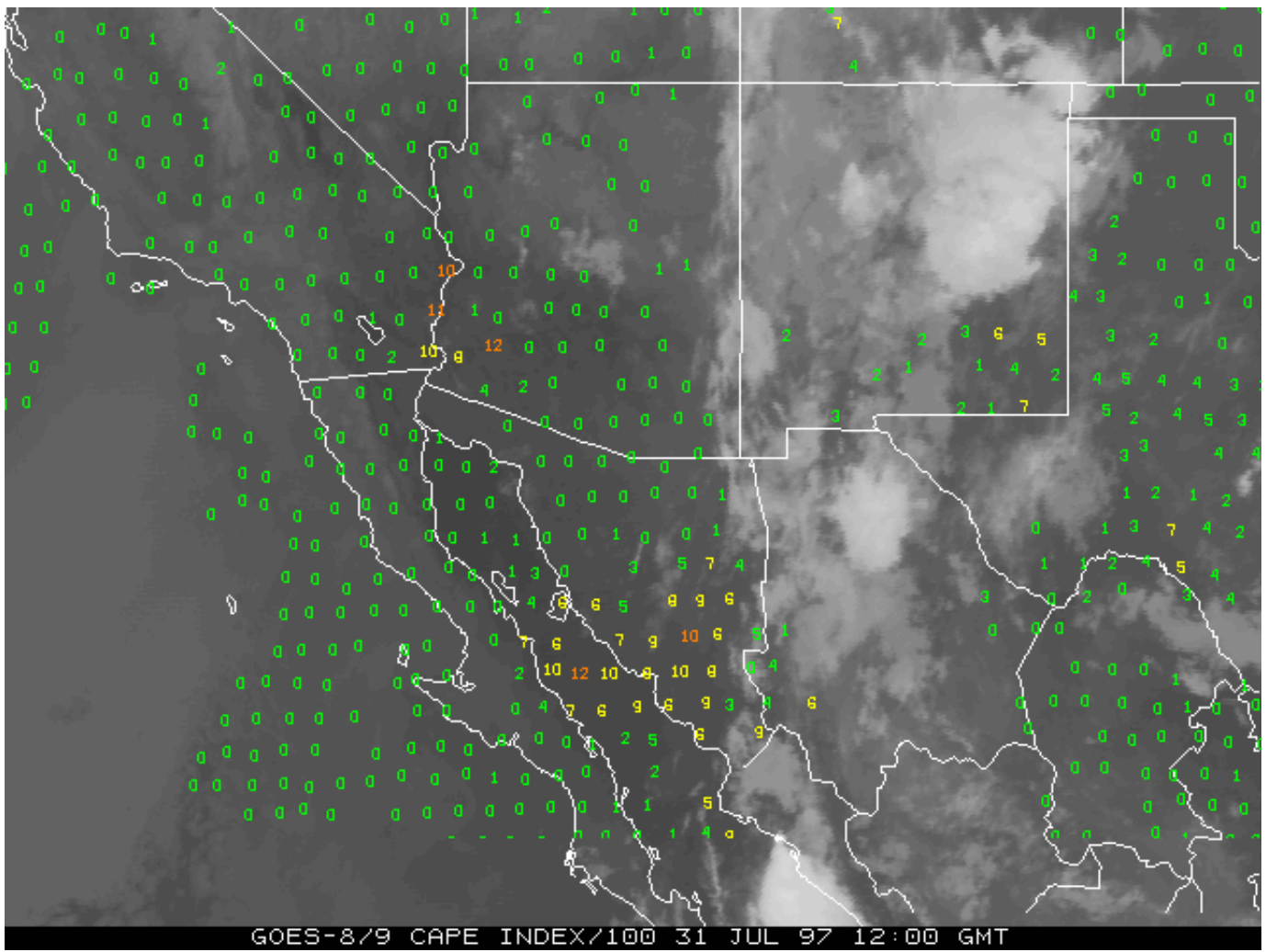


Figure 8.

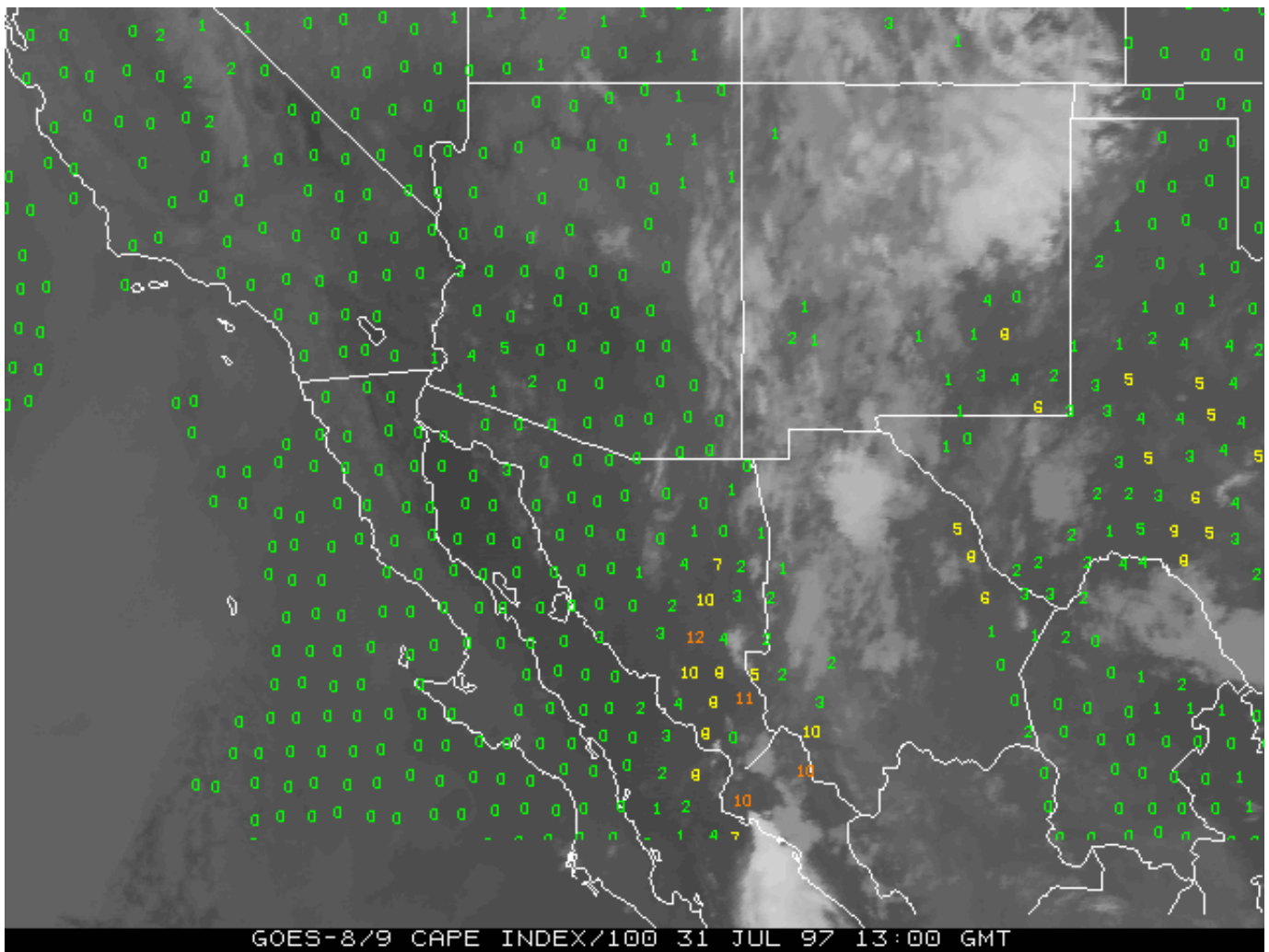


Figure 9.

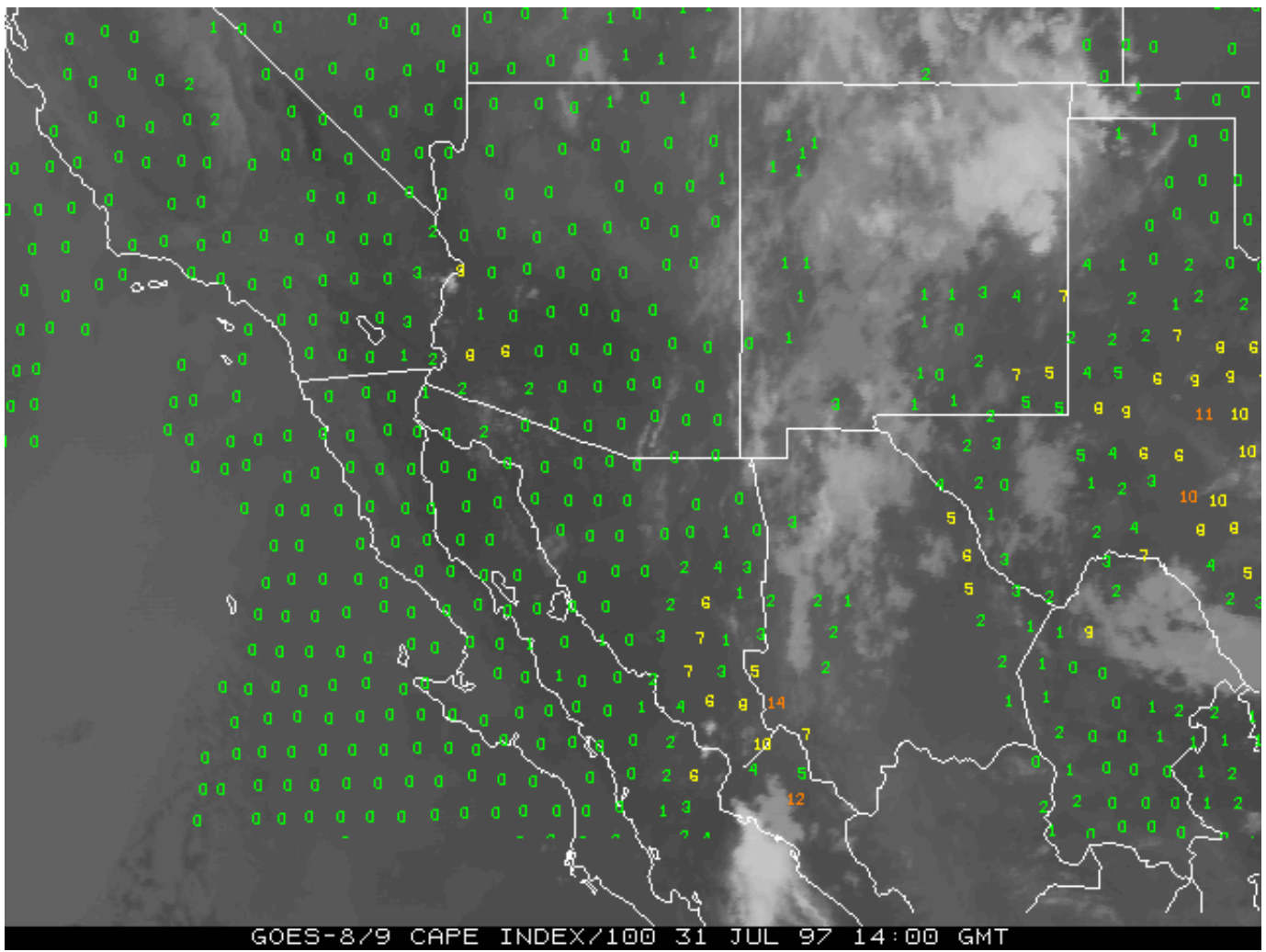


Figure 10.

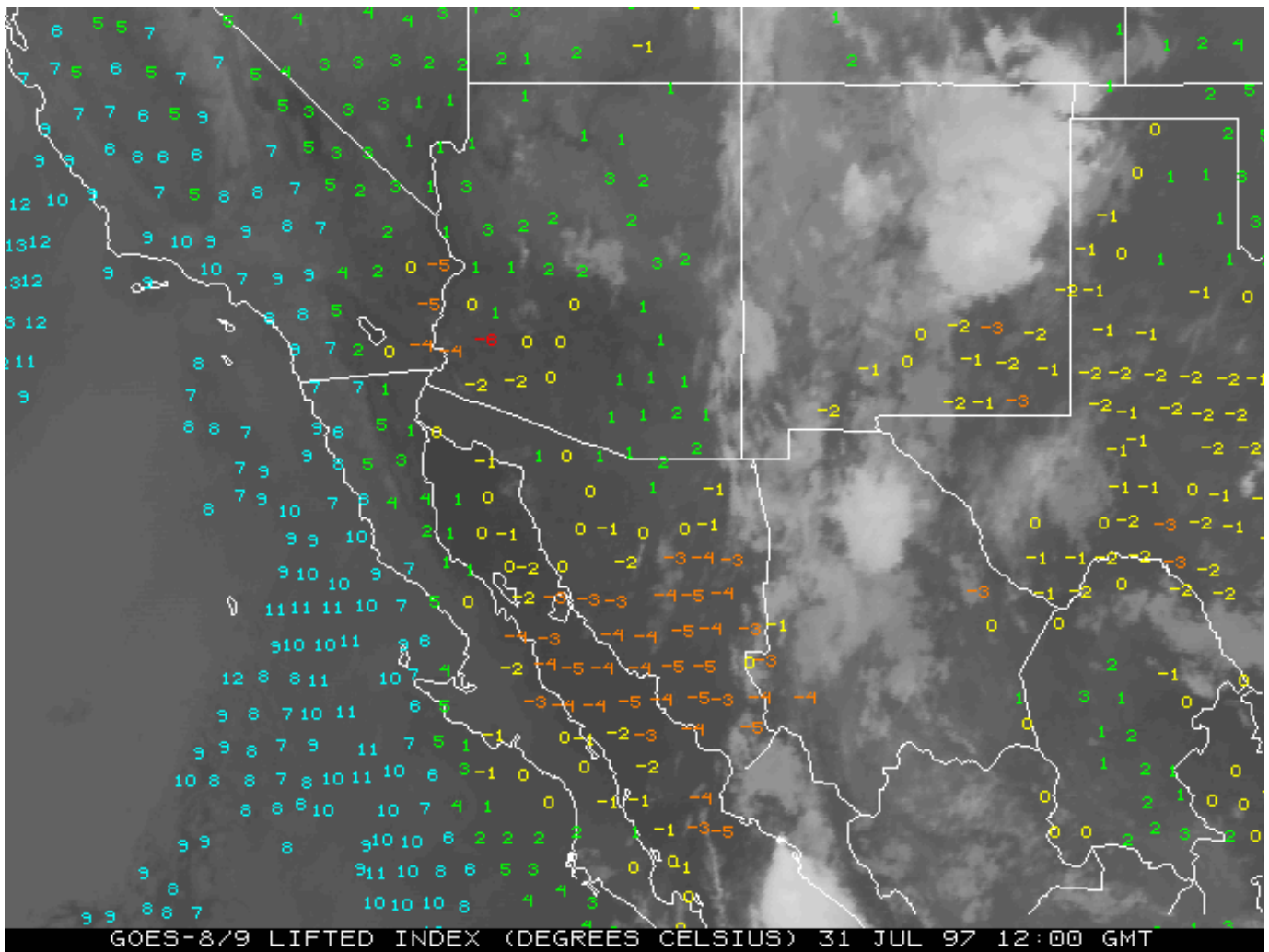


Figure 11.

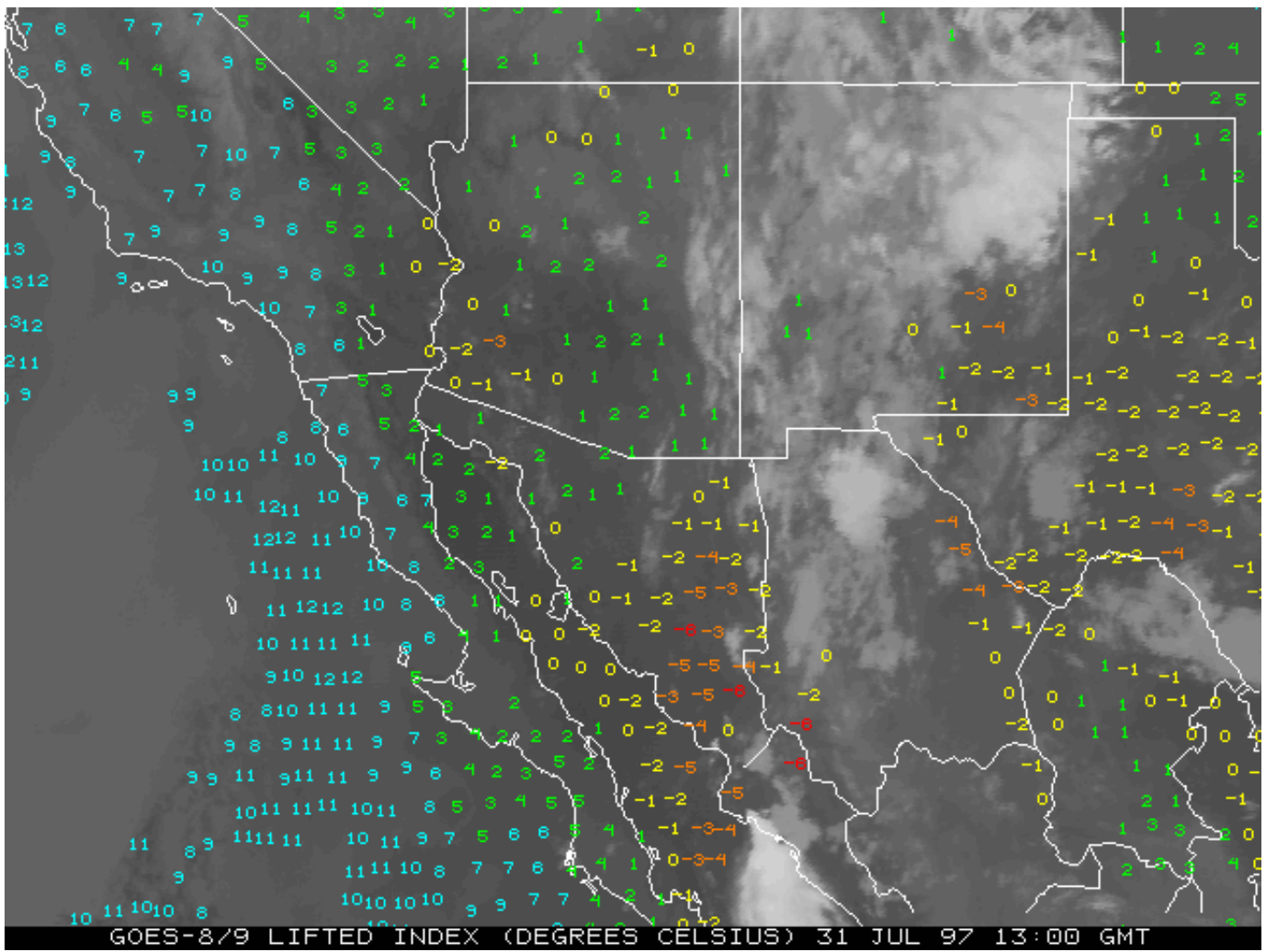


Figure 12.

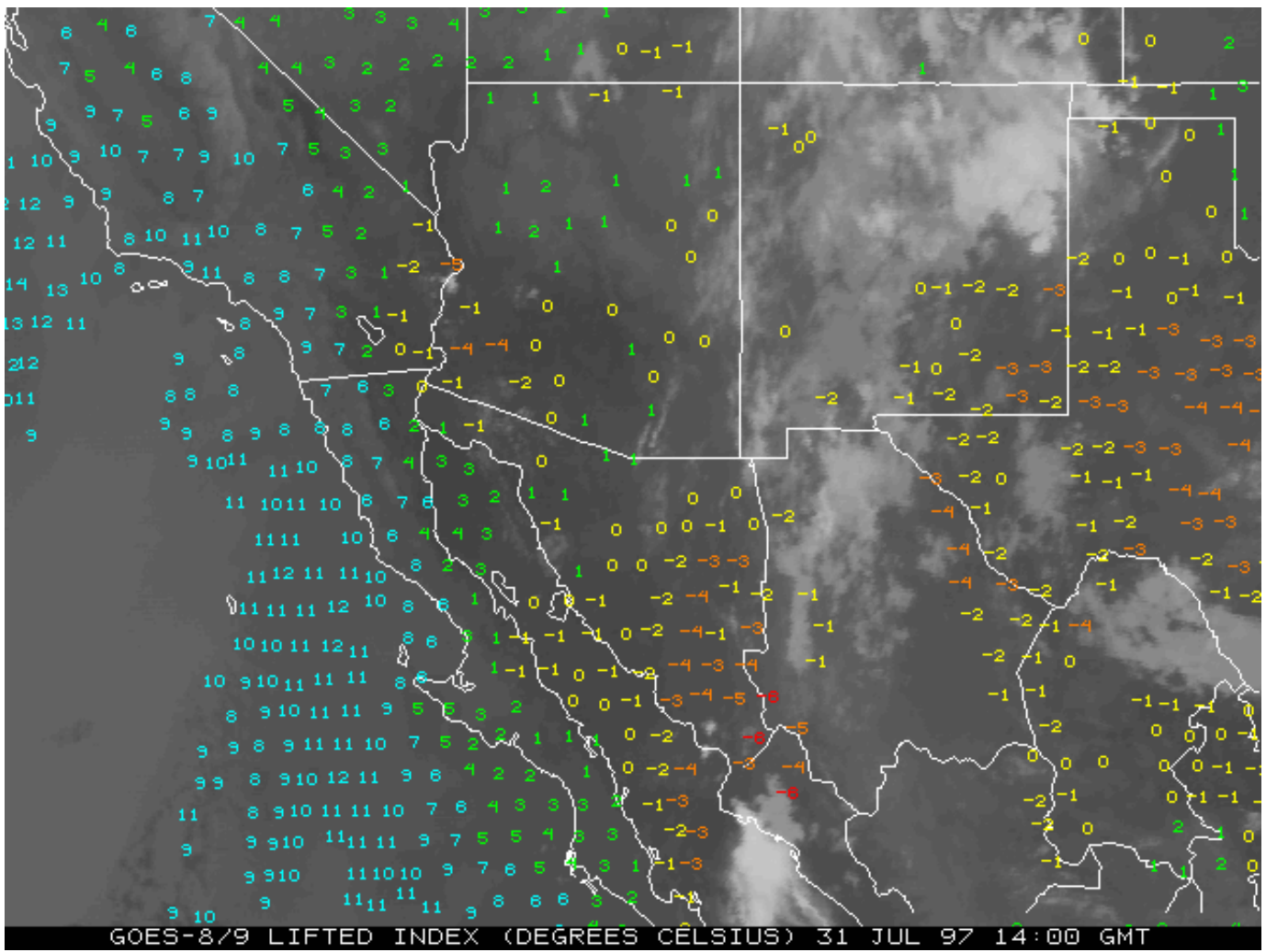


Figure 13.

RETRIEVAL IS 23 NMI NW OF REQUESTED LOCATION

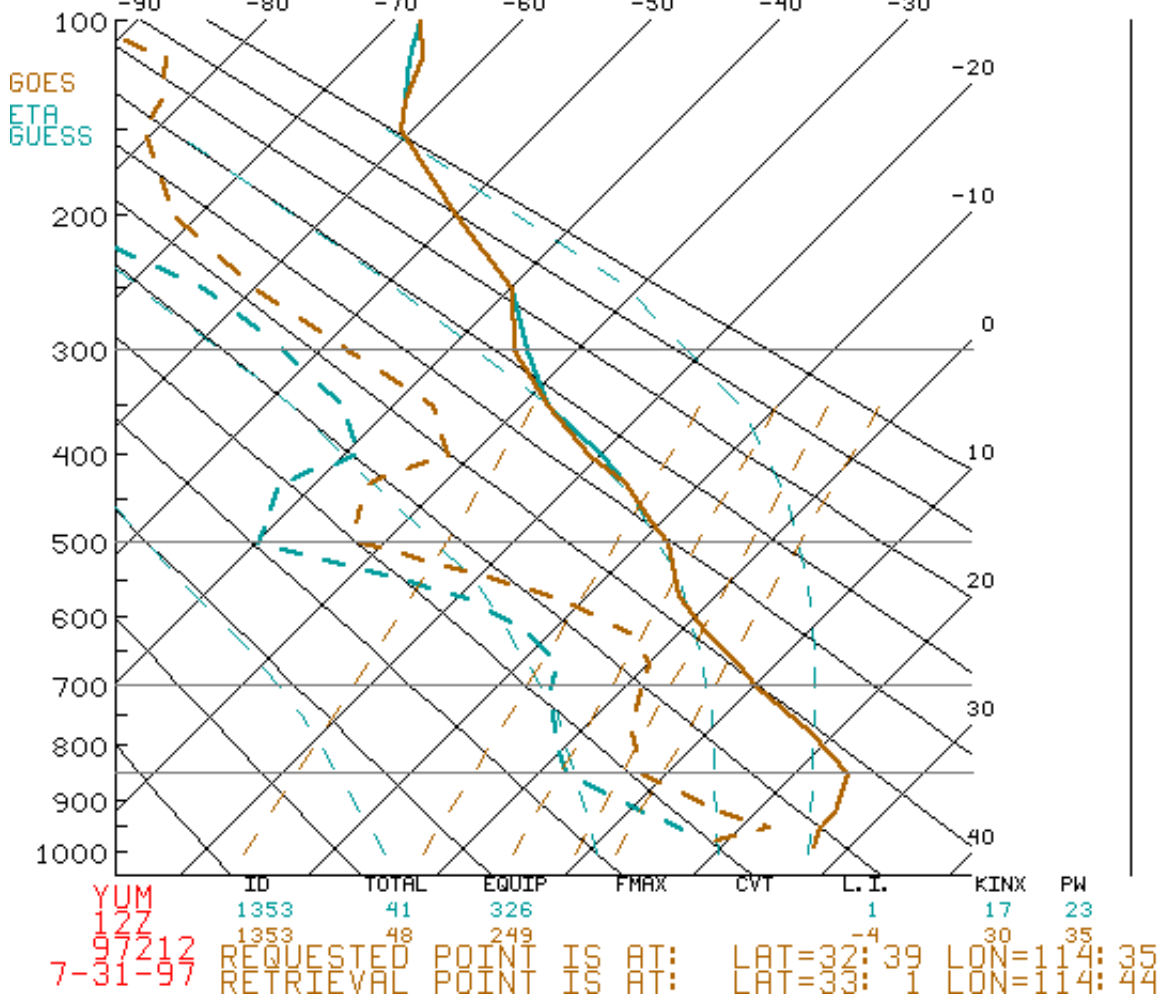


Figure 14.

RETRIEVAL IS 17 NMI N OF REQUESTED LOCATION

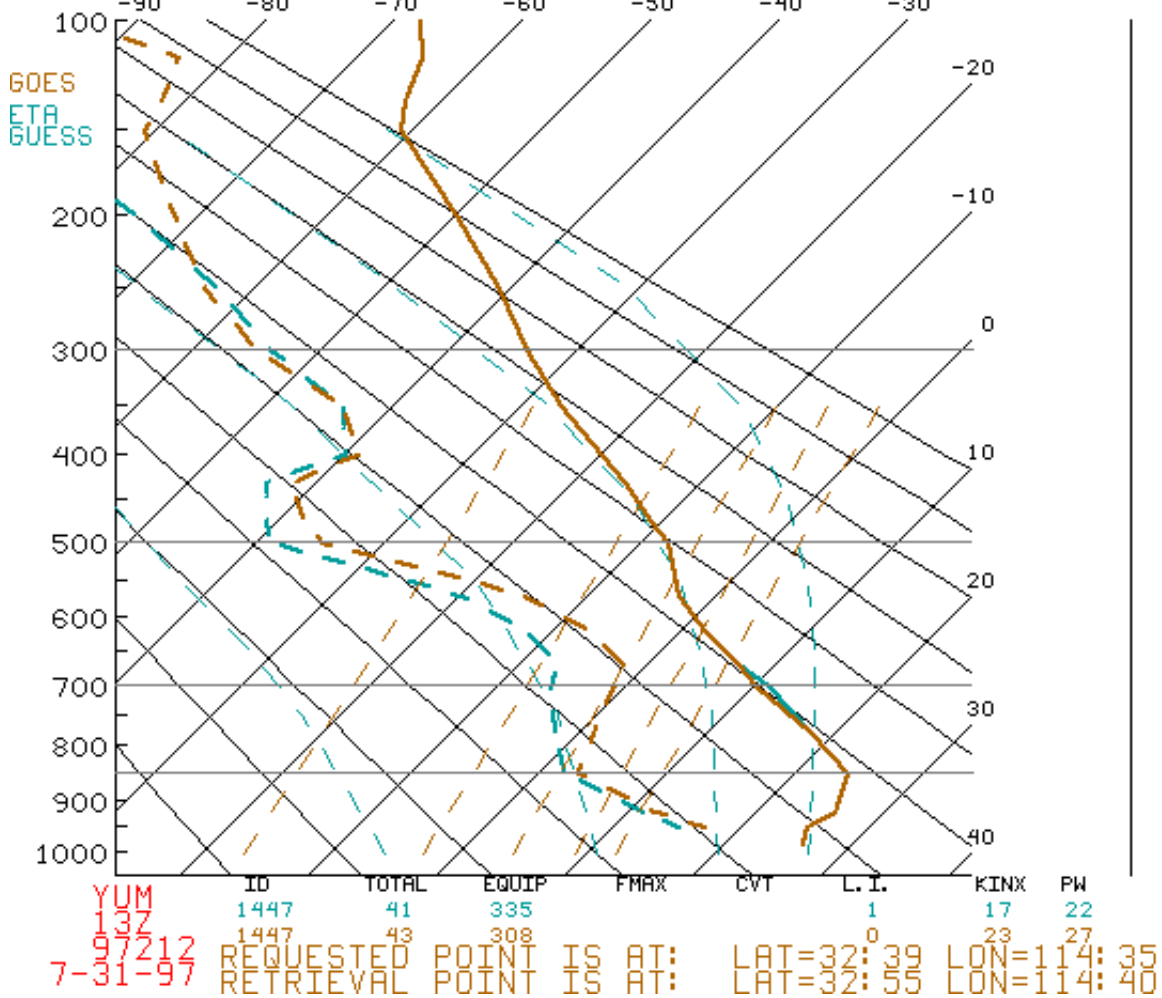


Figure 15.

RETRIEVAL IS 15 NMI N OF REQUESTED LOCATION

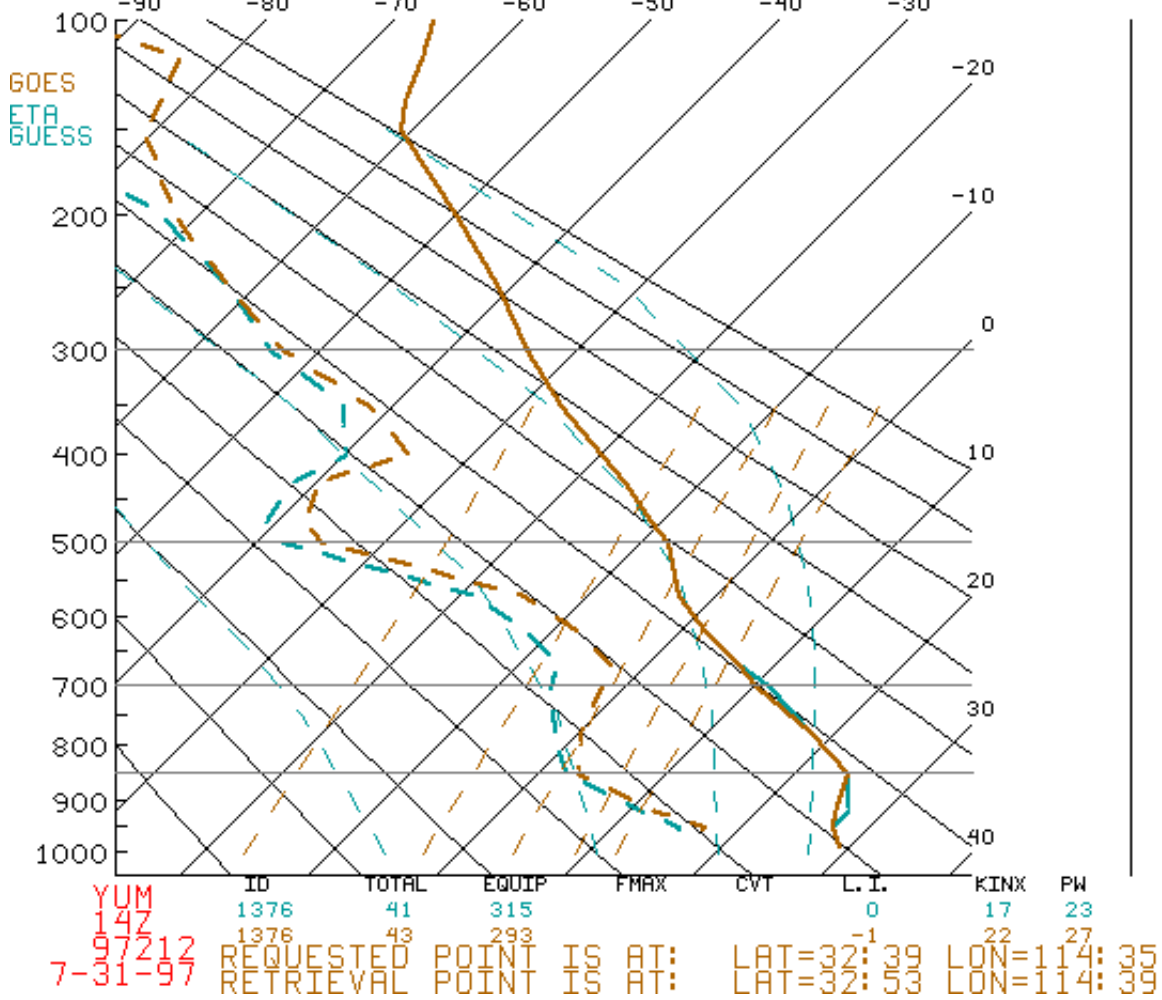


Figure 16.

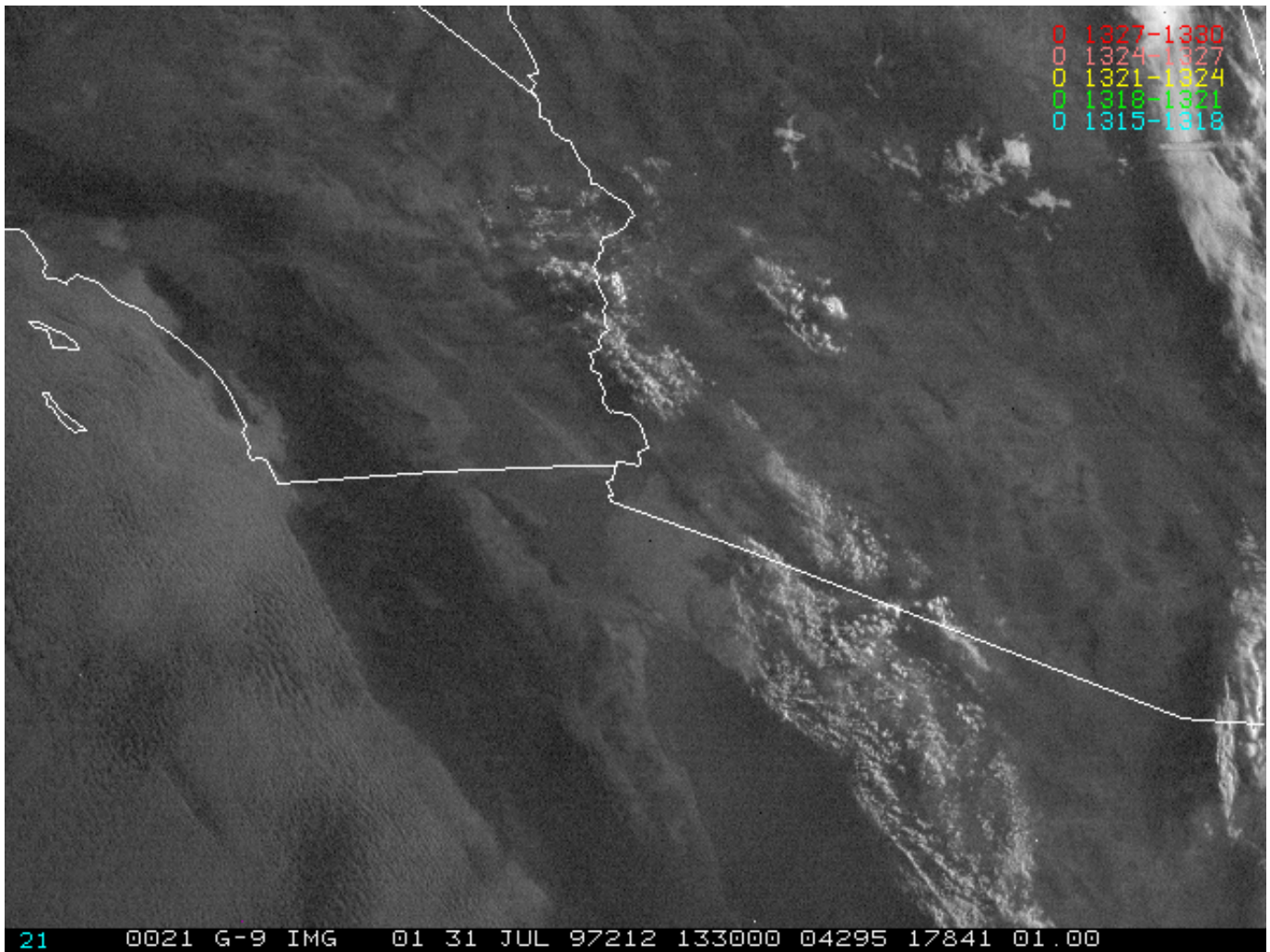


Figure 17.

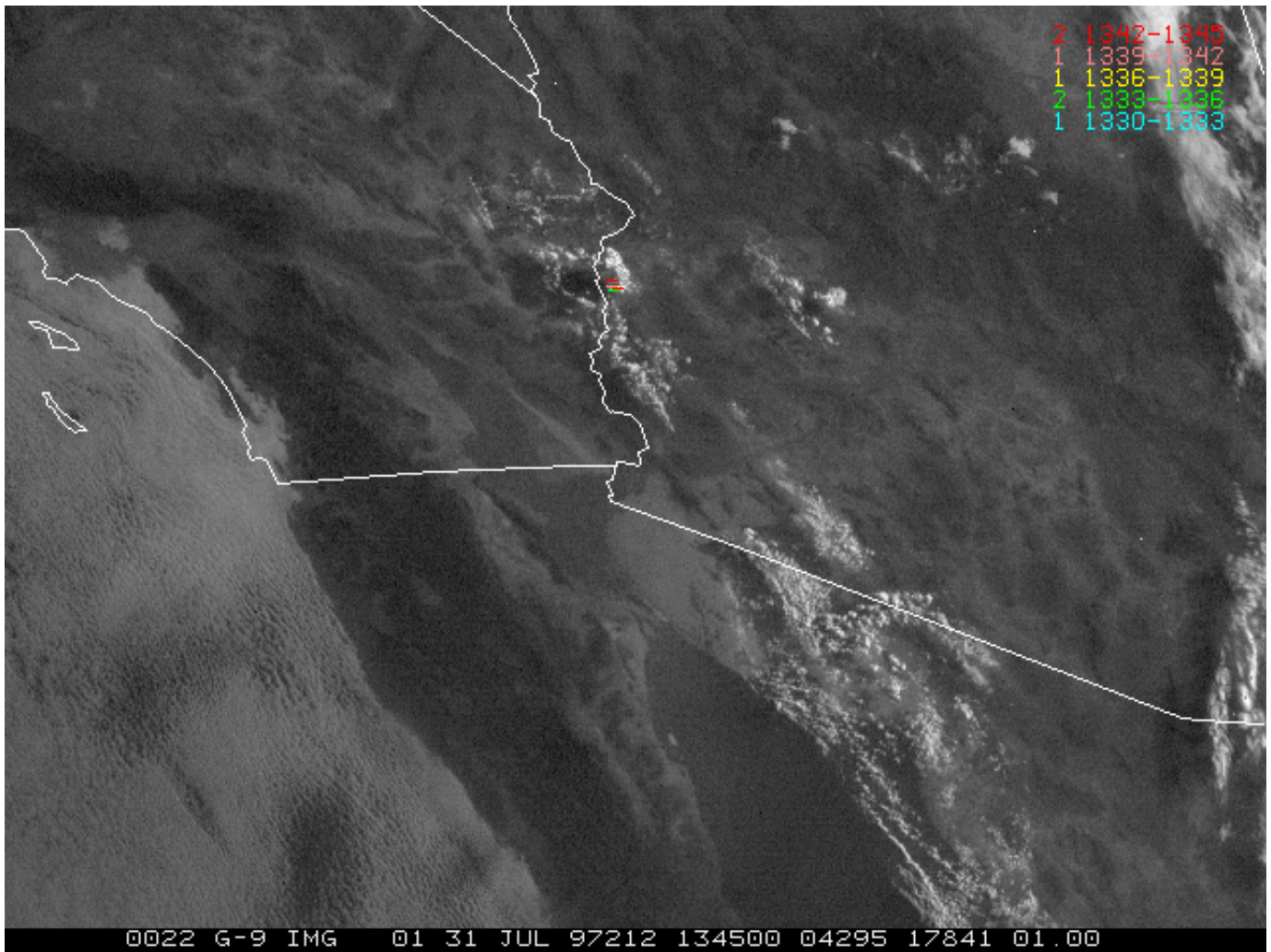


Figure 18.

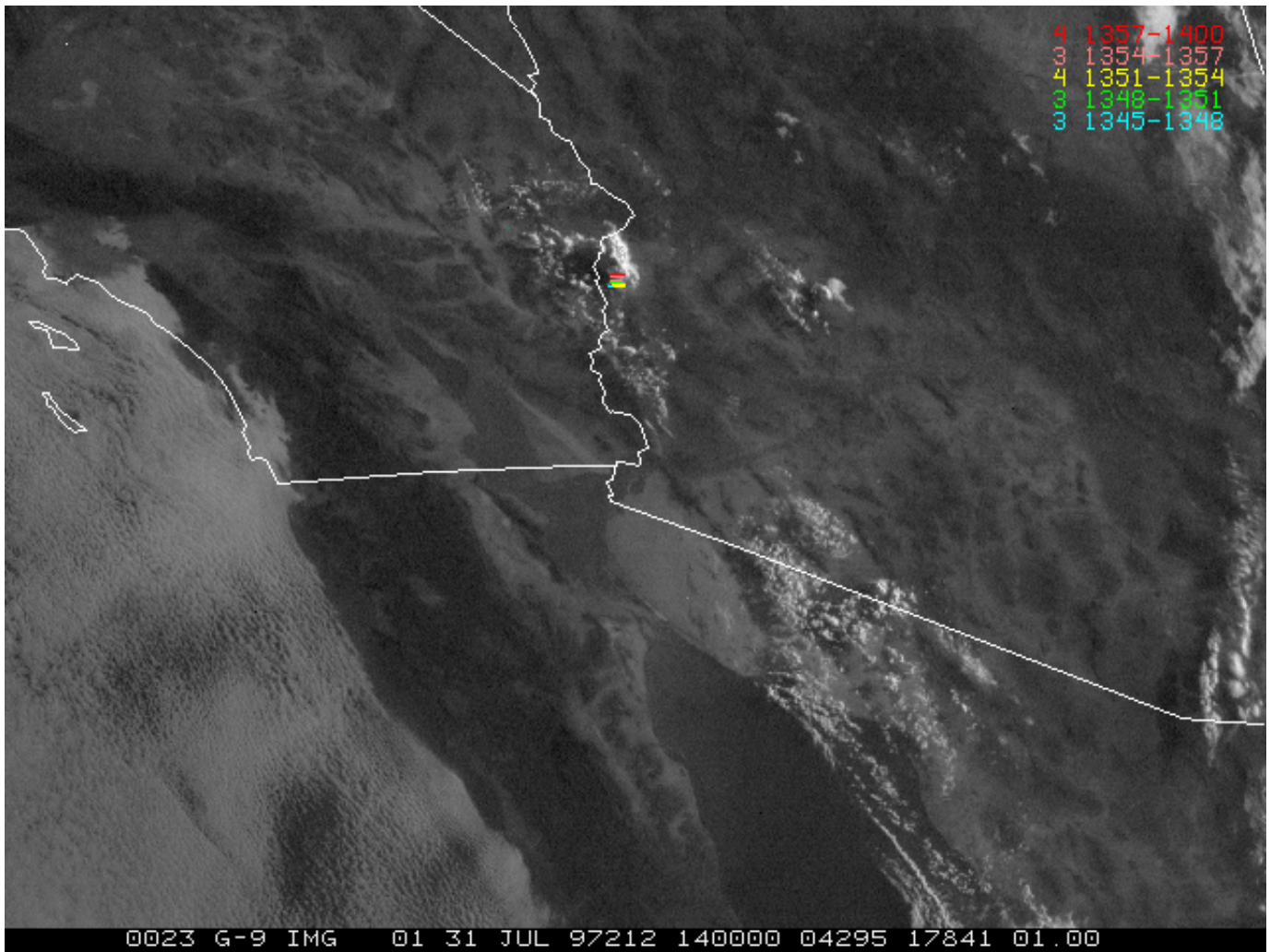


Figure 19.

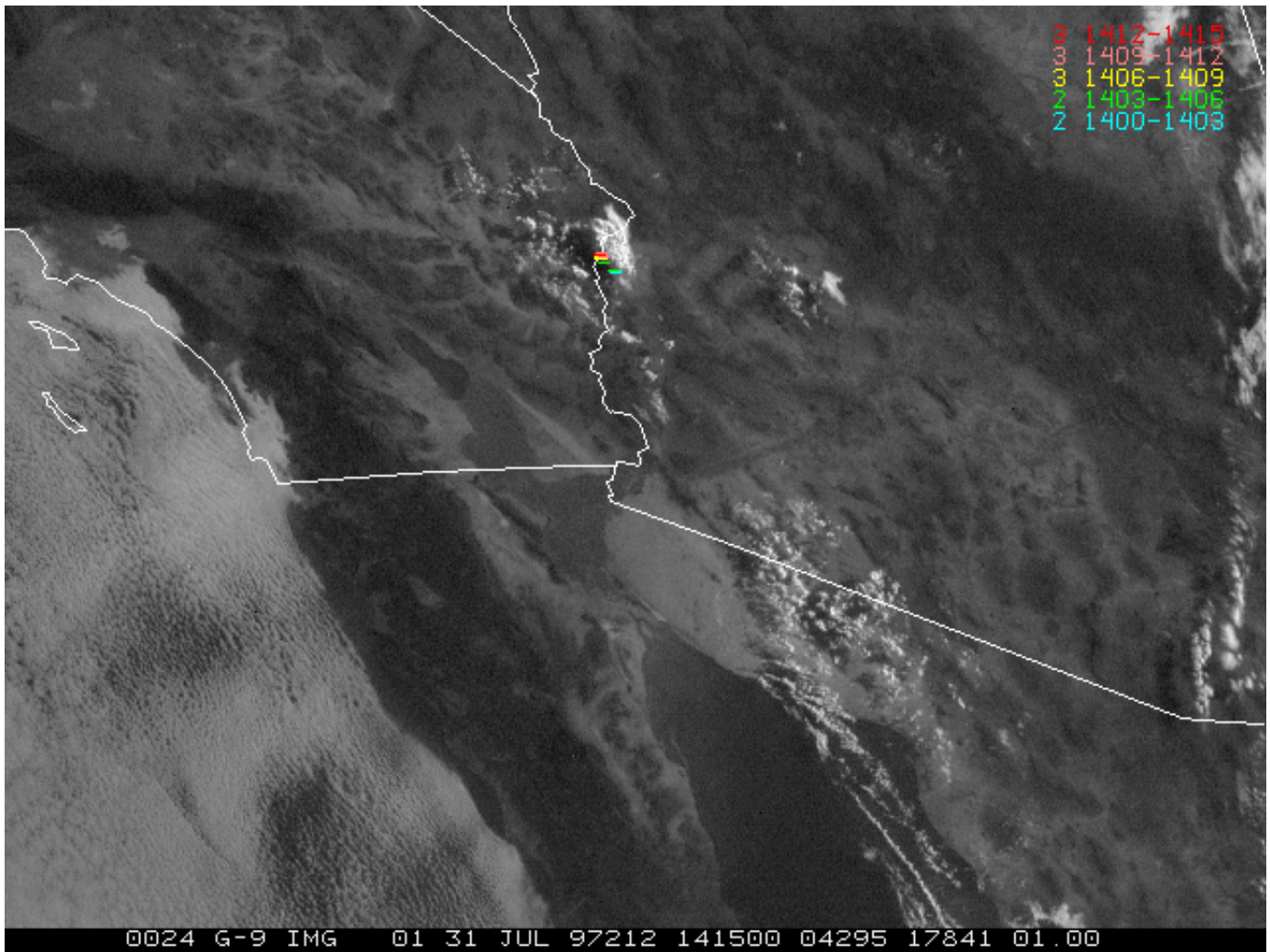


Figure 20.

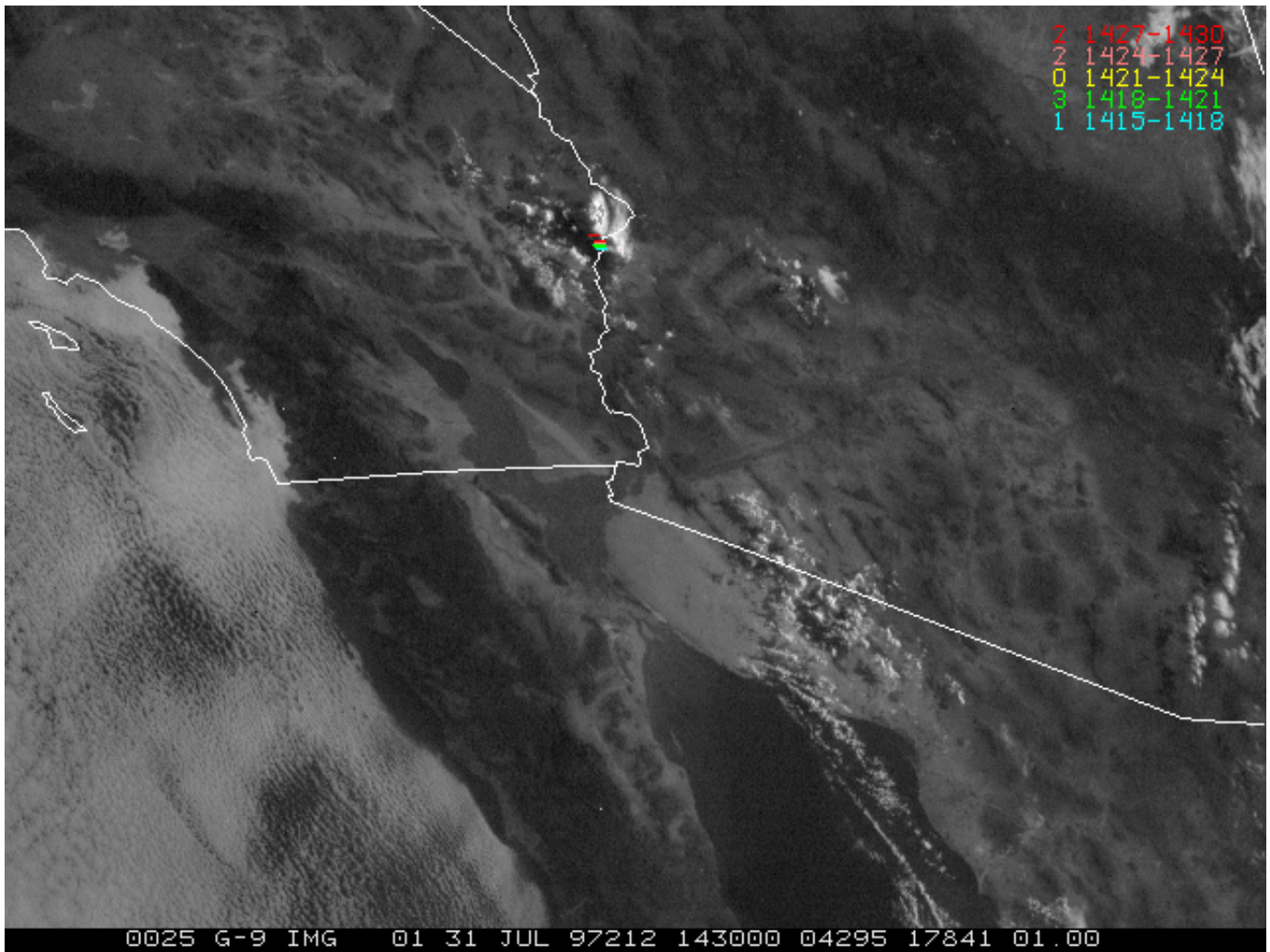


Figure 21.

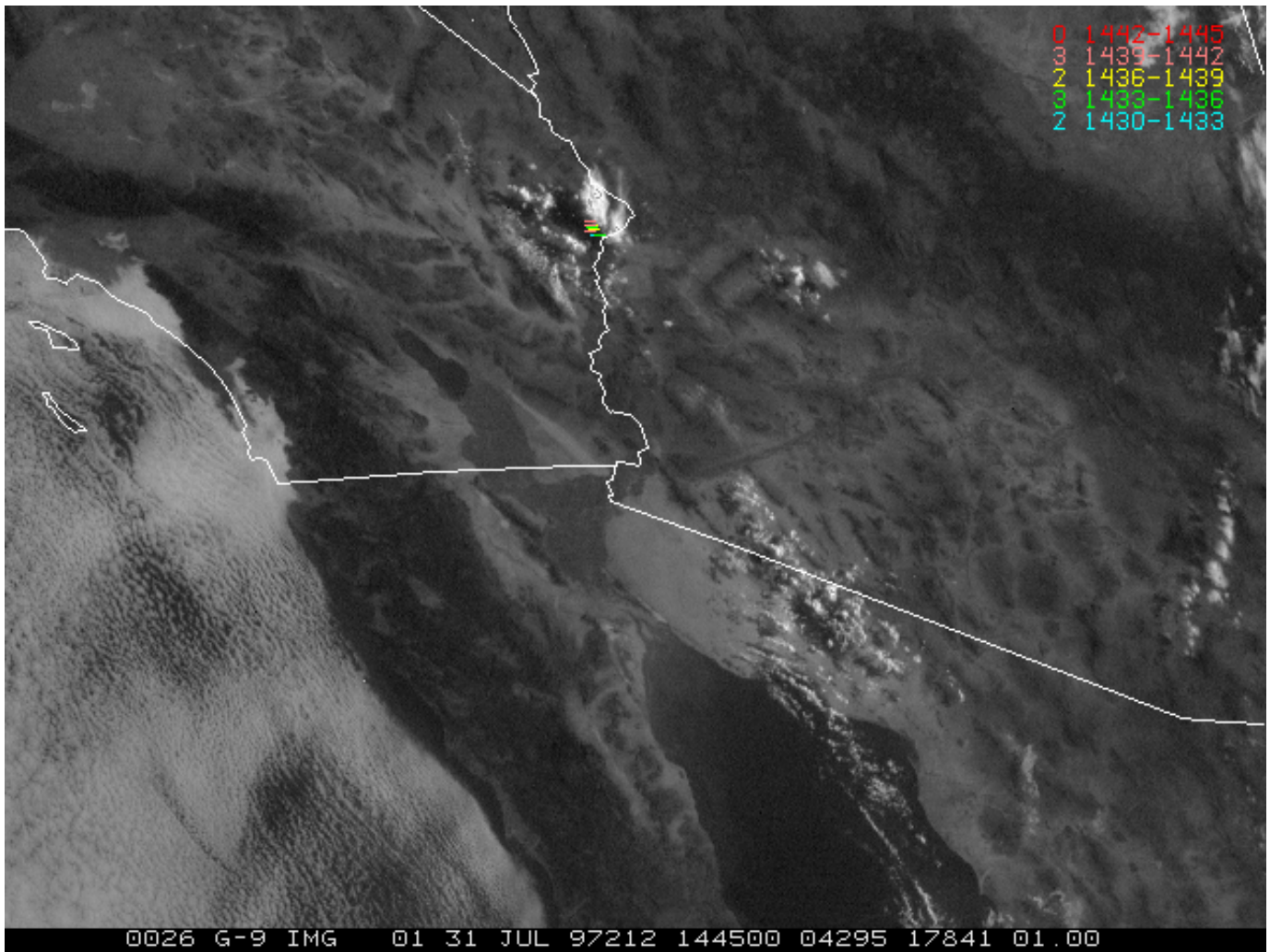


Figure 22.

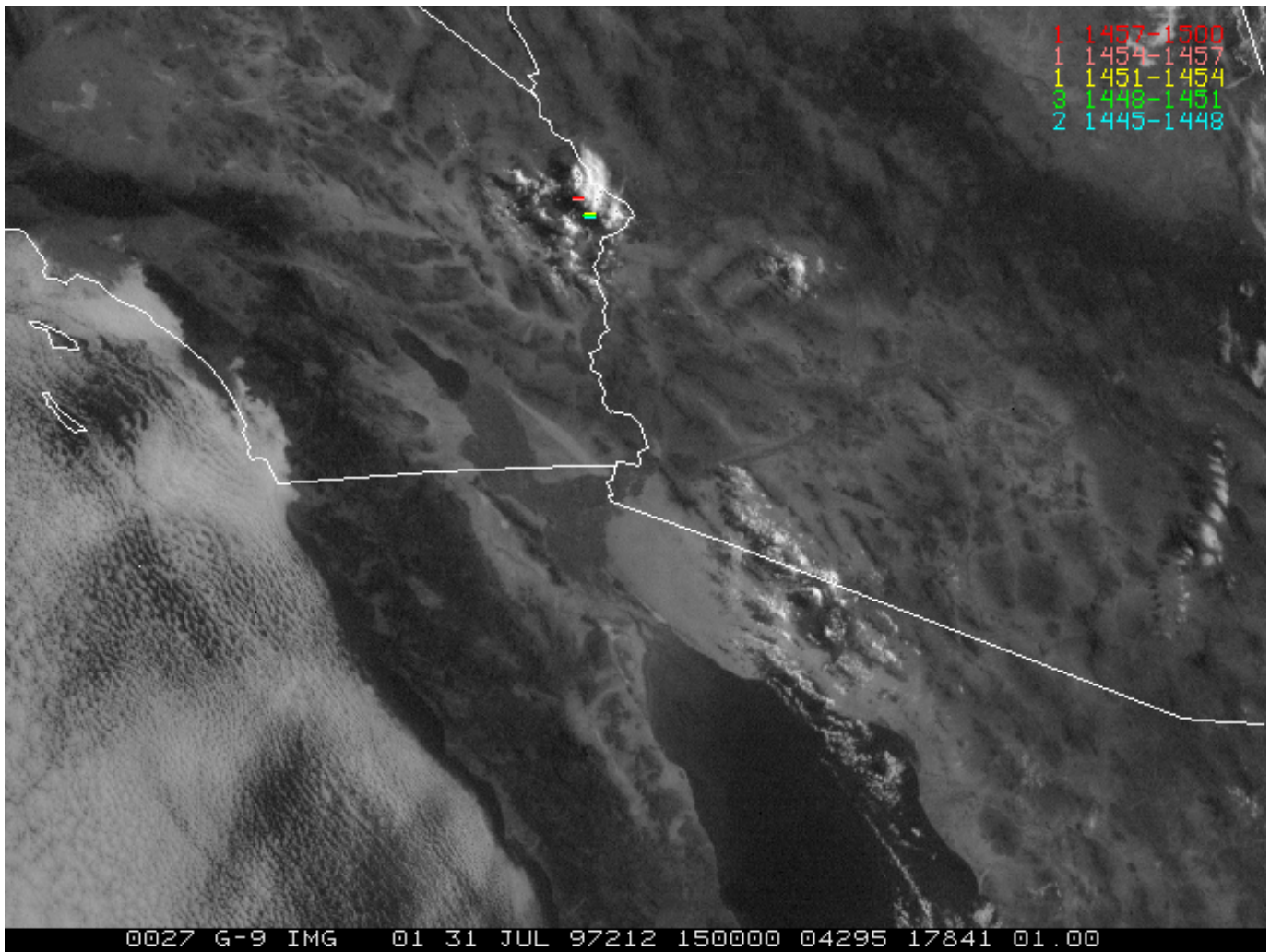


Figure 23.

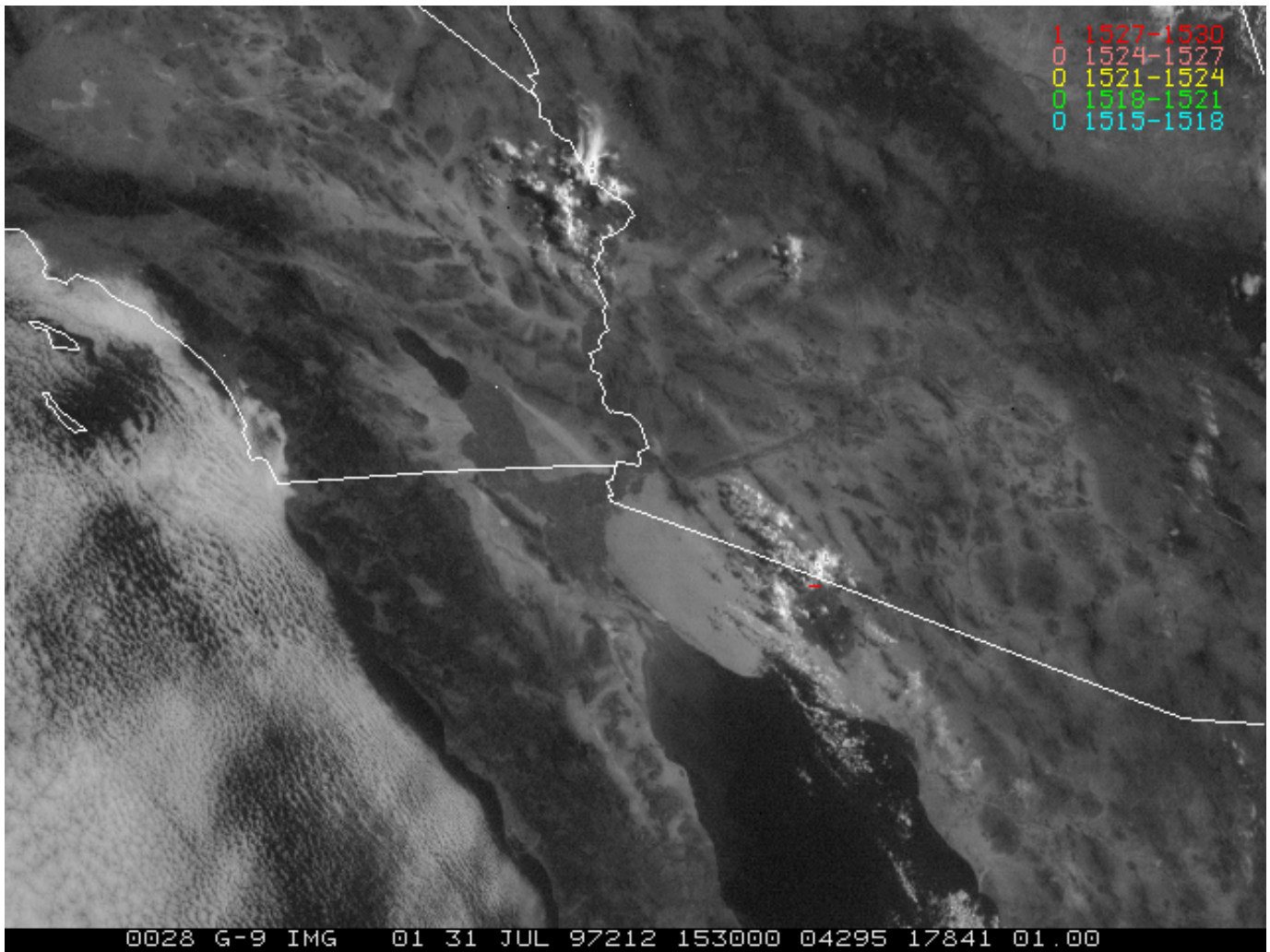


Figure 24.

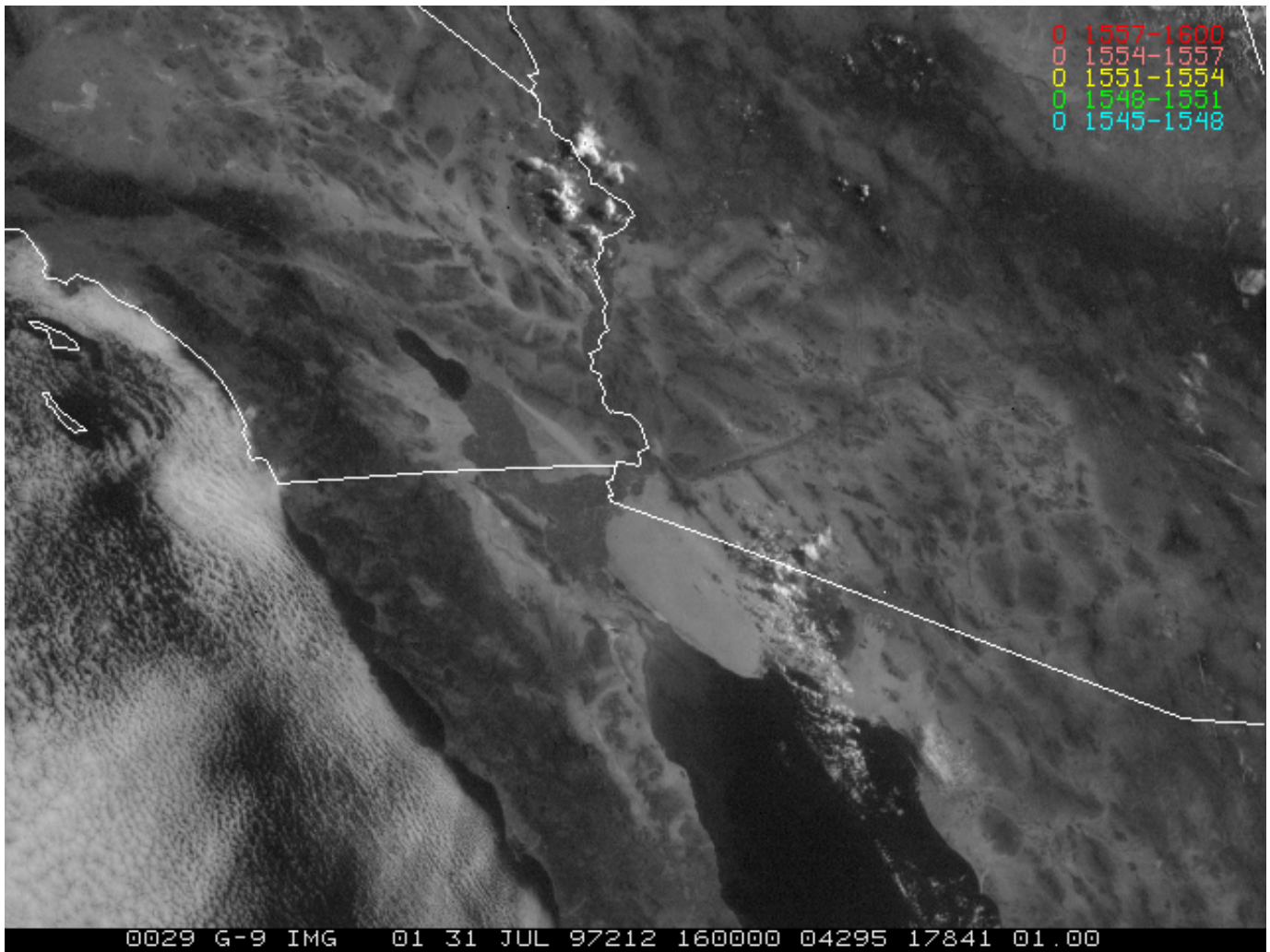


Figure 25.

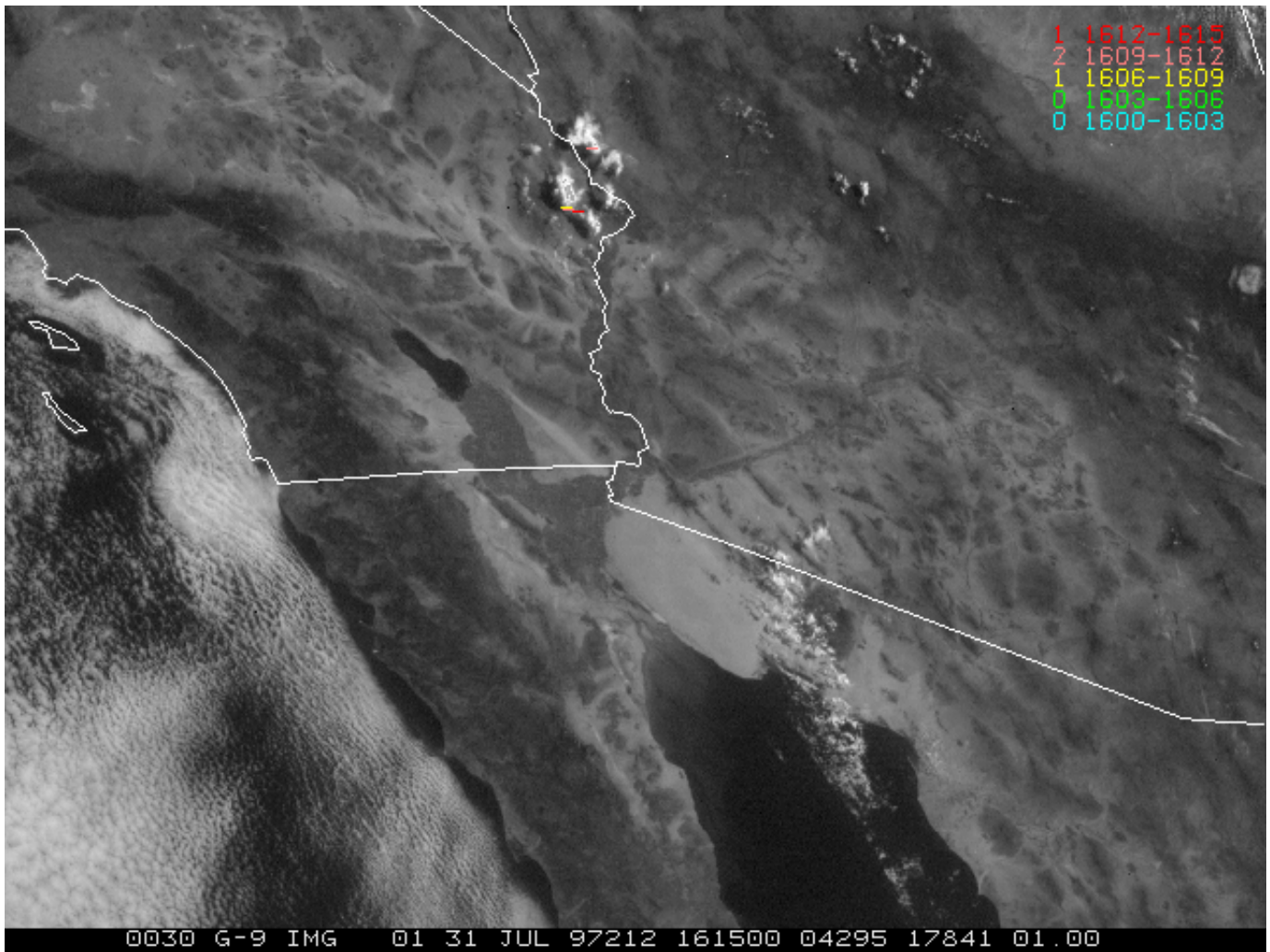


Figure 26.

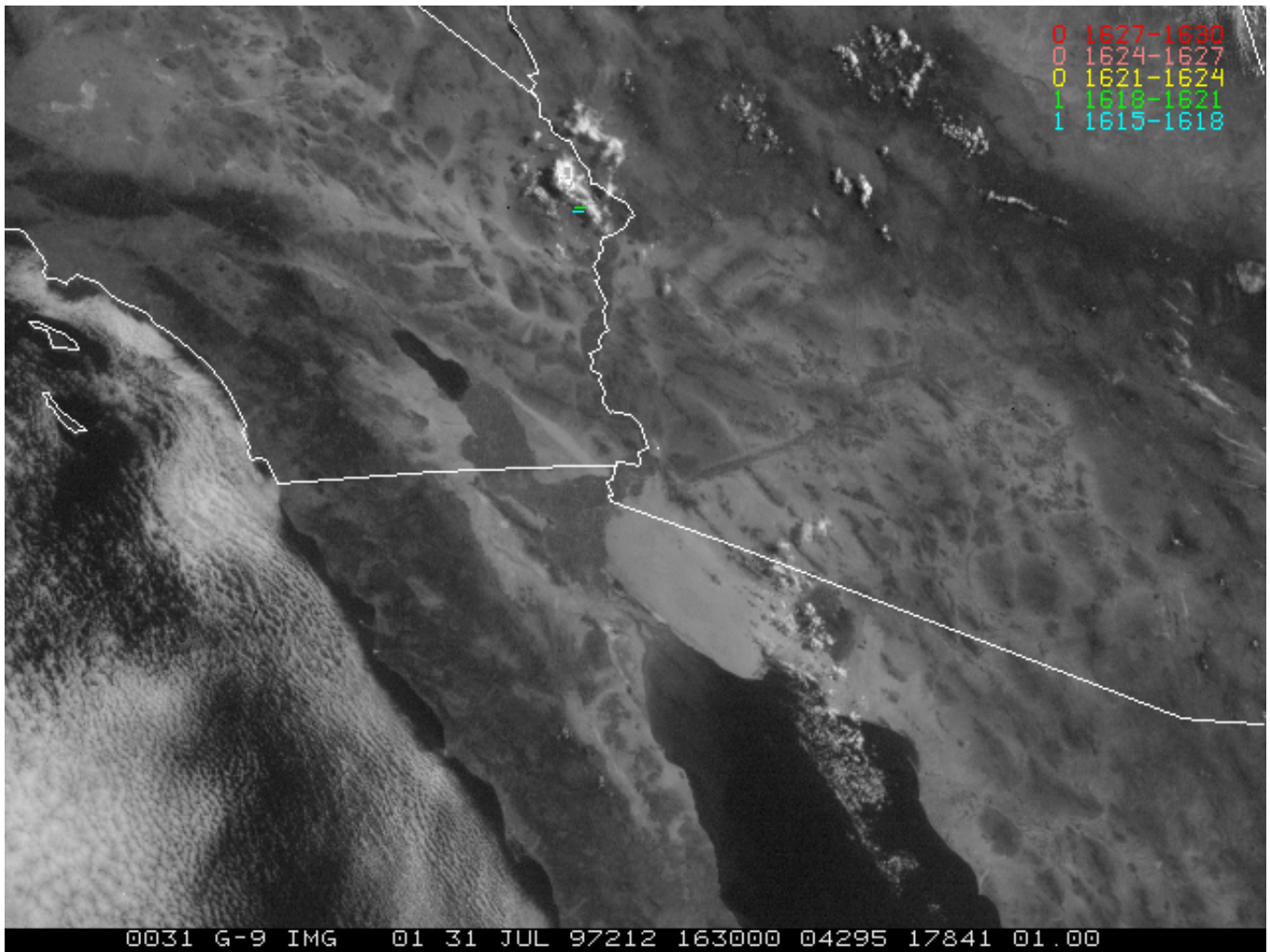


Figure 27.

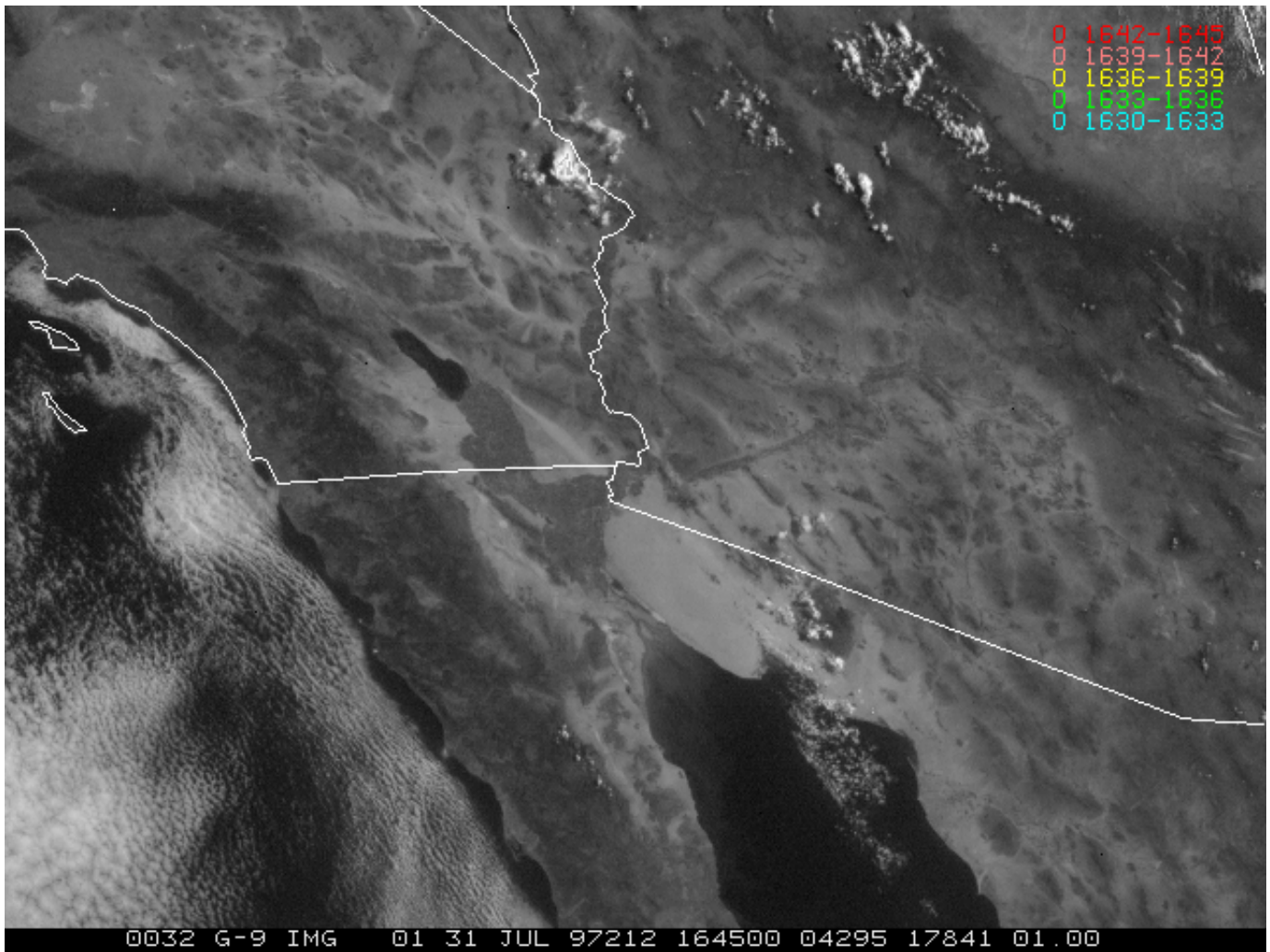


Figure 28.

