

STORM TRACKS ON SATELLITE PHOTOGRAPHS

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The GOES-1 and SMS-2 satellites have provided the WSFO at Oklahoma City many high-resolution photographs. An interesting phenomenon was seen on these photographs on March 3, 1977.

The western third of Oklahoma is experiencing a severe drought. Very little moisture is found in the top soil as evidenced by the recent dust storms (See page 38.)

During the afternoon of 2 March 1977, two significant thunderstorms developed in the southwest and west central portions of Oklahoma. These storms moved toward the northeast at 40 mph. Reports were received at the Oklahoma City NWS Forecast Office of tornadoes, hail and strong winds caused by these storms (Fig. 1).

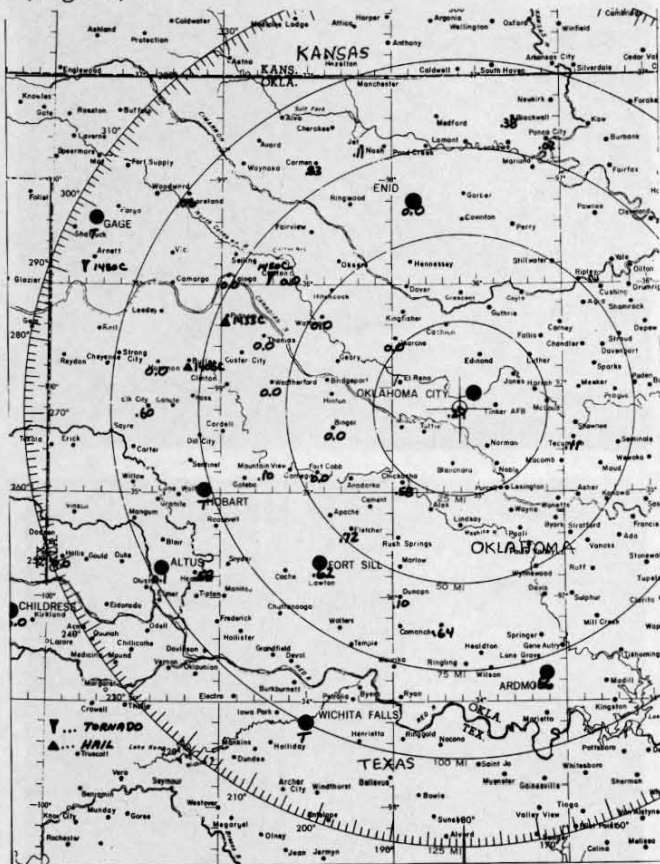


Figure 1. Weather occurrences and precipitation amounts on 2 March 1977.

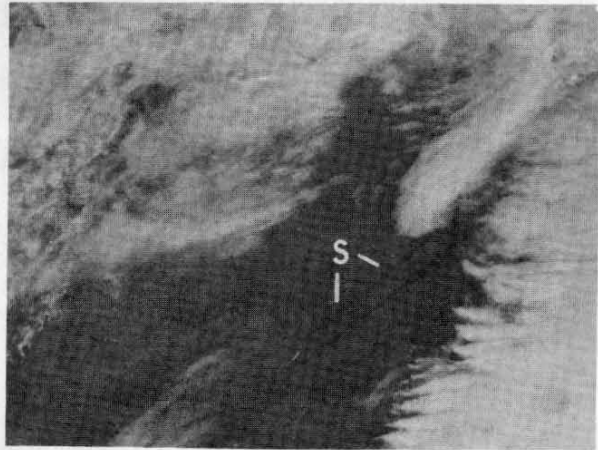


Figure 2, GOES-1 visible (1 mi) data taken at 1700 GMT 3 March 1977.

The visible satellite photograph, taken at 1700 GMT on 3 March 1977 (Fig. 2) revealed two distinct dark streaks (S) across northwestern Oklahoma. The tracks were found to be the same as the storm paths of the previous afternoon (Fig. 3). The infrared view (Fig. 4) taken at 1630 GMT, showed these areas to be cooler than the surrounding land areas. These tracks could be seen through the day (Figs. 5 and 6) until clouds moved in and obscured the view.

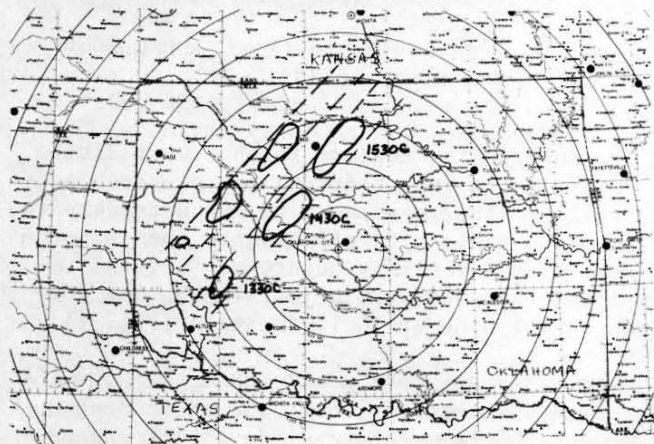


Figure 3. Radar storm tracks on 2 March 1977.

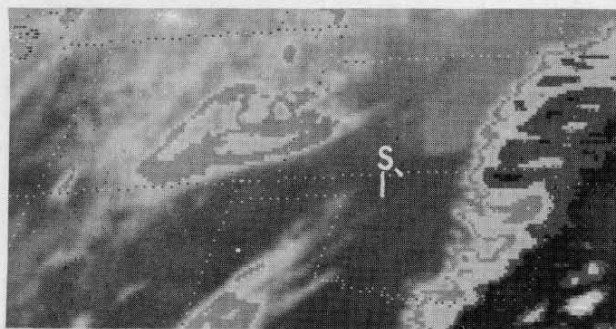


Figure 4, GOES-1 Infrared (4 mi) data taken at 1600 GMT 3 March 1977.

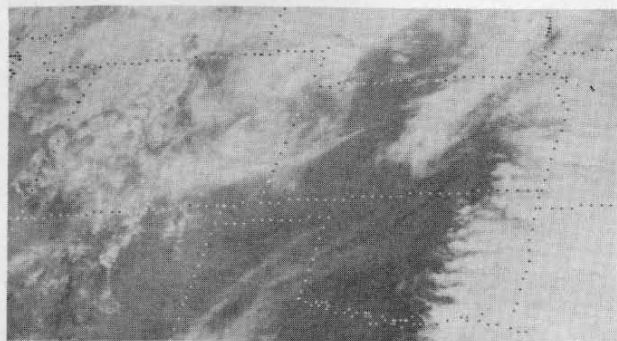


Figure 5, GOES-1 visible (1 mi) data taken at 1800 GMT 3 March 1977.

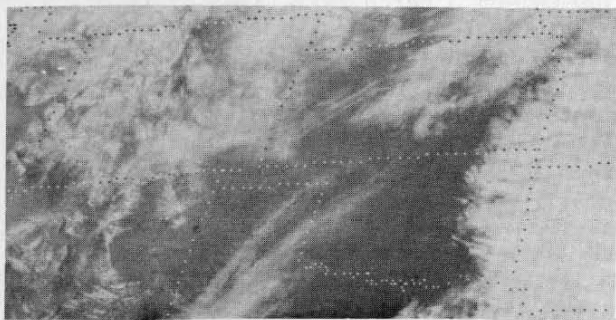


Figure 6, GOES-1 visible (1 mi) data taken at 1900 GMT 3 March 1977.

The interesting feature is that very little rainfall was reported from the observer network. Calls were placed to the observers requesting their rainfall amounts and reports were almost entirely negative. Several reported very heavy rain just to the east or west, but none at their location (Fig. 1).

Most meteorologists would agree that the Infrared data should reveal the storm tracks due to the temperature differential caused by rainfall. The only possible explanation for the tracks appearing on the visible photos is due to the dry soil conditions, whereby the rainfall caused a discoloration in the soil. Several narrower tracks are

evident on the visible photos in the central and southern sections of the state.

THE DUST STORM OF FEBRUARY 23, 1977

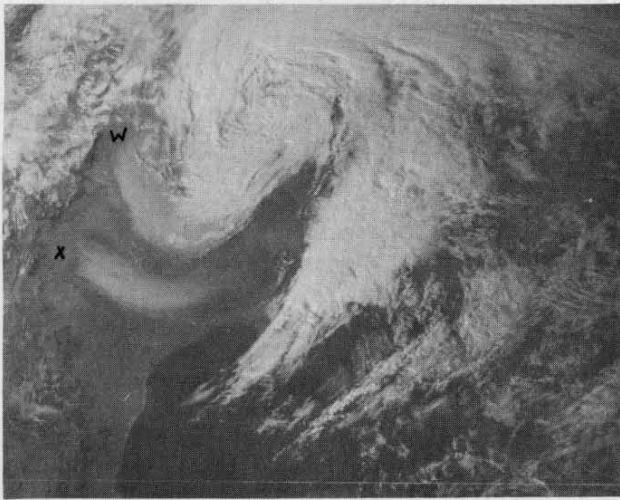
The NWA Newsletter carried a short article about the most severe dust storm that has been experienced in the United States in many years.

The GOES-1, visible data, taken at 2200 GMT shows the two major sources of the dust; one from northeastern Colorado (W) and one along the Texas-New Mexico border, south of Lubbock, TX (X). This dust spread eastward during the night and the following day. An early morning view, taken at 1600 GMT, 24 February 1977 is also shown.

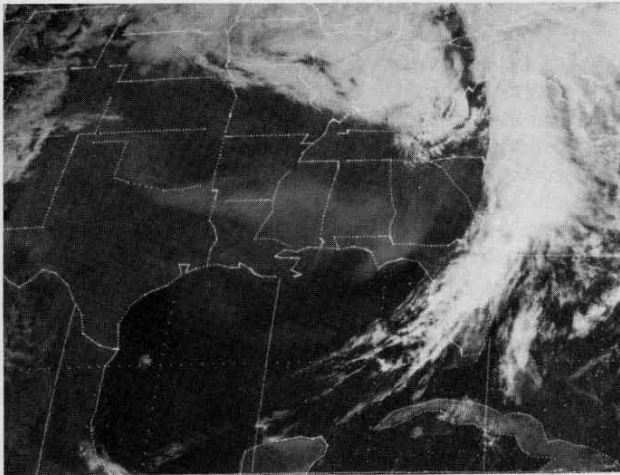
A few photographs of drifted soil are also shown. These were taken near Clovis, NM. by NWS, Central Region staff. F.P.



Drifted soil areas near Clovis, NM.



GOES-1 Visible (1 mi) data taken at 2200 GMT
23 February 1977,



GOES-1 Visible (1 mi) data taken at 1600 GMT
24 February 1977,