PACIFIC REGION TECHNICAL NOTES

No.-78-029

July 31,1978

THE EFFECT OF ANALYSES ON SUBSEQUENT PROGNOSES CONT...

1. ERRONEOUS VORTICITY PATTERN
2. LACK OF DATA

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DISCUSSION.

The following copies of charts or satellite imagery are attached:

1. CMC 500 mb analysis for May 18, 1200Z, 1978.
2. CMC 36 hour prog at 500 mb valid May 20, 0000Z, 1978 made from the May 18, 1200z analysis.
3. CMC 500 mb analysis for May 20, 0000Z, 1978.
4. Enhanced ir imagery for May 18, 1215Z, 1978.
5. Enhanced ir imagery for May 20, 0045Z, 1978.
6. Enhanced ir imagery for May 20, 0315Z, 1978.

A. EFFECT OF ERRONEOUS VORTICITY PATTERN

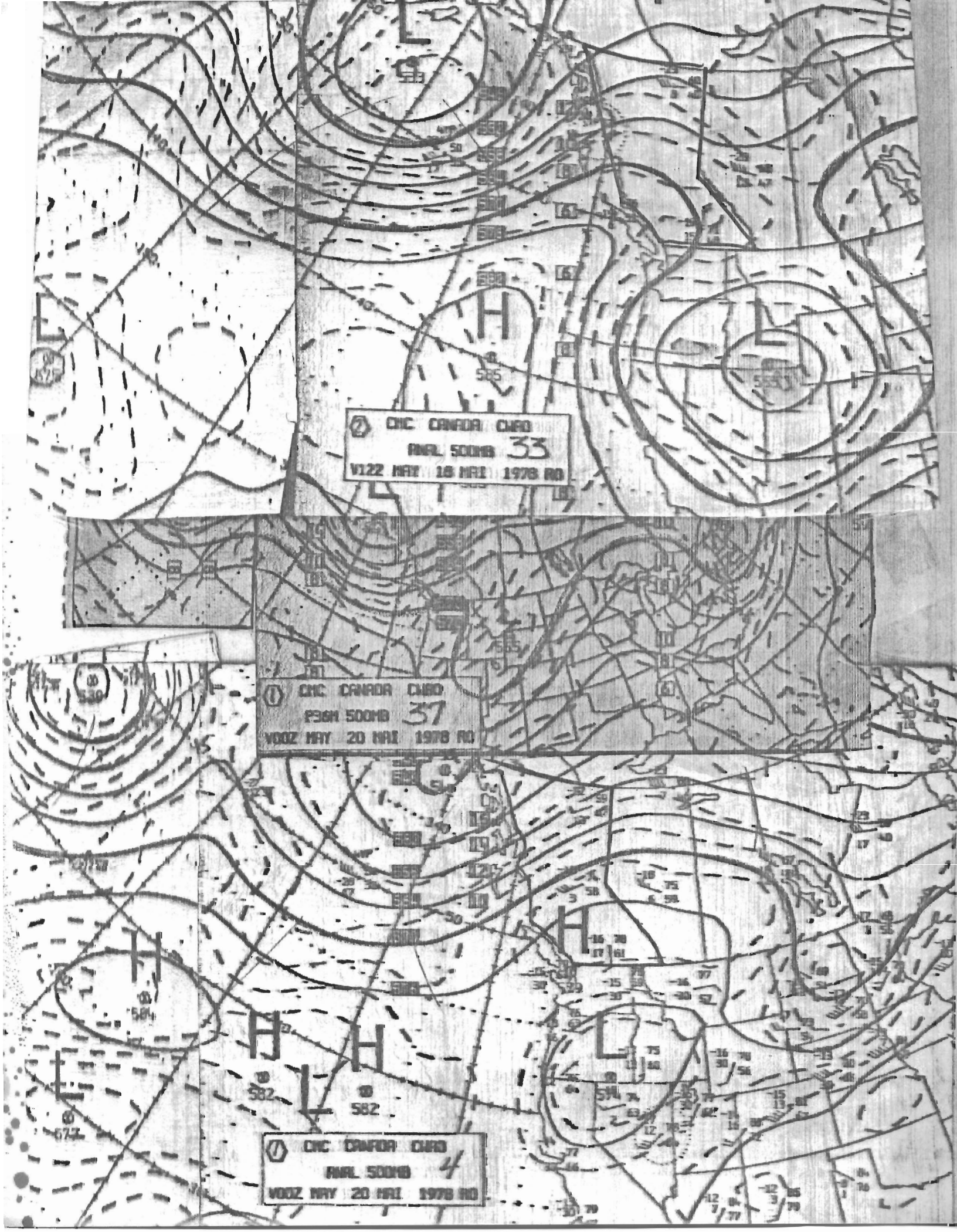
The initial analysis for May 18 1200Z shows a sharp , rather intense short wave trof between 40N and 45N and near 158W with quite strong vorticity advection to the east of the trof. The satellite imagery in that area shows for the same time relatively stable clouds at low levels and dissipating clouds at the higher levels. This would indicate that both the position and intensity of the short wave trof is likely to be in error. The fact that this trof is also embedded in the major wind field likely means that the resulting prognosis based upon this analysis may be quite inaccurate. In fact this trof produced the strong vorticity advection area over Vancouver Island and the North Coast of B.C. The verifying analysis, however, indicates little vorticity advection over Southwestern B.C. at 0000Z, May 20 and neutral vorticity advection in the main wind stream over the north coast. This analysis is confirmed by the satellite imagery for 00045Z, May 20 which shows a cloud free Vancouver Island and a weak frontal zone across the North Coast. The resulting height errors along the coast at 500 mbs. were from 10 to 15 dkm. It is rather interesting to point out that the short wave trof near 148W between 40N and 45N on the May 20 analysis for 0000Z also seems to have no support from the satellite picture of May 20, 0315Z. However, in this case the short wave trof is embedded at the southern edge of the main wind field and will likely have little effect on the subsequent prognosis. Thus, one would expect a relatively good prog based upon the May 20, 0000Z initial analysis.

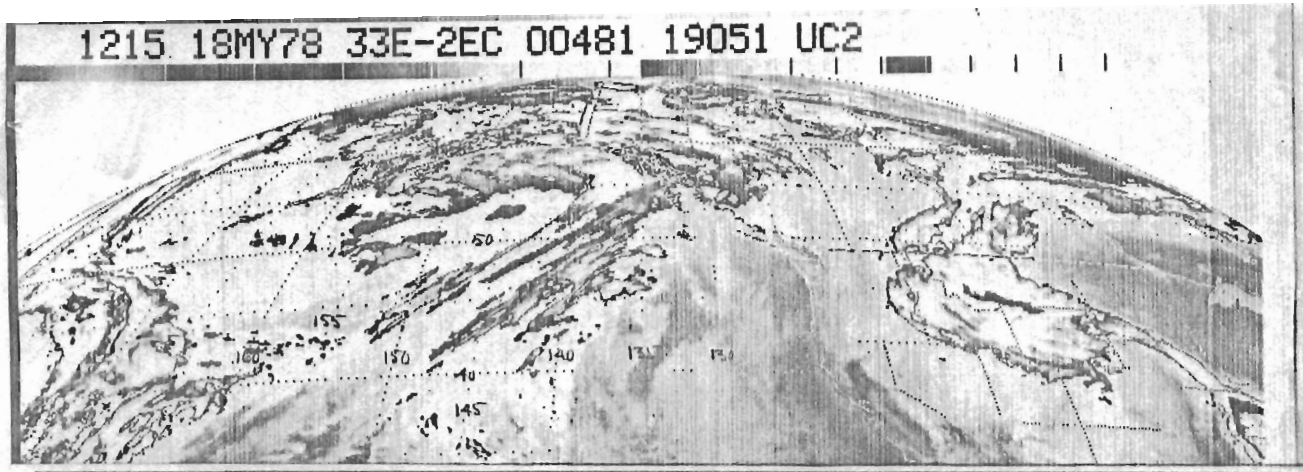
It would appear that an erroneous vorticity pattern embedded in the main wind field will have an impact on the subsequent prognosis. The effect will of course vary with the intensity and shape of the erroneous pattern.

B. LACK OF DATA

The May 18, 1200Z initial analysis also shows that all of the upper air data over the North-western U.S. and part of the data over Western Canada was missing. For the same time the satellite imagery (1215Z) would suggest one vorticity center over northeastern Nevada and another over south-central Wyoming with an area of strong PVA over Montana and parts of Idaho and Wyoming. These features are not born-out by the initial analysis. In addition one is dealing here with a cut-off low . One would therefore suspect that the resulting prognosis with regard to this system would be handled rather poorly by the computer. The comparison of the verifying prognosis with the May 20, 1200Z analysis indeed confirms this.

It would appear that lack of adequate upper air data will affect the analysis over continental areas and the subsequent prognosis based upon such an analysis over continental areas. By analogy the same is probably true over ocean areas. It need hardly be pointed out that the Eastern Pacific is an ocean area situated upstream from the Pacific region.


② CMC CANADA CWAO
ANAL 500MB 33
V122 MAY 18 MAI 1978 RO
① CMC CANADA CWAO
P36M 500MB 37
V00Z MAY 20 MAI 1978 RO
① CMC CANADA CWAO
ANAL 500MB 4
V00Z MAY 20 MAI 1978 RO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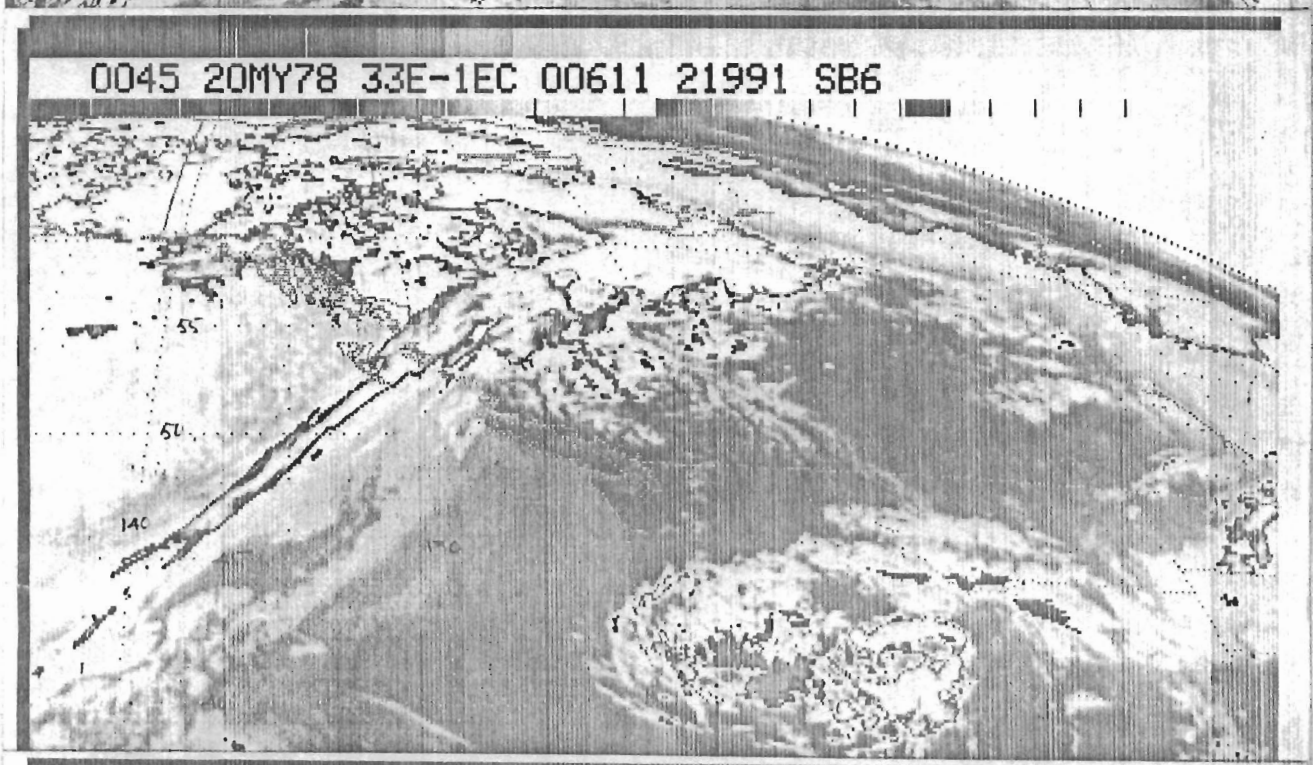
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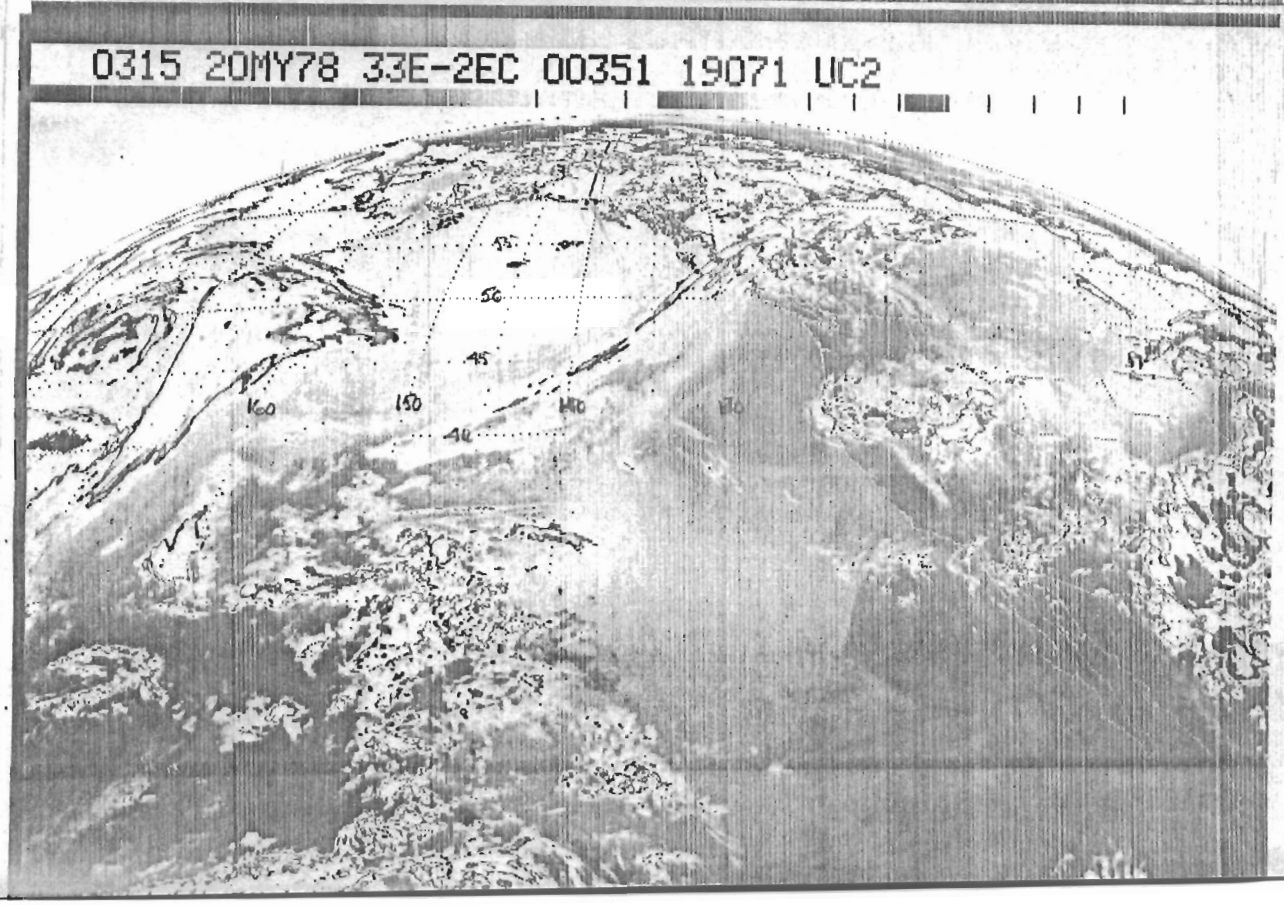
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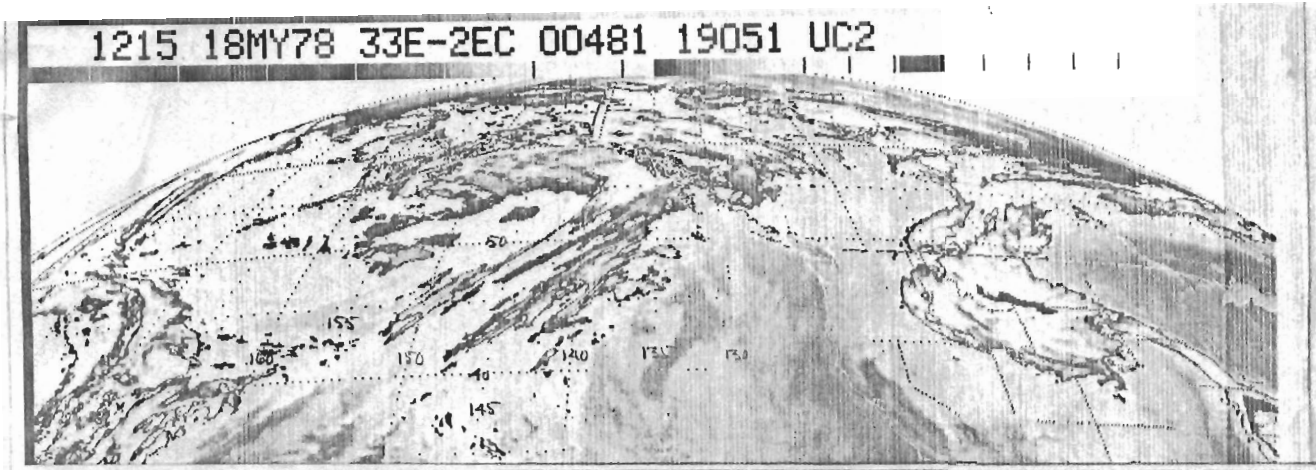
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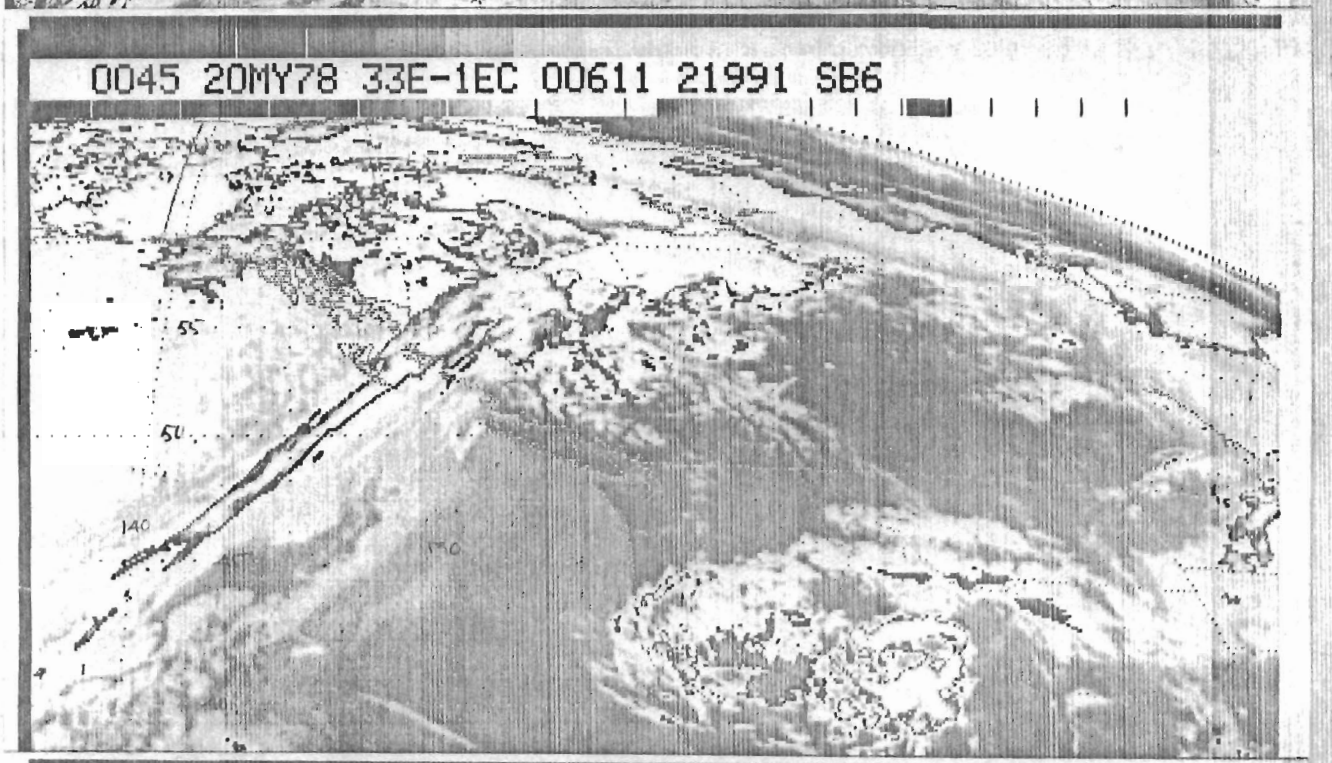
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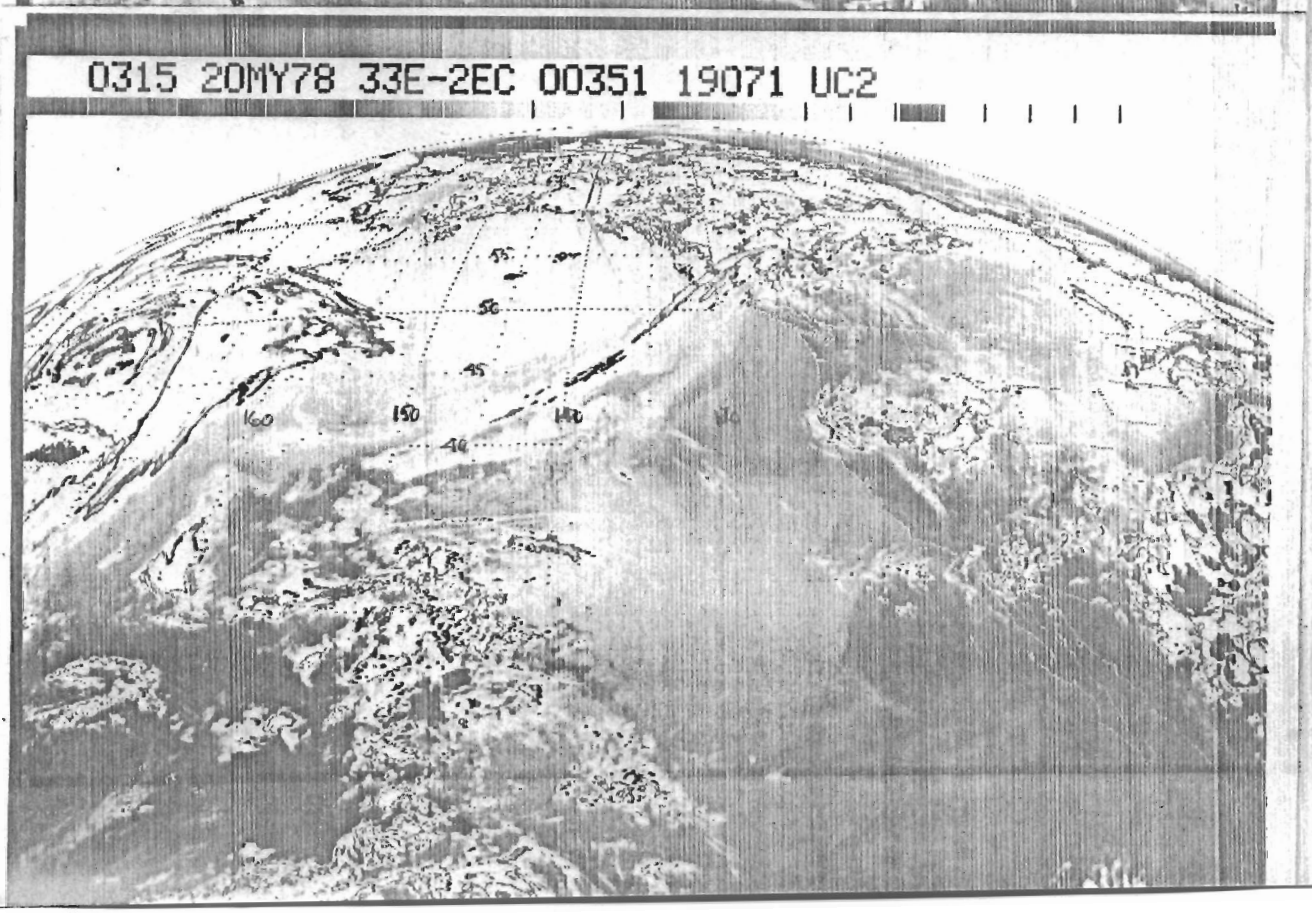
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