



PACIFIC REGION TECHNICAL NOTES

NO. 78-022
June 16, 1978

PLACEMENT OF UPPER LEVEL RIDGE LINES
USING SATELLITE IMAGERY.

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CURRENTLY, ONE OF THE PRIMARY USES OF GOES HARD COPY SATELLITE PICTURES AT THE PACIFIC WEATHER CENTER IS USUALLY ONE OF THREE CLASSES

- (1) AN EVALUATION OF THE CMC ANALYSIS VALID AT PICTURE TIME.
 - (2) AN EVALUATION OF NUMERICAL PROGNOSSES VALID AT PICTURE TIME.
 - (3) SHORT TERM EXTRAPOLATION OF CLOUD SYSTEMS.
- THIS NOTE WILL DEAL WITH ONE OF THE FIRST CLASS OF USES LEAVING ILLUSTRATIONS OF THE OTHER CLASSES TO (HOPEFULLY) FUTURE NOTES.

THE PURPOSE OF THIS NOTE IS TO ILLUSTRATE ONE ANALYSIS TECHNIQUE WHICH CAN BE USED. IT INVOLVES THE PLACING OF RIDGE LINES USING CIRRUS STREAKS AS TRACERS. THIS PARTIAL ANALYSIS IS THEN COMPARED WITH A HIGH LEVEL (USUALLY 250 MB) CMC PRESSURE LEVEL ANALYSIS.

THE ASSUMPTIONS MADE ARE

- (1) THE CIRRUS STREAKS ARE EVERYWHERE TANGENT TO THE STREAMLINES (USUALLY FOUND TO BE TRUE).
- (2) THE CIRRUS IS AT OR NEAR THE 250 MB LEVEL. (NOT QUITE AS RESTRICTIVE IS THE ASSUMPTION THAT THE RIDGE LINE AT THE CIRRUS LEVEL AND THE RIDGE LINE AT 250 MB ARE SUPERIMPOSABLE IN THE VERTICAL COORDINATE.)
- (3) THE STREAMLINE RIDGE AND THE CONTOUR (PRESSURE LEVEL) RIDGE ARE COINCIDENT. (A FAIR ASSUMPTION NEAR A RIDGE LINE WHERE WIND VELOCITIES ARE RELATIVELY LOWER IN ABSOLUTE TERMS AND THE AGEOSTROPHIC COMPONENTS ARE NEGLIGIBLE.

FIGURE 1 SHOWS THE 250 MB ANALYSIS VALID 12Z JUNE 12TH, 1978 (THE RIDGE LINE IS SUPERIMPOSED). FIGURE 3 SHOWS THE NORTHERN EDGE OF THE CIRRUS STREAKS AS DETERMINED FROM THE SATELLITE PICTURE OF FIGURE 2. (IT IS ANTICIPATED THAT THE CIRRUS STREAKS WILL NOT BE DISCERNIBLE ON THE COPIES OF THE SATELLITE PICTURE THAT WILL REACH THE READERS. IT IS HOPED THAT THE READERS WILL HAVE FAITH THAT THEY HAVE BEEN ANALYZED CORRECTLY.) THE RIDGE LINE LIES NORMAL TO THE TANGENT AT THE POINT OF MAXIMUM ANTI-CYCLONIC CURVATURE OF EACH OF THESE CIRRUS STREAKS. THE RIDGE LINES ARE CONSTRUCTED AND SUPERIMPOSED ON FIGURE 3.

THE RIDGE LINES OF FIGURES 3 AND 1 CAN NOW BE COMPARED AND ARE SHOWN TO BE IN CLOSE AGREEMENT. THEREFORE, THE ANALYST AT THE PACIFIC WEATHER CENTER MAY HAVE CONCLUDED THAT THE RIDGES AT 250 MB ARE WELL PLACED ON THE ANALYSIS. THIS GIVES GREATER CREDIBILITY TO THE PROGNOSIS BASED ON THE INITIAL FIELD.

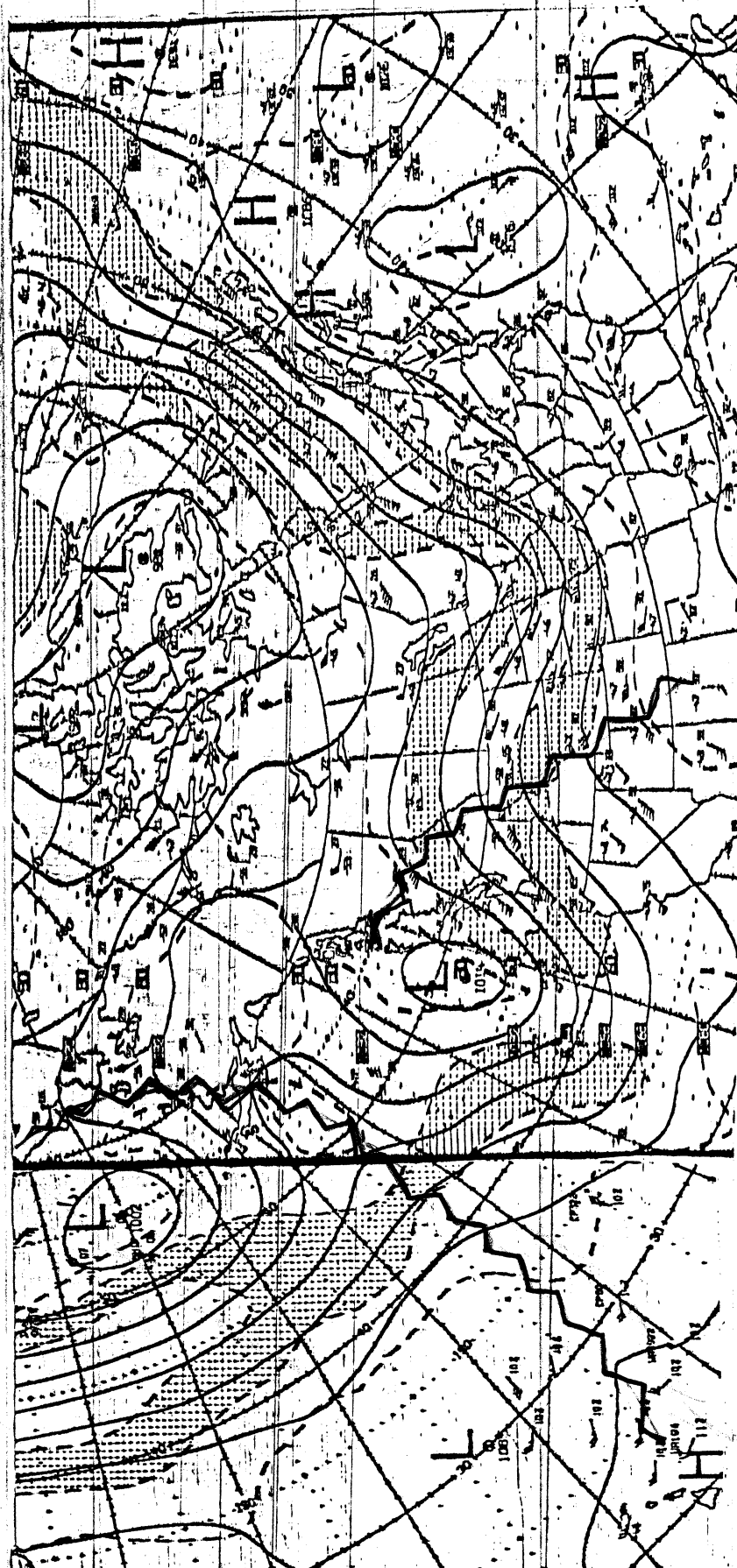


Figure 1. 250 mb chart valid 12Z June 12th, 1978.

121 12JUN78 33E-2EC 00341 19231 UC2



Figure 2. Satellite picture (EC enhancement) valid 1215Z June 12th, 1978

1215 12JN78 33E-2EC 00341 19231 UC2



Figure 3. Ridge lines obtained from cirrus streaks (tracers) seen on satellite picture of Figure 3.