



PACIFIC REGION TECHNICAL NOTES

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Pacific Weather Centre Five-Day Forecast Verification

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INTRODUCTION

Longrange forecasts for three to five days hence are issued each morning by the Pacific Weather Centre. These forecasts are of greatest concern to those who have an economic interest in the weather for the five-day period. Since precipitation is the most critical forecast event and problem, the verification scheme was based primarily on precipitation. In this preliminary look at the three-five day forecasts, only the forecasts for the south coast were studied with verification for the lower mainland area.

VERIFICATION SCHEME AND RESULTS

The forecasts for each day are rated as good, fair or poor: good - if precipitation is correctly forecast to occur or not occur, fair - if there is no precipitation forecast or observed and if cloud amounts are reasonable, i.e., forecast is cloudy and broken clouds occur. Poor - if precipitation is forecast and does not occur or occurs unforecast. The period of study was from December 23, 1978 to April 1, 1979, 100 days of the winter season.

The scores for days 3-5 are shown in table 1, with good and fair forecasts combined and labeled useable forecasts.

During the 100 day test period precipitation occurred on 46 days with two clear and cold periods of 12 days and 10 days. As expected the useability of the forecast decreased with time into the future decreasing from 60% (day 3) to 50% (day 5). These are all unimpressive scores but because this period was drier than normal, the forecasts were better than would be achieved if dynamics were not considered. The "normal" number of days of precipitation for this period is 56. If the forecast had been for precipitation every day, as this was the most climatically probable event, the best score would have been only 46% with all precipitation days forecast. This is not much below the 50% of the 5th day but this type of forecast would be of no value to the users. The forecasts during this period got off to a poor start because during 12 clear days from December 28 to January 8 the 4th and 5th days forecasts were continually for clouds and precipitation. This was the typical blocking pattern over the eastern Pacific which lasted from 5 to 10 days. When the change occurred finally on January 9th, it was missed by all forecasts for that day. The 3, 4, and 5 day forecasts for January 9th

were all for clear and cold. Had we missed only the change in patterns and not the establishment of the pattern all of the scores would have been about 5% higher than they are. The next block during which no precipitation occurred was from March 19, 1979, to March 28, 1979. This situation was handled much better with change on March 29 forecast in days 3 and 4. In the period between the blocking situations when there was a predominately westerly flow aloft, conditions in Vancouver remained the same for 1 to 3 days depending on the strength of the flow and the amplitude of the dominant longwave pattern. During this period the weather is closer to the climatic normal and the forecasting of precipitation on a day to day basis appears beyond the ability of current long range forecasts by numerical models.

The key to improving over 3 to 5 day forecasts during the winter months appears to be on the early recognition of Blocking patterns. The forecasts issued by the PWC show a definite level of skill above climatology for the period studied.

TABLE I.
NUMBER OF FORECASTS OF EACH TYPE

DAY	GOOD	FAIR	POOR	USEABLE%
3	40	20	40	60
4	35	19	46	54
5	27	23	50	50