



PACIFIC REGION TECHNICAL NOTES

83-012
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Experiment in Forecasting Without Numerical Models (Verification - Aviation Aerodrome Forecasts)

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INTRODUCTION

This is the last in a series of five Technical Notes dealing with the verification of a forecast experiment that was conducted at the Pacific Weather Centre during the period from November 29th to December 10, 1982. For further information dealing with this experiment see Pacific Region Technical Notes 83-007, 83-008, 83-009, 83-010, and 83-011.

PROCEDURE

1. For the 10 day period - November 29-December 3 and December 6-10, the following 1630 GMT issues of the aerodrome forecasts were verified:

<u>Coast</u>		<u>Interior</u>	
YYJ	YVR	YKA	YXT
YXX	YPR	YYF	YRV
YCD	YAZ	YLW	YWL
YZP	YZT	YCG	YQZ
		YXC	YZY
		YXS	YYD

This amounted to 200 forecasts.

2. The following forecast ranges for ceilings and visibilities were defined:

Range 1	0 - 700 feet and/or 0 - 3/4 miles
Range 2	800 - 1500 feet and/or 1 - 4 miles
Range 3	1600 - 3000 feet and/or 5 - 8 miles
Range 4	Greater than 3000 feet and/or greater than 8 miles

These ranges were chosen because they are more suitable to B.C. aviation requirements and also because they differed from the traditional ranges.

3. All hourly reports and specials were examined and a subjective "perfect" forecast was written using the above defined ranges.

4. The "perfect" forecasts were compared to the forecasts issued by the office and the experimental team. The lowest range during any time period was considered the forecast range. The analyses of this data appears in Tables 1-4.
5. A completely subjective evaluation of each forecast was also done and the results are tabulated in Table 5.

COMMENTS AND OBSERVATIONS

1. The analyses of the data suggest that there is no significant difference in the aerodrome forecasts issued by the office and experimental team.

ACKNOWLEDGEMENTS

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Table 1

Experimental Team

Coast
Forecast Range

Observed Range	Forecast Range				Total
	(1)	(2)	(3)	(4)	
(1)	2	1	3	0	6
(2)	1	13	15	1	30
(3)	4	14	20	1	39
(4)	2	21	32	32	87
Total	9	49	70	34	162

$$\% \text{ correct } = \frac{67}{162} = 41\%$$

% correct dry period = 56%

% correct wet period = 31%

Table 2

Office

Coast
Forecast Range

Observed Range	Forecast Range				Total
	(1)	(2)	(3)	(4)	
(1)	0	2	3	2	7
(2)	4	14	10	5	33
(3)	1	15	12	7	35
(4)	2	13	17	39	71
Total	7	44	42	53	146

$$\% \text{ correct } = \frac{65}{146} = 45\%$$

% correct dry period = 71%

% correct wet period = 28%

FT VERIFICATION RANGES

- Range 1 0 - 700 feet and/or 0 - 3/4 miles
- Range 2 800 - 1500 feet and/or 1 - 4 miles
- Range 3 1600 - 3000 feet and/or 5 - 8 miles
- Range 4 Greater than 3000 feet and/or greater than 8 miles

Table 3

Experimental Team

Interior
Forecast Range

Observed Range	Forecast Range				Total
	(1)	(2)	(3)	(4)	
(1)	22	19	8	2	51
(2)	16	34	14	3	67
(3)	6	20	15	6	47
(4)	10	19	32	35	96
Total	54	92	69	46	261

$$\% \text{ correct } = \frac{(106)}{(261)} = 41\%$$

$$\% \text{ correct dry period} = 51\%$$

$$\% \text{ correct wet period} = 32\%$$

Table 4

Office

Interior
Forecast Range

Observed Range	Forecast Range				Total
	(1)	(2)	(3)	(4)	
(1)	22	14	10	4	50
(2)	13	29	14	4	60
(3)	8	19	9	4	40
(4)	4	22	23	32	81
Total	47	84	56	44	231

$$\% \text{ correct } = \frac{(92)}{(231)} = 40\%$$

$$\% \text{ correct dry period} = 49\%$$

$$\% \text{ correct wet period} = 32\%$$

FT VERIFICATION RANGES

- Range 1 0 - 700 feet and/or 0 - 3/4 miles
- Range 2 800 - 1500 feet and/or 1 - 4 miles
- Range 3 1600 - 3000 feet and/or 5 - 8 miles
- Range 4 Greater than 3000 feet and/or greater than 8 miles

Table 5

Subjective Assessment

	Experimental Team Better	About the Same	Office Better
80 Forecasts for Coast	24	34	22
120 Forecasts for Interior	44	35	41
Total	68	69	63