PACIFIC REGION TECHNICAL NOTES

83-011
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Experiment in Forecasting Without Numerical Models
(Verification - Public Forecasts, Temperatures)

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INTRODUCTION

This is the fourth 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 10th, 1982. For further information dealing with this experiment see Pacific Region Technical Notes 83-007, 83-008, 83-009, and 83-010.

PROCEDURE

During the period of the experiment all 10 AM Public Temperature forecasts issued by the Pacific Weather Centre and the experimental team were examined and verified using the following methods:

1. All forecast regions (coastal and interior) were used.

2. The following stations were used for the various regions:

   Coast

   Greater Vancouver - Vancouver Airport
   Greater Victoria - Victoria Airport
   Lower Fraser Valley - Abbotsford
   Howe Sound/Whistler - Squamish, Alta Lake
   Sunshine Coast - Powell River
   East Coast Vancouver Island - Comox
   North and West Vancouver Island - Port Hardy, Amphitrite
   Northern Mainland - Prince Rupert, Terrace
   Queen Charlottes - Sandspit

   Interior

   Thompson - Kamloops
   Okanagan - Penticton
   Columbia - Revelstoke
   Kootenay - Castlegar, Cranbrook
   Chilcotin Cariboo - Williams Lake
   Central Interior - Prince George

3. If a forecast read "highs near 5" then 5 was used as the forecast temperature.

4. If a forecast read "highs 3 to 5" then the middle value was used as the forecast temperature (i.e. in this case 4).

5. If the forecast read "highs 1 to 4" the lowest whole temperature nearest the middle value was used (i.e. in this case 2) as the forecast temperature.

6. Conventions 3 to 5 were also used for the forecast low temperatures.

7. If a forecast used different temperatures for the same region (i.e. Howe Sound/Whistler - highs 3 near coast and minus 3 inland) conventions 3-6 were applied. However, if no such difference was indicated then in case of high temperatures, the highest temperature was used for the coast and the lowest for the interior. Similar methods were used for the north and west of Vancouver Island, Northern Mainland, and the Kootenay Regions.

8. The available FMs (computer produced temperature guidance from the Canadian Meteorological Centre) based on the 00 GMT data was also verified for a number of stations for comparison.

9. Verifications were carried out for the MAXIMUM TEMPERATURE TODAY, THE MINIMUM TEMPERATURE TONIGHT, and the MAXIMUM TEMPERATURE THE NEXT DAY.

10. Ten temperature forecasts were made for each region and the mean absolute error (in °C), the bias and the number of cases of errors greater or equal to 5°C were tabulated in Figures 1, 2, and 3 for the experimental team and the official forecasts. The available FMs were also verified and compared to the results of the office and the experimental team (Figures 4, 5, and 6). Since the experiment stretched over two weeks one of which was relatively cloudy and the other primarily clear, the data was broken into these groupings. See legend below figures for explanation.

COMMENTS AND OBSERVATIONS

1. For the maximum temperature for Day-1, the mean absolute error is about 1½ degrees for both experimental team and the official forecast.

2. For the maximum temperature for Day-2, the mean absolute error ranged from about 2-3°C.

3. For the minimum temperature, the mean absolute error ranged from about 2-3°C.

4. In general terms the official forecasts were somewhat better than those of the experimental team. In particular, the number of errors greater than 5°C on the minimum temperatures, and the second day maximum temperatures in favour of the official forecasts by 29 to 47.

5. The official forecast seemed to have the following bias; under cloudy conditions the temperatures are forecast too cold, and under clear conditions the temperatures are forecast too warm.

6. The experimental team appears to have a bias of forecasting temperatures too low, although this too is cloud dependent.

7. The FMs appear to do a much better job on cloudy days than on clear days.

8. There is also considerable evidence in the data that variations in temperatures within a region are significant and should be forecast (in particular the Kootenay region).

Figure 1

Maximum - Today

	Experiment						Office					
	Mean Absolute Error		Bias		Error ≥ 5°C		Mean Absolute Error		Bias		Error ≥ 5°C	
Greater Vancouver	1.6		0				1.0		- .2			
	1.2	1.4	- .2	- .2		0	.8	.9	+ .8	+ .3		0
Greater Victoria	1.4		- .6				1.4		-1.0			
	1.8	1.6	-1.4	-1.0		0	1.0	1.2	- .2	- .6		0
Lower Fraser Valley	1.6		+ .4				.6		- .2			
	3.0	2.3	-2.6	-1.1		0	1.6	1.1	- .4	- .3		0
Howe Sound	2.4		+ .4		1		1.0		- .2			
	2.2	2.3	-1.4	- .5	0	1	1.4	1.2	+1.0	+ .4		0
Whistler	1.8		+ .2				.6		- .2			
	2.6	2.2	-1.8	- .8		0	2.0	1.3	+1.2	+ .5		0
Sunshine Coast	1.0		+ .2				1.4		-1.4		1	
	1.6	1.3	- .4	- .1		0	.6	1.0	+ .6	- .4		1
East Vancouver Island	1.2		- .4				1.2		- .8			
	1.2	1.2	- .4	- .4		0	1.2	1.2	+ .8	0		0
North Vancouver Island	.6		- .2				.6		- .6			
	2.8	1.7	-2.8	-1.5		0	1.0	.8	- .6	- .6		0
West Vancouver Island	.8		+ .4				1.2		-1.2			
	2.2	1.5	-2.2	- .9		0	2.4	1.8	-2.0	-1.6		0
Northern Mainland - Coast	.6		+ .2				.6		- .2			
	1.6	1.1	- .8	- .3		0	2.8	1.7	+1.2	+ .5		0
Northern Mainland - Interior	.8		- .4				2.2		- .2			
	1.8	1.3	+ .2	- .1		0	2.4	2.3	+2.0	+ .9	1	1
Queen Charlottes	1.2		+1.2				1.0		+ .6			
	1.2	1.2	-1.2	0		0	.6	.8	- .6	0		0
Coast	1.3		+ .1		1		1.0		- .5		0	
	1.9	1.6	-1.1	- .5	0	1	1.6	1.3	+ .3	- .1	2	2
Thompson	.6		- .4				1.6		- .8			
	2.0	1.3	+2.0	+ .8		0	1.6	1.6	+1.2	+ .2		0
Okanagan	1.8		-1.4		1		1.6		- .8			
	1.4	1.6	- .6	-1.0		1	1.0	1.3	+ .2	- .3		0
Columbia	.4		- .4				1.2		-1.2			
	1.8	1.1	-1.0	- .7		0	2.2	1.7	-2.2	-1.7		0
Kootenay - West	.8		0				1.2		0			
	2.0	1.4	0	0		0	1.0	1.1	- .6	- .3		0
Kootenay - East	1.6		-1.6		1		2.4		-2.0		1	
	2.6	2.1	+2.2	+ .3	2	3	1.4	1.9	+1.4	- .3		1
Chilcotin/Cariboo	.2		+ .2				1.0		- .2			
	2.0	1.1	+2.0	+1.1		0	1.8	1.4	+1.4	+ .6		0
Central Interior	1.4		-1.0				.8		- .8			
	1.8	1.6	+ .2	- .4		0	2.0	1.4	0	- .4	1	1
Interior	1.0		- .7		2		1.4		- .8		0	
	2.0	1.5	+ .7	0	2	4	1.6	1.5	+ .2	- .3	2	2

LEGEND

Mean Absolute Error °C		Bias °C		Error ≥ 5°C	
Mean Absolute Error for Cloudy Conditions	Total Mean Absolute Error	Bias for Cloudy Conditions	Total Bias	Number of Errors on Cloudy Days	Total Number of Errors
Mean Absolute Error for Mostly Cloudy Conditions		Bias for Mostly Cloudy Conditions		Number of Errors on Mostly Clear Days	

Figure 2

Minimum - Tonight

	Experiment						Office					
	Mean Absolute Error		Bias		Error ≥ 5°C		Mean Absolute Error		Bias		Error ≥ 5°C	
Greater Vancouver	2.0		-1.6				1.8		- .6			
	1.6	1.8	+ .4	- .6		0	1.4	1.6	+1.4	+ .4		0
Greater Victoria	3.2		-3.2		2		2.0		- .8			
	1.2	2.2	+ .4	-1.4		2	.8	1.4	+ .8	0		0
Lower Fraser Valley	2.0		-2.0				1.6		-1.2			
	2.4	2.2	+ .4	- .8		0	1.4	1.5	+ .6	- .3		0
Howe Sound	.8		+ .8				1.6		+1.2			
	1.2	1.5	- .2	+ .3		0	1.0	1.3	+ .6	+ .9		0
Whistler	1.4		-1.4				1.0		- .2			
	4.0	2.7	+2.8	+ .7	2	2	4.0	2.5	+4.0	+1.9	2	2
Sunshine Coast	2.4		-1.6				2.2		-1.9		1	
	2.4	2.4	-1.2	-1.4		0	1.2	1.7	+ .4	- .7		1
East Vancouver Island	3.0		-2.6		1		1.6		- .4			
	2.2	2.6	-1.0	-1.8		1	1.0	1.3	+ .6	+ .1		0
North Vancouver Island	1.0		- .2				2.0		+1.2			
	1.8	1.4	- .2	- .2		0	1.8	1.9	+1.0	+1.1		0
West Vancouver Island	1.2		-1.2				1.4		+ .2			
	5.2	3.2	-4.8	-3.0	3	3	2.8	2.1	-2.0	- .9	1	1
Northern Mainland - Coast	2.0		0				1.8		+1.0			
	2.2	2.1	- .6	- .3		0	1.8	1.8	+1.0	+1.0		0
Northern Mainland - Interior	2.8		-1.2		1		2.0		- .4			
	2.0	2.4	-1.2	-1.2	1	2	2.4	2.2	+1.2	+ .4	1	1
Queen Charlottes	1.0		+ .2				1.8		+1.4			
	1.6	1.3	- .8	- .3		0	2.2	2.0	+ .2	+ .8		0
Coast	1.9		-1.1		4		1.8		0		1	
	2.5	2.2	- .5	- .8	6	10	1.8	1.8	+ .8	+ .4	4	5
Thompson	1.2		- .4				1.2		-1.2			
	2.8	2.0	+2.0	+ .8	1	1	2.8	2.0	+2.8	+ .8	1	1
Okanagan	1.6		-1.6				1.2		-1.2			
	4.0	2.8	- .8	-1.2	3	3	2.4	1.8	+ .8	- .2		0
Columbia	2.6		-2.6				3.0		-3.0			
	3.8	3.2	- .6	-1.6	2	2	2.4	2.7	0	-1.5		0
Kootenay - West	2.6		-2.6		1		2.4		-2.4			
	5.8	4.2	-5.8	-4.2	4	5	1.2	1.8	-1.2	-1.8		0
Kootenay - East	1.4		- .6				2.8		-1.6		1	
	3.0	2.2	+2.6	+1.0	1	1	3.8	3.3	+3.8	+1.1	2	3
Chilcotin/Cariboo	1.8		+1.8		1		2.4		+2.0		1	
	3.2	2.5	+2.8	+2.3	2	3	4.0	3.2	+4.0	+3.0	1	2
Central Interior	1.0		- .6				1.8		- .6			
	2.4	1.7	-1.2	- .9		0	2.0	1.9	-1.2	- .9	1	1
Interior	1.8		- .9		2		2.1		-1.3		2	
	3.6	2.7	- .1	- .5	13	15	2.7	2.4	+1.3	0	5	7

LEGEND

Mean Absolute Error °C		Bias °C		Error ≥ 5°C	
Mean Absolute Error for Cloudy Conditions	Total Mean Absolute Error	Bias for Cloudy Conditions	Total Bias	Number of Errors on Cloudy Days	Total Number of Errors
Mean Absolute Error for Mostly Cloudy Conditions		Bias for Mostly Cloudy Conditions		Number of Errors on Mostly Clear Days	

Figure 3

Maximum - 2nd Day

	Experiment						Office					
	Mean Absolute Error		Bias		Error ≥ 5°C		Mean Absolute Error		Bias		Error ≥ 5°C	
Greater Vancouver	2.4		- .4		1		2.4		-1.2		1	
	1.0	1.7	-1.0	- .7		1	1.0	1.7	+1.0	- .1		1
Greater Victoria	2.0		-1.2		1		2.4		-2.0		1	
	2.0	2.0	-1.6	-1.4		1	2.0	2.2	+ .4	- .8		1
Lower Fraser Valley	2.6		- .2		2		3.0		-1.8		1	
	2.4	2.5	-2.4	-1.3	1	3	2.0	2.5	0	- .9		1
Howe Sound	2.8		+ .4		1		1.8		- .6		1	
	2.0	2.4	-1.2	- .4		1	2.2	2.0	+1.8	+ .6		1
Whistler	2.4		- .4		1		1.8		- .6			
	2.6	2.5	- .2	- .3		1	2.8	2.3	+2.8	+1.1	1	1
Sunshine Coast	2.2		+ .2		1		2.2		-1.8		1	
	1.4	1.8	-1.0	- .4		1	1.6	1.9	+ .8	- .5		1
East Vancouver Island	2.4		- .4		1		1.8		-1.4		1	
	1.0	1.7	-1.0	- .7		1	1.4	1.6	+1.0	- .2		1
North Vancouver Island	.8		- .4		1		1.0		-1.0			
	3.0	1.9	-3.0	-1.7		1	1.0	1.0	- .2	- .6		0
West Vancouver Island	1.4		+ .2				1.8		-1.8		1	
	2.8	2.1	-1.2	- .5		0	2.8	2.3	-2.0	-1.9		1
Northern Mainland - Coast	1.4		+ .6				.4		- .4			
	3.0	2.2	-1.4	- .4		0	1.8	1.1	+ .6	+ .1		0
Northern Mainland - Interior	2.4		- .8				3.2		+ .8		1	
	.8	1.6	0	+ .4		0	3.0	3.1	+2.2	+1.5	1	2
Queen Charlottes	2.6		+2.6		1		1.0		+ .6			
	1.6	2.1	-1.6	+ .5		1	.8	.9	- .4	+ .1		0
Coast	2.1		0		10		1.9		- .9		8	
	2.0	2.0	-1.3	- .6	1	11	1.8	1.9	+ .7	- .1	2	10
Thompson	1.8		- .6		1		2.4		-2.0		1	
	2.0	1.9	+2.0	+ .5		1	2.2	2.3	+1.8	- .1		1
Okanagan	2.6		-1.8		2		2.4		-2.4		1	
	2.0	2.3	0	- .9		2	1.0	1.7	+1.0	- .7		1
Columbia	1.4		-1.4				1.8		-1.8			
	2.2	1.8	-1.4	-1.4		0	1.8	1.8	-1.4	-1.6		0
Kootenay - West	2.6		-1.8		1		2.4		-2.0		1	
	2.8	2.7	-1.2	-1.5	1	2	2.0	2.2	-1.2	-1.6		1
Kootenay - East	3.2		- .8		2		3.6		-3.6		2	
	2.6	2.9	+2.2	+ .7	1	3	2.2	2.9	+2.2	- .7		2
Chilcotin/Cariboo	2.0		+ .4				.8		- .4			
	3.6	2.8	+ .4	+ .4	2	2	1.8	1.3	+1.0	+ .3		0
Central Interior	1.8		+ .2				1.4		-1.4			
	2.8	2.3	- .8	- .3	1	1	3.0	2.2	+ .6	- .4	2	2
Interior	2.2		- .8		6		2.1		-1.9		5	
	2.6	2.4	+ .1	- .4	5	11	2.0	2.0	+ .6	- .7	2	7

LEGEND

Mean Absolute Error °C		Bias °C		Error ≥ 5°C	
Mean Absolute Error for Cloudy Conditions	Total Mean Absolute Error	Bias for Cloudy Conditions	Total Bias	Number of Errors on Cloudy Days	Total Number of Errors
Mean Absolute Error for Mostly Cloudy Conditions		Bias for Mostly Cloudy Conditions		Number of Errors on Mostly Clear Days	

Figure 4

Maximum - Today

	FMs 04Z						Mean Absolute Error			
	Mean Absolute Error		Bias		Error ≥ 5°C		FM - Experimental Team		FM - Office	
	1.6		+ .8				0		+ .6	
Greater Vancouver	.4	1.0	0	+ .4		0	- .8	- .4	- .4	+ .1
	.4		+ .4				-1.0		-1.0	
Greater Victoria	1.2	.8	-1.2	- .4		0	- .6	- .8	+ .2	- .4
	2.0		- .8				+ .4		+1.4	
Lower Fraser Valley	2.0	2.0	- .8	- .8		0	-1.0	- .3	+ .4	+ .9
Howe Sound										
Whistler										
Sunshine Coast										
East Vancouver Island										
	1.0		+ .6				+ .4		+ .4	
North Vancouver Island	1.6	1.3	+ .8	+ .7		0	-1.2	- .4	+ .6	+ .5
West Vancouver Island										
	1.0		- .2				+ .4		+ .4	
Northern Mainland - Coast	2.2	1.6	+1.0	- .4	1	1	+ .6	+ .5	- .6	- .1
	2.0		+ .4				+1.2		- .2	
Northern Mainland - Interior	3.2	2.6	+2.8	+1.6		0	+1.4	+1.3	+ .8	+ .3
	N/A		N/A							
*Queen Charlottes	.8	1.0	- .4	0		0		- .2		+ .2
Coast										
	1.6		+1.6				+1.0		0	
Thompson	3.2	2.4	+2.4	+2.0	1	1	+1.2	+1.1	+1.6	+ .8
	1.2		+ .8				- .6		- .4	
Okanagan	2.2	1.7	+1.8	+1.3		0	+ .8	+ .1	+1.2	+ .4
	1.4		+ .6				+1.0		+ .2	
Columbia	1.0	1.2	- .2	+ .2		0	- .8	+ .1	-1.2	- .5
	N/A		N/A				N/A		N/A	
*Kootenay - West	1.4	1.7	+1.4	+1.7		0	- .6	+ .3	+ .4	+ .6
	1.2		+1.2				- .2		-1.0	
Kootenay - East	1.6	1.4	+1.6	+1.4		0	-1.0	- .6	0	- .5
	N/A		N/A		1					
*Chilcotin/Cariboo	4.2	4.3	+4.2	+4.3	3	4		+3.2		+2.9
	1.4		+1.0				0		+ .6	
Central Interior	2.2	1.8	+1.8	+1.6	1	1	+ .4	+ .2	+ .2	+ .4
Interior										

* Note: 6 cases only (1 cloudy, 5 clear)
N/A: not available

LEGEND

Mean Absolute Error °C		Bias °C		Error ≥ 5°C		FM - Experimental Team		FM - Office	
Mean Absolute Error for Cloudy Conditions	Total Mean Absolute Error	Bias for Cloudy Conditions	Total Bias	Number of Errors on Cloudy Days	Total Number of Errors	Difference in Mean Absolute Error Cloudy Conditions	Average Difference	Difference in Mean Absolute Error Cloudy Conditions	Average Difference
Mean Absolute Error for Mostly Cloudy Conditions		Bias for Mostly Cloudy Conditions		Number of Errors on Mostly Clear Days		Difference in Mean Absolute Error Mostly Cloudy Conditions		Difference in Mean Absolute Error Mostly Cloudy Conditions	

Figure 5

Minimum - Tonight

	FMs 04Z						Mean Absolute Error			
	Mean Absolute Error		Bias		Error ≥ 5°C		FM - Experimental Team		FM - Office	
Greater Vancouver	2.4		- .4				+ .4		+ .6	
	2.6	2.5	+2.6	+1.1		0	+1.0	+ .7	+1.2	+ .9
Greater Victoria	1.8		-1.4				-1.4		- .2	
	3.2	2.5	+3.2	+ .9	1	1	+2.0	+ .3	+2.4	+1.1
Lower Fraser Valley	2.8		-2.8				+ .8		+1.2	
	1.2	2.0	+1.2	- .8		0	-1.2	- .2	- .2	+ .5
Howe Sound										
Whistler										
Sunshine Coast										
East Vancouver Island										
North Vancouver Island	.8		0				- .2		-1.2	
	4.0	2.4	+4.0	+2.0	3	3	+2.2	+1.0	+2.2	+ .5
West Vancouver Island										
Northern Mainland - Coast	2.2		-1.4		1		+ .2		+ .4	
	3.4	2.8	+2.6	+ .6	2	3	+1.2	+ .7	+1.6	+1.0
Northern Mainland - Interior	1.6		+1.2				-1.2		- .4	
	2.4	2.0	+2.4	+1.8	1	1	+ .4	- .4	0	- .2
*Queen Charlottes	N/A		N/A							
	1.8	1.5	+1.0	+ .8		0		+ .2		- .5
Coast										
Thompson	1.6		-1.6				+ .4		+ .4	
	2.6	2.1	+2.6	+ .5	1	1	- .2	+ .1	- .2	+ .1
Okanagan	1.6		- .4				0		+ .4	
	2.0	1.8	+1.6	+ .6	1	1	-2.0	-1.0	- .4	0
Columbia	1.2		+1.2				-1.4		-1.8	
	5.2	3.2	+5.2	+3.2	3	3	+1.4	0	+2.8	+ .5
*Kootenay - West	N/A		N/A							
	1.6	1.7	- .4	0		0		-2.5		- .1
Kootenay - East	1.6		0				+ .2		-1.2	
	5.2	3.4	+5.2	+3.0	4	4	+2.2	+1.2	+1.4	+ .1
*Chilcotin/Cariboo	N/A		N/A							
	5.8	5.3	+5.4	+5.0	4	4		+2.8		+2.1
Central Interior	3.0		- .6		1		+2.0		+1.2	
	3.0	3.0	- .2	- .2	1	2	+ .6	+1.3	+1.0	+1.1
Interior										

* Note: 6 cases only (1 cloudy, 5 clear)
N/A: not available

LEGEND

Mean Absolute Error °C		Bias °C		Error ≥ 5°C		FM - Experimental Team		FM - Office	
Mean Absolute Error for Cloudy Conditions	Total Mean Absolute Error	Bias for Cloudy Conditions	Total Bias	Number of Errors on Cloudy Days	Total Number of Errors	Difference in Mean Absolute Error Cloudy Conditions	Average Difference	Difference in Mean Absolute Error Cloudy Conditions	Average Difference
Mean Absolute Error for Mostly Cloudy Conditions		Bias for Mostly Cloudy Conditions		Number of Errors on Mostly Clear Days		Difference in Mean Absolute Error Mostly Cloudy Conditions		Difference in Mean Absolute Error Mostly Cloudy Conditions	

Figure 6

Maximum - Next Day

	FMs 04Z						Mean Absolute Error			
	Mean Absolute Error		Bias		Error ≥ 5°C		FM - Experimental Team		FM - Office	
	1.0		+ .2				-1.4		-1.4	
Greater Vancouver	1.2	1.1	0	+ .1		0	+ .2	- .6	+ .2	- .6
	1.4		-1.0				- .6		-1.0	
Greater Victoria	1.0	1.2	- .2	- .6		0	-1.0	- .8	-1.0	-1.0
	3.0		-1.8		1		+ .4		0	
Lower Fraser Valley	2.2	2.6	- .6	-1.2		1	- .2	+.1	+ .2	+ .1
Howe Sound										
Whistler										
Sunshine Coast										
East Vancouver Island										
	.6		+ .2				- .2		- .4	
North Vancouver Island	1.2	.9	+1.2	+ .7		0	-1.8	-1.0	+ .2	- .1
West Vancouver Island										
	.8		0				- .6		+ .4	
Northern Mainland - Coast	2.6	1.7	+1.4	+ .7	1	1	- .4	- .5	+ .8	+ .6
	1.0		+ .2				-1.4		-2.2	
Northern Mainland - Interior	3.6	2.3	+3.6	+1.9	2	2	+2.8	+ .7	+ .6	- .8
	N/A		N/A							
*Queen Charlottes	.6	.7	- .2	- .3		0		-1.4		- .2
Coast										
	2.6		+ .2		1		+ .8		+ .2	
Thompson	3.8	3.2	+3.8	+2.0	2	3	+1.8	+1.3	+1.6	+ .9
	2.6		-1.8		1		0		+ .2	
Okanagan	1.8	2.2	+1.8	0		1	- .2	- .1	+ .8	+ .5
	1.6		+ .4				+ .2		- .2	
Columbia	1.6	1.6	+1.6	+1.0		0	- .6	- .2	- .2	- .2
	N/A		N/A							
*Kootenay - West	1.8	1.7	+1.4	+1.3		0		-1.0		- .4
	2.2		- .2				-1.0		-1.4	
Kootenay - East	4.6	3.4	+4.6	+2.8	2	2	+2.0	+ .5	+2.4	+ .5
	N/A		N/A							
*Chilcotin/Cariboo	2.2	1.8	+1.8	+1.7	1	1		-1.0		+ .5
	1.6		+ .8				- .2		+ .2	
Central Interior	4.4	3.0	+4.0	+2.4	3	3	+1.6	+ .7	+1.4	+ .8
Interior										

* Note: 6 cases only (1 cloudy, 5 clear)
N/A: not available

LEGEND

Mean Absolute Error °C		Bias °C		Error ≥ 5°C		FM - Experimental Team		FM - Office	
Mean Absolute Error for Cloudy Conditions	Total Mean Absolute Error	Bias for Cloudy Conditions	Total Bias	Number of Errors on Cloudy Days	Total Number of Errors	Difference in Mean Absolute Error Cloudy Conditions	Average Difference	Difference in Mean Absolute Error Cloudy Conditions	Average Difference
Mean Absolute Error for Mostly Cloudy Conditions		Bias for Mostly Cloudy Conditions		Number of Errors on Mostly Clear Days		Difference in Mean Absolute Error Mostly Cloudy Conditions		Difference in Mean Absolute Error Mostly Cloudy Conditions	