



PACIFIC REGION TECHNICAL NOTES

81-014
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DEVELOPING LOW PRESSURE AREAS
OVER THE NORTHEASTERN PACIFIC;
HOW WELL ARE THEY FORECAST?
A SEQUEL TO TECHNICAL NOTE 80-029

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INTRODUCTION

This technical note is an update to technical note number 80-029 issued September 12, 1980.

The study examines and compares most of the developing, moving, low pressure areas over the northeastern Pacific. Over the past winter season 1980-81 12 more cases were added to the data set. This provides a total data set of 26 cases. See Table 1 for individual case information.

OBJECTIVES

- (1) To examine all developing low pressure areas for the period October 1979 to March 1981 inclusive, using the following selection criteria:
 - (i) low centre must have at least 15 knots average speed over 24 hours;
 - (ii) low centre must maintain its identity over the 24 hour period;
 - (iii) the 24 hour period must begin at either 0000Z or 1200Z;
 - (iv) low centre must deepen at least 8 mb over 24 hours;
 - (v) initial positions must be within the LFM chart boundaries.
- (2) To determine any bias of the progs for speed, direction and development. The initial and final positions and depths as determined by the Pacific Weather Centre (PWC) surface analyses were compared with the 24 hour CMC spectral prognosis, the 24 hour LFM prognosis, the 24 hour U.S. SPECTRAL prognosis and the 18 hour PWC prognosis.

AVERAGE BIAS IN DEPTHS

	<u>1979-80</u>	<u>1980-81</u>	<u>TOTAL</u>
CMC	16 mb	17 mb	16 mb
LFM	12 mb	13 mb	13 mb
US SPECTRAL	-	14 mb	14 mb
PWC	10 mb	10 mb	10 mb

ACCURACY OF FORECAST POSITION

See Figure 1 which depicts the forecast low position relative to the final actual low centre position.

The shaded square represents a 3° variation around the final actual low position. Low centre forecasts falling within this square would be a reasonable 24 hour forecast. Figure 2 shows the size of a 3° square relative to the PWC forecast region.

Percentage of cases falling within this square for each prog are as follows:

CMC	52%
LFM	61%
US SPECT	27%
PWC	81%

The data set was comprised of 26 cases. However only 11 cases utilizing the US SPECTRAL were available. Although there were fewer US SPECTRAL cases they did show a wide variation. 3 of that 11 were within 1°, 4 were much too fast and 4 were much too slow.

The widest variation was shown in the CMC positions. Two of the CMC forecast positions were right off the graph.

The LFM was the best numerical prog for position but it is obvious that the PWC prognostician, using the numerical models as a guide, produced significantly better results.

SUMMARY

The study brings up a couple of good points to remember when dealing with a developing, moving low pressure area over the northeastern Pacific.

- (1) The numerical models underforecast the depth. Although the PWC prog is the best, the central pressure of the low is still 10 mb too shallow on the average.
- (2) The LFM model has the best accuracy for position but this accuracy can be improved by using the man-machine mix.

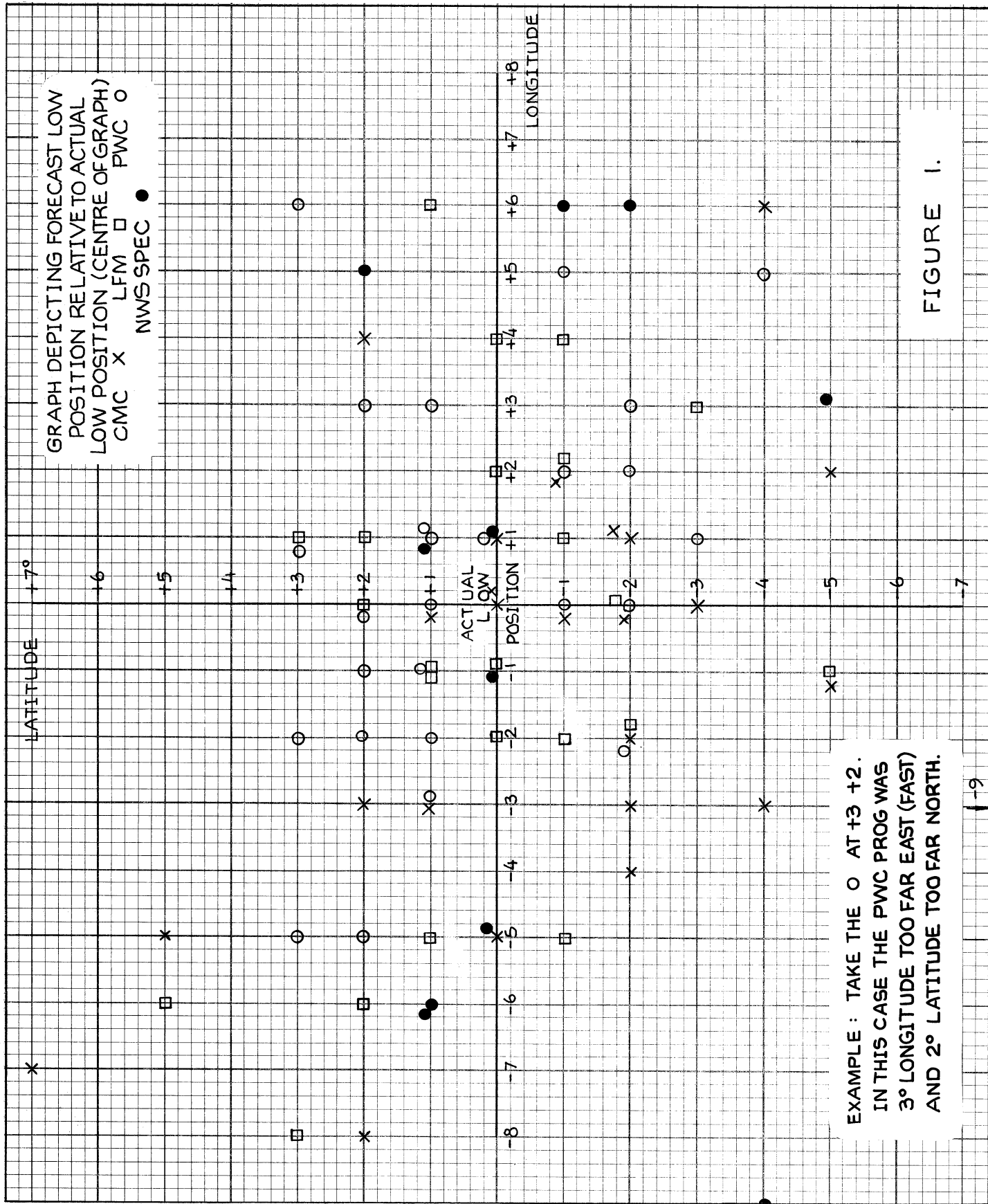


FIGURE 1.

FIGURE 2.

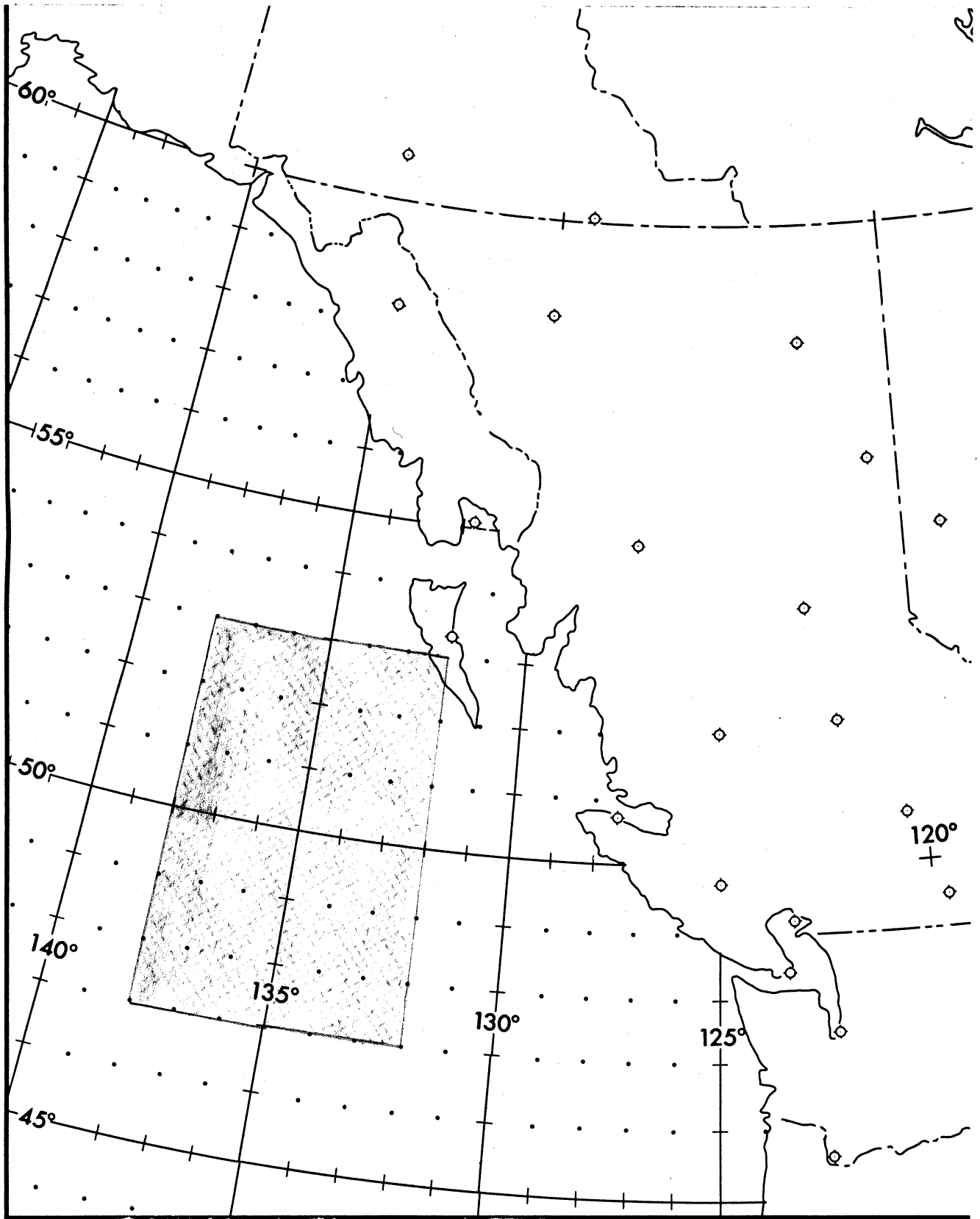


TABLE 1.

CYPRIA MEMBER ID	INITIAL		FINAL		INITIAL		FINAL		INITIAL CMC	24HR PROG CMC		INITIAL LFM		24HR PROG LFM		18 HR PROG PWC		FINAL US SPECTRAL		CYPRIA ONLINE EARLY SOONB	REMARKS
	DATE	TIME	DATE	TIME	LAT	LONG	PRESS	LAT		LONG	PRESS	LAT	LONG	PRESS	LAT	LONG	PRESS	LAT	LONG		
1	OCT 01	12Z	OCT 02	12Z	45	165	992	55	157	978	14	47	166	990	58	156	976			YES	
2	OCT 17	12Z	OCT 16	12Z	48	146	1000	53	137	975	25	47	148	1000	55	145	989			YES	
3	OCT 20	12Z	OCT 21	12Z	44	159	1008	45	141	980	28	43	144	997	46	142	985			NO	BUT USED ON LATE SOONB
4	OCT 21	12Z	OCT 22	12Z	45	141	980	51	138	950	30	45	141	987	50	137	968			YES	BUT REJECTED
5	OCT 24	12Z	OCT 25	12Z	43	133	984	49	134	974	10	44	135	990	52	128	978			NO	
6	NOV 20	12Z	NOV 21	12Z	47	157	966	50	144	950	16	57	160	975	52	144	953			M	
7	NOV 27	00Z	NOV 28	00Z	36	147	982	51	151	949	33	47	145	970	50	147	975			YES	
8	DEC 07	00Z	DEC 08	00Z	52	152	1007	57	138	992	15	50	153	1009	52	140	996			YES	
9	DEC 22	12Z	DEC 23	12Z	47	149	992	49	138	966	26	47	151	999	49	136	989			YES	
10	JAN 01	12Z	JAN 02	12Z	50	147	1002	52	135	990	12	50	148	1000	57	141	1007			YES	
11	JAN 07	00Z	JAN 08	00Z	58	141	1024	50	128	1006	18	62	140	1027	51	129	1007			YES	
12	FEB 02	00Z	FEB 03	00Z	42	143	984	57	143	962	22	55	147	970	54	140	964			YES	
13	MAR 12	00Z	MAR 13	00Z	46	151	1008	48	131	978	30	55	138	1002	50	130	1001			YES	
14	MAR 26	12Z	MAR 27	12Z	46	161	996	54	145	982	14	54	150	1000	49	146	1010			YES	
15	OCT 02	12Z	OCT 03	12Z	47	147	1000	58	142	988	12	47	145	1002	56	144	995			YES	
16	OCT 10	00Z	OCT 11	00Z	45	141	1008	54	137	988	20	42	138	1015	54	133	1005			YES	
17	OCT 23	00Z	OCT 24	00Z	48	145	988	54	143	978	10	49	145	988	56	149	989			YES	
18	OCT 31	12Z	NOV 01	12Z	40	138	990	54	133	977	13	41	139	988	55	138	983			YES	NO WIND
19	NOV 15	00Z	NOV 16	00Z	52	156	996	58	146	966	30	52	155	1000	53	147	1001			YES	BUT REJECTED
20	NOV 18	12Z	NOV 19	12Z	48	166	992	55	157	974	18	48	166	988	56	160	990			YES	BUT REJECTED
21	NOV 26	00Z	NOV 27	00Z	46	153	972	57	147	948	24	48	153	976	55	146	978			YES	
22	DEC 12	00Z	DEC 13	00Z	43	157	986	50	152	976	10	43	159	988	47	152	988			YES	BUT REJECTED
23	JAN 12	00Z	JAN 13	00Z	41	150	980	49	144	972	8	40	142	994	51	144	986			YES	
24	JAN 31	12Z	FEB 01	12Z	48	143	992	57	152	980	12	46	148	994	56	154	985			YES	NO WIND
25	FEB 12	12Z	FEB 13	12Z	38	145	976	49	140	968	8	37	147	988	47	140	987			YES	
26	MAR 6	00Z	MAR 07	00Z	44	145	996	49	138	980	16	45	146	1004	49	139	999			NO	