An Analysis of Weather Conditions off the coast off Shark Bay in November 1941

Refining the search area for HMAS Sydney

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1. Introduction

The area of interest is in an ocean area 390km NW of Geraldton and 320km SW of Carnarvon. The required data covers a time span from 18-28 November 1941. For the time in question the only data available were observations from land based stations. This allowed a reasonable Mean Sea Level (MSL) pressure analysis over the continent. In some situations extrapolation of the pressure pattern to adjacent oceans was possible but verification by surface or other more recent methods (satellite, aircraft) were then not available.

Since the area was, at closest point, 200 km from the coast, inferences from coastal observed winds are likely to present significant problems. Although the 9am coastal winds are unlikely to be affected by the seabreeze, the 3pm observations almost certainly were. The sharp land-sea temperature differential which is already evident in November would have caused strong seabreezes along the coast which overwhelmed the geostrophic flow.

A number of methods are used in this paper to simulate the actual wind over the area. The traditional method of extrapolating the pressure field over the ocean and calculating the geostrophic wind as was done by Courtney (1991) will be reviewed. Pattern matching which involves finding more recent similar MSL pressure analysis was a technique used by Steedman and McCormack (1991). In this study, due to technological advances that option has become more desirable and effective.

2. Data

Initially the source of the data was the Bureau of Meteorology archive called ADAM. In particular observations were extracted from:

- Albany Post Office,
- Cape Leeuwin,
- Carnarvon Post office,
- Esperance Post Office,
- Geraldton Port,
- Kalgoorlie Post Office,
- Meekatharra Post office and
- Perth City.

The main data extracted was station level pressure or corrected MSL pressure. Not all stations had both available in the data base. In addition, the plotted MSL pressure charts and the Daily Weather Bulletin were scrutinised at the National Archive Centre. The data extracted from the plotted charts was considered reliable, especially as it was also confirmed by the values plotted on the Daily Weather Bulletin. There were a few exceptions. Efforts were made to reconcile the data in the Archive Data records (ADAM), mainly to allow the use of 3pm data which was not available on plotted charts. If the 9am archived data from ADAM was consistent with the 9am plotted pressure on the MSL analysis then the 3pm data was also considered reliable.

A number of stations had Station level pressure values archived. This could be converted readily to MSL using the hydrostatic equation. However, difficulties arose when it was found

the station height was often recorded but not the barometer height and in any case, the values as they were applied in the database were often suspect. Without an accurate station height, the calculated MSL pressure did not match. Even adjusting the height to try to match the 9am plotted data was not always successful.

Albany had archived Station Level Pressure and MSL pressure but the latter did not concur with the plotted data. Recalculating the MSL pressure using the hydrostatic equation gave a good match and therefore could be used for the 3pm data. A similar situation existed with **Cape Leeuwin** data where the archived MSL pressure data did not match the plotted values but the re-calculated values did. **Carnarvon Post Office** had only Station Level Pressure archived but the calculated MSL pressure matched the 9am data and was then also used for 3pm. **Esperance Post Office** archived Station Level and MSL pressure data was consistent with the plotted data. **Kalgoorlie Post Office** had only archived Station Level pressure data, but matching this to the plotted 9am pressures proved futile, so no 3pm data could be inferred. A similar situation existed with **Meekatharra Post office**. For **Geraldton** a copy of the monthly summary of weather reports (A9 and F88) were obtained for Geraldton Airport and Geraldton Port. A plotting error on 23rd November was rectified by checking this information.

Appendix 1 has the pressure readings, the data that was archived, the final estimated MSL pressure value and an annotation to show the source of the final value.

3. Method

3.1 Pattern Matching

Pressure gradients from Geraldton to Carnarvon, Perth to Carnarvon, Geraldton to Meekatharra and Geraldton to Onslow along with information about pressure changes, were matched against a data base of pressure readings assembled for the period 1968-2007. The best matched dates were checked by accessing the online Australian Bureau of Meteorology MSL analysis archive.

If the match was high and occurred 2003 or later, then the Quickscat winds were accessed from http://manati.orbit.nesdis.noaa.gov and an estimate of winds in the area was made. The Quickscat winds are available for approximately 6am and 6pm daily. Information regarding Quickscat derived surface winds can be found at http://winds.jpl.nasa.gov/aboutScat/index.cfm

NCEP/DOE 2 Reanalysis data provided by the NOAA/OAR/ESRL PSD, Boulder, Colorado, USA, from their Web site at http://www.cdc.noaa.gov was accessed to obtain U (W/E) and V (N/S) wind components over the area which when combined gave the wind direction and speed. This data was available 4 times per day at a grid resolution of 2.5 degrees X 2.5 degrees. Two sets of data were accessed: the actual values for 00 UTC (8 am WST) for the all matching analysis and also a mean of the values from 1800 UTC to 0600 UTC. In the tables and appendices the data is labelled “ESRL”. The MSL pressure field was also scrutinised to ensure the pressure pattern was good match. It was then archived for later reference.

In addition the Bureau of Meteorology LAPS model which has a finer grid resolution of 1.25 degrees X 1.25 degrees was used to compute the winds in the area for the pattern matched dates. The computed winds were checked against Abrolhos Island data for 6 dates/times and

showed a high correlation. The median speed error was 3.5% and the average direction error 10 degrees.

Figs 1 and 2 show the Quickscat images for 17 October 2006 which matched the pressure analysis of 23 November 1941. Fig 3 shows the v component field. Since the winds were SSE, the u component was small and the final wind estimate was similar to the v field analysis and compared favourably with the Quickscat winds.

All days 18-28 November 1941 were pattern matched and the results placed in Appendix 2.

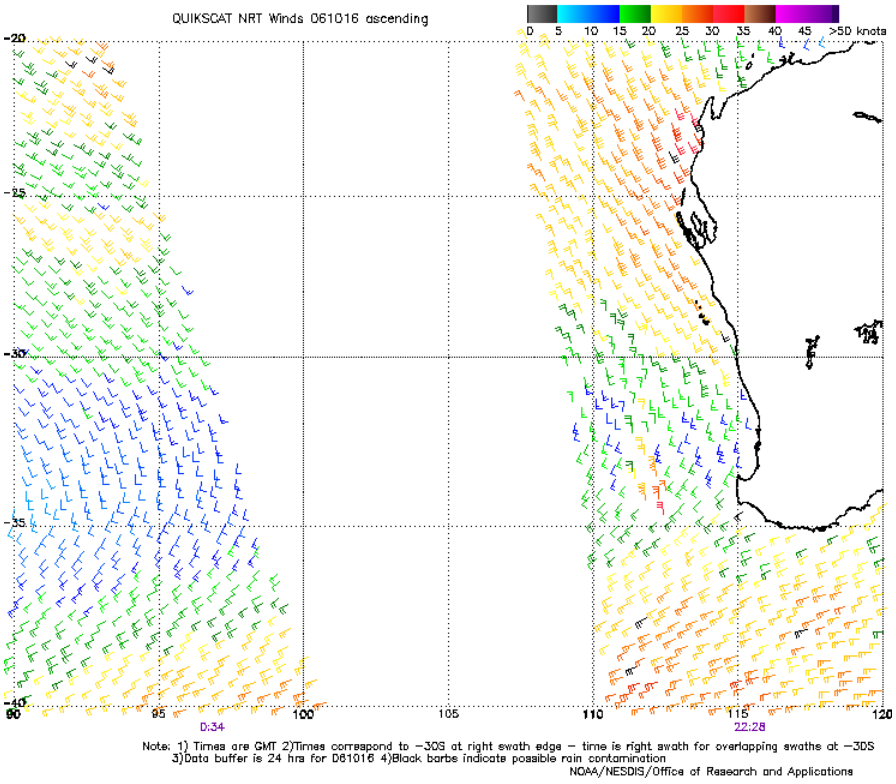

Fig1. QuickScat sea surface winds for 0630 WST 17 October 2006 from http://manati.orbit.nesdis.noaa.gov

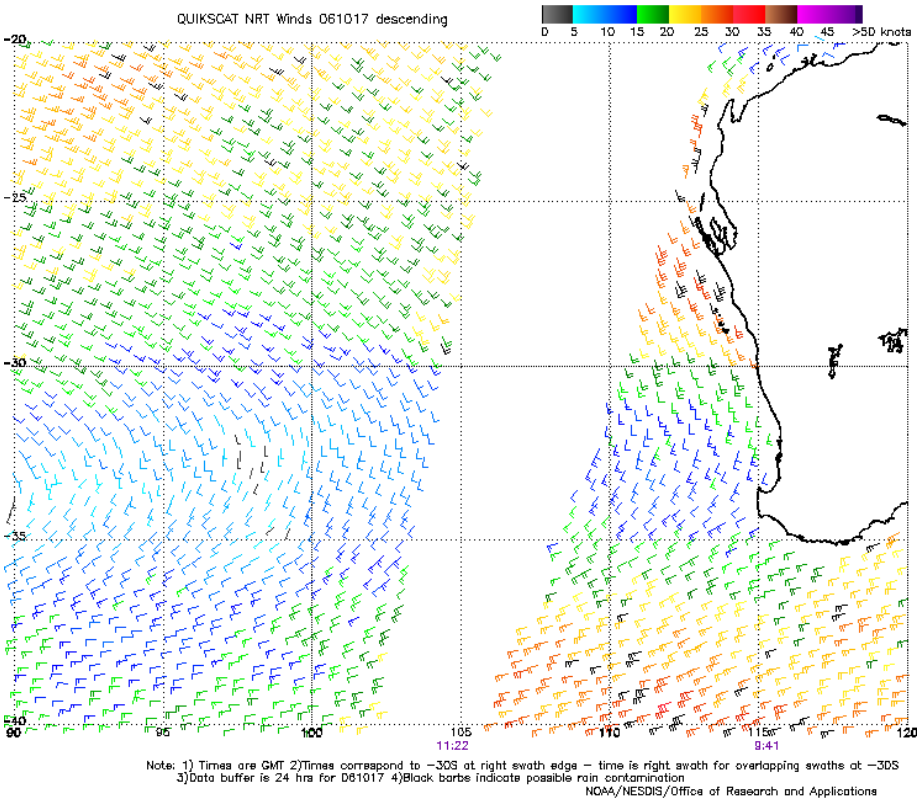

Fig 2: QuickScat sea surface winds for 1740WST 17 October 2006 from http://manati.orbit.nesdis.noaa.gov. Note the data void between swaths.

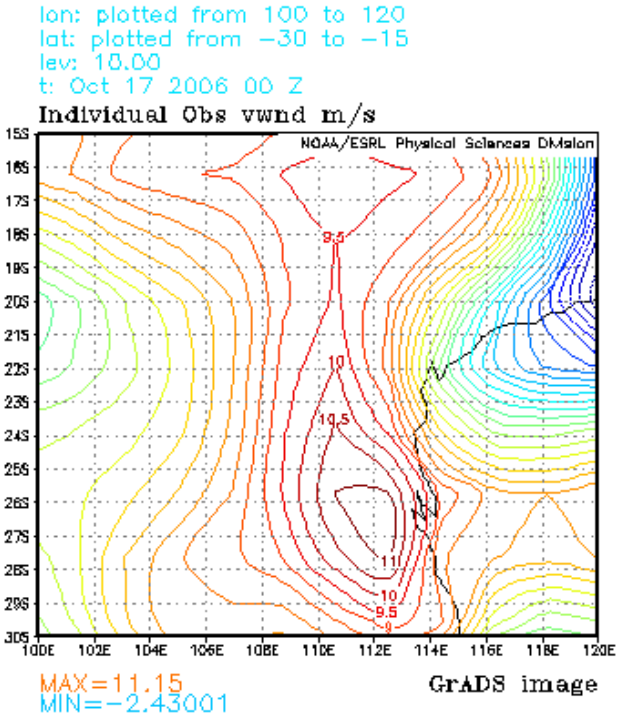

Fig 3: Plot of the V component of the surface wind. From NCEP DOE 2 reanalysis data obtained from http://www.cdc.noaa.gov

3.2. Pressure Analysis

Each of the MSL pressure charts for 9am for the period 18-28 November 1941 were copied from the archive. As necessary a careful re-analysis was done and although changes were not large, small corrections to the pressure gradient fields can lead to significant changes in wind estimates. Except for the 18th, the winds were mostly from south to south southeast until a deep inland low developed on the 25th of November causing winds over the search area to shift S/SW.

The surface analysis, with appropriate reanalysis, were used to derive the pressure gradient across the search area of 26.5E 111E. Using the geostrophic wind equation the wind direction and speed was calculated. The difficulty with this approach is that it cannot be known for certain the strength of the semi-permanent high pressure system in the Indian Ocean. When it is weak, the pressure gradients generated by the hot mass of air over inland Western Australia can decrease quickly seaward.

A pseudo west - east pressure gradient was obtained using Geraldton to Carnarvon pressure differences and a north south pressure gradient was obtained using Winning Pool and Meekatharra pressures. In addition the best scalar pressure gradient using known observations was also calculated. In this way the geostrophic wind could be calculated from known pressures, although only over the land to the east of the search area. This served as a check on the winds obtained from the derived pressure field over the search area.

3.2.1 Corrections to the Geostrophic Wind

The geostrophic wind obtained from a MSL pressure analysis gives actual winds only under ideal conditions. Geostrophic flow presumes steady state flow along straight isobars with no other forces acting other than pressure gradient force and Coriolis force due to the rotation of the earth. If the pressure pattern is dynamic the flow will become ageostrophic.

Factors which will break down geostrophic flow includes friction near the earth's surface which slows down the moving air, the forces due to air moving along curved isobars and the effect of pressure changes (isallobaric wind). Air travelling around anticyclones tends to move faster than the geostrophic wind, whilst air travelling around low pressures is reduced in speed due to this cyclostrophic effect. The so-called gradient wind equation which incorporates the curvature of the isobars is not trivial to calculate and requires the radius of curvature of the wind flow.

The corrections are described below. It should be noted that the pattern matching technique uses model output data which incorporates these effects.

3.2.2 Friction effects:

The conversion from geostrophic wind, which is accurate above the friction layer, to the actual 10m wind is dependant on the surface roughness and the stability of the air. The surface roughness for the ocean is more uniform than that over the land, but nevertheless determining the 'friction wind' or actual 10m wind is not exact. Often a scaling factor of 0.6 for the wind

speed and a 20 degree cross-isobar flow is used to determine the actual wind over the ocean. For the current study a power formula used by Stephens (2000) was calculated but the values did not vary greatly from using a constant 0.6.

3.2.3 Isallobaric Analysis

Surges of air extending across the Western Australian Central West coast are amplified by the contribution of the isallobaric wind which must to be added to the geostrophic wind. Isallobaric contribution to the wind can be quite significant, especially when a new high moves into the Australian Bight. Due to the sparsity of the observations, only a very rough estimate of the isallobaric field can be inferred. However on three days 21, 24 and 25 November 1941, isallobaric gradients were in excess of 1hpa per degree of latitude (60nm) per 24 hours. The isallobaric wind on these days was estimated at 5m/s or 9 knots and tended to blow into the centre of the large pressure falls occurring over inland Western Australia. In each case the isallobaric wind was almost at right angles to the geostrophic flow and the main impact was veering of the wind by about 10 degrees with the resultant wind speed changing less than 3 knots. Large pressure rises during the period 22 and 23 November 1941 were likely to have caused a larger shorter term isallobaric surge to increase the wind for a period of time well above the geostrophic estimate. This is may have been the event that Kapt-Lt Reinhold von Malapert reported in his log for the 22nd November, 1941: *"wind increased. Evening wind suddenly increased till 5 (17-21kn) and 6 (22-27kn) from SW. Rough sea from SSE and SSW."*

3.2.4 Gradient Wind

As the high pressure system moved strongly across the lower and central west coast on the 22nd and 23rd November, the isobars were curved anticyclonicaly and therefore the geostrophic wind calculations results in a value less than the gradient wind which includes effects of curved flow. Only on the 25th November were the isobars over the search area curved cyclonically and the calculated geostrophic wind would have overestimated the gradient wind. The effect is difficult to quantify because the radius of curvature on the limited analysis area cannot be accurately determined. Except in the nose of the ridge, which was mostly south of the search area, the radius of curvature probably was 20 degrees of latitude. According to graphs in Saucier (1955) the effect is to increase a 20 knot wind by about 10%. Gradient wind effects were not accounted for in estimating 10m winds from the estimated pressure gradients in this study. Therefore it is possible the winds from the pressure gradient calculation are slightly under estimated on the 23rd and 24th November and slightly overestimated on the 25th November.

4. Synoptic Summary

18 November
For several days a fresh westerly airstream with embedded frontal systems has been blowing across the south corner of Western Australia whilst a low pressure trough dominates east of the state with the high pressure ridge well north centred in a position more typical of winter at latitude 26 south.

19 November
The westerly flow to the south weakens and the sub-tropical ridge has moved south to latitude of 29south. Geraldton pressure is rising and a southeasterly flow develops across the search area.

20 November
The subtropical ridge, although still weak has moved south to a latitude 32S (near Perth) whilst a heat trough has formed well inland. The pressure rises at Geraldton were shortlived and pressures are falling.

21 November
The heat low over the Meekatharra area deepens rapidly with 24 hour pressure falls of 5hPa. It is likely these falls inland are induced by the upper trough associated with a strong front approaching the southwest. Winds near the coast east of the search area may have experienced an increase, but at 26.5S 111E the impact is much less. Kapt-Lt von Malapert's log reports "somewhat more wind".

22 November
The cold front brushes the south coast and the inland trough moves quickly east in response to the movement of the associated upper trough. Strong pressure rises of up to 4 hPa occur over the central west coast. The SE pressure gradient increases and a surge moves across the search area, resulting in winds of 20 kt reported at Shark Bay and 15 kt at Hamelin Pool.

23 November
The pressure rises are now strongest to the east of Carnarvon. Geraldton and Carnarvon report 20 knot winds at 9 am. However the high pressure ridge has now established through Perth and intensified causing an increased SE pressure gradient over the search area.

24 November
A high has developed in the Australian Bight and a broad low pressure trough begins to form well inland from the west coast.

25 November
The inland trough deepens rapidly. Winds over the central west coast strengthen from the south.

26 November
The low pressure trough moves towards the west coast and broadens. Winds over the search area continue to veer.

27 November
The trough moves rapidly east due to the upper trough associated with an approaching cold front. Winds over the search veer to the west and weaken.

28 November
The front moves through the Southwest of the state and a new high pressure ridge starts to develop with the axis centred between Perth and Geraldton.

5. Summary of Results

Table 1 summarises the results of the analysis. The pattern matching has been compared with results of the computations starting with the MSL pressure field for each day and the differences are shown in Table 2. It can be seen that on average the direction and speed correlates quite well with the data analysed from the pressure field.

Table 1
Wind estimates

DATE		REANALYSED DATA Using Pressure gradients		PATTERN MATCHING METHOD					
				ESRL		LAPS		Quickscat	
18/11/1941	9am	**180**	**9**	208	9				
18/11/1941	9pm	**170**	**10**					180	12
19/11/1941	9am	**160**	**11**	165	15	165	17	160	15
19/11/1941	9pm	**160**	**18**			150	18	160	18
20/11/1941	9am	**150**	**16**	164	19	150	16	150	17
20/11/1941	9pm	**160**	**16**			170	17	170	14
21/11/1941	9am	**170**	**17**	198	20	175	13	170	15
21/11/1941	9pm	**165**	**17**			205	17	200	18
22/11/1941	9am	**150**	**17**	177	16	175	16	180	12
22/11/1941	9pm	**145**	**20**			165	18	170	17
23/11/1941	9am	**140**	**22**	158	23	145	26	160	24
23/11/1941	9pm	**150**	**25**			150	27	160	25
24/11/1941	9am	**170**	**24**	154	18	140	21	150	23
24/11/1941	9pm	**185**	**23**			160	21	160	23
25/11/1941	9am	**200**	**19**	171	18	165	20	150	17
25/11/1941	9pm	**205**	**18**			190	18	150	17
26/11/1941	9am	**215**	**18**	190	17	240	10	180	14
26/11/1941	9pm	**250**	**13**			280	13	150	08
27/11/1941	9am	**280**	**12**	297	11	290	12	240	13
27/11/1941	9pm	**230**	**11**			205	10	190	13
28/11/1941	9am	**150**	**15**	178	16	160	20	160	19

Table 1: Wind estimates using the re-analysed pressure fields (in bold). Model derived 10m winds from NCEP DOE 2 reanalysis (ESRL) and the LAPS model reanalysis plus the observed sea surface winds from the QuickScat satellite data for the pattern matched days.

Table 2
Wind variation between methods

Date/Time			ESRL		Laps		QuickScat winds	
			Dirn	Speed	Dirn	Speed	Dirn	Speed
19/11/1941	9am		-5	-4	-5	0	0	-4
19/11/1941	9pm				10	0	0	0
20/11/1941	9am		-14	-4	0	0	0	-1
20/11/1941	9pm				-10	-1	-10	2
21/11/1941	9am		-28	-3	-5	4	0	2
21/11/1941	9pm				-40	0	-35	-1
22/11/1941	9am		-27	1	-25	1	-30	5
22/11/1941	9pm				-20	2	-25	3
23/11/1941	9am		-18	-2	-5	-4	-20	-2
23/11/1941	9pm				0	-2	-10	0
24/11/1941	9am		16	7	30	3	20	1
24/11/1941	9pm				25	2	25	0
25/11/1941	9am		29	1	35	-1	50	2
25/11/1941	9pm				15	0	55	1
26/11/1941	9am		25	1	-25	8	35	4
26/11/1941	9pm				-30	0	100	5
27/11/1941	9am		-17	1	-10	0	40	-1
27/11/1941	9pm				25	1	0	1
28/11/1941	9am		-28	-1	-10	-5	-10	-4
Average Deviation			21.3	2.1	17.1	1.9	23.8	2.2

Table 2: Differences in the computed and observed wind values compared with the analysed data from the pressure field for the period 19 – 28 November 1941.

The three sets of data are not completely independent of each other as the pattern matching was compared to actual analysed pressure fields. The average of the derived winds from the analysed pressure fields tended to be 10 degrees further anticlockwise in direction (i.e. more South rather than Southsoutheast) compared to the Quickscat winds.

The results are divided into 12 hour intervals. However it should be understood that there is a strong bias towards the 9am data as only limited 3pm observations were available.

6. Changing Location

The forecast winds have been calculated for a location of 26.5 South 111.0 East. A re-analysis of the pressure gradients at the more northern location of 24.1S 111.0E was also undertaken to assist in the leeway analysis of the raft and debris. The results are in appendix 2. The calculated winds were within 1 kt except for the 27th and 28th November. The direction from the 19th until the 24th was similar in the two locations. From the evening of the 24th to the 26th, the winds at the northern location had veered about 10 degrees due to the inland low moving south. Linear interpolated values between the two locations were supplied for the leeway analysis.

7. Comparison with earlier results.

Table 3 shows the mean 12 hourly values from Courtney (1991) and 24 hour values from Southern (1991). The average values found in this study are very similar to that found by Courtney (1991) although the values on individual days vary by up to 5kt and the direction by up to 40 degrees. The direction values from Southern (1991) are 20 degrees more anticlockwise (to the east) which added to the 10 degree bias found relative to the QuickScat winds compared with NCEP and LAPS data. This would seem to indicate the cross isobar flow was underestimated by Southern. The mean wind speed over the 11 days has the winds estimated by Southern 40% higher. In part this can be explained by the data from Southern (1991) being affected by an error in the pressure reading for Geraldton on the 23rd November which was corrected by Courtney (1991) and also in this study.

Table 3
Comparisons with earlier studies

Date	Time	van Burgel		Courtney (1991)		Southern (1991)	
18/11/1941	9am	**180**	**9**	200	5	180	18
18/11/1941	9pm	**170**	**10**	180	10		
19/11/1941	9am	**160**	**11**	170	13	157	18
19/11/1941	9pm	**160**	**18**	160	14		
20/11/1941	9am	**150**	**16**	150	13	139	24
20/11/1941	9pm	**160**	**16**	150	12		
21/11/1941	9am	**170**	**17**	160	15	148	24
21/11/1941	9pm	**165**	**17**	170	18		
22/11/1941	9am	**150**	**17**	170	20	149	26
22/11/1941	9pm	**145**	**20**	170	26		
23/11/1941	9am	**140**	**22**	160	25	129	40
23/11/1941	9pm	**150**	**25**	150	20		
24/11/1941	9am	**170**	**24**	150	20	143	28
24/11/1941	9pm	**185**	**23**	160	20		
25/11/1941	9am	**200**	**19**	190	18	162	23
25/11/1941	9pm	**205**	**18**	190	18		
26/11/1941	9am	**215**	**18**	210	14	200	20
26/11/1941	9pm	**250**	**13**	220	12		
27/11/1941	9am	**280**	**12**	250	10	230	20
27/11/1941	9pm	**230**	**11**	230	10		
28/11/1941	9am	**150**	**15**	190	17	144	20
	Average	181	17.3	179	16.6	160	24.3

Table 3: Computed hindcast winds for the area 26.5S 111E for the period 18 – 28 November 1941. Note the average does not include the data for the 18th November.

8. Survivor Weather Reports

It is of interest to check the three data sets against weather data information provided by D. Mearns (2008) from the logs of Kapt-Lt von Malapert, Meyer and Captain Detmer's book.

Detmer reports on the 19th that the wind "had risen and was now blowing at Force 5 or 6 (16-27 kt). The next day (20th) he reported a sea "which goes with a force 5 or 6 wind". However on the same day (20th November) von Malapert reported a quiet sea with winds Force 2 to 3 (4-10kt). This study has a 16 kt wind, Courtney 13 kt and Southern 24 kt for 9am on the 20th. It is likely that Detmer is reporting an increase in wind due to strong pressure rises to the southeast. These pressure rises, however, ceased rapidly by the morning of the 20th and winds were likely to have moderated quickly.

On the 22nd November, von Malapert reported the wind in the evening increasing to Force 5 to Force 6 (17-27kt) with rough seas. The strength of the wind continues at Force 4 to Force 6 (11-27kt) the next morning. This study has winds at 20 kt in the evening increasing to 22 kt in the morning and 25 kt in the evening of the 23rd. Courtney suggested 26 kt in the evening of the 22nd and 25 kt the following morning. Southern reports 26 kt on the 22nd and 40 kt on the 23rd although his estimate is affected by a faulty reading as noted above. It is likely that a strong surge due to the pressure rises to the south travelled over the area. Although our value has been adjusted slightly upwards for the isallobaric wind, it may have been insufficient.

The wind speed reported by von Malapert on the 23rd was Force 4/6 (11/27kn) which is consistent with our estimation. However the wind direction reported by von Malapert does not in general correlate well with the three studies. In addition in the 3 days since travelling from the ship area, it is possible he may have moved closer to the coast with a stronger localised wind regime.

9. Error analysis

Some of the derived values required subjective assessment. On an individual day to day basis the errors in estimating surface wind speed and direction are numerous but not necessarily cumulative. The estimate of the pressure gradient in the absence of ocean observations is the largest source of error. However for most of the period the area was in the southeast trade wind region which, as is well known, blows with a degree of constancy due to the presence of the semi-permanent Indian Ocean high pressure cell. Thus the errors in estimating the strength of the trade wind flow will over a period of time tend to cancel out. This is borne out by looking at composite mean of the pressure field for November 1948-2007 taken from the NCEP/NCAR reanalysis fields. The pressure composite is shown in fig 4 and the scalar wind plots in figure 5. The wind from the two plots give a mean of 170/16kt which is remarkably similar to the mean of the current hindcasting for the period 19 to 28 November, 1941.

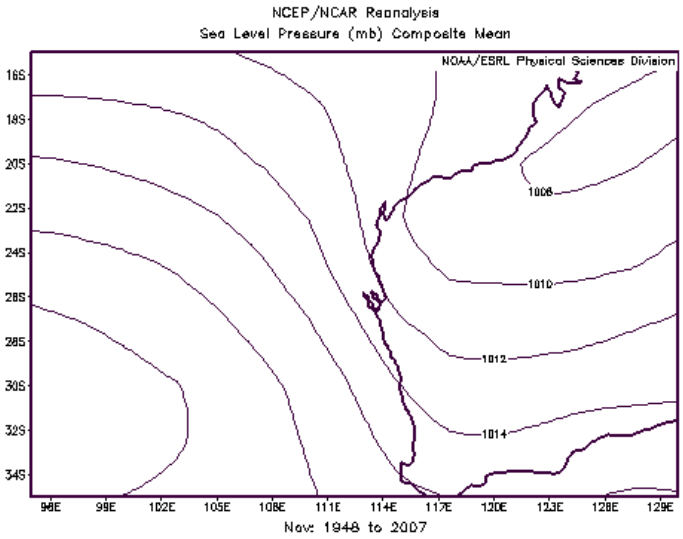

Fig 4: Composite MSL pressure analysis for November period 1948-2007. From the NCEP reanalysis.

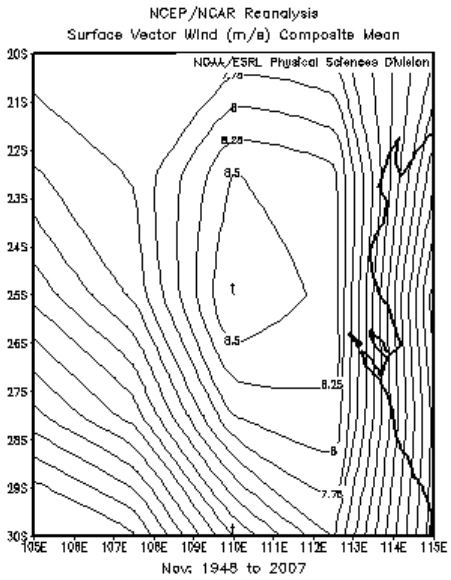

Fig 5: Derived scalar wind velocity plots for the composite above. From the NCEP reanalysis.

Other errors, besides accurately determining the pressure gradient from the pressure field, include the difficulty in accurately determining corrections due the curvature of the isobars and also in determining the isallobaric wind from the temporal sparse data. In addition estimating the actual wind at the standard 10m level requires assumptions about surface roughness and stability. In this case the additional information from actual observed QuickScat winds and also computer derived 10m winds gave a greater confidence in the assumptions made.

It is expected the errors in the wind speed are up to +/-4 knots and the error in direction 20 to 30 degrees. However due to the extra data available to this study, the errors are likely to be random and over a period of days will in the mean reduce considerably. This is borne out by the similarity in the results from this study and that by Courtney (1991) and also Steedman and McCormack (1991). Calculations over a period about 10 days will tend to cancel out errors in the estimation of the pressure gradient. However a bias due to the way the 10m wind is calculated from the pressure gradient will be constant. The good agreement between the derived wind from the pressure gradient and the model winds from the matched days as well as the satellite derived QuickScat data, indicates the bias is small. Over a period of 10 days it is likely to be well below the stated error of +/- 4 kt and 20-30 degrees in direction.

10. References

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Appendix 1 - Summary of Observations

Date	hh	Station	SLP	MSL Press	Calc MSL Press	Chart Press	DWB	DWB		Final Press	Source	Verified	Accuracy
18-Nov-41	9	ALBANY	1006.5	1008.7	1007.4	1007.4	1007.5	29.75		**1007.4**	Plotted charts	DWB, ADAM SLP (calc).	ADAM MSL 1.2hPa too high
18-Nov-41	9	CAPE LEEUWIN	1007.5	1009.1	1010.0	1009.8	1009.8	29.82		**1009.8**	Plotted charts	DWB, ADAM SLP (calc).	ADAM SL 0.8hPa too low
18-Nov-41	9	CARNARVON POST OFFICE	1013.5		1014.3	1014.5	1014.6	29.96		**1014.5**	Plotted charts	DWB, ADAM SLP (calc).	No ADAM MSL available
18-Nov-41	9	ESPERANCE POST OFFICE	1008	1008.5	1008.5	1008.4	1008.5	29.78		**1008.4**	Plotted charts	DWB, Adam MSL and SLP (calc)	
18-Nov-41	9	GERALDTON PORT	1013.3	1013.3	1013.7	1013.2	1013.2	29.92		**1013.2**	Plotted charts	DWB, ADAM MSL	ADAM SLP same as MSL
18-Nov-41	9	KALGOORLIE POST OFFICE	966.4		1008.6	1010.5	1010.5	29.84		**1010.5**	Plotted charts	DWB	ADAM SLP inconsistent. No ADAM MSL
18-Nov-41	9	MEEKATHARRA POST OFFICE	952.5	1009.3	1010.6	1012.5	1012.5	29.9		**1012.5**	Plotted charts	DWB	ADAM SLP inconsistent, ADAM MSL inconsistent
18-Nov-41	9	PERTH CITY			0.0	1012.5	1012.5	29.9		**1012.5**	A9	Plotted charts, DWB	
18-Nov-41	15	ALBANY	1008.1	1010.3	1009.0					**1009.0**	Calculated values from ADAM SLP		ADAM MSL 1.2 Hpa too high. Calc from SLP correct on 9am data.
18-Nov-41	15	CAPE LEEUWIN	1010	1011.7	1012.5					**1012.5**	Calculated values from ADAM SLP		ADAM MSL 0.8 Hpa too low. Calc from SLP correct on 9am data.
18-Nov-41	15	CARNARVON POST OFFICE	1011.3		1012.1					**1012.1**	Calculated values from ADAM SLP		No ADAM MSL data. Calc based on SLP correct on 9am data
18-Nov-41	15	ESPERANCE POST OFFICE	1008.6	1009.1	1009.1					**1009.1**	ADAM MSL Data	Confirmed with Calc based on ADAM SLP	
18-Nov-41	15	GERALDTON PORT	1013.8	1013.8	1014.2					**1013.8**	ADAM MSL Data		Calc based on ADAM SLP 0.4hPa too high
18-Nov-41	15	KALGOORLIE POST OFFICE	965.4		1006.5								
18-Nov-41	15	MEEKATHARRA POST OFFICE	949.8	1006.4	1006.4								
18-Nov-41	15	PERTH CITY					1013.3	29.923		**1013.3**	A9		
19-Nov-41	9	ALBANY	1010	1012.2	1011.0	1010.8	1010.8	29.85		**1010.8**	Plotted charts	DWB, ADAM SLP (calc).	ADAM MSL 1.2hPa too high
19-Nov-41	9	CAPE LEEUWIN	1010.6	1012.3	1013.1	1013.2	1013.2	29.92		**1013.2**	Plotted charts	DWB, ADAM SLP (calc).	ADAM SL 0.8hPa too low
19-Nov-41	9	CARNARVON POST OFFICE	1013.3		1014.1	1014.2	1014.2	29.95		**1014.2**	Plotted charts	DWB, ADAM SLP (calc).	No ADAM MSL available
19-Nov-41	9	ESPERANCE POST OFFICE	1013	1013.5	1013.5	1013.5	1013.5	29.93		**1013.5**	DWB	Adam MSL and SLP (calc)	Value on chart 1012.8
19-Nov-41	9	GERALDTON PORT	1016.1	1016.1	1016.5	1015.9	1015.9	30		**1015.9**	Plotted charts	DWB, ADAM MSL	ADAM SLP same as MSL
19-Nov-41	9	KALGOORLIE POST OFFICE	969.4		1011.7	1012.8	1012.9	29.91		**1012.8**	Plotted charts	DWB	ADAM SLP inconsistent. No ADAM MSL
19-Nov-41	9	MEEKATHARRA POST OFFICE	953.2	1010	1011.3	1012.5	1012.5	29.9		**1012.5**	Plotted charts	DWB	ADAM SLP inconsistent, ADAM MSL inconsistent
19-Nov-41	9	PERTH CITY			0.0	1015.6	1015.5	29.989		**1015.6**	A9	Plotted charts, DWB	
19-Nov-41	15	ALBANY	1009.6	1011.8	1010.5					**1010.5**	Calculated values from ADAM SLP		ADAM MSL 1.2 Hpa too high. Calc from SLP correct on 9am data.
19-Nov-41	15	CAPE LEEUWIN	1009.7	1011.4	1012.2					**1012.2**	Calculated values from ADAM SLP		ADAM MSL 0.8 Hpa too low. Calc from SLP correct on 9am data.
19-Nov-41	15	CARNARVON POST OFFICE	1010.6		1011.4					**1011.4**	Calculated values from ADAM SLP		No ADAM MSL data. Calc based on SLP correct on 9am data
19-Nov-41	15	ESPERANCE POST OFFICE	1012.7	1013.2	1013.2					**1013.2**	ADAM MSL Data	Confirmed with Calc based on ADAM SLP	
19-Nov-41	15	GERALDTON PORT	1014.4	1014.4	1014.8					**1014.4**	ADAM MSL Data		Calc based on ADAM SLP 0.4hPa too high
19-Nov-41	15	KALGOORLIE POST OFFICE	966.6		1007.8								
19-Nov-41	15	MEEKATHARRA POST OFFICE	950.1	1006.7	1006.8								
19-Nov-41	15	PERTH CITY					1013.9	29.94		**1013.9**	A9		
20-Nov-41	9	ALBANY	1012.9	1015	1013.9	1013.8	1013.9	29.94		**1013.8**	Plotted charts	DWB, ADAM SLP (calc).	ADAM MSL 1.2hPa too high
20-Nov-41	9	CAPE LEEUWIN	1012.3	1014	1014.8	1014.9	1014.9	29.97		**1014.9**	Plotted charts	DWB, ADAM SLP (calc).	ADAM SL 0.8hPa too low
20-Nov-41	9	CARNARVON POST OFFICE	1011.5		1012.3	1012.2	1012.2	29.89		**1012.2**	Plotted charts	DWB, ADAM SLP (calc).	No ADAM MSL available
20-Nov-41	9	ESPERANCE POST OFFICE	1016.4	1016.9	1016.9	1016.9	1016.9	30.03		**1016.9**	Plotted charts	DWB, Adam MSL and SLP (calc)	
20-Nov-41	9	GERALDTON PORT	1015	1015	1015.4	1014.9	1014.9	29.97		**1014.9**	Plotted charts	DWB, ADAM MSL	ADAM SLP same as MSL
20-Nov-41	9	KALGOORLIE POST OFFICE	970.1		1012.5	1012.5	1012.5	29.9		**1012.5**	Plotted charts	DWB	ADAM SLP inconsistent. No ADAM MSL
20-Nov-41	9	MEEKATHARRA POST OFFICE	952.9	1009.7	1011.0	1010.8	1010.8	29.85		**1010.8**	Plotted charts	DWB	ADAM SLP inconsistent, ADAM MSL inconsistent
20-Nov-41	9	PERTH CITY			0.0	1016.4	1016.5	30.016		**1016.4**	A9	Plotted charts, DWB	
20-Nov-41	15	ALBANY	1012.1	1014.2	1013.0					**1013.0**	Calculated values from ADAM SLP		ADAM MSL 1.2 Hpa too high. Calc from SLP correct on 9am data.
20-Nov-41	15	CAPE LEEUWIN	1011.3	1013	1013.8					**1013.8**	Calculated values from ADAM SLP		ADAM MSL 0.8 Hpa too low. Calc from SLP correct on 9am data.
20-Nov-41	15	CARNARVON POST OFFICE	1009.6		1010.4					**1010.4**	Calculated values from ADAM SLP		No ADAM MSL data. Calc based on SLP correct on 9am data
20-Nov-41	15	ESPERANCE POST OFFICE	1014.7	1015.2	1015.2					**1015.2**	ADAM MSL Data	Confirmed with Calc based on ADAM SLP	
20-Nov-41	15	GERALDTON PORT	1013.9	1013.9	1014.3					**1013.9**	ADAM MSL Data		Calc based on ADAM SLP 0.4hPa too high
20-Nov-41	15	KALGOORLIE POST OFFICE	967.7		1008.9								
20-Nov-41	15	MEEKATHARRA POST OFFICE	949.6	1006.2	1006.2								
20-Nov-41	15	PERTH CITY					1014.3	29.952		**1014.3**	A9		
21-Nov-41	9	ALBANY	1010.9	1013.1	1011.9	1011.8	1011.9	29.88		**1011.8**	Plotted charts	DWB, ADAM SLP (calc).	ADAM MSL 1.2hPa too high
21-Nov-41	9	CAPE LEEUWIN	1008.4	1010	1010.9	1010.8	1010.8	29.85		**1010.8**	Plotted charts	DWB, ADAM SLP (calc).	ADAM SL 0.8hPa too low
21-Nov-41	9	CARNARVON POST OFFICE	1010.2		1011.0	1011.1	1011.2	29.86		**1011.1**	Plotted charts	DWB, ADAM SLP (calc).	No ADAM MSL available
21-Nov-41	9	ESPERANCE POST OFFICE	1012	1012.5	1012.5	1012.5	1012.5	29.9		**1012.5**	Plotted charts	DWB, Adam MSL and SLP (calc)	
21-Nov-41	9	GERALDTON PORT	1013.7	1013.7	1014.1	1013.5	1013.5	29.93		**1013.5**	Plotted charts	DWB, ADAM MSL	ADAM SLP same as MSL
21-Nov-41	9	KALGOORLIE POST OFFICE	966.9		1009.1	1008.8	1008.8	29.79		**1008.8**	Plotted charts	DWB	ADAM SLP inconsistent. No ADAM MSL
21-Nov-41	9	MEEKATHARRA POST OFFICE	949.5	1006.1	1007.4	1006.8	1006.8	29.73		**1006.8**	Plotted charts	DWB	ADAM SLP inconsistent, ADAM MSL inconsistent
21-Nov-41	9	PERTH CITY			0.0	1013.5	1013.5	29.93		**1013.5**	A9	Plotted charts, DWB	
21-Nov-41	15	ALBANY	1008.2	1010.3	1009.1					**1009.1**	Calculated values from ADAM SLP		ADAM MSL 1.2 Hpa too high. Calc from SLP correct on 9am data.
21-Nov-41	15	CAPE LEEUWIN	1008.6	1010.3	1011.1					**1011.1**	Calculated values from ADAM SLP		ADAM MSL 0.8 Hpa too low. Calc from SLP correct on 9am data.

Date	hh	Station	SLP	MSL Press	Calc MSL Press	Chart Press	DWB	DWB		Final Press	Source	Verified	Accuracy
21-Nov-41	15	CARNARVON POST OFFICE	1009.7		1010.5					**1010.5**	Calculated values from ADAM SLP		No ADAM MSL data. Calc based on SLP correct on 9am data
21-Nov-41	15	ESPERANCE POST OFFICE	1008.3	1008.8	1008.8					**1008.8**	ADAM MSL Data	Confirmed with Calc based on ADAM SLP	
21-Nov-41	15	GERALDTON PORT	1012.6	1012.6	1012.9					**1012.6**	ADAM MSL Data		Calc based on ADAM SLP 0.4hPa too high
21-Nov-41	15	KALGOORLIE POST OFFICE	961.9		1002.9								
21-Nov-41	15	MEEKATHARRA POST OFFICE	948.2	1004.7	1004.7								
21-Nov-41	15	PERTH CITY					1011.4	29.868		**1011.4**	A9		
22-Nov-41	9	ALBANY	1010.5	1012.7	1011.5	1011.5	1011.5	29.87		**1011.5**	Plotted charts	DWB, ADAM SLP (calc).	ADAM MSL 1.2hPa too high
22-Nov-41	9	CAPE LEEUWIN	1010.4	1012.1	1012.9	1012.8	1012.9	29.91		**1012.8**	Plotted charts	DWB, ADAM SLP (calc).	ADAM SL 0.8hPa too low
22-Nov-41	9	CARNARVON POST OFFICE	1014.8		1015.6	1015.6	1015.6	29.99		**1015.6**	Plotted charts	DWB, ADAM SLP (calc).	No ADAM MSL available
22-Nov-41	9	ESPERANCE POST OFFICE	1011	1011.5	1011.5		1011.5	29.87		**1011.5**	DWB	Adam MSL and SLP (calc)	No value plotted on chart
22-Nov-41	9	GERALDTON PORT	1017.8	1017.8	1018.2	1017.6	1017.6	30.05		**1017.6**	Plotted charts	DWB, ADAM MSL	ADAM SLP same as MSL
22-Nov-41	9	KALGOORLIE POST OFFICE	967.2		1009.5	1010.1	1010.2	29.83		**1010.1**	Plotted charts	DWB	ADAM SLP inconsistent. No ADAM MSL
22-Nov-41	9	MEEKATHARRA POST OFFICE	953.1	1009.8	1011.2	1011.8	1011.9	29.88		**1011.8**	Plotted charts	DWB	ADAM SLP inconsistent, ADAM MSL inconsistent
22-Nov-41	9	PERTH CITY			0.0	1016.9	1016.8	30.027		**1016.9**	A9	Plotted charts, DWB	
22-Nov-41	15	ALBANY	1012.3	1014.5	1013.2					**1013.2**	Calculated values from ADAM SLP		ADAM MSL 1.2 Hpa too high. Calc from SLP correct on 9am data.
22-Nov-41	15	CAPE LEEUWIN	1011.8	1013.4	1014.3					**1014.3**	Calculated values from ADAM SLP		ADAM MSL 0.8 Hpa too low. Calc from SLP correct on 9am data.
22-Nov-41	15	CARNARVON POST OFFICE	1013.8		1014.6					**1014.6**	Calculated values from ADAM SLP		No ADAM MSL data. Calc based on SLP correct on 9am data
22-Nov-41	15	ESPERANCE POST OFFICE	1012.4	1012.9	1012.9					**1012.9**	ADAM MSL Data	Confirmed with Calc based on ADAM SLP	
22-Nov-41	15	GERALDTON PORT	1016.9	1016.9	1017.3					**1016.9**	ADAM MSL Data		Calc based on ADAM SLP 0.4hPa too high
22-Nov-41	15	KALGOORLIE POST OFFICE	965.7		1006.8								
22-Nov-41	15	MEEKATHARRA POST OFFICE	950.9	1007.6	1007.6								
22-Nov-41	15	PERTH CITY					1017.4	30.044		**1017.4**	A9		
23-Nov-41	9	ALBANY	1016	1018.1	1017.0	1016.9	1016.9	30.03		**1016.9**	Plotted charts	DWB, ADAM SLP (calc).	ADAM MSL 1.2hPa too high
23-Nov-41	9	CAPE LEEUWIN	1016.5	1018.2	1019.0	1018.9	1019.0	30.09		**1018.9**	Plotted charts	DWB, ADAM SLP (calc).	ADAM SL 0.8hPa too low
23-Nov-41	9	CARNARVON POST OFFICE	1014.8		1015.6	1015.6	1015.6	29.99		**1015.6**	Plotted charts	DWB, ADAM SLP (calc).	No ADAM MSL available
23-Nov-41	9	ESPERANCE POST OFFICE	1017.8	1018.3	1018.3	1018.3	1018.3	30.07		**1018.3**	Plotted charts	DWB, Adam MSL and SLP (calc)	
23-Nov-41	9	GERALDTON PORT	1019.2	1019.2	1019.6	1022.3	1022.4	30.19		**1019.2**	A9	SLP (Calc)	ADAM has 1019.2,charts plot 1022.3
23-Nov-41	9	KALGOORLIE POST OFFICE	973		1015.5	1017.3	1017.3	30.04		**1017.3**	Plotted charts	DWB	ADAM SLP inconsistent. No ADAM MSL
23-Nov-41	9	MEEKATHARRA POST OFFICE	954.8	1011.7	1013.0	1014.2	1014.2	29.95		**1014.2**	Plotted charts	DWB	ADAM SLP inconsistent, ADAM MSL inconsistent
23-Nov-41	9	PERTH CITY			0.0	1020.3	1020.5	30.134		**1020.3**	A9	Plotted charts, DWB	
23-Nov-41	15	ALBANY	1016.2	1018.4	1017.2					**1017.2**	Calculated values from ADAM SLP		ADAM MSL 1.2 Hpa too high. Calc from SLP correct on 9am data.
23-Nov-41	15	CAPE LEEUWIN	1016.6	1018.3	1019.1					**1019.1**	Calculated values from ADAM SLP		ADAM MSL 0.8 Hpa too low. Calc from SLP correct on 9am data.
23-Nov-41	15	CARNARVON POST OFFICE	1011.1		1011.9					**1011.9**	Calculated values from ADAM SLP		No ADAM MSL data. Calc based on SLP correct on 9am data
23-Nov-41	15	ESPERANCE POST OFFICE	1017.8	1018.3	1018.3					**1018.3**	ADAM MSL Data	Confirmed with Calc based on ADAM SLP	
23-Nov-41	15	GERALDTON PORT	1016.7	1016.7	1017.1					**1016.7**	ADAM MSL Data		Calc based on ADAM SLP 0.4hPa too high
23-Nov-41	15	KALGOORLIE POST OFFICE	970.1		1011.4								
23-Nov-41	15	MEEKATHARRA POST OFFICE	952.1	1008.9	1008.9								
23-Nov-41	15	PERTH CITY					1018.6	30.08		**1018.6**	A9		
24-Nov-41	9	ALBANY	1016.2	1018.3	1017.2	1017.3	1017.3	30.04		**1017.3**	Plotted charts	DWB, ADAM SLP (calc).	ADAM MSL 1.2hPa too high
24-Nov-41	9	CAPE LEEUWIN	1015.5	1017.2	1018.0	1017.8		est		**1017.8**	Estimated	DWB, ADAM SLP (calc).	ADAM SL 0.8hPa too low
24-Nov-41	9	CARNARVON POST OFFICE	1010.5		1011.3	1010.8	1010.8	29.85		**1010.8**	Plotted charts	DWB, ADAM SLP (calc).	No ADAM MSL available
24-Nov-41	9	ESPERANCE POST OFFICE	1019.1	1019.6	1019.6	1019.6	1019.6	30.11		**1019.6**	Plotted charts	DWB, Adam MSL and SLP (calc)	
24-Nov-41	9	GERALDTON PORT	1015.6	1015.6	1016.0	1015.6	1015.6	29.99		**1015.6**	Plotted charts	DWB, ADAM MSL	ADAM SLP same as MSL
24-Nov-41	9	KALGOORLIE POST OFFICE	971.6		1014.0	1015.2	1015.2	29.98		**1015.2**	Plotted charts	DWB	ADAM SLP inconsistent. No ADAM MSL
24-Nov-41	9	MEEKATHARRA POST OFFICE	952.3	1009	1010.4	1010.1	1010.2	29.83		**1010.1**	Plotted charts	DWB	ADAM SLP inconsistent, ADAM MSL inconsistent
24-Nov-41	9	PERTH CITY			0.0	1017.6	1017.6	30.049		**1017.6**	A9	Plotted charts, DWB	
24-Nov-41	15	ALBANY	1014	1016.2	1014.9					**1014.9**	Calculated values from ADAM SLP		ADAM MSL 1.2 Hpa too high. Calc from SLP correct on 9am data.
24-Nov-41	15	CAPE LEEUWIN	1014	1015.7	1016.5					**1016.5**	Calculated values from ADAM SLP		ADAM MSL 0.8 Hpa too low. Calc from SLP correct on 9am data.
24-Nov-41	15	CARNARVON POST OFFICE	1007		1007.8					**1007.8**	Calculated values from ADAM SLP		No ADAM MSL data. Calc based on SLP correct on 9am data
24-Nov-41	15	ESPERANCE POST OFFICE	1015.1	1015.6	1015.6					**1015.6**	ADAM MSL Data	Confirmed with Calc based on ADAM SLP	
24-Nov-41	15	GERALDTON PORT	1012.1	1012.1	1012.4					**1012.1**	ADAM MSL Data		Calc based on ADAM SLP 0.4hPa too high
24-Nov-41	15	KALGOORLIE POST OFFICE	966.7		1007.9								
24-Nov-41	15	MEEKATHARRA POST OFFICE	947.9	1004.4	1004.4								
24-Nov-41	15	PERTH CITY					1015.4	29.986		**1015.4**	A9		
25-Nov-41	9	MEEKATHARRA POST OFFICE	948.6	1005.1	1006.4					**1006.0**	Plotted charts		
25-Nov-41	9	ALBANY	1012.5	1014.6	1013.4					**1013.4**	Calculated values from ADAM SLP		
25-Nov-41	9	CAPE LEEUWIN	1012.0	1013.7	1014.5					**1014.5**	Calculated values from ADAM SLP		
25-Nov-41	9	CARNARVON POST OFFICE	1009.7		1010.5					**1010.5**	Calculated values from ADAM SLP		
25-Nov-41	9	ESPERANCE POST OFFICE	1012.7	1013.2	1013.2					**1013.2**	Adam MSL Data		
25-Nov-41	9	GERALDTON PORT	1010.4	1010.4	1010.8					**1010.4**	Adam MSL Data		

Date	hh	Station	SLP	MSL Press	Calc MSL Press	Chart Press	DWB	DWB		Final Press	Source
25-Nov-41	9	KALGOORLIE POST OFFICE	965.5		1007.7					**1007.4**	Plotted charts
25-Nov-41	9	PERTH CITY					1011.9	29.882		**1011.9**	A9
25-Nov-41	15	ALBANY	1011.6	1013.7	1012.5					**1012.5**	Calculated values from ADAM SLP
25-Nov-41	15	CAPE LEEUWIN	1011	1012.7	1013.5					**1013.5**	Calculated values from ADAM SLP
25-Nov-41	15	CARNARVON POST OFFICE	1006.4		1007.2					**1007.2**	Calculated values from ADAM SLP
25-Nov-41	15	ESPERANCE POST OFFICE	1011	1011.5	1011.5					**1011.5**	ADAM MSL Data
25-Nov-41	15	GERALDTON PORT	1008.3	1008.3	1008.6					**1008.3**	ADAM MSL Data
25-Nov-41	15	KALGOORLIE POST OFFICE	960.4		1001.3						
25-Nov-41	15	MEEKATHARRA POST OFFICE	945.8	1002.2	1002.2						
25-Nov-41	15	PERTH CITY					1008.9	29.794		**1008.9**	A9
26-Nov-41	9	MEEKATHARRA POST OFFICE	950.8	1007.4	1008.8					**1008.8**	Plotted charts
26-Nov-41	9	ALBANY	1012.7	1014.8	1013.6					**1013.6**	Calculated values from ADAM SLP
26-Nov-41	9	CAPE LEEUWIN	1010.0	1011.7	1012.5					**1012.5**	Calculated values from ADAM SLP
26-Nov-41	9	CARNARVON POST OFFICE	1010.1		1010.9					**1011.2**	Plotted charts
26-Nov-41	9	ESPERANCE POST OFFICE	1014.4	1014.9	1014.9					**1014.9**	Adam MSL Data
26-Nov-41	9	GERALDTON PORT	1008.7	1008.7	1009.0					**1008.7**	Adam MSL Data
26-Nov-41	9	KALGOORLIE POST OFFICE	967.6		1009.9					**1010.8**	Plotted charts
26-Nov-41	9	PERTH CITY					1009.6	29.812		**1009.6**	A9
26-Nov-41	15	ALBANY	1010.6	1012.7	1011.5					**1011.5**	Calculated values from ADAM SLP
26-Nov-41	15	CAPE LEEUWIN	1009	1010.6	1011.5					**1011.5**	Calculated values from ADAM SLP
26-Nov-41	15	CARNARVON POST OFFICE	1008.6		1009.4					**1009.4**	Calculated values from ADAM SLP
26-Nov-41	15	ESPERANCE POST OFFICE	1012.7	1013.2	1013.2					**1013.2**	ADAM MSL Data
26-Nov-41	15	GERALDTON PORT	1009.5	1009.5	1009.8					**1009.5**	ADAM MSL Data
26-Nov-41	15	KALGOORLIE POST OFFICE	962.9		1003.9						
26-Nov-41	15	MEEKATHARRA POST OFFICE	948.1	1004.6	1004.6						
26-Nov-41	15	PERTH CITY					1006.0	29.708		**1006.0**	A9
27-Nov-41	9	MEEKATHARRA POST OFFICE	952.3	1009	1010.4					**1010.5**	Plotted charts
27-Nov-41	9	ALBANY	1003.2	1005.3	1004.1					**1004.1**	Calculated values from ADAM SLP
27-Nov-41	9	CAPE LEEUWIN	1004.8	1006.4	1007.3					**1007.3**	Calculated values from ADAM SLP
27-Nov-41	9	CARNARVON POST OFFICE	1013		1013.8					**1013.8**	Plotted charts
27-Nov-41	9	ESPERANCE POST OFFICE	1006.3	1006.8	1006.8					**1006.8**	Adam MSL Data
27-Nov-41	9	GERALDTON PORT	1011.7	1011.7	1012.1					**1011.5**	Plotted charts
27-Nov-41	9	KALGOORLIE POST OFFICE	965		1007.2					**1007.1**	Plotted charts
27-Nov-41	9	PERTH CITY					1009.7	29.815		**1009.7**	A9
27-Nov-41	15	ALBANY	1003.9	1006	1004.8					**1004.8**	Calculated values from ADAM SLP
27-Nov-41	15	CAPE LEEUWIN	1004.6	1006.2	1007.1					**1007.1**	Calculated values from ADAM SLP
27-Nov-41	15	CARNARVON POST OFFICE	1012.9		1013.7					**1013.7**	Calculated values from ADAM SLP
27-Nov-41	15	ESPERANCE POST OFFICE	1003.4	1003.9	1003.9					**1003.9**	ADAM MSL Data
27-Nov-41	15	GERALDTON PORT	1013.5	1013.5	1013.9					**1013.5**	ADAM MSL Data
27-Nov-41	15	KALGOORLIE POST OFFICE	960.1		1001.0						
27-Nov-41	15	MEEKATHARRA POST OFFICE	948.5	1005.1	1005.1						
27-Nov-41	15	PERTH CITY					1010.9	29.852		**1010.9**	A9
28-Nov-41	9	MEEKATHARRA POST OFFICE	953.5	1010.3	1011.6					**1013.2**	Plotted charts
28-Nov-41	9	ALBANY	1008.3	1010.4	1009.2					**1009.2**	Calculated values from ADAM SLP
28-Nov-41	9	CAPE LEEUWIN	1007.8	1009.5	1010.3					**1010.3**	Calculated values from ADAM SLP
28-Nov-41	9	CARNARVON POST OFFICE	1014.8		1015.6					**1015.6**	Plotted charts
28-Nov-41	9	ESPERANCE POST OFFICE	1012.7	1013.2	1013.2					**1013.2**	Adam MSL Data
28-Nov-41	9	GERALDTON PORT	1017.1	1017.1	1017.5					**1016.8**	Plotted charts
28-Nov-41	9	KALGOORLIE POST OFFICE	967.8		1010.1					**1011.5**	Plotted charts
28-Nov-41	9	PERTH CITY					1016.3	30.01		**1016.3**	A9
28-Nov-41	15	ALBANY	1008.6	1010.7	1009.5					**1009.5**	Calculated values from ADAM SLP
28-Nov-41	15	CAPE LEEUWIN	1010	1011.7	1012.5					**1012.5**	Calculated values from ADAM SLP
28-Nov-41	15	CARNARVON POST OFFICE	1010.8		1011.6					**1011.6**	Calculated values from ADAM SLP
28-Nov-41	15	ESPERANCE POST OFFICE	1010	1010.5	1010.5					**1010.5**	ADAM MSL Data
28-Nov-41	15	GERALDTON PORT	1016.2	1016.2	1016.6					**1016.2**	ADAM MSL Data
28-Nov-41	15	KALGOORLIE POST OFFICE	964.9		1006.0						
28-Nov-41	15	MEEKATHARRA POST OFFICE	950.3	1006.9	1007.0						
28-Nov-41	15	PERTH CITY					1014.0	29.942		**1014.0**	A9

Appendix 2

Wind Hindcast (Two Locations)													
		Location 26.5S 111.0 E							24.1S 111.0E (2.4 degrees north)				
Date	Time	LAPS		**Pressure Gradient**		QuickScat			LAPS		**Pressure Gradient**		QuickScat	
19/11/1941	9pm	150	18	**160**	**18**	160	18		150	19	**160**	**19**	160	20
20/11/1941	9am	150	16	**150**	**16**	150	17		160	15	**150**	**17**	150	18
20/11/1941	9pm	170	17	**160**	**16**	170	14		170	17	**160**	**18**	180	18
21/11/1941	9am	175	13	**170**	**17**	170	15		175	14	**170**	**18**	160	16
21/11/1941	9pm	205	17	**165**	**17**	200	18		205	18	**165**	**18**	200	18
22/11/1941	9am	175	16	**150**	**17**	180	12		175	17	**150**	**18**	180	17
22/11/1941	9pm	165	18	**145**	**20**	170	17		165	18	**145**	**22**	170	17
23/11/1941	9am	145	26	**140**	**22**	160	24		145	24	**140**	**23**	140	26
23/11/1941	9pm	150	27	**150**	**25**	160	25		150	27	**150**	**27**	160	25
24/11/1941	9am	140	21	**170**	**24**	150	23		150	21	**170**	**25**	150	23
24/11/1941	9pm	160	21	**185**	**23**	160	23		160	22	**190**	**23**	160	23
25/11/1941	9am	165	20	**200**	**19**	150	17		165	21	**210**	**20**	150	17
25/11/1941	9pm	190	18	**205**	**18**	150	17		190	19	**210**	**18**	150	19
26/11/1941	9am	240	10	**215**	**18**	180	14		240	12	**225**	**17**	160	15
26/11/1941	9pm	280	13	**250**	**13**	150	8		280	13	**230**	**11**	150	8
27/11/1941	9am	290	12	**280**	**12**	240	13		290	12	**250**	**10**	230	10
27/11/1941	9pm	205	10	**230**	**11**	190	13		205	11	**200**	**12**	190	13
28/11/1941	9am	160	20	**150**	**15**	160	19		160	22	**150**	**18**	160	22