



Report on the Quality of Land Surface Observations in Region V

July - December 2001

Report No. 10

WMC Melbourne

Lead Centre for Monitoring of the Quality of Land Surface Observation in RA-V

*Data Management Section
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1. Introduction

Within the Data Management Section of the Bureau of Meteorology lie responsibilities for collecting a full set of meteorological data in real-time from the WMO Global Observing System, and for making such data available to the Analysis-Prognosis models along with some indication as to reliability of report content.

Real-time judgement as to whether a reported element be assimilated by models relies largely on first guess fields, supplemented by observations from any neighbouring stations. Additionally, listings of platforms, which are currently considered suspect, are presented to the Analysis model.

To monitor platform performance, and also to expose likely positional errors, selected reported elements are paired with the interpolated first-guess value from the global model (6 hour forecast field) and analysed statistically each 6 months in a format which accords with the CBS recommended standards for the exchange of monitoring results. All observations used are unvalidated or "raw" data. This report covers a consolidated list of the suspect stations for the period July to December 2001. The locations of the suspect stations are shown in Figure 1 and diagrams of the residuals for each of station are in Figures 2-7.

As part of WMO responsibilities as a WMC, copies of this report are made available to major GDPS Centres participating in data monitoring activities.

2. Monitoring Methods

The decision as to whether a station is 'suspect' is from determination of the deviations of Mean Sea Level Pressure (MSLP) from the GASP first-guess fields (observation minus Guess), hereafter called O-G. Deviations are assessed relative to the first guess fields.

To achieve more complete reporting profiles for the investigation of suspect stations, observations were not retrieved for statistical analysis until 24 hours after real-time, thus not all values used in such computations may have been available to the assimilation processing.

The selection criteria for deciding whether a station is suspect or not are as follows:

Number of observations (NOBS) ≥ 120 , and one or more of the following:

1. the mean of O-G $|BIAS| \geq 3.0$ hPa
2. the standard deviation of O-G $SD \geq 5.0$ hPa
3. the percentage of gross errors $PGE \geq 25\%$

BIAS and SD are calculated excluding gross error data.

3 Monitoring Results

Table 1 contains a list of synoptic stations, which are considered to have reported suspect observations of mean sea level pressure (MSLP) during the 6 months.

WMO REGION 5

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
48632	4.5	101.4	1545	ALL	MSLP	263	0	0	1.5	3.9	4.2
92010	-6.1	145.4	1587	ALL	MSLP	255	0	0	1.1	8.3	8.4
94997	-53.1	73.7	13	ALL	MSLP	359	0	0	2.6	-3.0	4.0
96947	-8.0	112.7	526	ALL	MSLP	220	0	0	1.2	3.1	3.4
97008	3.6	125.5	38	ALL	MSLP	466	0	0	.7	3.1	3.2
97378	-10.7	123.1	1	ALL	MSLP	266	211	79	1.2	-14.2	14.2

Table 1. List of land surface stations reporting suspect observations of mean sea level pressure over the period July to December 2001.

3.1 Suspect Stations

3.1.1 Retentions

The following stations have reappeared as suspect station from the previous six-month period.

92010 Goroka, New Guinea

A constant positive bias throughout the period indicates a possible incorrect station elevation, which should possibly be lower than published.

97008 Tahuna, Indonesia

A constant positive bias of 3.1 hPa for the entire six months.

97378 Rote, Indonesia

With a large negative bias of -14.1 hPa and an elevation of only 1m, it is suggestive that there is a problem with the barometer readings or settings.

3.1.2 Additions

Several new suspect stations have appeared for the first time.

48632 Cameron Highlands, Malaysia

This station started reporting in September 2001, and from that date onwards displayed a consistent positive bias.

94977 Heard Island, Australia

The AWS has displayed an erratic negative bias during the entire period. The biases seem to show some form of cyclicity, but this may be spurious. Not much can be done about this very remote station. It is quite possible that the model is incorrect, rather than the observations being in error, as there are no neighbouring stations for thousands of kilometers.

96947 Malang/ Abdul Rahkman, Indonesia

Seems to be getting worse during the six-month period. The MSLP bias has always been positive, but started out being only 1 or 2 hPa high, but was closer to 3 or 4 hPa high by December.

3.1.3 Deteriorations and/or Improvements

There are no deteriorating stations or improving stations for this period.

3.1.4 Removals

Two suspect stations from the previous report have not reappeared:

96753 – Bogor/Dermaga, Indonesia

This station had a four month period, from August to November, when it reported no observations. There were only four observations reported for the entire month of December. All that can be said is that the negative 6.0 hPa bias for the previous six-months appears to be recurring in the few reports available this period.

97126 – Masamba, Indonesia

The negative bias for this station has dropped from 3.3 hPa during the last six months to less than 3.0 hPa during this period, so it no longer qualifies as a suspect station. However it should be noted that the bias this month is only just below the detection criteria.

4. Summary

Three new stations appear for the first time in this report, and three stations continue to be present. Additionally two stations in the previous report are now removed from suspect Status.

MONITORING OF SURFACE DATA

MONTHLY SUSPECT LIST

MONITORING CENTRE: NMC MELBOURNE

JULY to DECEMBER 2001

MONITORING PROCEDURES :-

PERIOD : SIX CALENDAR MONTHS

DATA MONITORED : REPORTS FROM EACH UNIQUE IDENTIFIER
FOR SYNOP

AREA : FULL GLOBAL

STANDARD OF COMPARISON : +6H FIRST GUESS FIELD FROM THE AUSTRALIAN GLOBAL
ASSIMILATION PREDICTION (GASP) MODEL

OBSERVATION TIMES : 00, 06, 12, 18 UTC

ELEMENT MONITORED : MSLP - MEAN SEA LEVEL PRESSURE (hPa)

PARAMETERS MONITORED :-

NOBS : NUMBER OF OBSERVATIONS RECEIVED (WITH FIRST
GUESS AVAILABLE) EXCLUDING DUPLICATES

NGE : NUMBER OF OBSERVATIONS WITH GROSS ERRORS

PGE : PERCENTAGE OF OBSERVATIONS WITH GROSS ERRORS

SD : STANDARD DEVIATION OF DIFFERENCE BETWEEN
OBSERVATIONS AND BACKGROUND FIELD
EXCLUDING OBSERVATIONS WITH GROSS ERRORS

BIAS : MEAN OF DIFFERENCE BETWEEN
OBSERVATIONS AND BACKGROUND FIELD
EXCLUDING OBSERVATIONS WITH GROSS ERRORS

RMS : ROOT MEAN SQUARE OF DIFFERENCE BETWEEN
OBSERVATIONS AND BACKGROUND FIELD
EXCLUDING OBSERVATIONS WITH GROSS ERRORS

GROSS ERROR LIMIT : 15.0 hPa

SELECTION CRITERIA : NOBS >= 120 AND ONE OR MORE OF THE FOLLOWING:
1. |BIAS| >= 3.0hPa
2. SD >= 5.0hPa
3. PGE >= 25%

MONTHLY LIST OF SUSPECT LAND SURFACE STATIONS FOR JUL to DEC 2001

WMO REGION 1

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
61492	16.1	-13.5	18	ALL	MSLP	249	0	0	1.8	4.5	4.8
62271	24.2	23.3	436	ALL	MSLP	395	0	0	1.6	3.4	3.7
63170	9.5	44.1	1326	ALL	MSLP	132	1	1	2.0	7.8	8.0
63175	9.5	45.6	1032	ALL	MSLP	124	0	0	1.9	7.4	7.6
63333	11.1	39.7	1903	ALL	MSLP	179	0	0	2.6	5.0	5.6
63478	5.9	43.6	295	ALL	MSLP	152	1	1	.9	5.7	5.8
68016	-19.3	12.7	0	ALL	MSLP	213	0	0	3.5	3.6	5.1

WMO REGION 2

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
24671	64.0	135.9	402	ALL	MSLP	697	4	1	4.0	3.1	5.0
24688	63.3	143.1	741	ALL	MSLP	708	62	9	5.0	3.5	6.1
30967	49.9	115.8	623	ALL	MSLP	538	1	0	2.3	-5.9	6.3
36096	0.0	1000.0	10000	ALL	MSLP	473	37	8	5.0	3.0	5.8
38933	37.8	68.8	429	ALL	MSLP	476	2	0	2.2	5.6	6.0
40700	39.7	48.1	45	ALL	MSLP	567	2	0	1.7	-4.6	4.9
40726	36.8	45.7	1385	ALL	MSLP	582	0	0	2.3	3.1	3.8
40741	36.5	61.2	236	ALL	MSLP	573	0	0	2.0	-4.2	4.6
41396	16.0	49.0	700	ALL	MSLP	257	0	0	1.3	3.9	4.1
44207	50.4	100.2	1687	ALL	MSLP	703	27	4	5.0	3.3	6.0
44213	49.7	94.4	1232	ALL	MSLP	705	47	7	5.2	1.4	5.3
44214	49.0	90.0	1714	ALL	MSLP	688	32	5	5.4	-.4	5.4
44215	49.1	91.7	1591	ALL	MSLP	684	55	8	5.7	.6	5.7
44218	48.0	91.7	1406	ALL	MSLP	707	46	7	6.1	-1.8	6.3
44225	48.7	98.3	1723	ALL	MSLP	715	105	15	5.4	3.1	6.2
44230	49.6	102.0	1236	ALL	MSLP	708	23	3	4.0	3.5	5.4
44232	49.4	102.7	933	ALL	MSLP	713	16	2	4.4	3.1	5.4
44265	46.1	91.6	1186	ALL	MSLP	668	63	9	4.4	5.4	7.0
44272	47.8	96.8	1753	ALL	MSLP	706	10	1	5.7	-.6	5.7
44275	46.8	98.1	2255	ALL	MSLP	701	34	5	5.8	1.6	6.0
44284	46.7	100.1	2117	ALL	MSLP	709	74	10	5.4	3.9	6.7
44285	46.9	102.8	1655	ALL	MSLP	708	7	1	4.8	3.1	5.7
50727	47.2	119.9	1028	ALL	MSLP	731	0	0	2.2	3.0	3.8
51156	46.8	85.7	1294	ALL	MSLP	729	0	0	2.7	3.6	4.5
51334	44.6	82.9	321	ALL	MSLP	726	2	0	3.4	3.6	4.9
51379	44.0	89.6	794	ALL	MSLP	726	3	0	3.8	3.2	5.0
51463	43.8	87.6	919	ALL	MSLP	731	1	0	3.6	3.3	4.9
51495	43.5	91.6	874	ALL	MSLP	727	57	8	2.6	7.7	8.1
51818	37.6	78.3	1376	ALL	MSLP	727	7	1	3.5	3.1	4.6
52378	41.4	102.4	960	ALL	MSLP	727	0	0	2.2	3.0	3.8
52436	40.3	97.0	1527	ALL	MSLP	727	5	1	3.5	3.7	5.1
52495	40.8	104.5	1329	ALL	MSLP	731	0	0	2.3	3.4	4.1
52533	39.8	98.5	1478	ALL	MSLP	731	5	1	3.4	4.3	5.5
52652	38.9	100.4	1483	ALL	MSLP	731	8	1	3.7	3.9	5.3
53192	44.0	114.9	1128	ALL	MSLP	731	0	0	2.2	3.5	4.2
53352	41.7	110.4	1377	ALL	MSLP	727	0	0	2.4	3.6	4.3
53480	41.0	113.1	1416	ALL	MSLP	729	0	0	2.2	3.2	3.8
54587	39.0	123.2	10	ALL	MSLP	716	3	0	1.3	-4.3	4.5
56287	30.0	103.0	629	ALL	MSLP	731	0	0	1.9	3.2	3.7

WMO REGION 3

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
80099	7.1	-70.7	128	ALL	MSLP	240	0	0	1.4	-5.5	5.6
80315	3.0	-75.3	443	ALL	MSLP	477	0	0	2.1	-4.0	4.5
82353	-3.2	-52.2	74	ALL	MSLP	461	0	0	1.2	-3.2	3.4
82765	-7.3	-47.5	193	ALL	MSLP	510	0	0	1.5	4.3	4.6
83214	-10.3	-54.9	285	ALL	MSLP	501	0	0	5.0	-4.5	6.7
83319	-14.7	-52.3	315	ALL	MSLP	505	0	0	1.8	4.5	4.8
83361	-15.6	-56.1	151	ALL	MSLP	496	0	0	1.7	3.5	3.9
83773	-23.1	-48.9	793	ALL	MSLP	525	3	1	4.1	-7.5	8.6
84401	-5.2	-80.6	55	ALL	MSLP	625	1	0	2.4	6.1	6.5
84440	-6.1	-77.2	792	ALL	MSLP	124	0	0	2.9	-3.6	4.6
84452	-6.8	-79.8	34	ALL	MSLP	611	1	0	1.5	3.7	4.0
84455	-6.4	-76.4	282	ALL	MSLP	457	2	0	2.3	7.8	8.1
84501	-8.1	-79.0	30	ALL	MSLP	467	0	0	1.3	5.4	5.6
84628	-12.0	-77.1	13	ALL	MSLP	654	0	0	1.1	4.0	4.2
84782	-18.1	-70.3	458	ALL	MSLP	495	0	0	1.8	9.4	9.6
85041	-11.0	-68.8	235	ALL	MSLP	335	0	0	1.9	6.2	6.5
85141	-14.5	-67.6	204	ALL	MSLP	337	0	0	2.0	4.2	4.7
85365	-22.0	-63.7	645	ALL	MSLP	328	1	0	2.9	3.9	4.9
85394	-22.8	-64.3	381	ALL	MSLP	245	1	0	2.8	3.6	4.6
85406	-18.4	-70.3	55	ALL	MSLP	721	0	0	1.8	6.3	6.6
85418	-20.5	-70.2	48	ALL	MSLP	715	0	0	1.4	5.0	5.2
85442	-23.4	-70.4	140	ALL	MSLP	724	0	0	1.5	3.7	4.0
87222	-28.6	-65.8	454	ALL	MSLP	715	0	0	2.5	-3.5	4.2

WMO REGION 4

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
71048	61.6	-125.8	610	ALL	MSLP	698	1	0	2.9	4.7	5.5
71506	67.0	-136.2	720	ALL	MSLP	724	0	0	2.8	-3.1	4.2
72375	35.1	-11.2	2139	ALL	MSLP	698	17	2	5.4	-1.0	5.5
72376	35.2	-111.8	2192	ALL	MSLP	692	0	0	3.7	4.0	5.5
72462	37.4	-105.9	2299	ALL	MSLP	712	5	1	4.4	6.2	7.6
72475	38.4	-113.0	1536	ALL	MSLP	688	0	0	3.5	3.7	5.1
72486	39.3	-114.8	1909	ALL	MSLP	692	1	0	3.8	3.5	5.2
72487	37.6	-114.5	1335	ALL	MSLP	675	0	0	3.1	3.8	4.9
72570	40.5	-107.5	1915	ALL	MSLP	630	2	0	3.7	6.3	7.3
72578	42.9	-112.6	1365	ALL	MSLP	700	1	0	4.0	4.2	5.8
76118	30.4	-109.7	1040	ALL	MSLP	177	2	1	2.4	-11.1	11.3
76220	29.0	-107.8	1870	ALL	MSLP	309	45	15	2.7	9.4	9.8
76243	28.7	-100.5	250	ALL	MSLP	496	0	0	2.0	3.4	4.0
76323	26.9	-105.7	1744	ALL	MSLP	379	13	3	3.4	8.3	9.0
76539	22.1	-101.0	1870	ALL	MSLP	446	0	0	2.4	-3.6	4.3
76687	19.5	-96.9	1389	ALL	MSLP	622	0	0	1.6	4.2	4.5
76743	18.0	-92.9	10	ALL	MSLP	433	0	0	1.3	5.8	5.9
76762	17.5	-99.5	1865	ALL	MSLP	372	0	0	1.6	-4.3	4.6
76843	16.8	-93.1	528	ALL	MSLP	526	1	0	1.2	5.7	5.9
76855	15.6	-96.5	43	ALL	MSLP	303	0	0	1.8	-4.0	4.4
76903	14.9	-92.3	182	ALL	MSLP	548	0	0	1.4	5.8	6.0

WMO REGION 5

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
48632	4.5	101.4	1545	ALL	MSLP	263	0	0	1.5	3.9	4.2
92010	-6.1	145.4	1587	ALL	MSLP	255	0	0	1.1	8.3	8.4
94997	-53.1	73.7	13	ALL	MSLP	359	0	0	2.6	-3.0	4.0
96947	-8.0	112.7	526	ALL	MSLP	220	0	0	1.2	3.1	3.4

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
97008	3.6	125.5	38	ALL	MSLP	466	0	0	.7	3.1	3.2
97378	-10.7	123.1	1	ALL	MSLP	266	211	79	1.2	-14.2	14.2

WMO REGION 6

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
06253	56.4	2.1	34	ALL	MSLP	516	0	0	1.1	-4.0	4.2
15292	45.4	22.3	242	ALL	MSLP	731	0	0	1.4	3.3	3.6
40296	31.0	35.5	-350	ALL	MSLP	676	1	0	1.2	3.6	3.8

WMO REGION ANTARCTICA

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
89512	-70.8	11.8	102	ALL	MSLP	716	7	1	2.5	-3.8	4.6
89514	-70.8	11.7	117	ALL	MSLP	375	6	2	2.4	-3.5	4.2

Figure 1
SUSPECT STATIONS FOR LAND SURFACE OBSERVATIONS FOR MSLP in RA-V
JULY to DECEMBER 2001

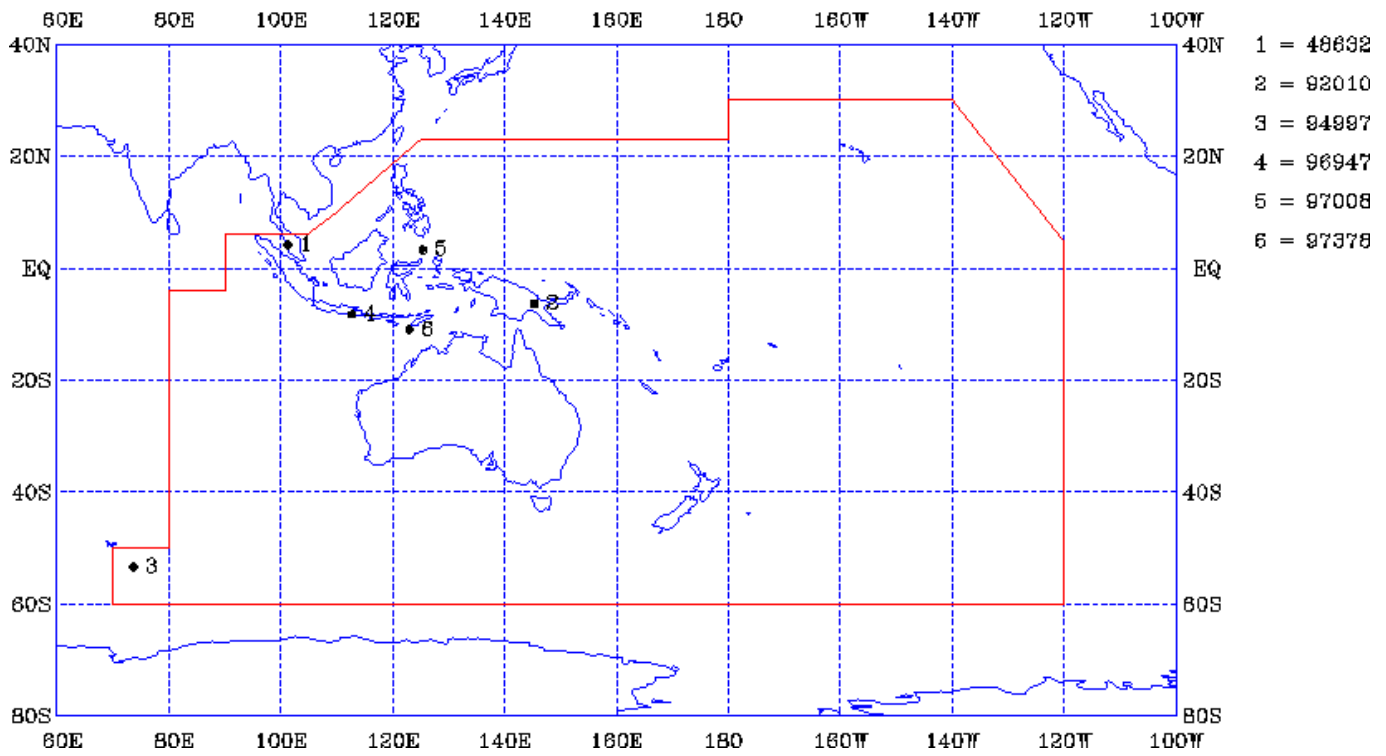


Figure 2
Residuals of MSL Pressure
July – December 2001
STATION: **48632** CAMERON HIGHLANDS

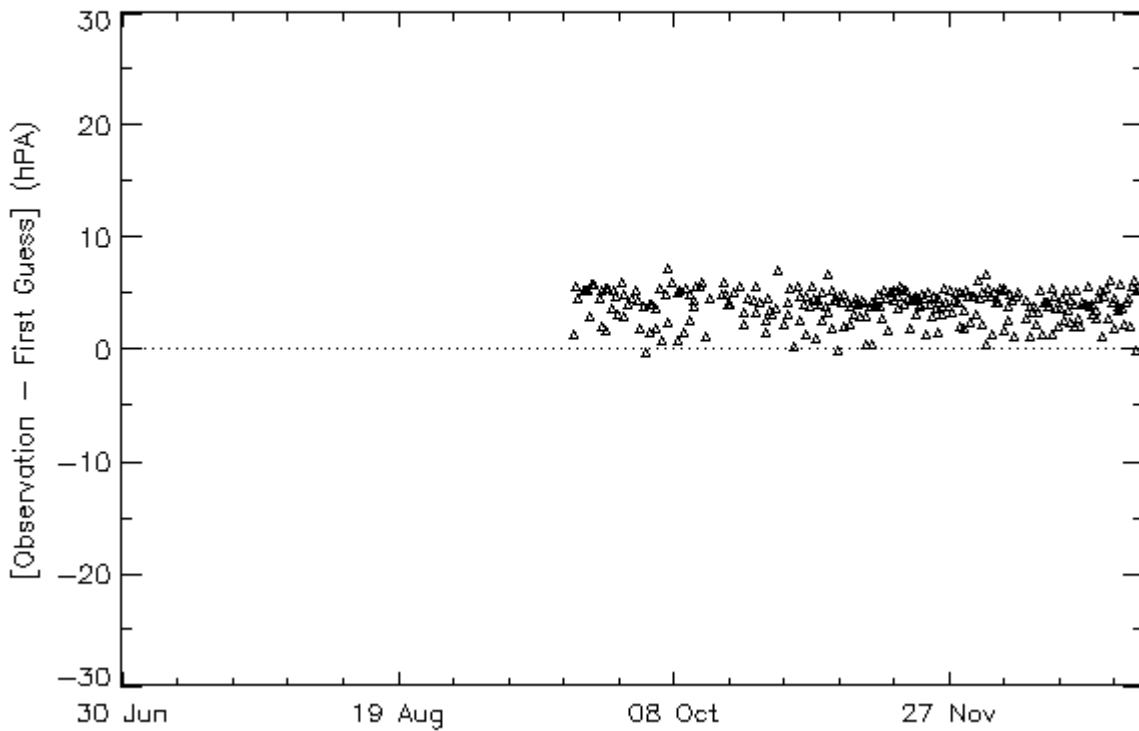


Figure 3
Residuals of MSL Pressure
July – December 2001
STATION: **92010** GOROKA

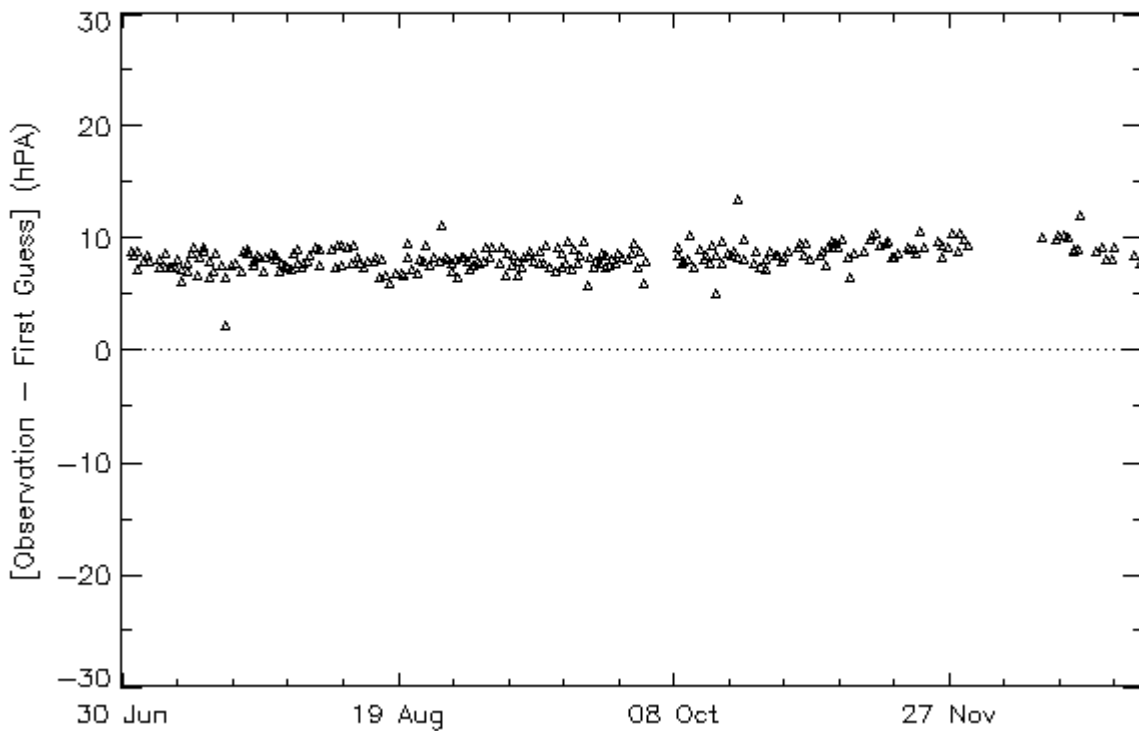


Figure 4
Residuals of MSL Pressure
July – December 2001
STATION: **94997** HEARD ISLAND (THE SPIT)

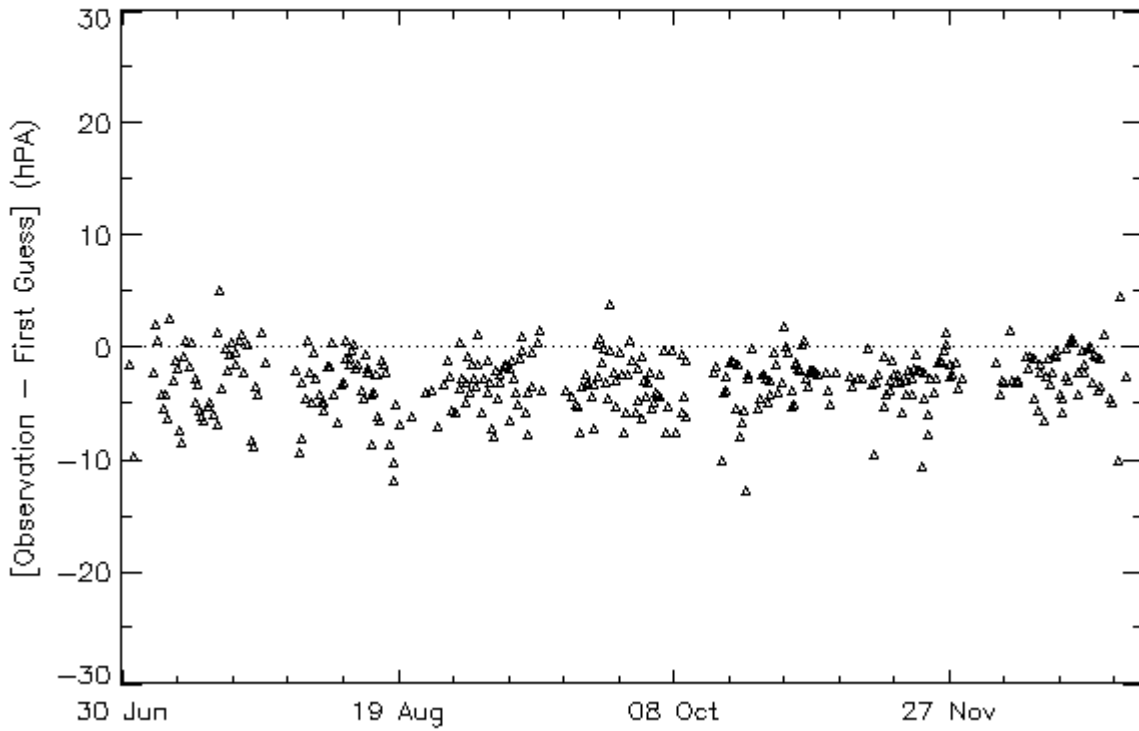


Figure 5
Residuals of MSL Pressure
July – December 2001
STATION: **96947** MALANG/ABDUL RAHKMAN

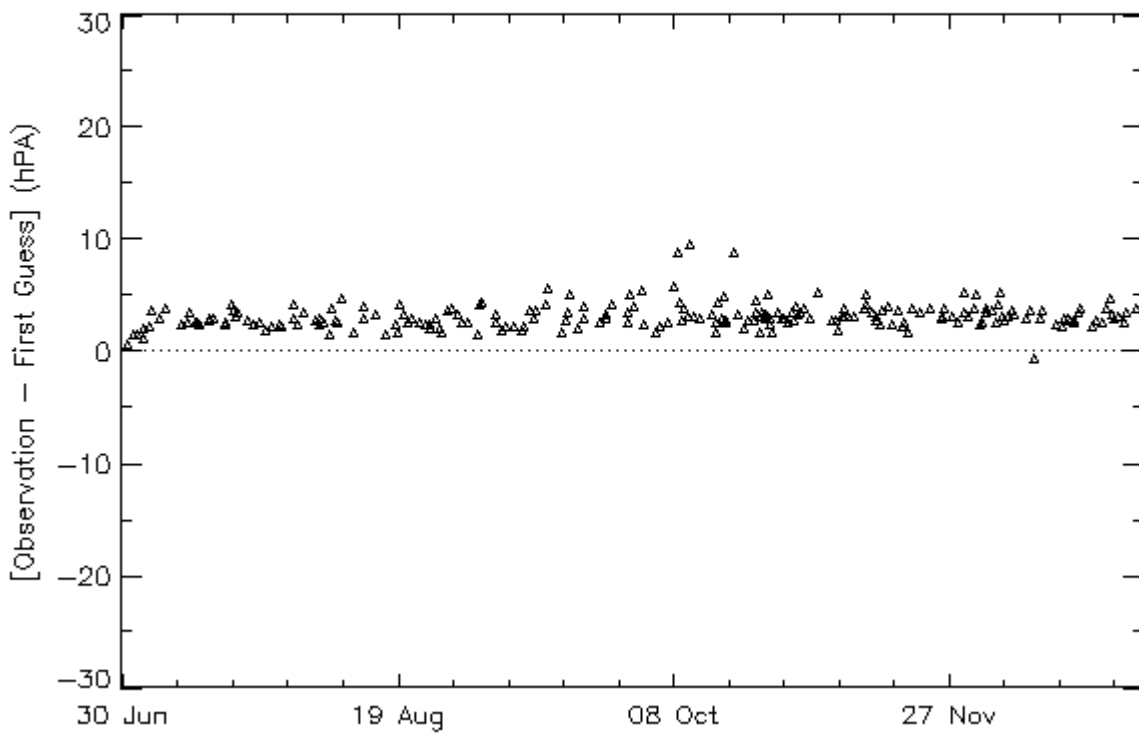


Figure 6
Residuals of MSL Pressure
July – December 2001
STATION: **97008** TAHUNA

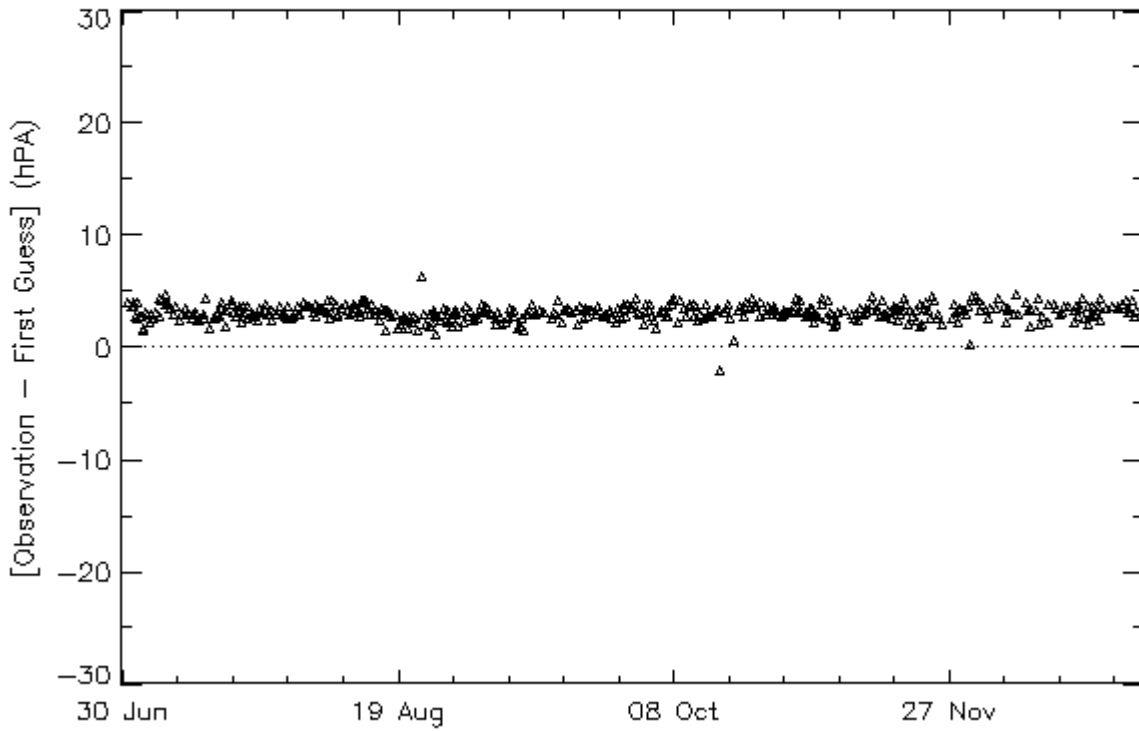


Figure 7
Residuals of MSL Pressure
July – December 2001
STATION: **97378** ROTE/BAA

