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Bureau of Meteorology

Report on the Quality of Land Surface Observations in Region V

July – December 2003

Report No. 14

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 2003. The locations of the suspect stations are shown in Figure 1 and diagrams of the residuals for each of station are in Figures 2-5.

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

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
96753	-6.5	106.8	250	ALL	MSLP	212	0	0	1.6	4.9	5.1
96947	-8.0	112.7	526	ALL	MSLP	145	0	0	1.4	4.0	4.2
97378	-10.7	123.1	1	ALL	MSLP	261	229	88	1.5	-14.1	14.2
98132	20.8	121.8	124	ALL	MSLP	685	2	0	1.6	3.2	3.6

Table 1. List of land surface stations reporting suspect observations of mean sea level pressure over the period July to December 2003.

Table 2 details a Global coverage of synoptic stations, which are considered to have reported suspect observations of mean sea level pressure (MSLP) during the 6 months.

MONITORING OF SURFACE DATA

SUSPECT LIST

MONITORING CENTRE: MELBOURNE

JULY to DECEMBER 2003

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%

LIST OF SUSPECT LAND SURFACE STATIONS FOR JUL to DEC 2003

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	372	0	0	1.5	4.2	4.4
61829	10.4	-9.3	384	ALL	MSLP	171	0	0	1.4	3.4	3.6
62271	24.2	23.3	436	ALL	MSLP	313	1	0	1.6	3.4	3.8
62733	15.3	35.6	451	ALL	MSLP	219	0	0	2.3	3.2	3.9
62751	14.4	33.5	408	ALL	MSLP	232	0	0	2.5	3.3	4.1
62781	12.7	28.4	564	ALL	MSLP	240	0	0	2.3	3.4	4.1
62790	12.1	24.9	674	ALL	MSLP	228	0	0	2.7	3.3	4.2
62810	11.0	29.7	499	ALL	MSLP	154	0	0	2.7	3.6	4.5
62840	9.6	31.6	388	ALL	MSLP	228	0	0	2.1	3.5	4.1
64108	-3.3	17.4	324	ALL	MSLP	143	0	0	1.7	4.9	5.2
64222	-5.0	18.8	449	ALL	MSLP	192	0	0	1.7	6.5	6.7
64228	-6.4	20.9	481	ALL	MSLP	194	0	0	2.1	4.2	4.7
64650	4.4	18.5	366	ALL	MSLP	308	0	0	1.5	3.5	3.9
64654	8.4	20.6	511	ALL	MSLP	137	0	0	2.1	8.4	8.6
64655	6.5	22.0	584	ALL	MSLP	155	0	0	1.8	3.6	4.0
64656	4.7	22.8	500	ALL	MSLP	156	0	0	1.6	3.7	4.0
64662	5.1	21.2	449	ALL	MSLP	121	0	0	1.5	4.7	4.9
64750	9.1	18.4	365	ALL	MSLP	518	0	0	2.7	3.5	4.4
64754	11.0	20.3	436	ALL	MSLP	235	0	0	2.9	4.1	5.0
64860	9.3	13.4	244	ALL	MSLP	417	1	0	1.7	3.1	3.6
65404	10.1	-2.5	323	ALL	MSLP	514	0	0	1.2	3.2	3.4
65416	9.0	-2.5	301	ALL	MSLP	168	0	0	1.2	3.6	3.8
65418	9.5	-0.9	173	ALL	MSLP	224	0	0	1.2	4.3	4.5
65432	7.8	-2.1	340	ALL	MSLP	167	0	0	1.3	3.1	3.4
67241	-15.0	40.7	11	ALL	MSLP	333	1	0	1.3	-3.3	3.5
68016	-19.3	12.7	0	ALL	MSLP	230	3	1	1.8	3.4	3.8

WMO REGION 2

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
24688	63.3	143.1	741	ALL	MSLP	730	95	13	5.0	1.9	5.4
40700	39.7	48.1	45	ALL	MSLP	669	0	0	1.6	-3.8	4.1
40726	36.8	45.7	1385	ALL	MSLP	636	1	0	2.6	3.9	4.7
40741	36.5	61.2	236	ALL	MSLP	657	0	0	1.9	-4.2	4.6
44215	49.1	91.7	1591	ALL	MSLP	707	35	5	5.1	0.2	5.1
44217	48.3	89.5	2148	ALL	MSLP	125	19	15	5.6	4.4	7.1
44218	48.0	91.7	1406	ALL	MSLP	720	37	5	5.5	-0.8	5.5
44224	48.8	90.1	1928	ALL	MSLP	141	56	40	8.1	1.6	8.2
44225	48.7	98.3	1723	ALL	MSLP	723	103	14	4.8	3.2	5.8
44230	49.6	102.0	1236	ALL	MSLP	713	7	1	3.8	3.6	5.2
44232	49.4	102.7	933	ALL	MSLP	718	21	3	4.1	3.2	5.2
44265	46.1	91.6	1186	ALL	MSLP	696	86	12	3.4	7.5	8.2
44266	46.3	93.9	2222	ALL	MSLP	140	1	1	5.3	3.5	6.3
44272	47.8	96.8	1753	ALL	MSLP	723	5	1	5.6	0.3	5.6
44275	46.8	98.1	2255	ALL	MSLP	720	60	8	5.5	3.0	6.3
44277	46.4	96.3	2147	ALL	MSLP	720	4	1	5.0	0.2	5.0
44284	46.7	100.1	2117	ALL	MSLP	725	126	17	5.1	4.8	7.0

44285	46.9	102.8	1655	ALL	MSLP	725	19	3	4.5	3.7	5.9
44286	47.2	104.2	1357	ALL	MSLP	124	3	2	4.2	5.0	6.5
44325	44.9	96.8	1183	ALL	MSLP	136	1	1	5.6	4.2	7.0
44336	45.5	103.9	1316	ALL	MSLP	670	16	2	3.9	4.6	6.1
48952	15.7	106.4	168	ALL	MSLP	231	0	0	1.6	-3.2	3.6
51156	46.8	85.7	1294	ALL	MSLP	735	0	0	2.2	3.0	3.7
51379	44.0	89.6	794	ALL	MSLP	699	0	0	3.1	3.1	4.4
51495	43.2	91.7	732	ALL	MSLP	706	21	3	2.5	7.6	8.0
51818	37.6	78.3	1376	ALL	MSLP	709	0	0	3.2	3.4	4.6
52436	40.3	97.0	1527	ALL	MSLP	702	0	0	3.4	3.0	4.5
52495	40.8	104.5	1329	ALL	MSLP	736	0	0	2.4	3.9	4.5
52533	39.8	98.5	1478	ALL	MSLP	734	1	0	3.2	3.6	4.8
52652	38.9	100.4	1483	ALL	MSLP	736	3	0	3.5	3.9	5.2
53083	44.6	114.2	1183	ALL	MSLP	702	0	0	2.3	3.2	4.0
53192	44.0	114.9	1128	ALL	MSLP	736	0	0	2.4	4.1	4.8
53336	41.6	108.5	1290	ALL	MSLP	735	0	0	2.0	3.8	4.3
53352	41.7	110.4	1377	ALL	MSLP	702	0	0	2.0	3.3	3.9
53391	41.9	114.0	1484	ALL	MSLP	736	1	0	1.9	3.5	4.0
53480	41.0	113.1	1416	ALL	MSLP	689	0	0	2.1	3.7	4.3
54208	42.2	116.5	1247	ALL	MSLP	736	1	0	2.5	3.3	4.2
56287	30.0	103.0	629	ALL	MSLP	734	0	0	1.8	3.8	4.1

WMO REGION 3

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
82287	-2.9	-41.6	22	ALL	MSLP	540	0	0	0.8	-3.1	3.2
82353	-3.2	-52.2	74	ALL	MSLP	527	0	0	1.2	-3.7	3.9
82571	-5.5	-45.3	153	ALL	MSLP	532	0	0	1.0	3.1	3.3
82765	-7.3	-47.5	193	ALL	MSLP	534	0	0	1.3	4.5	4.6
83319	-14.7	-52.3	315	ALL	MSLP	531	0	0	1.5	5.0	5.2
83726	-22.0	-47.9	856	ALL	MSLP	336	1	0	1.8	3.1	3.6
83738	-22.5	-44.5	440	ALL	MSLP	340	51	15	3.7	-8.9	9.7
84390	-4.6	-81.3	90	ALL	MSLP	152	0	0	1.4	4.9	5.1
84401	-5.2	-80.6	55	ALL	MSLP	709	0	0	1.5	5.6	5.8
84425	-5.9	-76.1	184	ALL	MSLP	230	1	0	2.1	6.4	6.7
84452	-6.8	-79.8	34	ALL	MSLP	678	0	0	1.6	4.5	4.8
84455	-6.4	-76.4	282	ALL	MSLP	533	1	0	1.9	9.4	9.6
84501	-8.1	-79.0	30	ALL	MSLP	539	0	0	1.7	5.3	5.6
84531	-9.2	-78.5	21	ALL	MSLP	149	0	0	1.4	3.6	3.9
84628	-12.0	-77.1	13	ALL	MSLP	702	0	0	1.6	3.8	4.2
84720	-14.9	-74.9	567	ALL	MSLP	349	0	0	2.1	6.3	6.6
84773	-17.7	-71.3	9	ALL	MSLP	141	0	0	1.2	4.8	4.9
84782	-18.1	-70.3	458	ALL	MSLP	568	0	0	1.9	8.3	8.5
85041	-11.0	-68.8	235	ALL	MSLP	349	1	0	2.1	7.1	7.4
85210	-16.3	-58.4	124	ALL	MSLP	342	0	0	1.7	3.2	3.6
85365	-22.0	-63.7	645	ALL	MSLP	319	0	0	3.0	3.9	4.9
85394	-22.8	-64.3	381	ALL	MSLP	259	1	0	3.4	3.1	4.6
85406	-18.4	-70.3	55	ALL	MSLP	714	0	0	2.1	5.6	6.0
85418	-20.5	-70.2	48	ALL	MSLP	713	0	0	1.5	4.0	4.3
85442	-23.4	-70.4	140	ALL	MSLP	722	2	0	1.6	3.0	3.4
87222	-28.6	-65.8	454	ALL	MSLP	710	1	0	2.2	-3.5	4.1
87904	-50.3	-72.1	204	ALL	MSLP	719	245	34	4.4	1.6	4.7

WMO REGION 4

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
71023	65.9	-89.4	18	ALL	MSLP	733	101	14	7.3	1.6	7.4
71048	61.6	-125.8	610	ALL	MSLP	635	0	0	2.9	4.9	5.7
71060	65.6	-118.1	230	ALL	MSLP	725	68	9	6.8	2.1	7.1
71786	51.5	-116.3	1615	ALL	MSLP	733	1	0	3.1	4.0	5.0
72374	35.0	-110.7	1488	ALL	MSLP	720	0	0	3.1	3.7	4.8
72375	35.1	-11.2	2139	ALL	MSLP	723	38	5	6.0	-1.3	6.1
72376	36.2	-111.8	2181	ALL	MSLP	710	2	0	4.6	5.3	7.0
72462	37.4	-105.9	2299	ALL	MSLP	724	12	2	4.6	6.5	8.0
72475	38.4	-113.0	1536	ALL	MSLP	718	0	0	3.7	3.9	5.4
72486	39.3	-114.8	1909	ALL	MSLP	706	0	0	3.8	3.7	5.3
72564	41.2	-104.8	1872	ALL	MSLP	710	2	0	4.0	3.2	5.1
72570	40.5	-107.5	1915	ALL	MSLP	714	0	0	4.1	6.8	7.9
72576	42.8	-108.7	1694	ALL	MSLP	721	0	0	4.7	3.1	5.6
72578	42.9	-112.6	1365	ALL	MSLP	707	0	0	4.0	4.0	5.6

72583	40.9	-117.8	1322	ALL	MSLP	721	0	0	3.4	3.3	4.8
72772	46.6	-112.0	1188	ALL	MSLP	707	0	0	3.2	3.1	4.4
76220	29.0	-107.8	1932	ALL	MSLP	235	64	27	2.9	9.8	10.2
76225	28.6	-106.1	1435	ALL	MSLP	424	1	0	4.5	-4.6	6.4
76323	26.9	-105.7	1661	ALL	MSLP	442	7	2	3.6	5.3	6.4
76625	20.6	-100.4	1880	ALL	MSLP	195	0	0	2.4	-3.4	4.1
76634	20.1	-98.4	2181	ALL	MSLP	227	0	0	2.1	5.5	5.9
76658	19.2	-103.7	494	ALL	MSLP	152	0	0	1.1	5.0	5.1
76687	19.5	-96.9	1389	ALL	MSLP	600	0	0	1.6	4.1	4.4
76762	17.5	-99.5	1265	ALL	MSLP	383	0	0	2.1	3.8	4.4
76843	16.8	-93.1	528	ALL	MSLP	457	0	0	1.3	5.8	5.9
76848	16.3	-92.1	1646	ALL	MSLP	394	0	0	1.7	-3.5	3.9
76903	14.9	-92.3	118	ALL	MSLP	395	0	0	1.3	6.0	6.2
78588	17.2	-87.5	1	ALL	MSLP	727	642	88	0.8	0.4	0.9

WMO REGION 5

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
96753	-6.5	106.8	250	ALL	MSLP	212	0	0	1.6	4.9	5.1
96947	-8.0	112.7	526	ALL	MSLP	145	0	0	1.4	4.0	4.2
97378	-10.7	123.1	1	ALL	MSLP	261	229	88	1.5	-14.1	14.2
98132	20.8	121.8	124	ALL	MSLP	685	2	0	1.6	3.2	3.6

WMO REGION 6

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
17042	41.4	41.4	33	ALL	MSLP	642	0	0	3.3	4.3	5.4

WMO REGION ANTARCTICA

STN NO.	LAT	LONG	HT (M)	TIME	ELEM	NOBS	NGE	PGE	SD	BIAS	RMS
89250	-62.1	-58.4	267	ALL	MSLP	354	2	1	2.9	-4.5	5.4
89253	-63.2	-55.4	75	ALL	MSLP	345	1	0	3.8	3.6	5.2
89263	-66.0	-66.1	20	ALL	MSLP	715	297	42	9.2	2.0	9.4
89512	-70.8	11.8	102	ALL	MSLP	733	4	1	3.2	-3.8	5.0
89642	-66.7	140.0	41	ALL	MSLP	709	0	0	3.0	-3.2	4.4

Figure 1
SUSPECT STATIONS FOR LAND SURFACE OBSERVATIONS FOR MSLP in RA-V
JULY to DECEMBER 2003

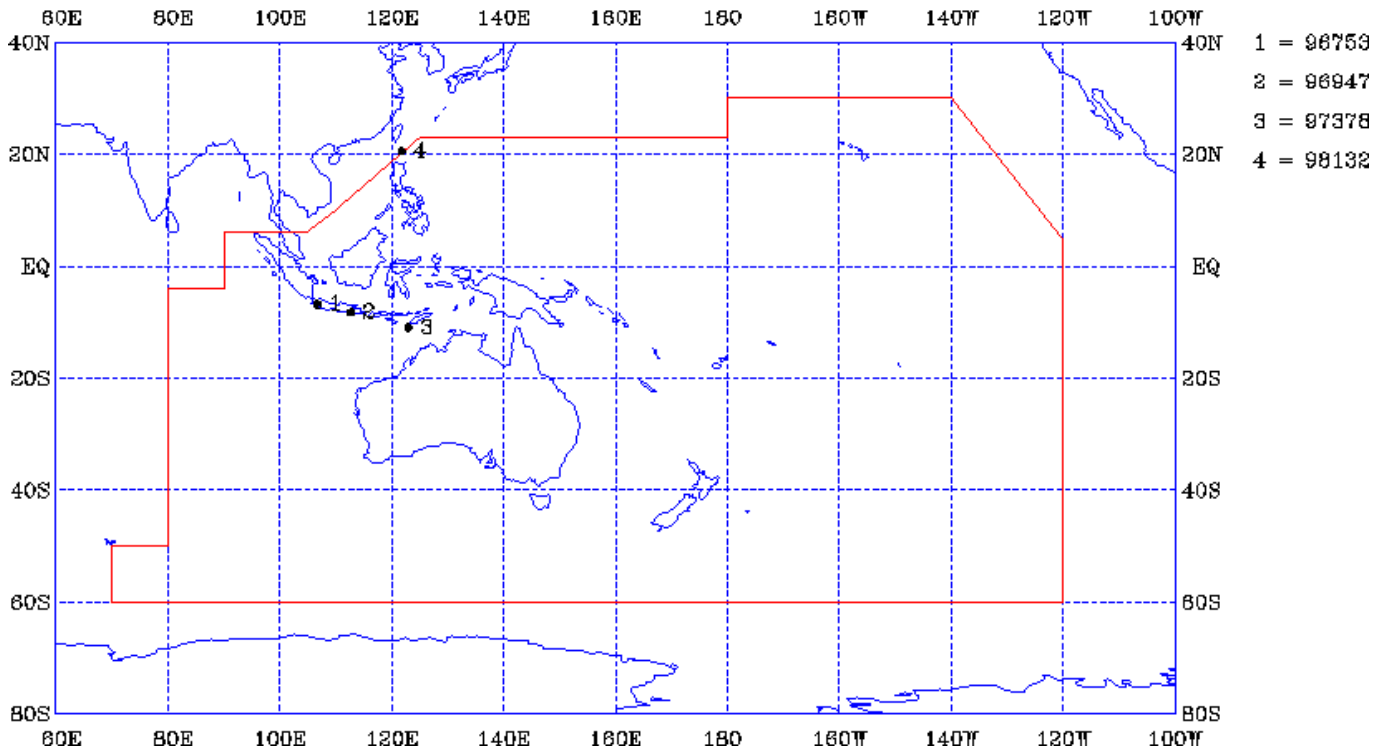


Figure 2
Residuals of MSL Pressure
July – December 2003
STATION: **96753** BOGOR/DERMAGA

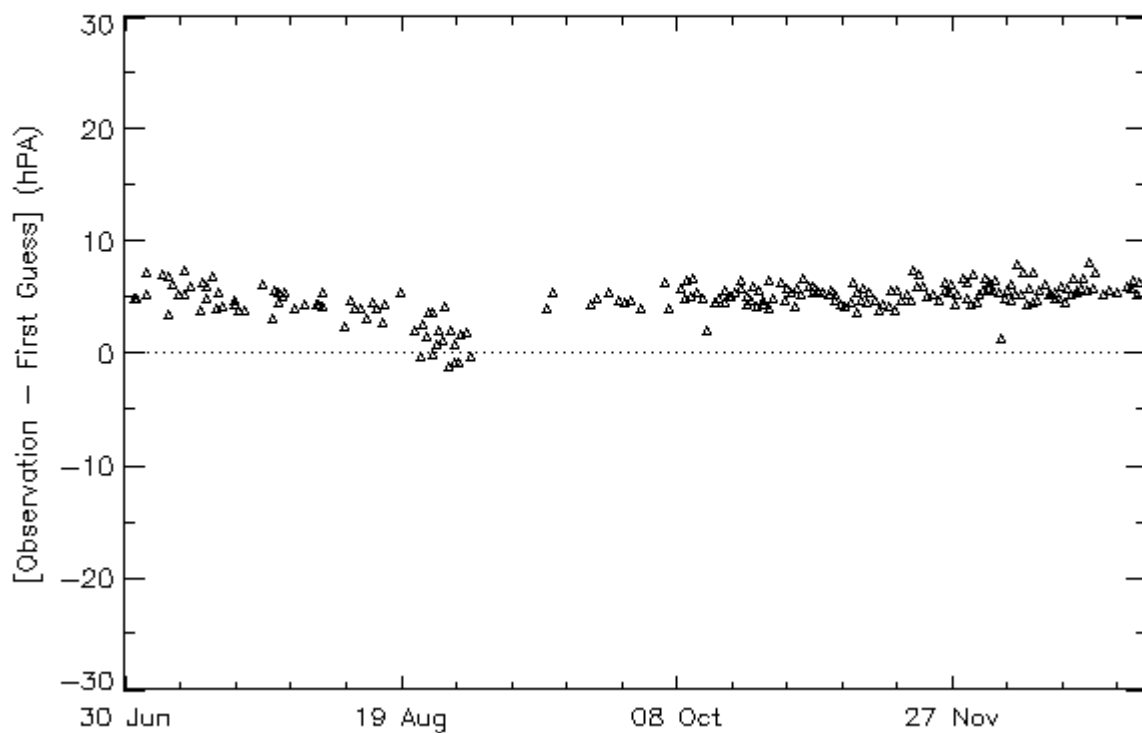


Figure 3
Residuals of MSL Pressure
July – December 2003
STATION: **96947** MALANG/ABDUL RAHKMAN

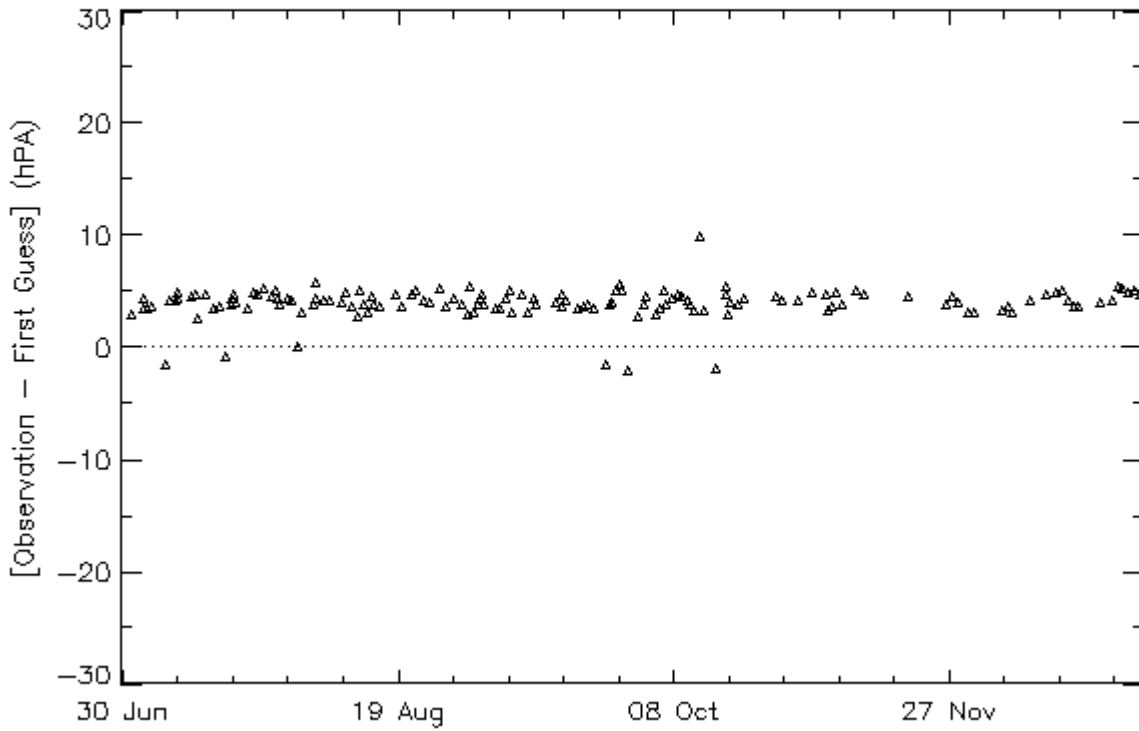


Figure 4
Residuals of MSL Pressure
July – December 2003
STATION: **97378** ROTE/BAA

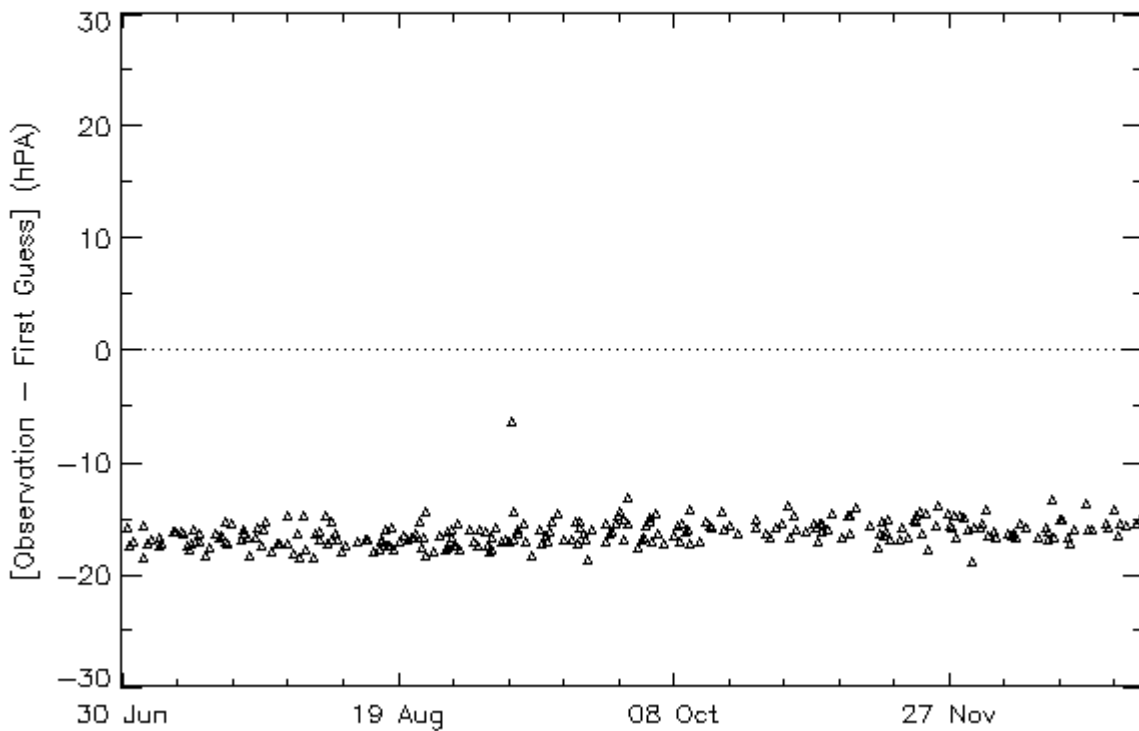


Figure 5
Residuals of MSL Pressure
July – December 2003
STATION: **98132** ITBAYAT

