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Bureau of Meteorology

Report on the Quality of Land Surface Observations in Region V

January – June 2003

Report No. 13

WMC Melbourne

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

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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 January to June 2003. The locations of the suspect stations are shown in Figure1 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	126	0	0	0.9	5.2	5.3
97008	3.6	125.5	38	ALL	MSLP	434	0	0	1.0	3.1	3.3
97378	-10.7	123.1	1	ALL	MSLP	139	125	90	0.3	-14.5	14.5
98553	11.6	125.4	7	ALL	MSLP	669	0	0	2.9	-3.5	4.6

Table 1. List of land surface stations reporting suspect observations of mean sea level pressure over the period January to June 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

JANUARY to JUNE 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 JAN to JUN 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	329	0	0	1.7	4.0	4.3
62271	24.2	23.3	436	ALL	MSLP	274	1	0	1.8	3.9	4.3
62770	13.5	22.5	805	ALL	MSLP	207	0	0	2.0	3.5	4.0
63160	10.4	45.0	9	ALL	MSLP	167	1	1	2.4	-3.0	3.9
64108	-3.3	17.4	324	ALL	MSLP	167	0	0	2.1	4.2	4.7
64222	-5.0	18.8	449	ALL	MSLP	181	0	0	2.5	5.4	6.0
64228	-6.4	20.9	481	ALL	MSLP	157	0	0	2.3	3.6	4.2
64650	4.4	18.5	366	ALL	MSLP	251	0	0	1.9	3.5	4.0
64654	8.4	20.6	511	ALL	MSLP	188	0	0	2.2	3.1	3.8
64655	6.5	22.0	584	ALL	MSLP	210	0	0	1.8	3.3	3.8
64656	4.7	22.8	500	ALL	MSLP	158	0	0	1.9	3.6	4.1
64662	5.1	21.2	449	ALL	MSLP	250	0	0	2.2	3.6	4.2
65416	9.0	-2.5	301	ALL	MSLP	306	0	0	1.3	3.5	3.8
65418	9.5	-0.9	173	ALL	MSLP	139	0	0	1.3	3.8	4.0
67241	-15.0	40.7	11	ALL	MSLP	224	0	0	1.2	-3.2	3.4
67308	-22.1	31.7	453	ALL	MSLP	121	120	99	0.0	0.5	0.5
68016	-19.3	12.7	0	ALL	MSLP	295	0	0	1.7	3.4	3.8

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	511	2	0	4.3	4.5	6.2
24688	63.3	143.1	741	ALL	MSLP	709	122	17	6.1	3.2	6.9
30967	49.9	115.8	623	ALL	MSLP	224	1	0	2.6	-7.6	8.0
31137	56.3	131.1	850	ALL	MSLP	687	14	2	5.4	2.8	6.1
36096	51.7	94.5	628	ALL	MSLP	698	42	6	5.5	1.5	5.7
36859	44.2	80.1	645	ALL	MSLP	700	3	0	2.9	-3.2	4.3
40700	39.7	48.1	45	ALL	MSLP	540	2	0	1.8	-3.9	4.3
40726	36.8	45.7	1385	ALL	MSLP	494	0	0	2.6	3.8	4.5
40741	36.5	61.2	236	ALL	MSLP	488	0	0	2.4	-4.1	4.8
40836	30.8	51.7	1880	ALL	MSLP	491	1	0	2.5	3.6	4.4
41396	16.0	49.0	700	ALL	MSLP	261	2	1	1.5	3.6	3.9
44203	51.1	99.7	1583	ALL	MSLP	685	122	18	5.4	3.7	6.6
44207	50.4	100.2	1687	ALL	MSLP	687	23	3	4.7	4.5	6.5
44212	49.8	92.1	936	ALL	MSLP	691	188	27	5.8	3.1	6.6
44213	49.7	94.4	1232	ALL	MSLP	697	164	24	5.9	2.9	6.5
44215	49.1	91.7	1591	ALL	MSLP	689	53	8	5.9	0.7	6.0
44218	48.0	91.7	1406	ALL	MSLP	696	60	9	6.3	-0.7	6.3
44225	48.7	98.3	1723	ALL	MSLP	692	205	30	5.6	2.5	6.2
44230	49.6	102.0	1236	ALL	MSLP	696	9	1	4.4	4.1	6.0
44231	49.6	100.2	1288	ALL	MSLP	690	26	4	5.1	2.2	5.6
44232	49.4	102.7	933	ALL	MSLP	695	23	3	5.0	3.6	6.2
44265	46.1	91.6	1186	ALL	MSLP	681	111	16	3.8	7.3	8.2
44272	47.8	96.8	1753	ALL	MSLP	695	35	5	6.5	0.9	6.6
44275	46.8	98.1	2255	ALL	MSLP	696	60	9	5.6	2.0	5.9
44277	46.4	96.3	2147	ALL	MSLP	697	2	0	5.6	-2.1	6.0
44284	46.7	100.1	2117	ALL	MSLP	695	168	24	5.4	4.6	7.1
44287	46.1	100.7	1860	ALL	MSLP	698	9	1	4.8	3.3	5.9

44336	45.5	103.9	1316	ALL	MSLP	663	0	0	4.0	3.5	5.3
48957	14.8	106.8	105	ALL	MSLP	130	0	0	1.9	3.1	3.6
51334	44.6	82.9	321	ALL	MSLP	674	0	0	3.4	3.1	4.6
51379	44.0	89.6	794	ALL	MSLP	676	0	0	4.0	3.7	5.4
51495	43.2	91.7	732	ALL	MSLP	671	89	13	3.3	6.7	7.5
51573	42.9	89.2	37	ALL	MSLP	714	5	1	5.5	-1.3	5.6
51709	39.5	76.0	1291	ALL	MSLP	714	0	0	5.2	1.0	5.3
51747	39.0	83.7	1099	ALL	MSLP	715	3	0	5.0	-1.9	5.4
51777	39.0	88.2	889	ALL	MSLP	715	5	1	5.0	-2.6	5.7
52203	42.8	93.5	739	ALL	MSLP	714	1	0	5.0	-0.4	5.0
52418	40.2	94.7	1140	ALL	MSLP	716	2	0	5.1	-0.8	5.2
53083	44.6	114.2	1183	ALL	MSLP	677	2	0	3.3	3.5	4.8
53192	44.0	114.9	1128	ALL	MSLP	716	5	1	3.6	4.5	5.7
53336	41.6	108.5	1290	ALL	MSLP	716	0	0	2.9	3.2	4.3
53352	41.7	110.4	1377	ALL	MSLP	675	0	0	3.1	3.4	4.6
53391	41.9	114.0	1484	ALL	MSLP	716	0	0	2.6	3.0	4.0
53480	41.0	113.1	1416	ALL	MSLP	678	0	0	2.5	3.4	4.2
54208	42.2	116.5	1247	ALL	MSLP	716	1	0	3.4	3.4	4.8
56096	33.4	104.9	1079	ALL	MSLP	716	0	0	2.5	-3.0	4.0
56763	25.7	101.9	1120	ALL	MSLP	711	0	0	2.3	-3.5	4.2

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	204	1	0	1.8	-6.4	6.6
80315	3.0	-75.3	443	ALL	MSLP	479	0	0	2.0	-4.1	4.6
82287	-2.9	-41.6	22	ALL	MSLP	513	1	0	0.9	-3.2	3.3
82353	-3.2	-52.2	74	ALL	MSLP	477	0	0	1.4	-3.3	3.6
82765	-7.3	-47.5	193	ALL	MSLP	519	0	0	1.4	3.1	3.4
82861	-8.3	-49.3	157	ALL	MSLP	478	0	0	1.4	-3.1	3.4
83319	-14.7	-52.3	315	ALL	MSLP	509	0	0	1.3	3.4	3.6
84390	-4.6	-81.3	90	ALL	MSLP	124	2	2	1.1	4.8	4.9
84401	-5.2	-80.6	55	ALL	MSLP	617	0	0	1.6	5.0	5.2
84425	-5.9	-76.1	184	ALL	MSLP	433	2	0	1.9	5.2	5.5
84452	-6.8	-79.8	34	ALL	MSLP	590	0	0	1.5	4.0	4.3
84455	-6.4	-76.4	282	ALL	MSLP	415	1	0	2.1	8.0	8.2
84501	-8.1	-79.0	30	ALL	MSLP	459	0	0	1.6	4.8	5.1
84628	-12.0	-77.1	13	ALL	MSLP	579	0	0	1.4	3.5	3.7
84720	-14.9	-74.9	567	ALL	MSLP	293	1	0	1.9	6.4	6.6
84773	-17.7	-71.3	9	ALL	MSLP	122	0	0	1.4	4.1	4.4
84782	-18.1	-70.3	458	ALL	MSLP	468	0	0	1.7	7.9	8.1
85041	-11.0	-68.8	235	ALL	MSLP	329	0	0	2.2	6.7	7.0
85141	-14.5	-67.6	204	ALL	MSLP	330	0	0	3.8	4.0	5.5
85268	-18.3	-59.8	276	ALL	MSLP	318	0	0	1.6	3.1	3.5
85394	-22.8	-64.3	381	ALL	MSLP	231	0	0	2.9	4.0	5.0
85406	-18.4	-70.3	55	ALL	MSLP	710	0	0	1.8	5.5	5.8
85418	-20.5	-70.2	48	ALL	MSLP	707	0	0	1.5	4.4	4.7
85442	-23.4	-70.4	140	ALL	MSLP	708	0	0	1.5	3.4	3.7
85486	-28.6	-70.8	526	ALL	MSLP	146	0	0	1.7	4.3	4.7
87904	-50.3	-72.1	204	ALL	MSLP	701	346	49	7.0	5.7	9.0

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	713	174	24	7.5	-0.1	7.5
71048	61.6	-125.8	610	ALL	MSLP	539	0	0	2.7	3.2	4.1
71060	65.6	-118.1	230	ALL	MSLP	702	148	21	7.2	-2.5	7.6
71177	57.1	-61.5	834	ALL	MSLP	237	0	0	1.9	-4.7	5.1
71179	54.7	-58.3	683	ALL	MSLP	217	0	0	2.1	-4.1	4.6
71506	67.0	-136.2	720	ALL	MSLP	699	0	0	2.3	-4.7	5.2
72375	35.1	-11.2	2139	ALL	MSLP	709	34	5	6.0	-4.0	7.2
72570	40.5	-107.5	1915	ALL	MSLP	710	7	1	3.9	3.7	5.4
76220	29.0	-107.8	1932	ALL	MSLP	294	41	14	3.7	8.8	9.5
76243	28.7	-100.5	250	ALL	MSLP	470	1	0	3.0	3.4	4.5
76323	26.9	-105.7	1661	ALL	MSLP	393	4	1	4.0	4.5	6.0
76390	25.5	-101.0	1790	ALL	MSLP	379	0	0	2.5	-3.0	3.9
76625	20.6	-100.4	1880	ALL	MSLP	174	0	0	2.5	-3.7	4.5
76634	20.1	-98.4	2181	ALL	MSLP	371	0	0	3.0	3.9	5.0
76658	19.2	-103.7	494	ALL	MSLP	149	0	0	1.4	5.5	5.7
76680	19.4	-99.2	2303	ALL	MSLP	137	0	0	2.8	-3.0	4.1

76685	19.0	-98.2	2179	ALL	MSLP	468	0	0	3.4	-3.4	4.8
76687	19.5	-96.9	1389	ALL	MSLP	546	0	0	1.8	3.3	3.7
76726	18.9	-99.2	1618	ALL	MSLP	358	0	0	3.3	-3.2	4.6
76762	17.5	-99.5	1265	ALL	MSLP	366	0	0	2.0	3.2	3.8
76773	17.8	-97.8	1680	ALL	MSLP	120	0	0	3.0	3.1	4.3
76843	16.8	-93.1	528	ALL	MSLP	439	1	0	1.4	5.8	6.0
76848	16.3	-92.1	1646	ALL	MSLP	423	0	0	1.6	-3.8	4.2
76903	14.9	-92.3	118	ALL	MSLP	409	0	0	1.6	6.0	6.2
78588	17.2	-87.5	1	ALL	MSLP	705	306	43	1.0	0.1	1.0

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	126	0	0	0.9	5.2	5.3
97008	3.6	125.5	38	ALL	MSLP	434	0	0	1.0	3.1	3.3
97378	-10.7	123.1	1	ALL	MSLP	139	125	90	0.3	-14.5	14.5
98553	11.6	125.4	7	ALL	MSLP	669	0	0	2.9	-3.5	4.6

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	709	0	0	3.3	3.4	4.7

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	184	0	0	3.0	-4.1	5.1
89263	-66.0	-66.1	20	ALL	MSLP	179	11	6	6.1	5.2	8.0
89512	-70.8	11.8	102	ALL	MSLP	706	1	0	2.6	-3.0	4.0

Figure 1
 SUSPECT STATIONS FOR LAND SURFACE OBSERVATIONS FOR MSLP in RA-V
 JANUARY to JUNE 2003

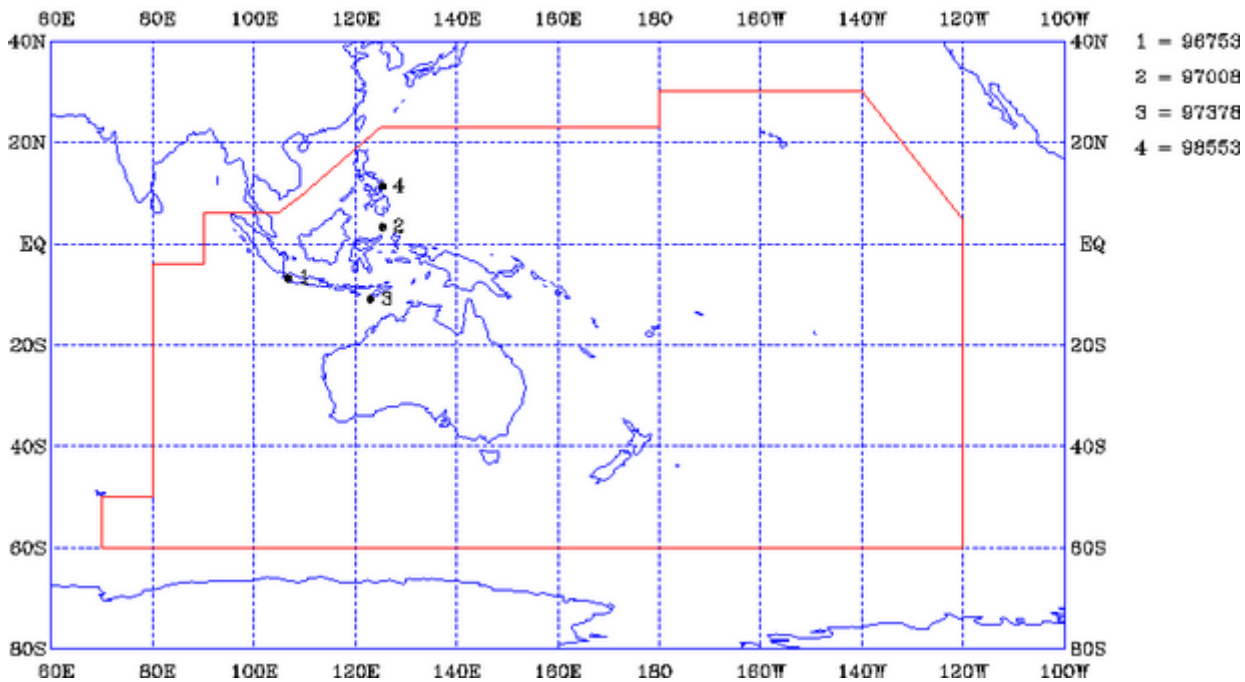


Figure 2
Residuals of MSL Pressure
January – June 2003
STATION: **96753** BOGOR/DERMAGA

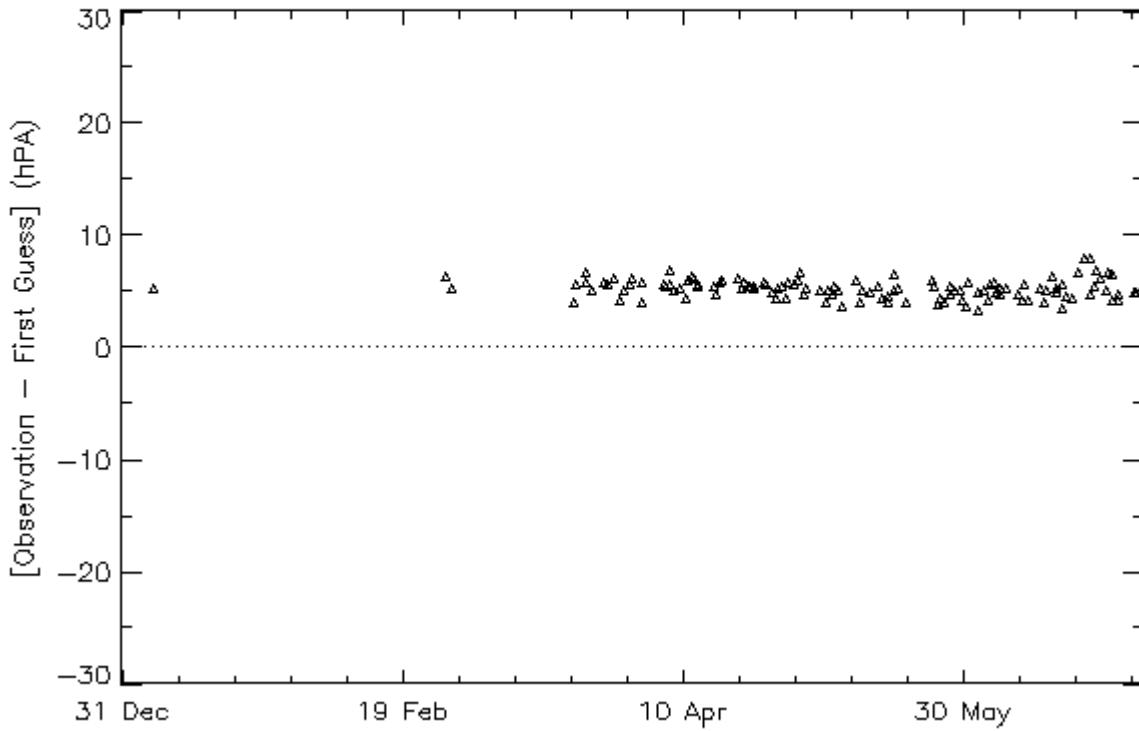


Figure 3
Residuals of MSL Pressure
January – June 2003
STATION: **97008** TAHUNA

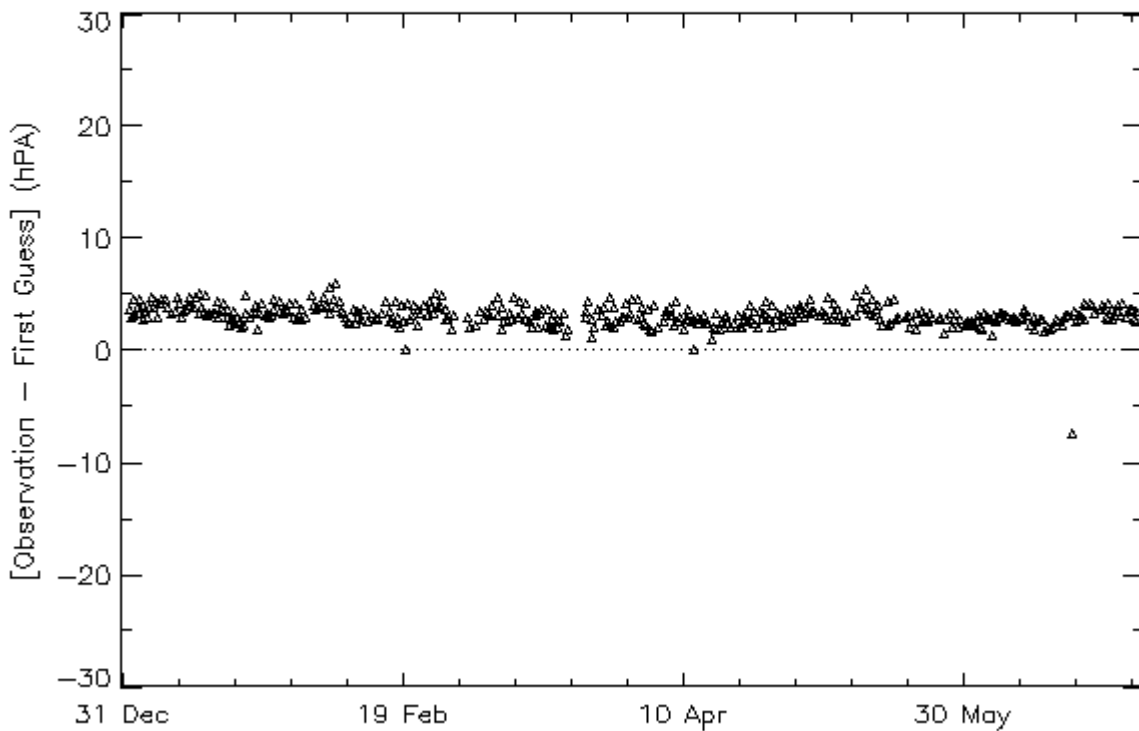


Figure 4
Residuals of MSL Pressure
January – June 2003
STATION: **97378** ROTE/BAA

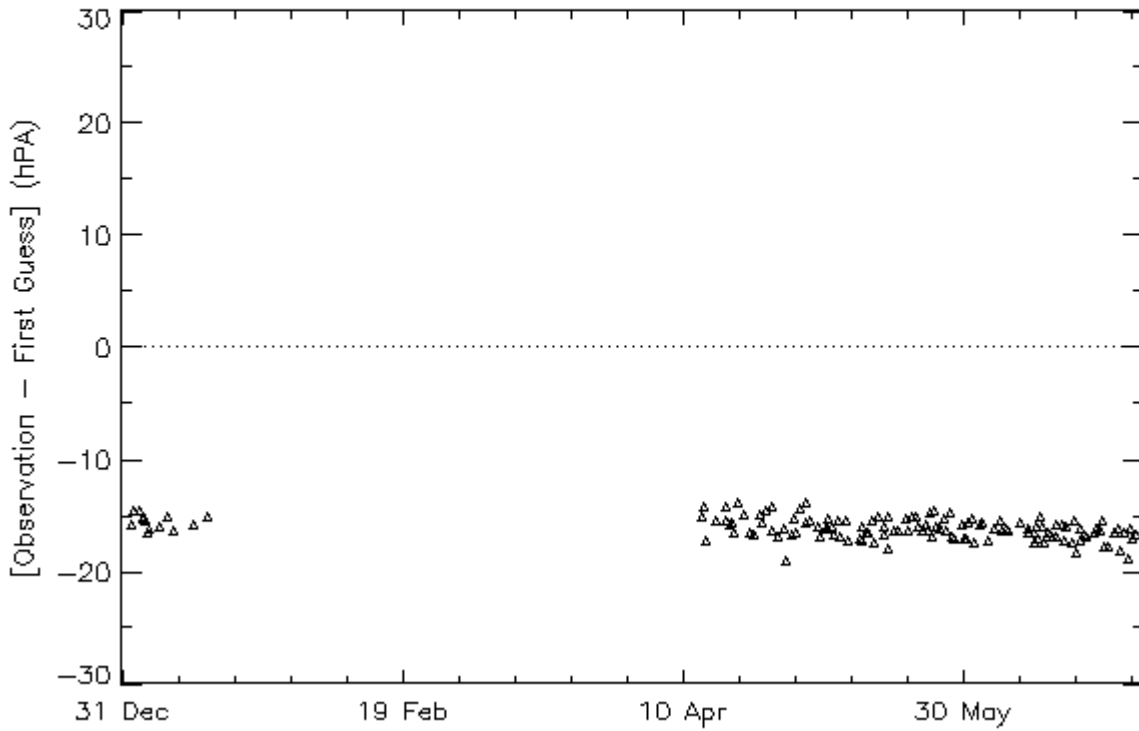


Figure 5
Residuals of MSL Pressure
January – June 2003
STATION: **98553** BORONGAN

