Report on the Quality of Land Surface Observations in Region II (Asia)

January – June 2026

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RSMC Tokyo
Lead Center for Monitoring Quality of Land Surface Observations

Japan Meteorological Agency
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Japan

Report on the Quality of Land Surface Observations in Region II
(No. 71)
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Summary

In its role as a Lead Center, RSMC Tokyo has issued the 71st report on the land surface observation quality monitoring for the period from January to June 2026. The report includes a consolidated list of stations suspected of producing low-quality observation data.

（1）SLP

As a result of monitoring, four stations (38827, 44406, 48001, 48018) were excluded from the consolidated lists of the previous report (July – December 2025), and four stations (32408, 48963, 48966, 48988) were newly added to the lists.

（2）MSLP

As a result of monitoring, one station (38836) was excluded from the consolidated lists of the previous report (July – December 2025), and two stations (48963, 48976) were newly added to the lists.

（3）GZ

As a result of monitoring, one station (38827) was excluded from the consolidated lists of the previous report (July – December 2025), and no stations were newly added to the lists.

1. Introduction

Pursuant to Section 2.2.3.5.4 of the Manual on the WMO Integrated Processing and Prediction System (WMO No. 485), the Regional Specialized Meteorological Center (RSMC) Tokyo was designated by the President of the Commission for Basic Systems (CBS) as a Lead Center for monitoring the quality of land surface observations (i.e., SYNOP) in Region II in March 1991. The Center is responsible for monitoring the quality of land surface observations and maintaining consolidated lists of stations suspected of reporting low-quality observation data together with adequate evidence. The lists are to be passed on to the WMO Secretariat and monitoring centers participating in this activity as well as to Members of Regional Association (RA) II for their reference.

2. Monitored Data

Monitored surface observation data are obtained at 00, 06, 12 and 18 UTC and collected at RSMC Tokyo before the data cut-off time, defined as the end of the period in which observation data are gathered for operational analysis. The cut-off times for Japan Meteorological Agency (JMA) global analysis are shown in Table 1.

Table 1 Data cut-off times for JMA global analysis.

Analysis time	Data cut-off time
00 UTC	11:50 UTC
06 UTC	13:50 UTC
12 UTC	23:50 UTC
18 UTC	01:50 UTC

The observation elements monitored are (1) station level pressure, (2) mean sea level pressure and (3) geopotential height, hereafter referred to as SLP, MSLP and GZ, respectively. In accordance with the Manual on Codes (WMO No. 306) Volume II, GZ data on an agreed standard pressure level are reported at the stations whose elevation is higher than 800 m. Standard pressure levels defined in line with station elevation are shown in Table 2.

Table 2 Elevation of stations reporting GZ data and corresponding standard pressure levels.

Station elevation (m)	Pressure level (hPa)
800 - 2,300	850
2,300 - 3,700	700
Higher than 3,700	500

The numbers of stations reporting SLP, MSLP and/or GZ data in Region II are shown in Table 3, and the locations of these land surface stations are shown in Figure 1.

Table 3 Numbers of stations reporting SLP, MSLP and/or GZ data in Region II

Element	Number of stations
SLP	1942
MSLP	1978
GZ	96

3. Monitoring Methods

The three items described below are examined for each element.

(i) Monthly statistics on observation deviations from the most recent forecast of JMA's global model (referred to as first-guess values) (observation minus guess, hereafter referred to as O-G) and on related trends over the monitoring period

(ii) Monthly statistics on deviations from values observed at surrounding stations

(iii) Reference information from other monitoring centers

Information on the latitude, longitude and altitude of each station is necessary for calculation of first-guess values. Such data for land surface station locations is retrieved from the surface-based observing

system component of the Observing Systems Capability Analysis and Review Tool (OSCAR/Surface)* , replacing WMO No. 9, Volume A.

The monitoring procedure has two steps as outlined below.

(1) Exclusion of data with gross errors from the statistical calculation sample

The following thresholds are applied for the gross error check in the first step:

|O-G| >= 15 hPa for SLP and MSLP
|O-G| >= 100 gpm for GZ

Gross error data are excluded from the calculation of BIAS (the mean of O-G) and SD (the standard deviation of O-G).

(2) Identification of suspect stations

When the total number of observations (NOBS) is 181 or more, the next criteria are applied:

- BIAS	|BIAS| >= 3 hPa for SLP and MSLP
	|BIAS| >= 30 gpm for GZ
- SD	SD >= 5 hPa for SLP and MSLP
	SD >= 40 gpm for GZ
- Percentage of gross errors (PGE)	PGE >= 25%

Stations with even one statistic exceeding the threshold are considered suspect.

Note:

(i) The quality of observation data from stations is not checked when the NOBS value is less than 181 or the difference between the station elevation and the model elevation is greater than 1,000 m. MSLP reports are also not checked for stations located at altitudes higher than 1,000 m above sea level.

(ii) In case of low quality of the first-guess field, those statistics can exceed the threshold and the stations are listed in the consolidated list. To avoid such situations, statistics of surrounding stations and information from other monitoring centers are also used to judge whether the quality of the station's first-guess field value is appropriate.

*https://oscar.wmo.int/surface/index.html#/

4. Monitoring Results

4.1 Consolidated list of suspect stations throughout the period

Table 4 List of suspect land surface stations during the period from January to June 2026

WMO IDENT	LAT (N)	LON (E)	H (m)	HM (m)	ELEM	NOBS	PGE (%)	SD	BIAS	RMS
23992	60.7	97.5	178	348	SLP	651	0	1.1	0.2	1.1
					MSLP	652	3	5.9	7.2	9.3
30673	53.8	119.7	625	747	SLP	721	0	0.9	-8.8	8.8
					MSLP	721	0	1.5	-0.1	1.5
35615	47.6	53.3	-21	-16	SLP	599	0	0.6	0.2	0.6
					MSLP	599	0	0.7	5.2	5.2
35701	47.2	51.0	-27	-24	SLP	680	0	0.5	0.1	0.5
					MSLP	680	0	0.7	6.5	6.5
38262	43.0	59.8	93	64	SLP	724	0	0.7	3.5	3.6
					MSLP	724	0	0.7	0.3	0.8
38403	41.8	62.5	97	131	SLP	723	14	5.7	6.9	8.9
					MSLP	724	16	5.7	6.9	8.9
38567	40.1	65.4	340	407	SLP	719	1	1.3	-6.7	6.8
					MSLP	719	1	1.5	-6.7	6.9
38875	39.0	73.6	3930	4259	SLP	350	100	*****	*****	*****
					GZ500	4	50	7.3	-61.7	62.1
38880	38.0	58.4	312	199	SLP	723	1	1.1	11.9	12.0
					MSLP	724	0	1.0	0.2	1.0
38944	37.5	69.4	447	622	SLP	721	0	1.1	-5.6	5.7
					MSLP	720	0	1.3	-5.5	5.7
41315	17.3	54.1	881	641	SLP	704	98	0.5	14.4	14.4
					GZ850	704	93	57.5	-15.5	59.6
41573	33.9	73.4	2127	1411	SLP	714	0	1.4	8.9	9.0
					GZ850	714	0	14.1	0.2	14.1
41710	28.8	62.8	683	685	SLP	707	0	1.2	-2.9	3.1
					MSLP	707	0	1.5	-4.3	4.6
41757	25.1	62.3	96	-6	SLP	714	0	0.6	7.9	7.9
					MSLP	713	0	0.9	0.1	0.9
42045	33.5	75.2	1630	2356	SLP	540	0	1.4	-6.5	6.6
					GZ850	540	0	14.4	-68.9	70.4
42056	32.7	74.8	323	295	SLP	708	0	1.0	-6.6	6.7
					-	-	-	-	-	-
42083	31.1	77.2	2202	1552	SLP	348	74	0.3	14.7	14.7
					-	-	-	-	-	-
42111	30.3	78.1	683	851	SLP	719	0	0.9	5.8	5.9
					MSLP	719	0	1.5	-1.7	2.3
42114	30.4	78.4	770	1482	SLP	360	100	*****	*****	*****

WMO IDENT	LAT (N)	LON (E)	H (m)	HM (m)	ELEM	NOBS	PGE (%)	SD	BIAS	RMS
					-	-	-	-	-	-
42147	29.5	79.7	2311	1687	SLP	360	0	0.6	4.2	4.2
					-	-	-	-	-	-
42299	27.3	88.6	1756	1964	SLP	360	0	0.7	0.4	0.8
					GZ850	360	0	9.4	56.9	57.7
47020	41.0	126.6	306	677	SLP	723	0	1.4	-0.2	1.4
					MSLP	723	0	3.2	8.0	8.6
47037	40.0	125.3	99	217	SLP	724	0	1.8	-4.1	4.5
					MSLP	724	0	1.9	-4.1	4.5
48043	22.0	96.5	1078	946	GZ850	346	100	*****	*****	*****
					-	-	-	-	-	-
48921	21.6	101.9	1360	1049	SLP	509	1	1.1	-4.8	4.9
					GZ850	506	99	29.4	-39.5	49.2
48925	20.7	102.0	636	960	SLP	529	0	0.9	-5.6	5.7
					MSLP	529	0	1.4	-4.3	4.5
48935	19.5	103.1	1094	1204	SLP	530	0	1.0	-0.7	1.2
					GZ850	529	40	10.3	-89.6	90.2
48944	18.3	102.6	185	226	SLP	205	100	*****	*****	*****
					MSLP	205	1	3.1	-7.6	8.2
48952	15.7	106.4	180	288	SLP	520	0	1.1	3.2	3.4
					MSLP	520	0	1.1	1.9	2.2

WMO IDENT:	WMO station identification number
LAT:	station latitude
LON:	station longitude
H:	barometer elevation
HM:	model elevation
ELEM:	observed element
NOBS:	total number of observations during the period
PGE:	percentage of gross errors
SD:	standard deviation of (observation - guess)
BIAS:	bias of (observation - guess)
RMS:	root mean square of (observation - guess)

RUSSIAN FEDERATION IN ASIA

23992 - Positive bias of O-G at the mean sea level (Figures 2 and 3)

30673 - Negative bias of O-G at the station level (Figures 4 and 5)

KAZAKHSTAN

35615 - Positive bias of O-G at the mean sea level (Figures 6 and 7)

35701 - Positive bias of O-G at the mean sea level (Figures 6 and 8)

UZBEKISTAN

38262 - Positive bias of O-G at the station level (Figures 9 and 11)

38403 - Positive bias of O-G at the station level and at the mean sea level (Figures 9, 10 and 12)

38567 - Negative bias of O-G at the station level and at the mean sea level (Figures 9, 10 and 13)

TAJIKISTAN

38875 - Positive bias of O-G at the station level (Figure 14)

38944 - Negative bias of O-G at the station level and at the mean sea level (Figures 15, 16 and 17)

TURKMENISTAN

38880 - Positive bias of O-G at the station level (Figures 18 and 19)

OMAN

41315 - Positive bias of O-G at the station level and negative bias of O-G at 850 hPa or 700 hPa (Figures 20 and 21)

PAKISTAN

41573 - Positive bias of O-G at the station level (Figures 22 and 23)

41710 - Negative bias of O-G at the mean sea level (Figures 24 and 25)

41757 - Positive bias of O-G at the station level (Figures 26 and 27)

INDIA

42045 - Negative bias of O-G at the station level and at 850 hPa (Figures 28 and 29)

42056 - Negative bias of O-G at the station level (Figures 28 and 30)

42083 - Positive bias of O-G at the station level (Figures 28 and 31)

42111 - Positive bias of O-G at the station level (Figures 28 and 32)

42114 - Negative bias of O-G at the station level (Figure 33)

42147 - Positive bias of O-G at the station level (Figures 28 and 34)

42299 - Positive bias of O-G at 850 hPa (Figure 35)

KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF

47020 - Positive bias of O-G at the mean sea level (Figures 36 and 38)

47037 - Negative bias of O-G at the station level and at the mean sea level (Figures 36, 37 and 39)

MYANMAR

48043 - Negative bias of O-G at 850 hPa (Figure 40)

LAO PEOPLE'S DEMOCRATIC REPUBLIC

48921 - Negative bias of O-G at the station level and at 850 hPa (Figures 41 and 43)

48925 - Negative bias of O-G at the station level and at the mean sea level (Figures 41, 42 and 44)

48935 - Negative bias of O-G at 850 hPa (Figure 45)

48944 - Negative bias of O-G at the station level and at the mean sea level (Figures 42 and 46)

48952 - Positive bias of O-G at the station level (Figures 41 and 47)

4.2 Stations where quality deteriorated during the period

Table 5 List of suspect land surface stations where quality deteriorated during the period

WMO IDENT	LAT (N)	LON (E)	H (m)	HM (m)	ELEM	NOBS	PGE (%)	SD	BIAS	RMS
32408	56.2	162.7	30	116	SLP	724	0	0.6	3.4	3.5
					MSLP	722	0	0.6	0.3	0.7
48963	12.8	102.6	170	353	SLP	267	1	4.2	9.6	10.5
					MSLP	267	20	4.7	12.4	13.3
48966	13.4	103.9	15	9	SLP	313	0	1.4	-3.9	4.1
					MSLP	313	0	1.4	0.0	1.4
48976	13.9	103.8	15	64	SLP	216	2	1.9	-0.3	1.9
					MSLP	213	1	1.9	3.5	4.0
48988	11.7	104.1	27	68	SLP	326	0	0.7	-5.1	5.1
					MSLP	326	0	1.3	1.7	2.1

RUSSIAN FEDERATION IN ASIA

32408 - Positive bias of O-G at the station level (Figures 48 and 49)

CAMBODIA

48963 - Positive bias of O-G at the station level and at the mean sea level (Figures 50, 51 and 52)

48966 - Negative bias of O-G at the station level (Figures 50 and 53)

48976 - Positive bias of O-G at the mean sea level (Figures 51 and 54)

48988 - Negative bias of O-G at the station level (Figures 50 and 55)

4.3 Stations improved and excluded from the previous consolidated list

UZBEKISTAN

38827 - Improved at the station level and at 850 hPa (Figure 56)

TAJIKISTAN

38836 - Improved at the mean sea level (Figure 57)

NEPAL

44406 - Improved at the station level (Figure 58)

MYANMAR

48001 - Improved at the station level (Figure 59)

4.4 Stations removed from the previous consolidated list

MYANMAR

48018 - Although station 48018 still displays positive biases of O-G at the station level, it was removed from the consolidated list because the number of reports (2) was insufficient for quality checking. (Figure 60)

5. Possible Causes of Remarkable and Sustained Biases

The following are possible causes of remarkable and sustained biases

(i) The barometer used for observation is not correctly calibrated.

(ii) The latitude, longitude or altitude of the station in OSCAR/Surface has not been updated in a timely and appropriate manner. This could result in remarkable biases because it may cause incorrect calculated first-guess field values.

(iii) Biases are specific to the NWP model used in quality monitoring.
Note: Model biases are likely to appear in relatively large areas.

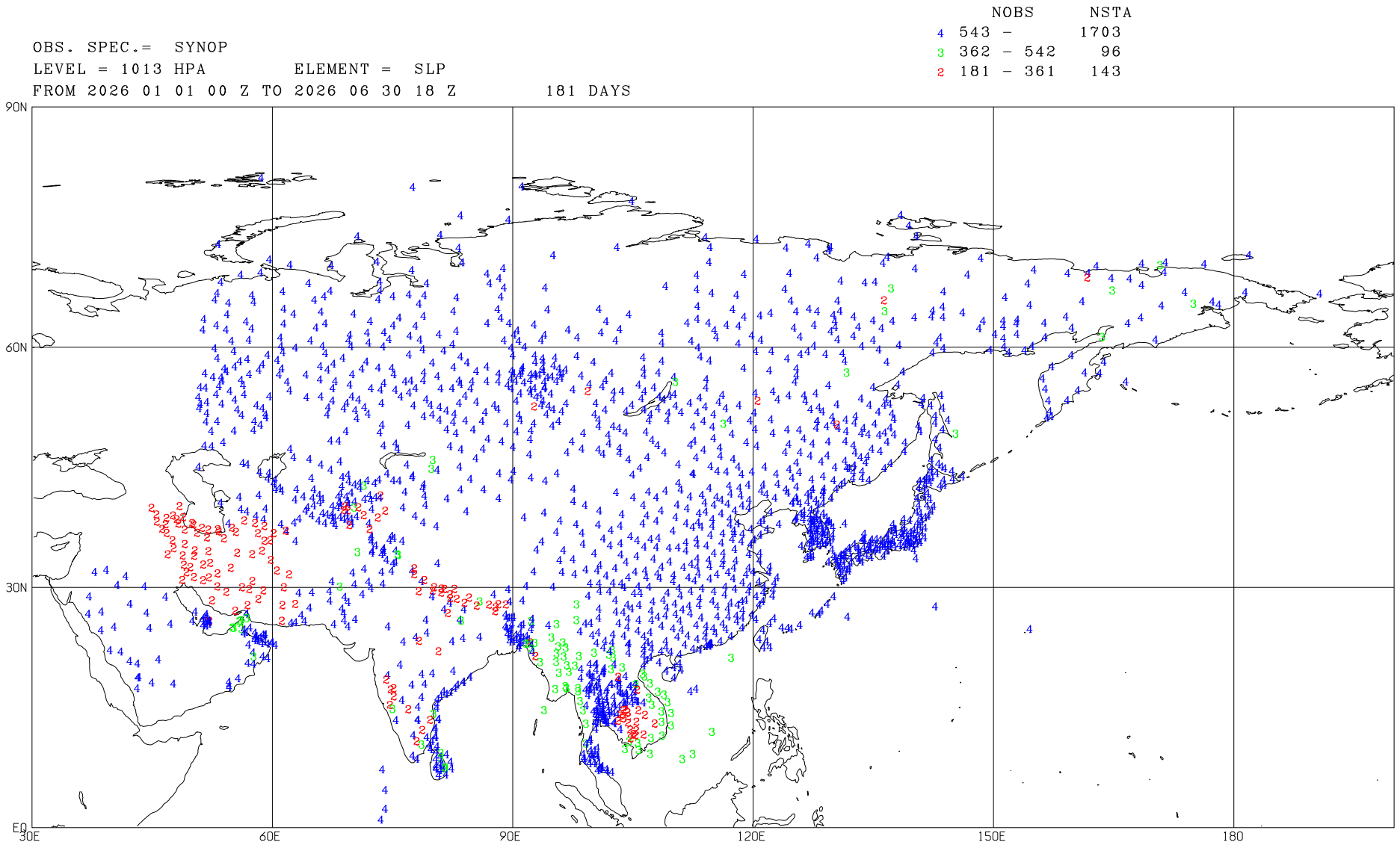


Figure 1(a) Location of all land surface stations reporting station level pressure (SLP) observations in Region II over the six-month period from January to June 2026. Numbers (2, 3, 4) show the total number of observations (NOBS) received at RSMC Tokyo. The total numbers of stations (NSTA) reporting SLP are shown at the top of the figure.

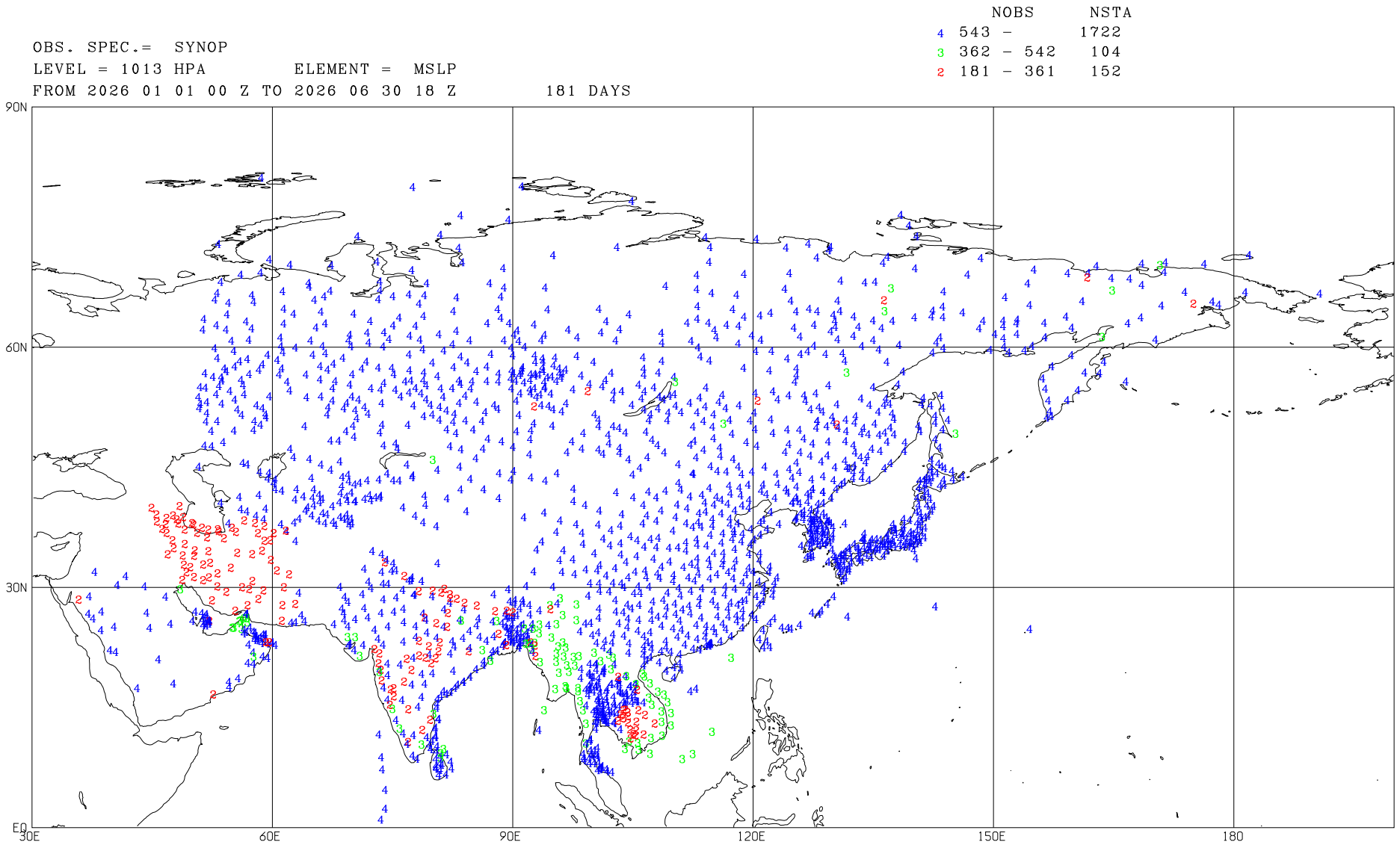


Figure 1(b) Location of all land surface stations reporting mean sea level pressure (MSLP) observations in Region II over the six-month period from January to June 2026. Numbers (2, 3, 4) show the total number of observations (NOBS) received at RSMC Tokyo. The total numbers of stations (NSTA) reporting MSLP are shown at the top of the figure.

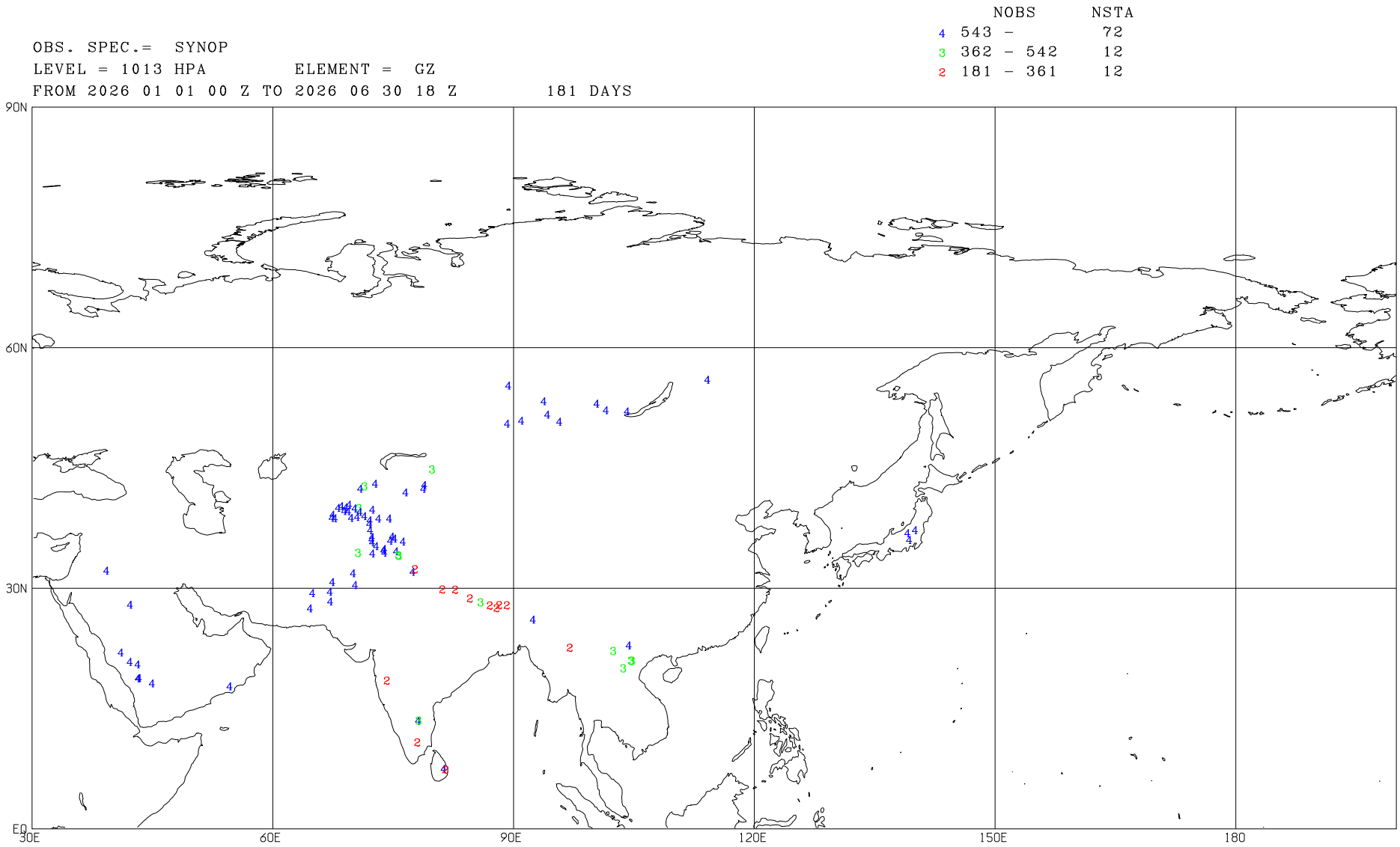


Figure 1(c) Location of all land surface stations reporting geopotential height (GZ) observations in Region II over the six-month period from January to June 2026. Numbers (2, 3, 4) show the total number of observations (NOBS) received at RSMC Tokyo. The total numbers of stations (NSTA) reporting GZ are shown at the top of the figure.

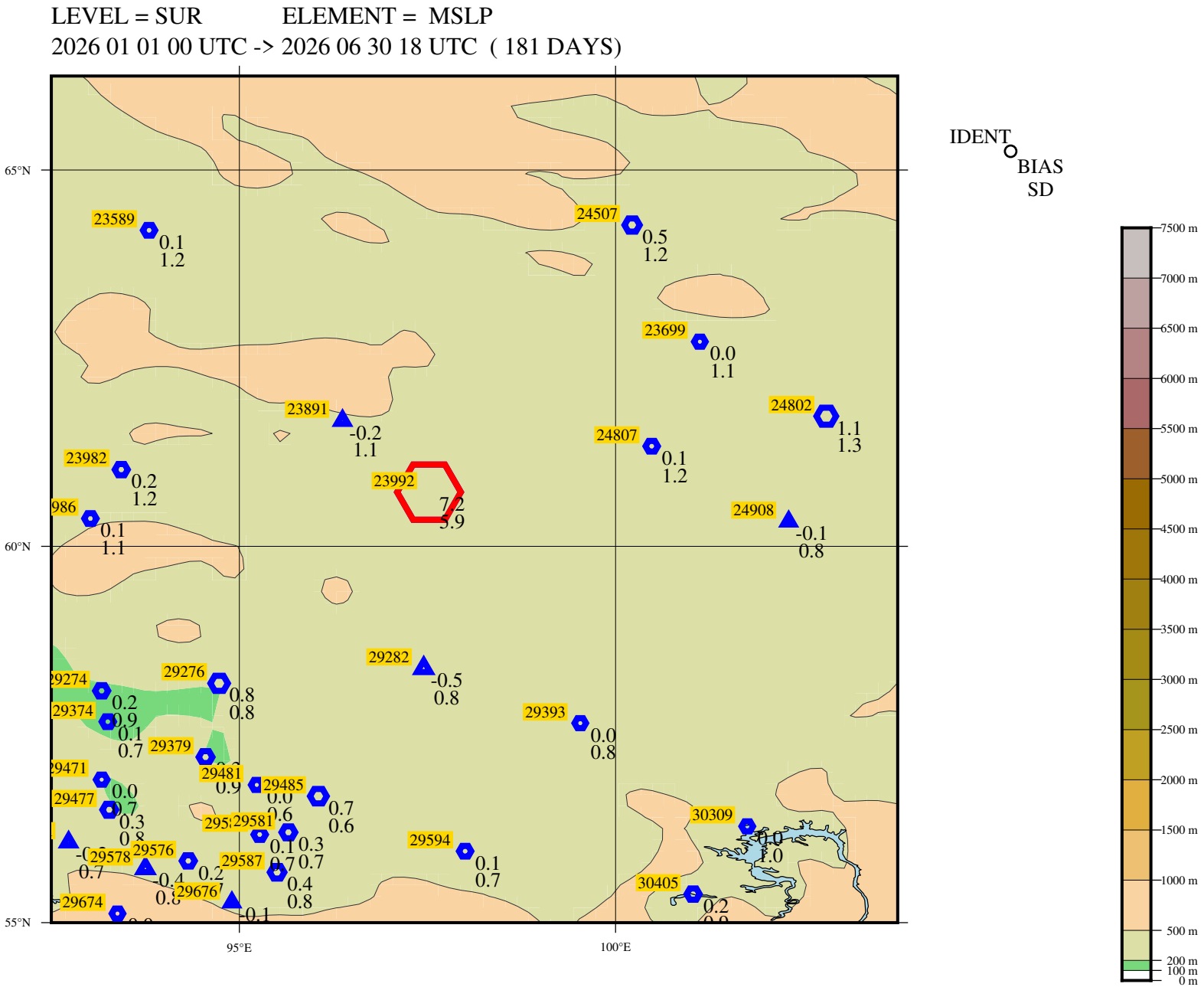


Figure 2 BIAS and SD of MSLP for station 23992 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

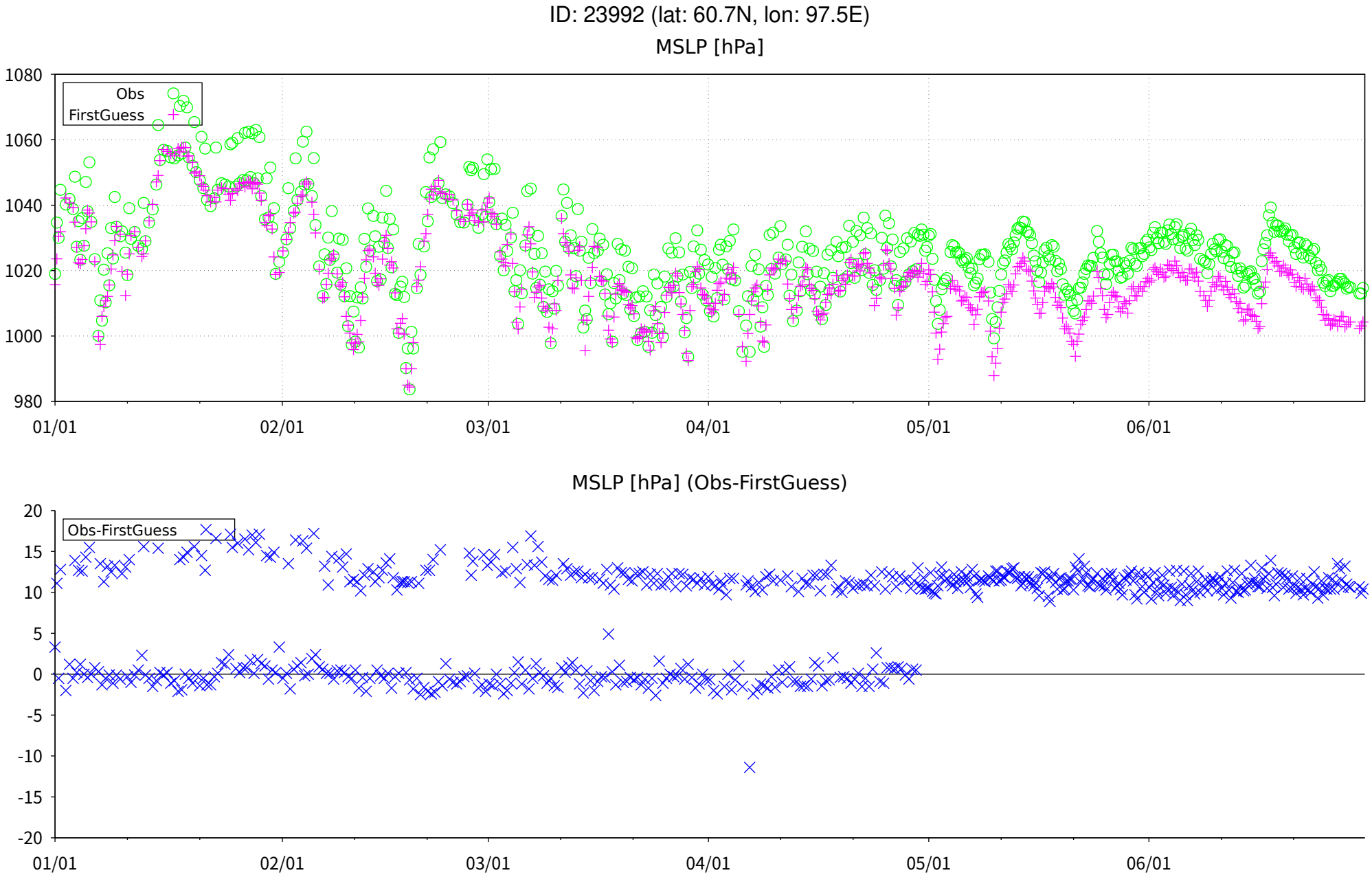


Figure 3 Time-series representation of MSLP Obs minus FirstGuess for station 23992

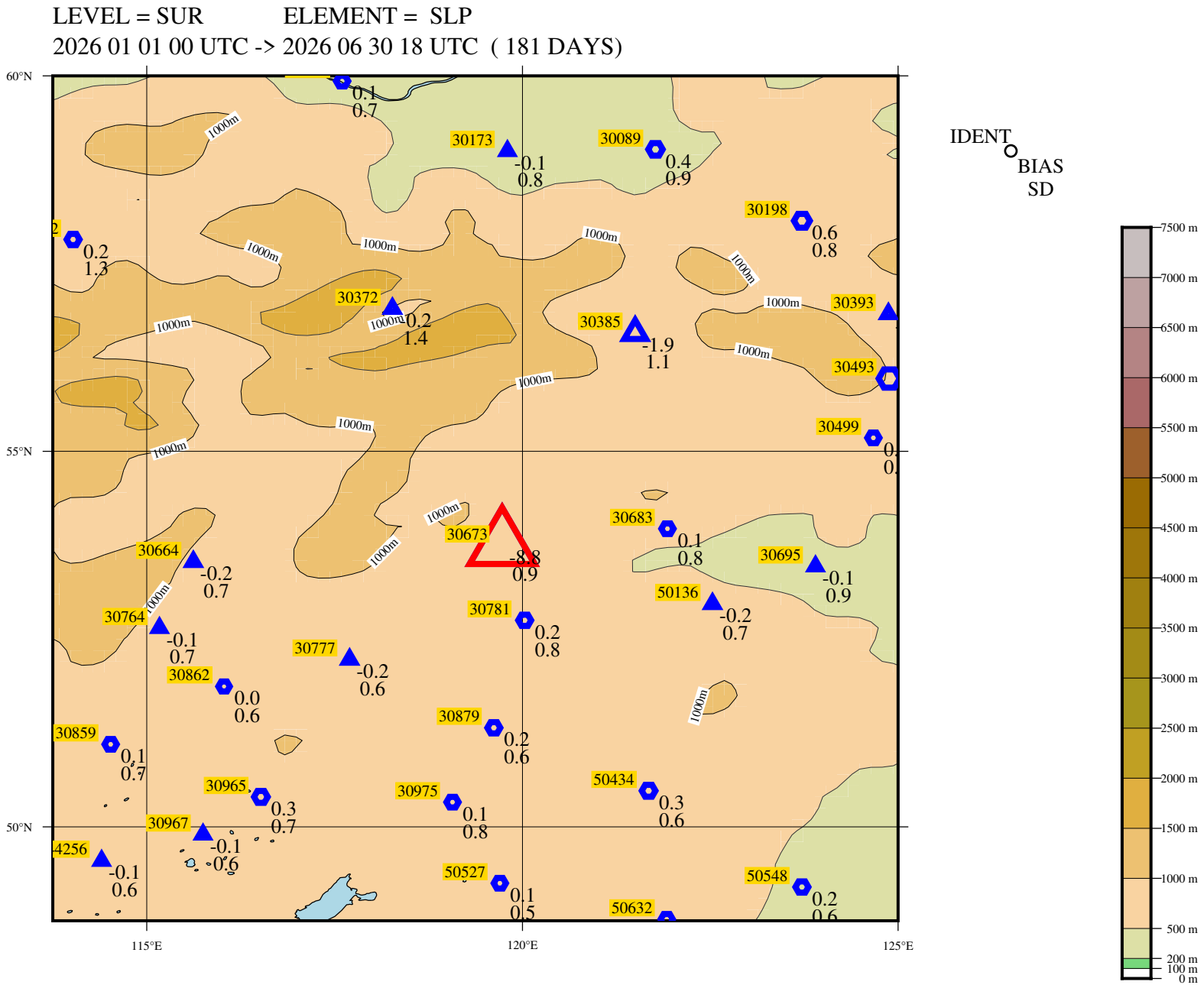


Figure 4 BIAS and SD of SLP for station 30673 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

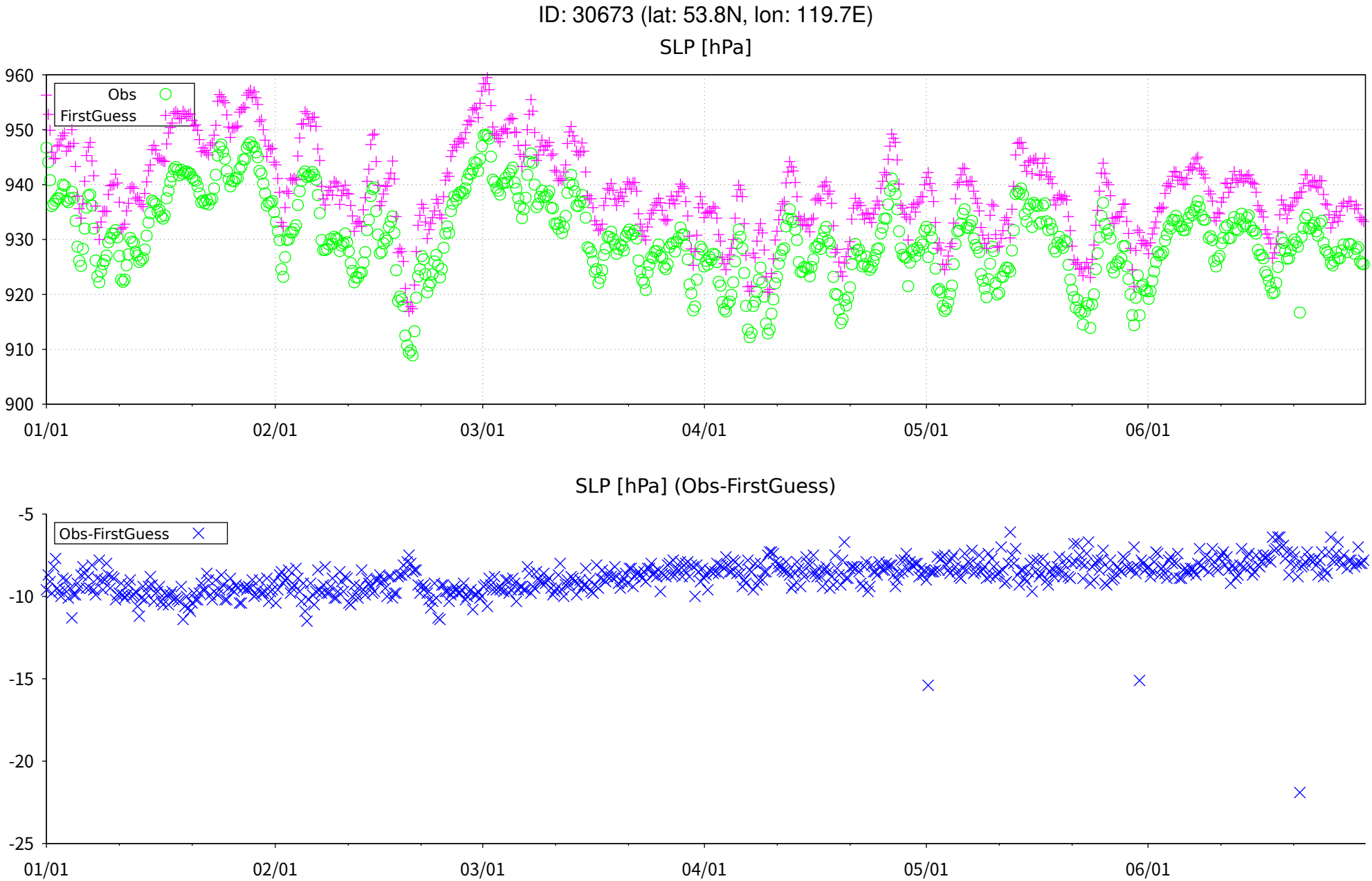


Figure 5 Time-series representation of SLP Obs minus FirstGuess for station 30673

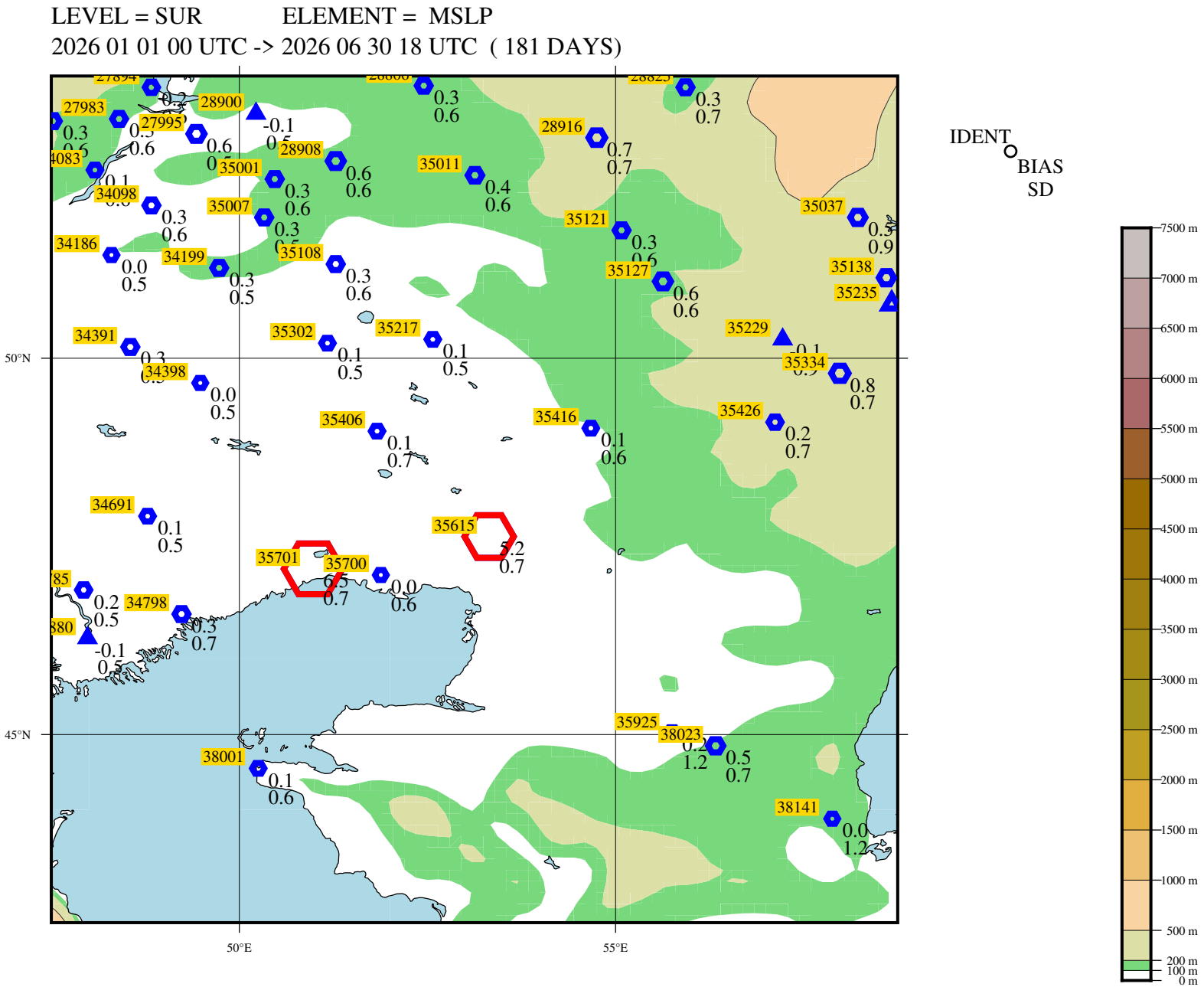


Figure 6 BIAS and SD of MSLP for station 35615, 35701 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

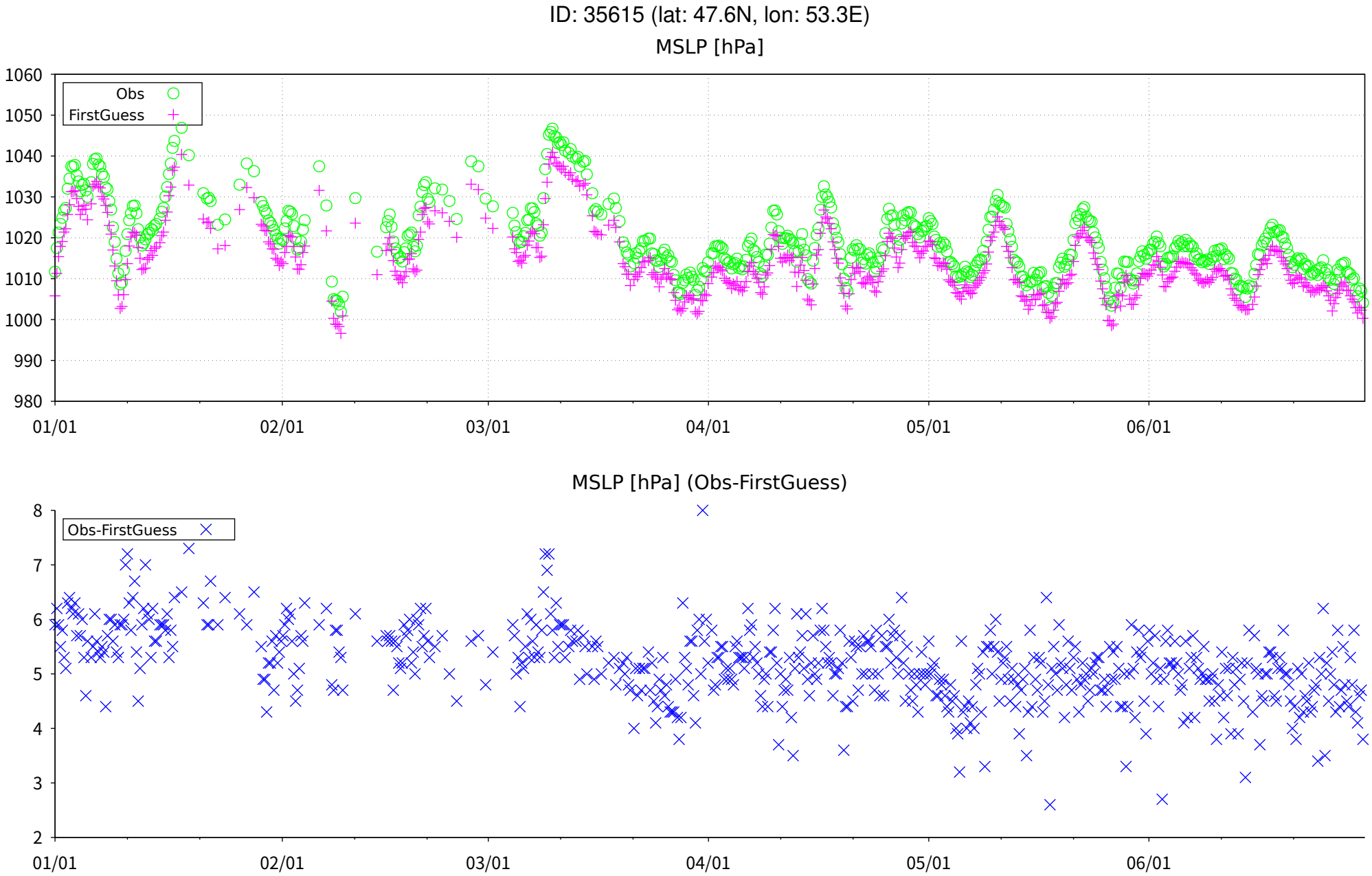


Figure 7 Time-series representation of MSLP Obs minus FirstGuess for station 35615

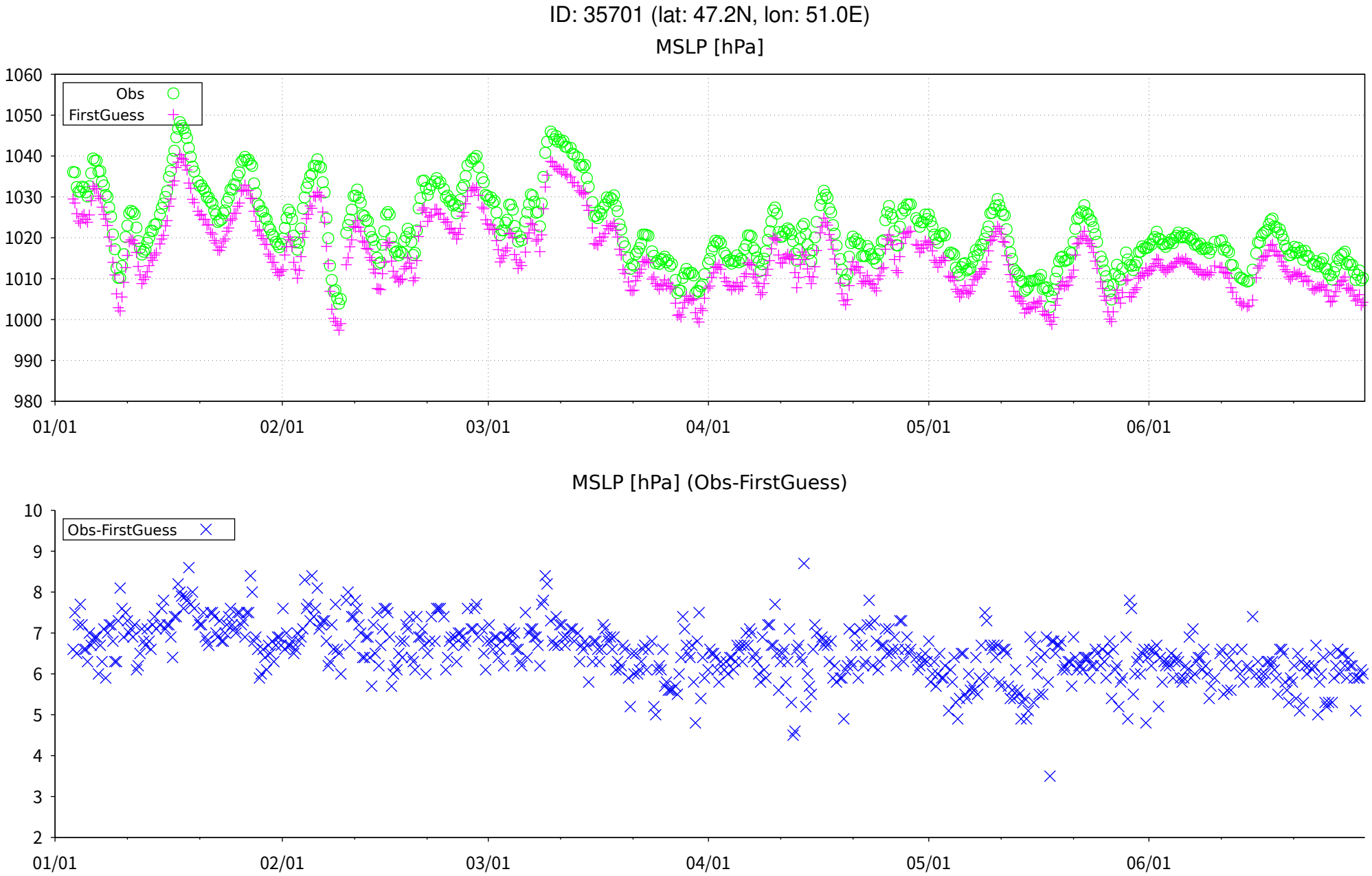


Figure 8 Time-series representation of MSLP Obs minus FirstGuess for station 35701

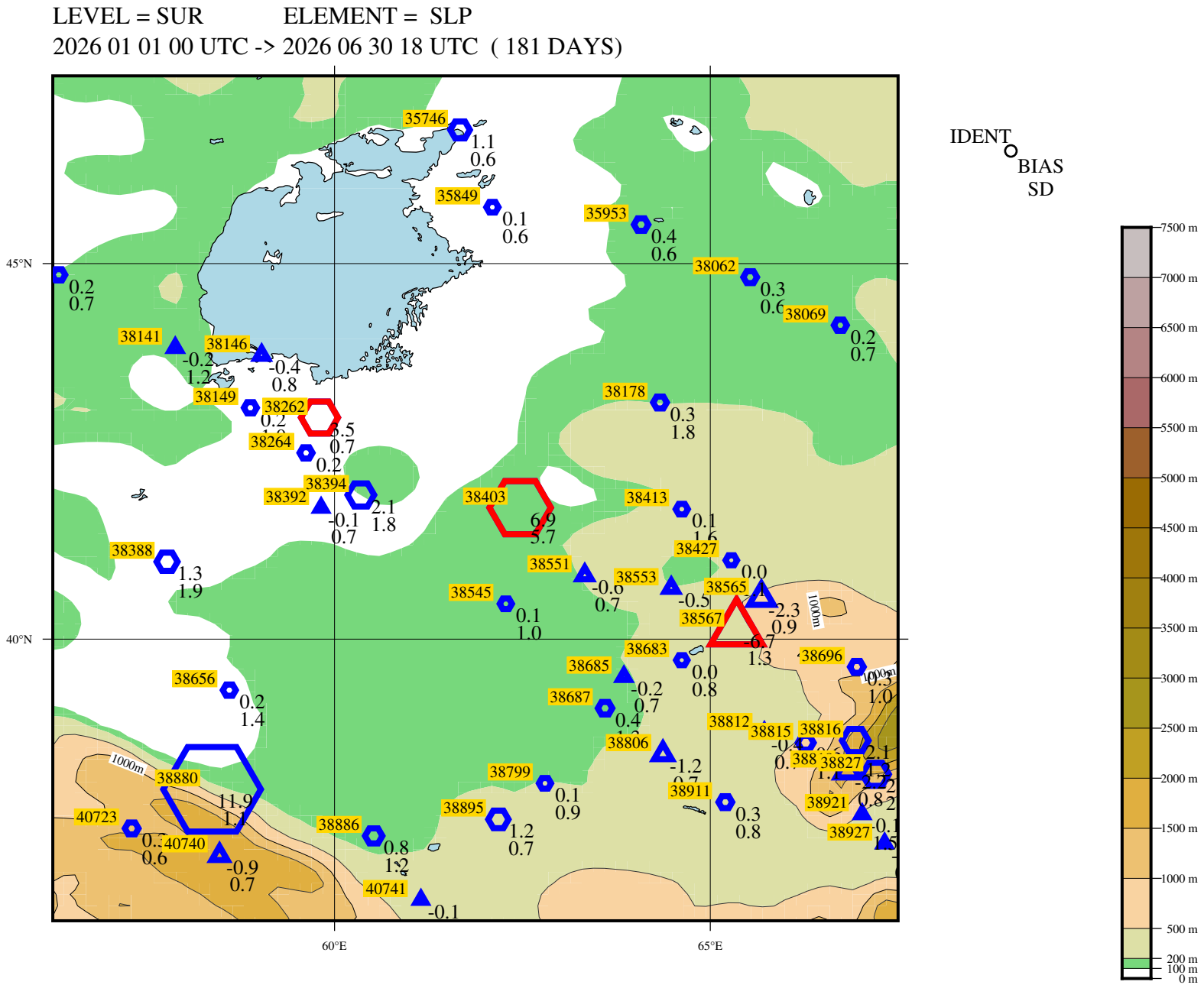


Figure 9 BIAS and SD of SLP for station 38262, 38403, 38567 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

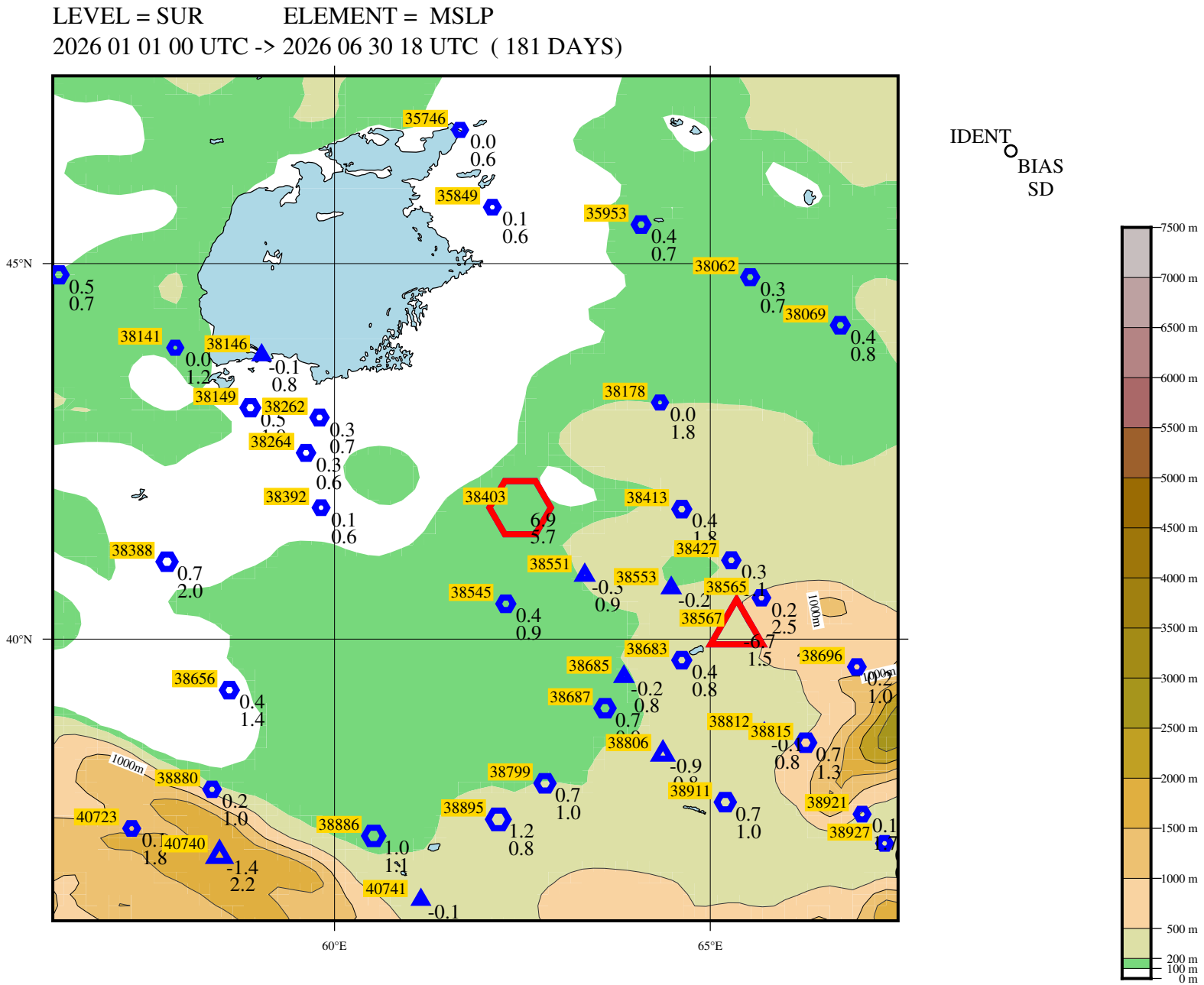


Figure 10 BIAS and SD of MSLP for station 38403, 38567 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

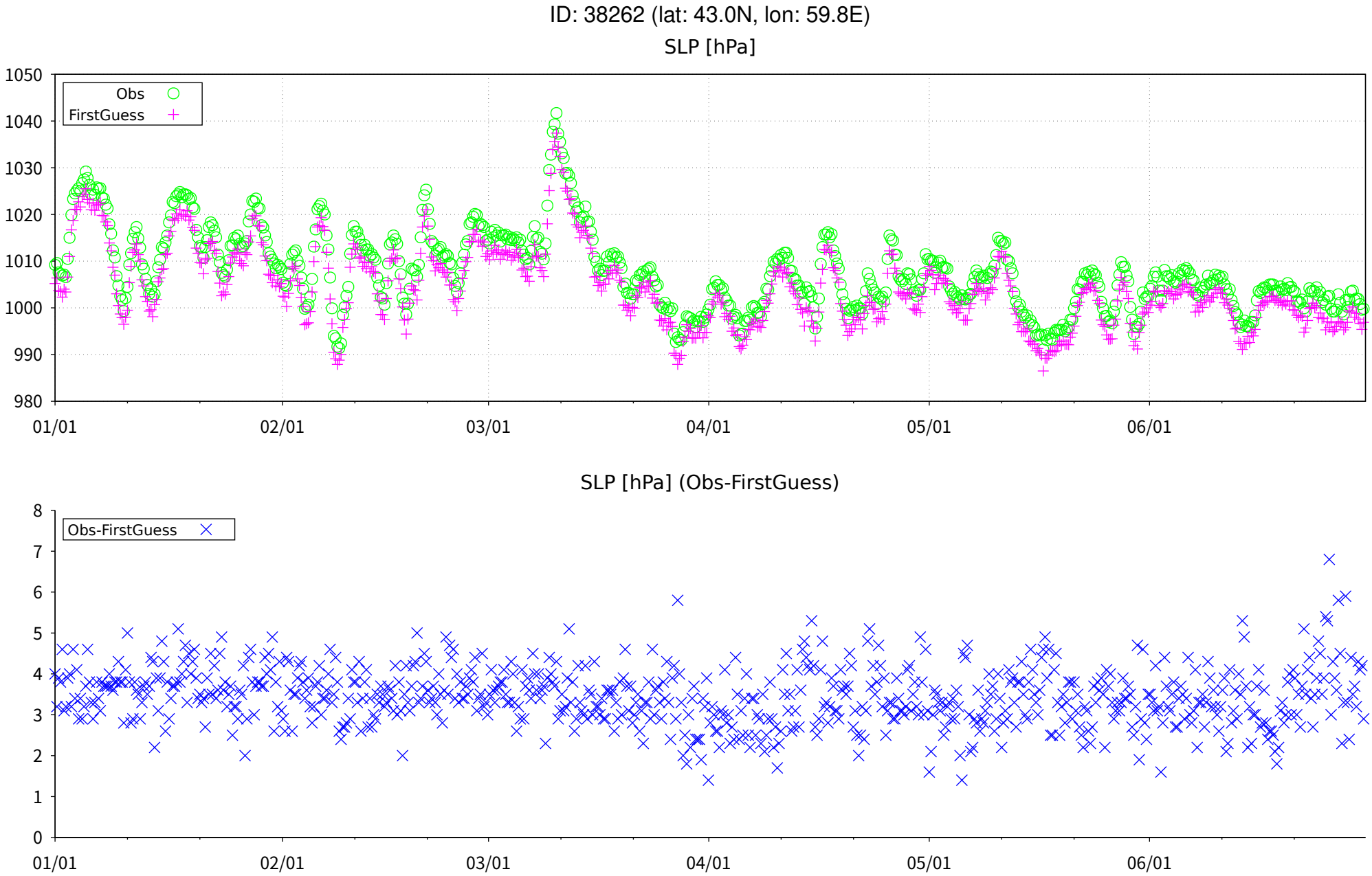


Figure 11 Time-series representation of SLP Obs minus FirstGuess for station 38262

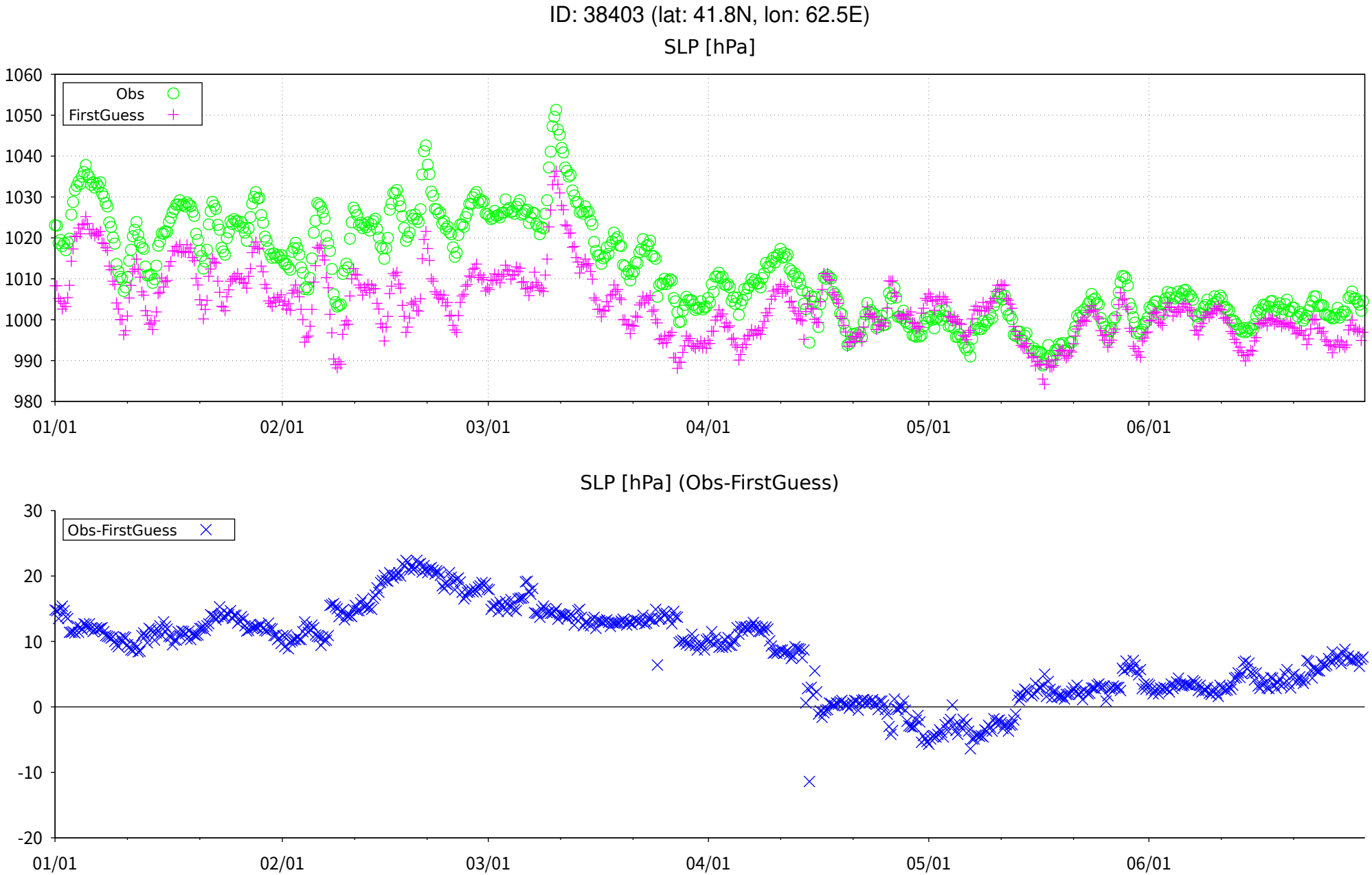


Figure 12(a) Time-series representation of SLP Obs minus FirstGuess for station 38403

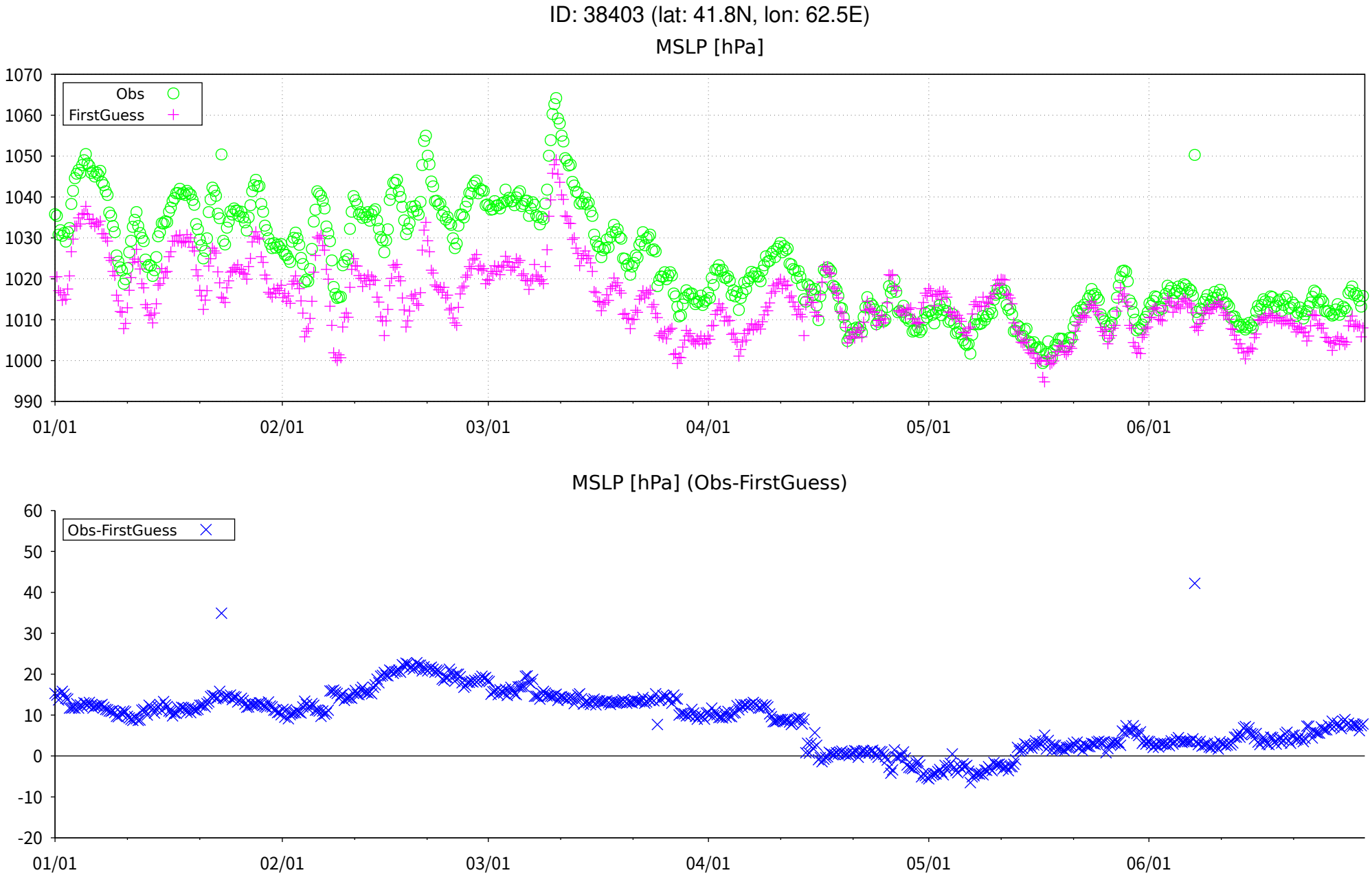


Figure 12(b) Time-series representation of MSLP Obs minus FirstGuess for station 38403

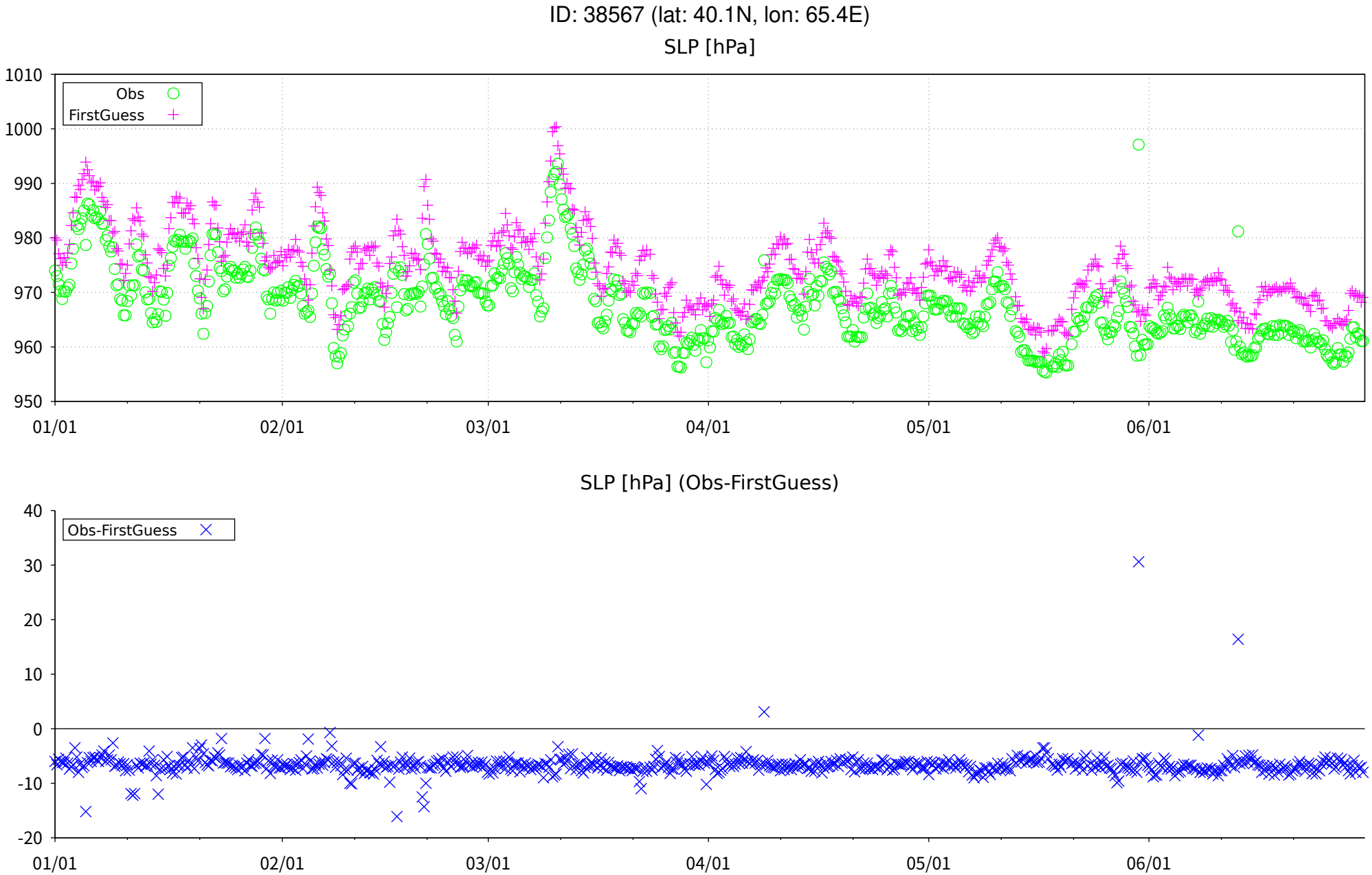


Figure 13(a) Time-series representation of SLP Obs minus FirstGuess for station 38567

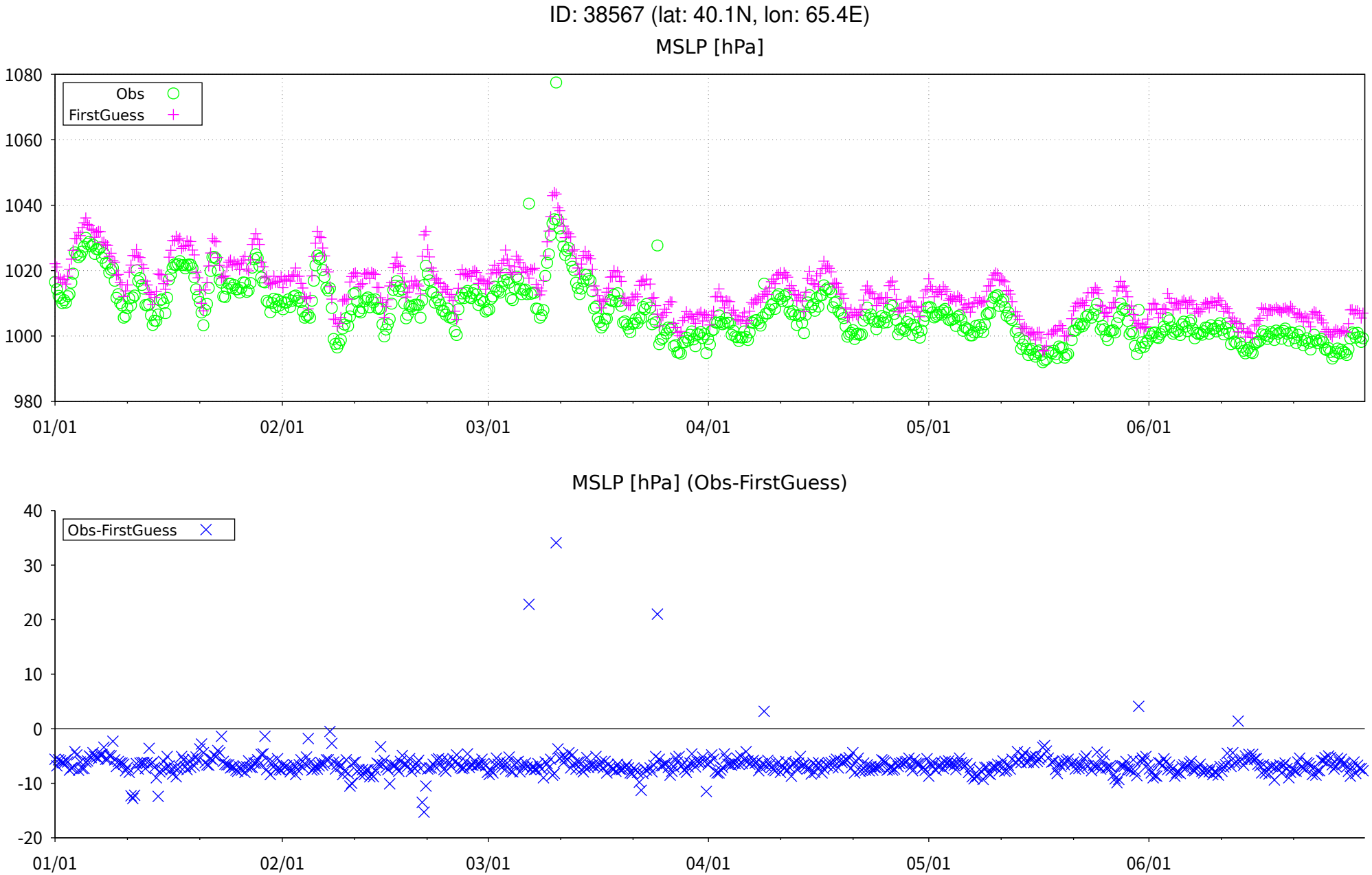


Figure 13(b) Time-series representation of MSLP Obs minus FirstGuess for station 38567

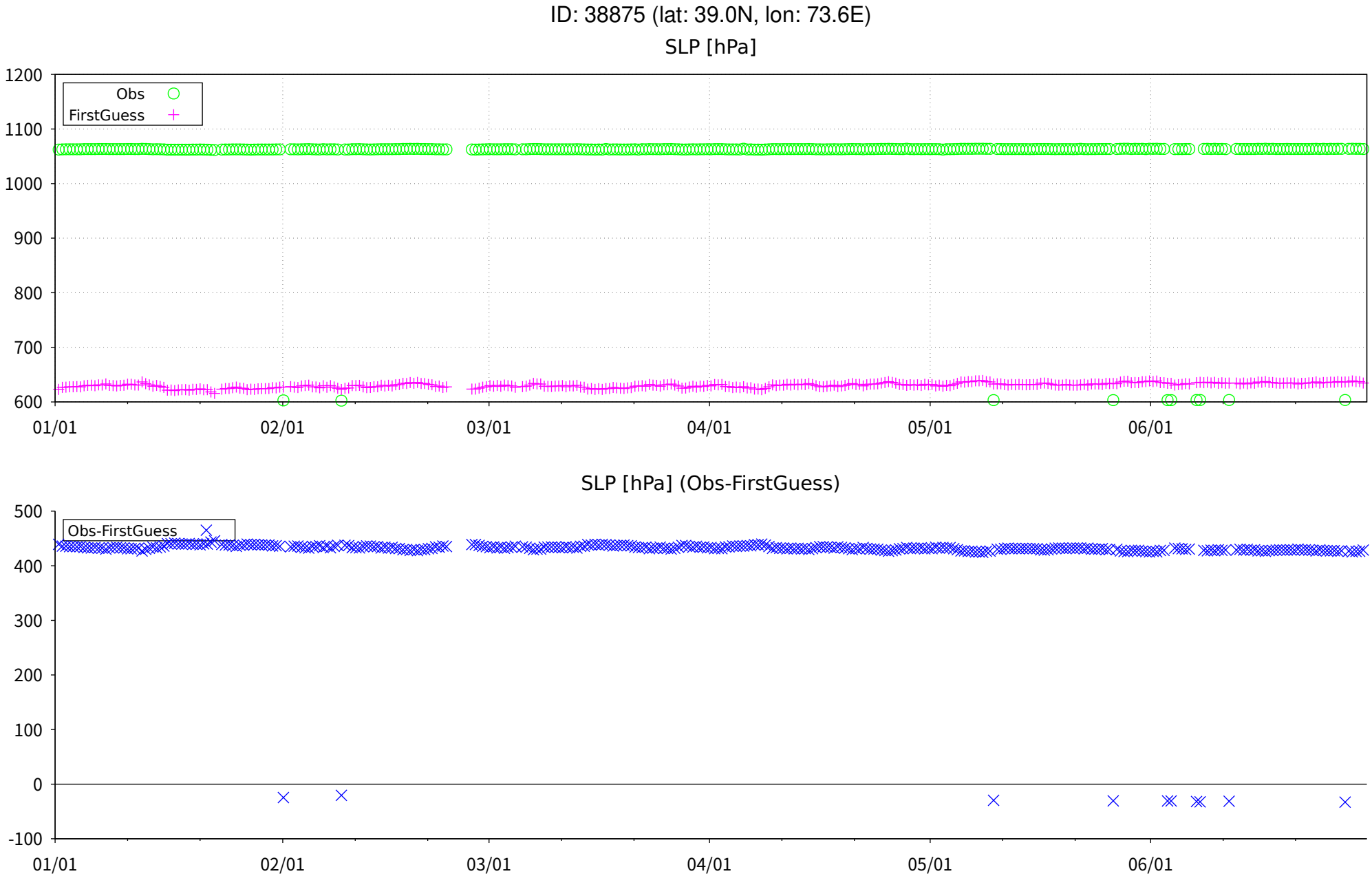


Figure 14 Time-series representation of SLP Obs minus FirstGuess for station 38875

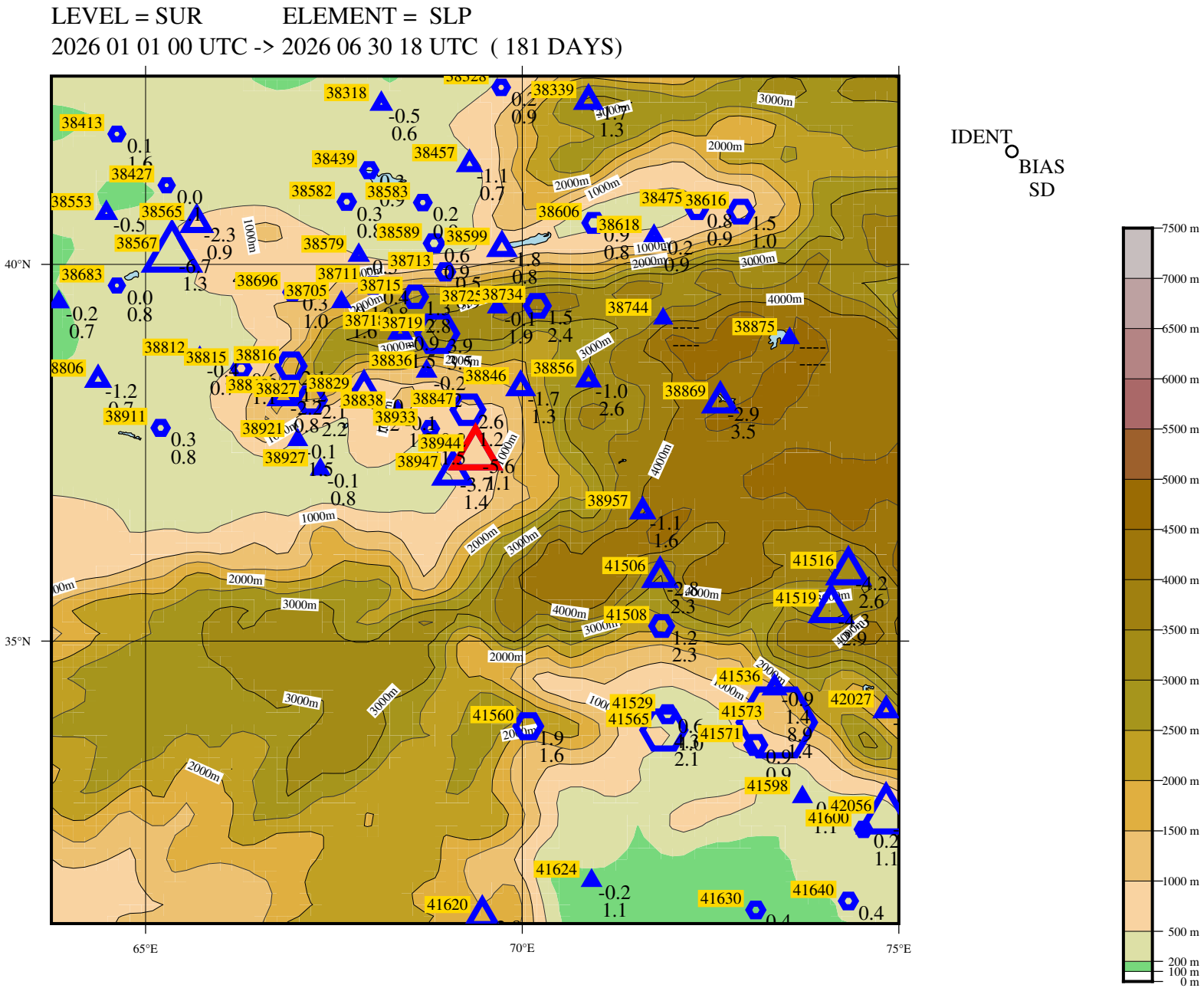


Figure 15 BIAS and SD of SLP for station 38944 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

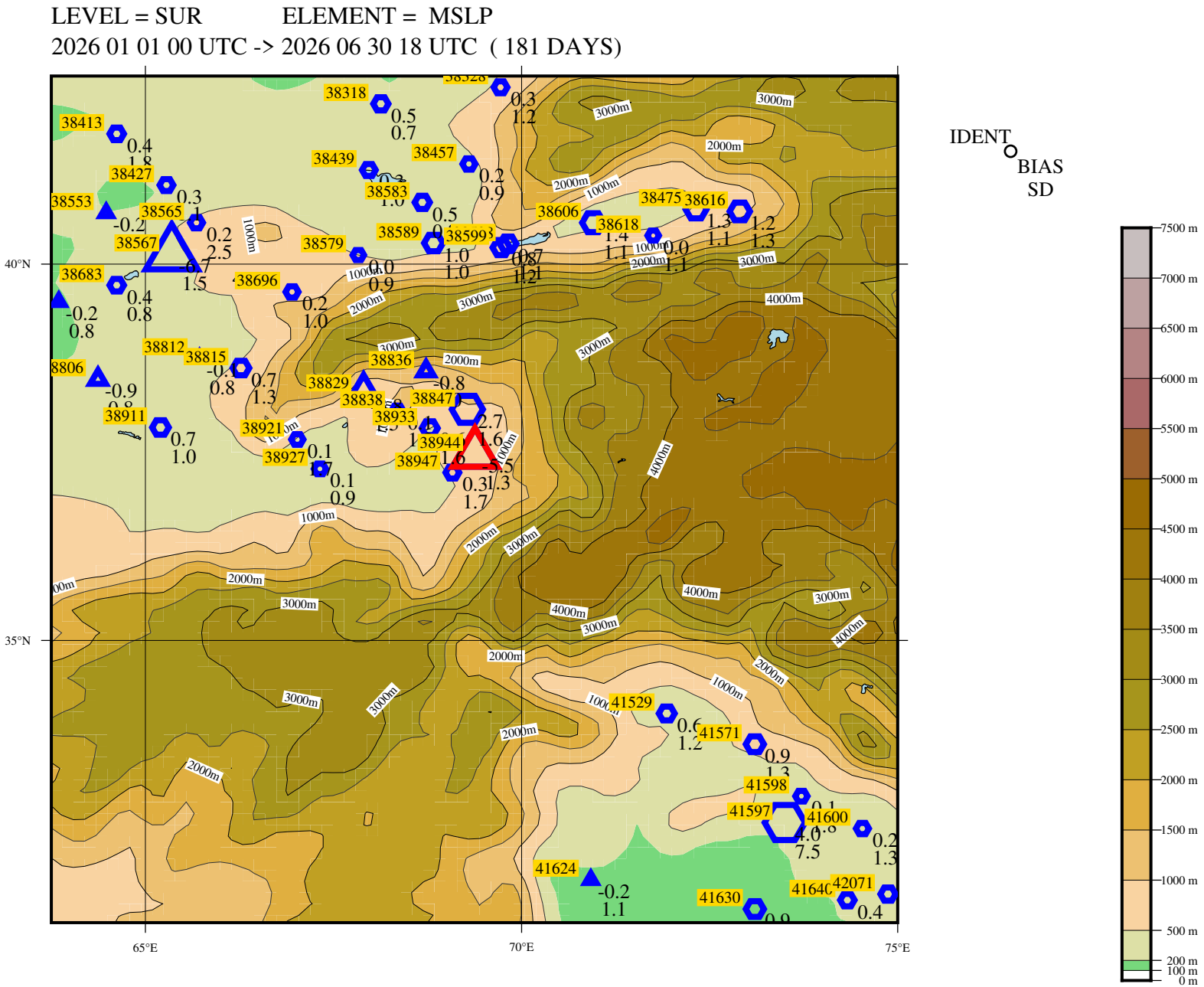


Figure 16 BIAS and SD of MSLP for station 38944 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

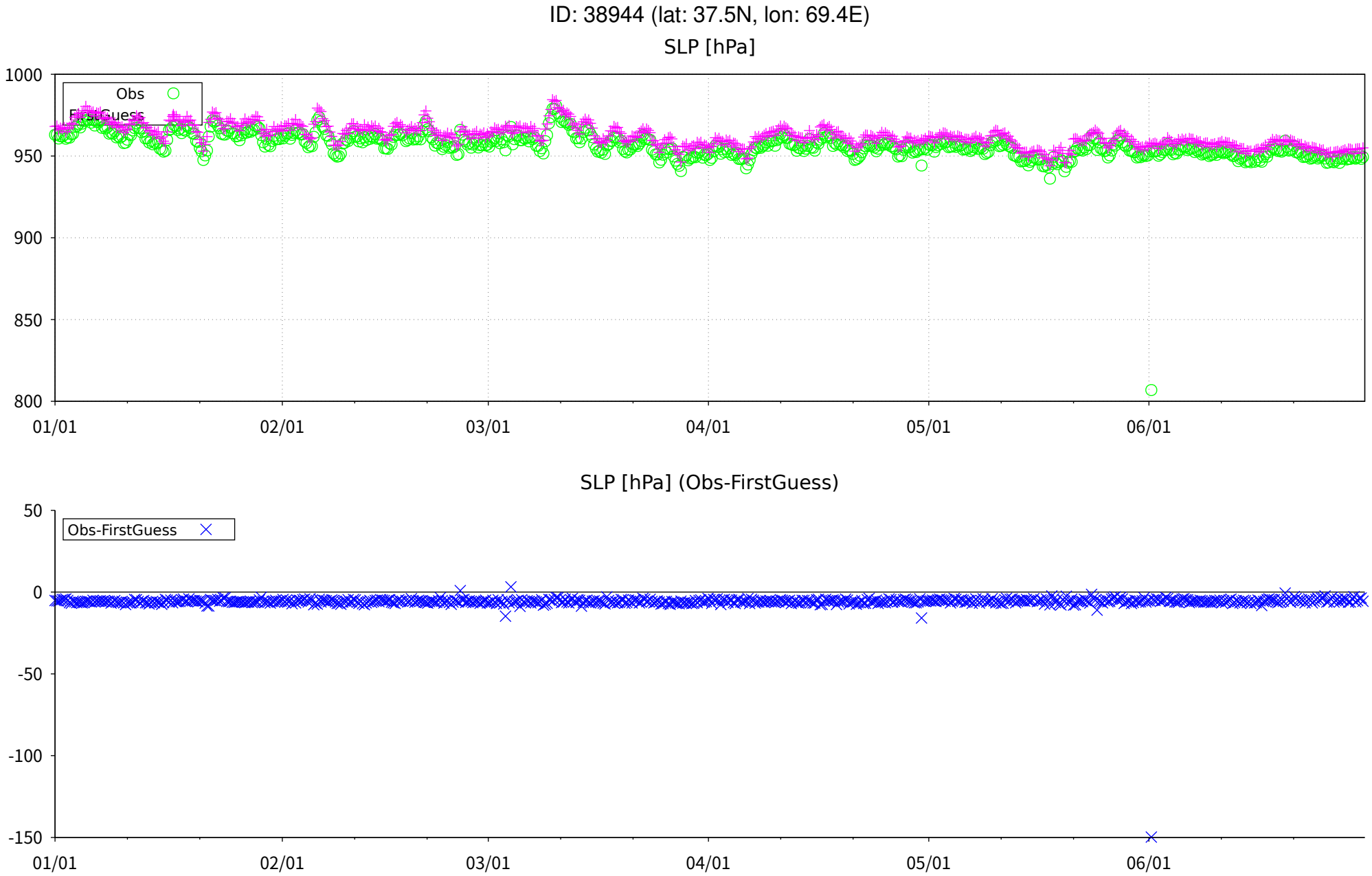


Figure 17(a) Time-series representation of SLP Obs minus FirstGuess for station 38944

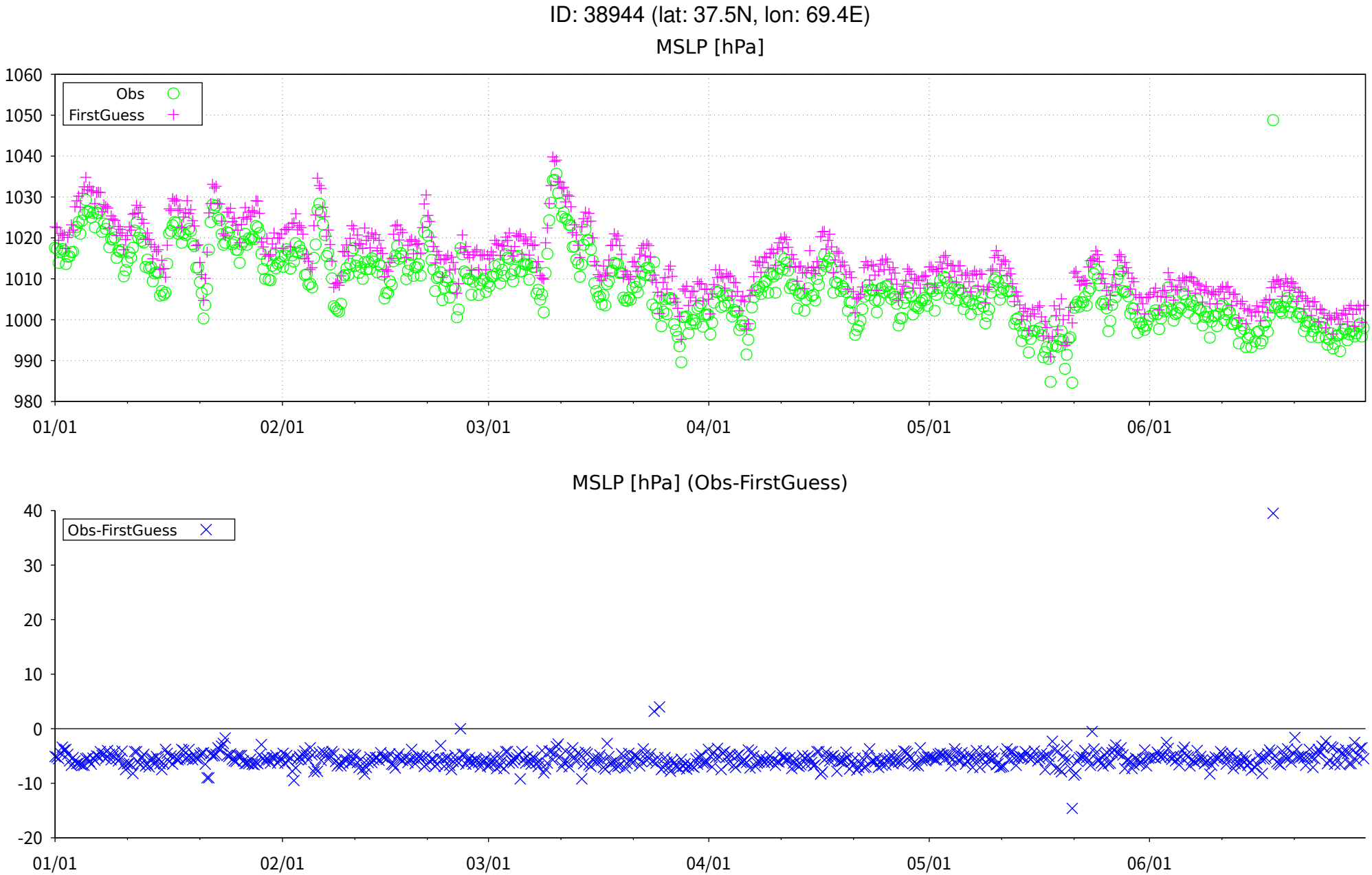


Figure 17(b) Time-series representation of MSLP Obs minus FirstGuess for station 38944

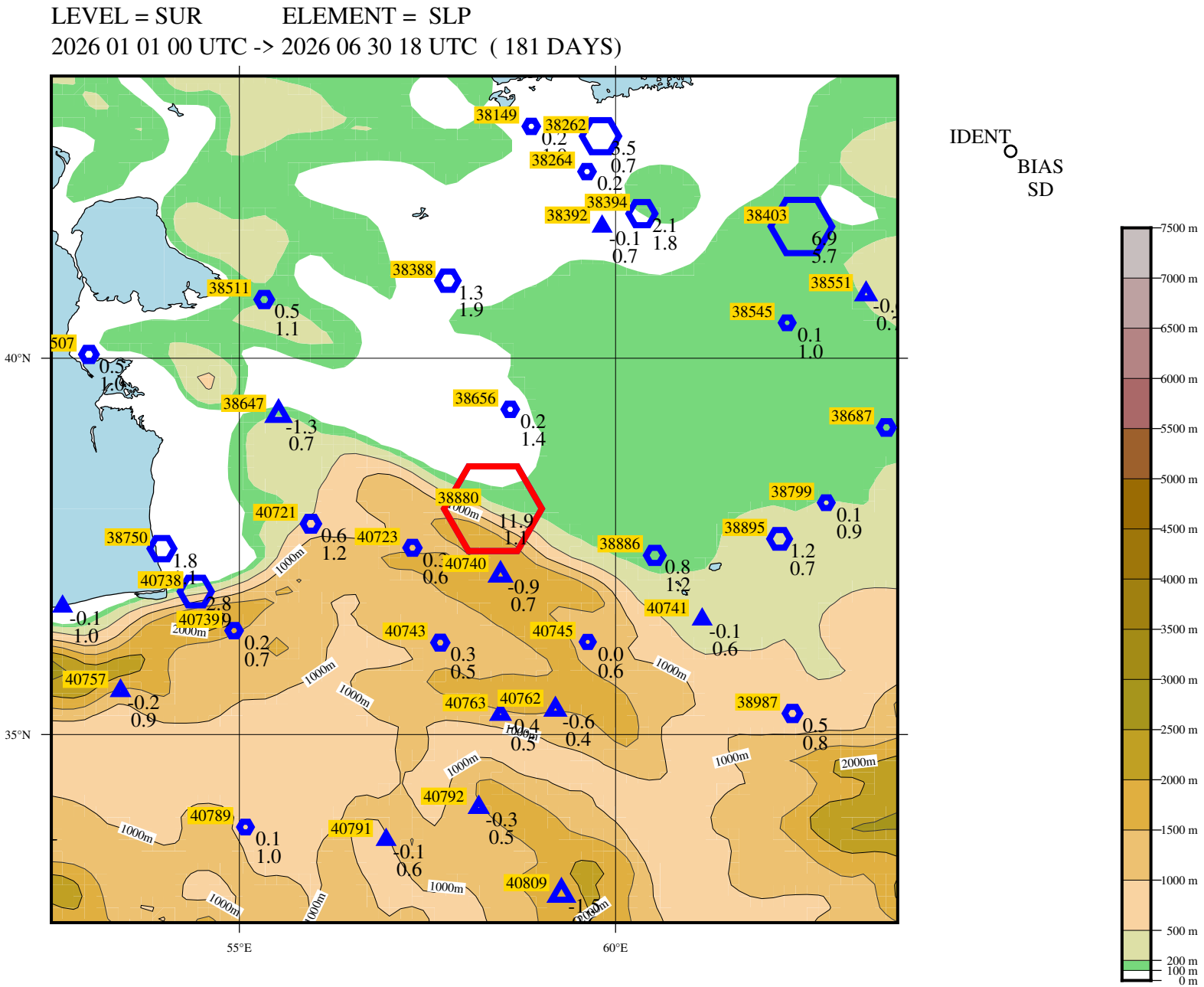


Figure 18 BIAS and SD of SLP for station 38880 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

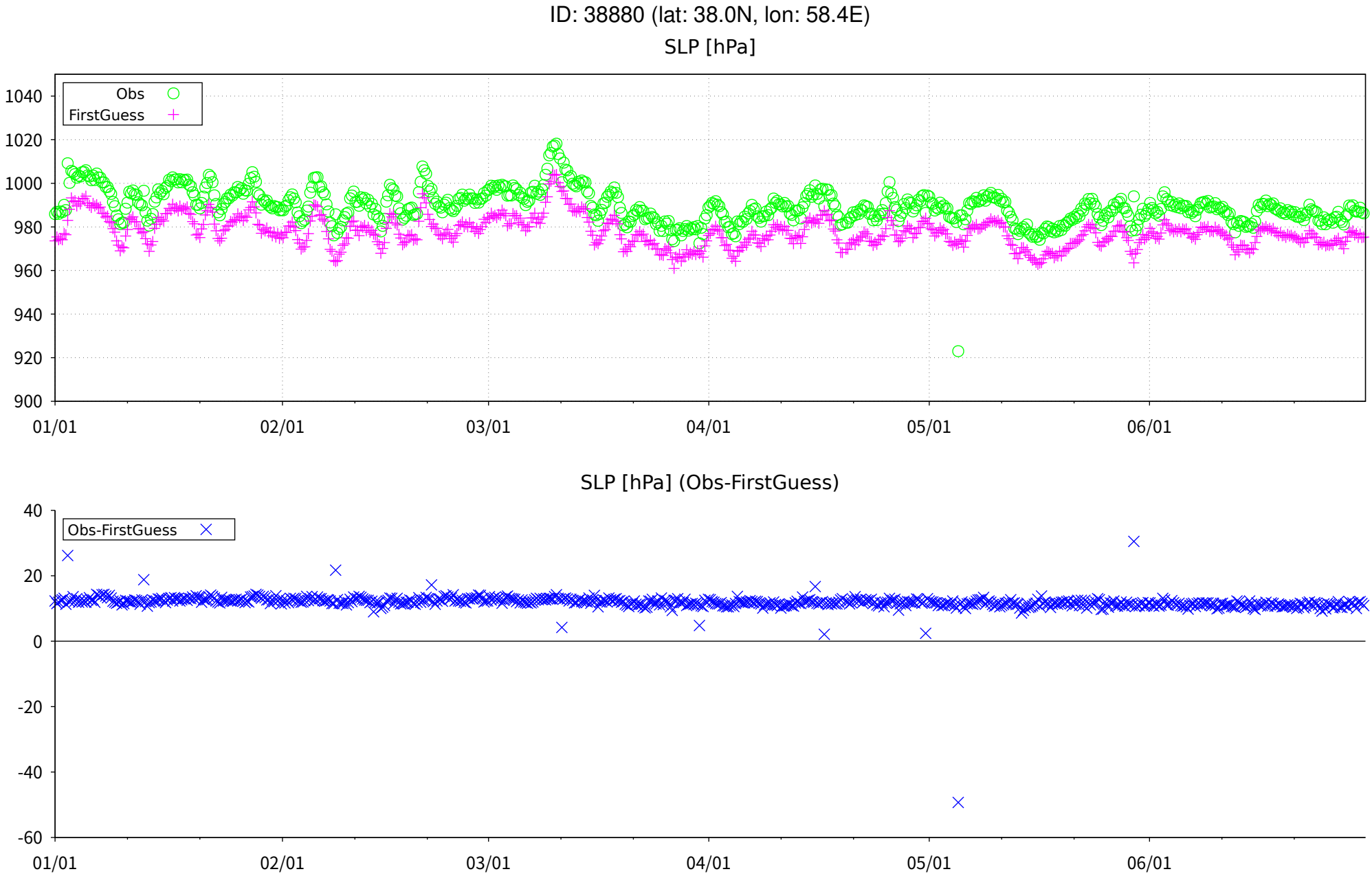


Figure 19 Time-series representation of SLP Obs minus FirstGuess for station 38880

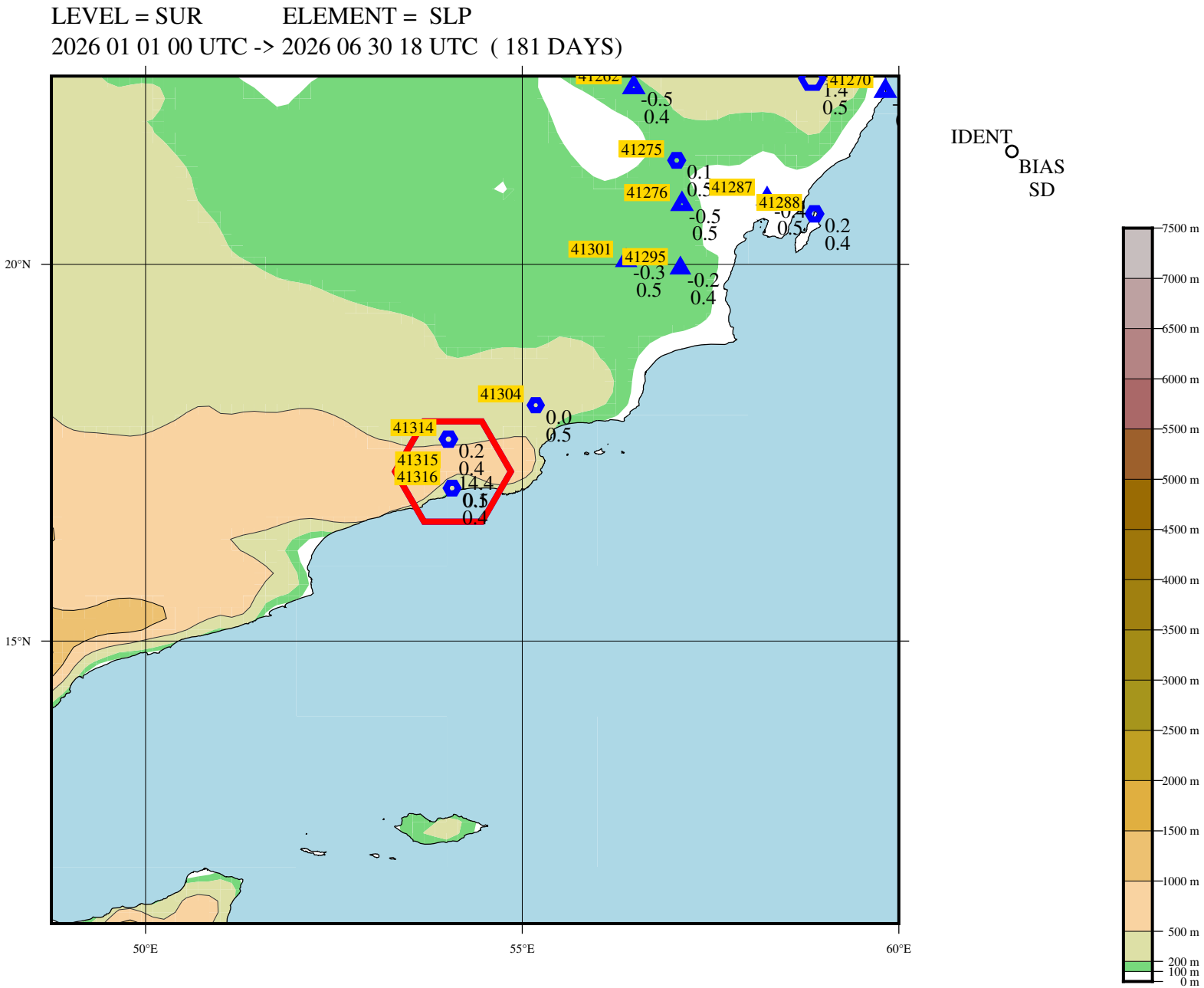


Figure 20 BIAS and SD of SLP for station 41315 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

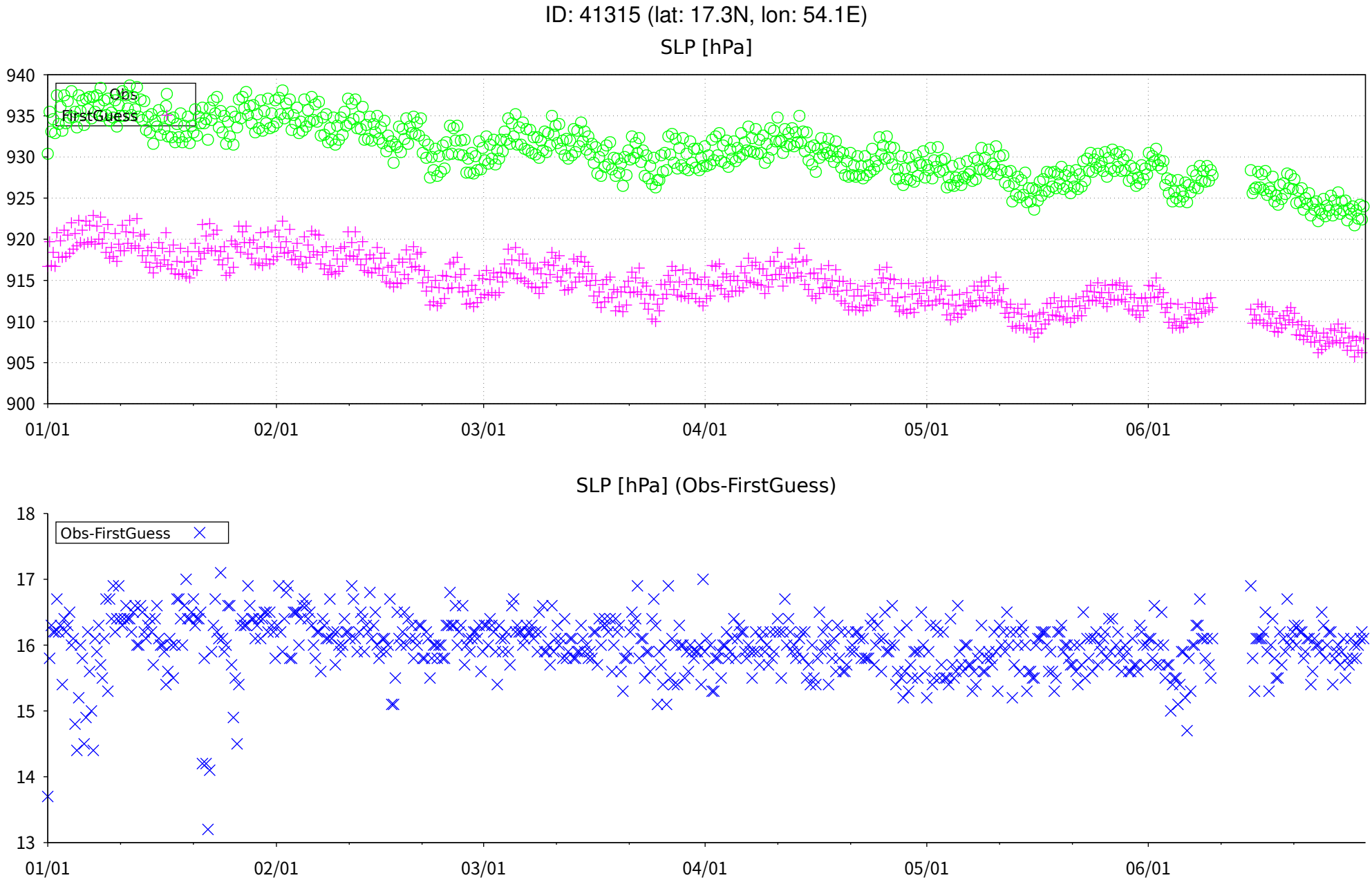


Figure 21(a) Time-series representation of SLP Obs minus FirstGuess for station 41315

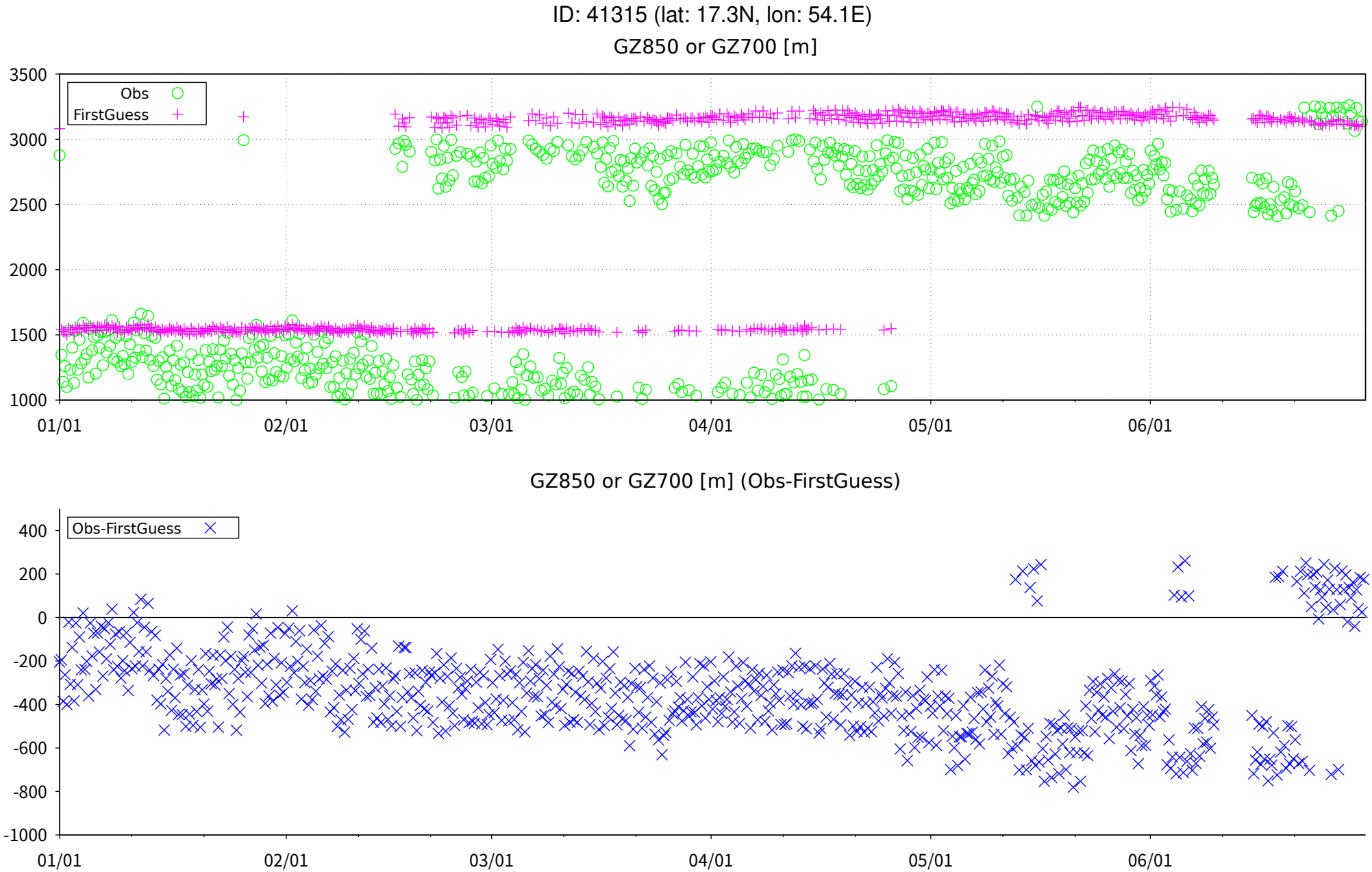


Figure 21(b) Time-series representation of GZ850 or GZ700 Obs minus FirstGuess for station 41315

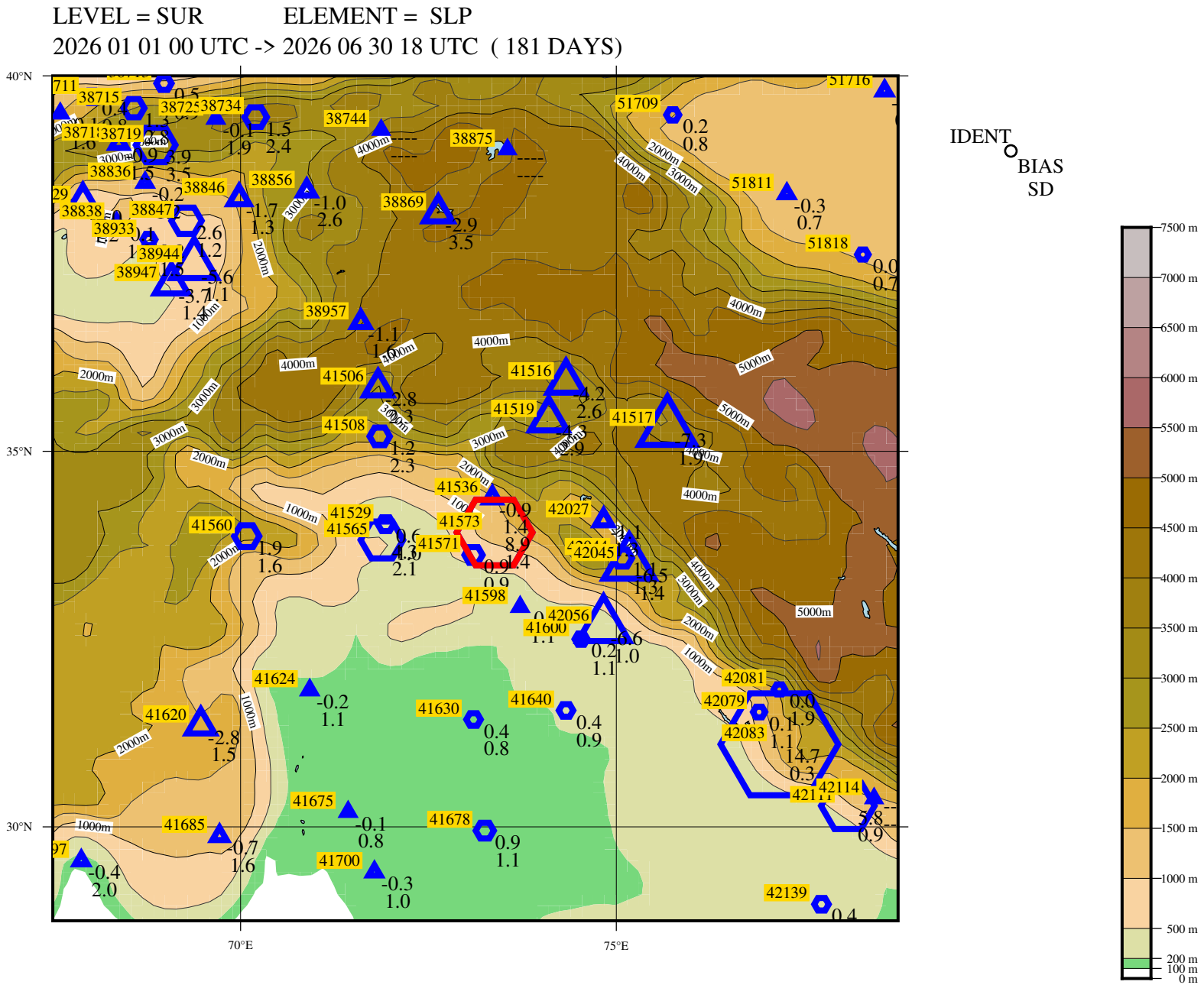


Figure 22 BIAS and SD of SLP for station 41573 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

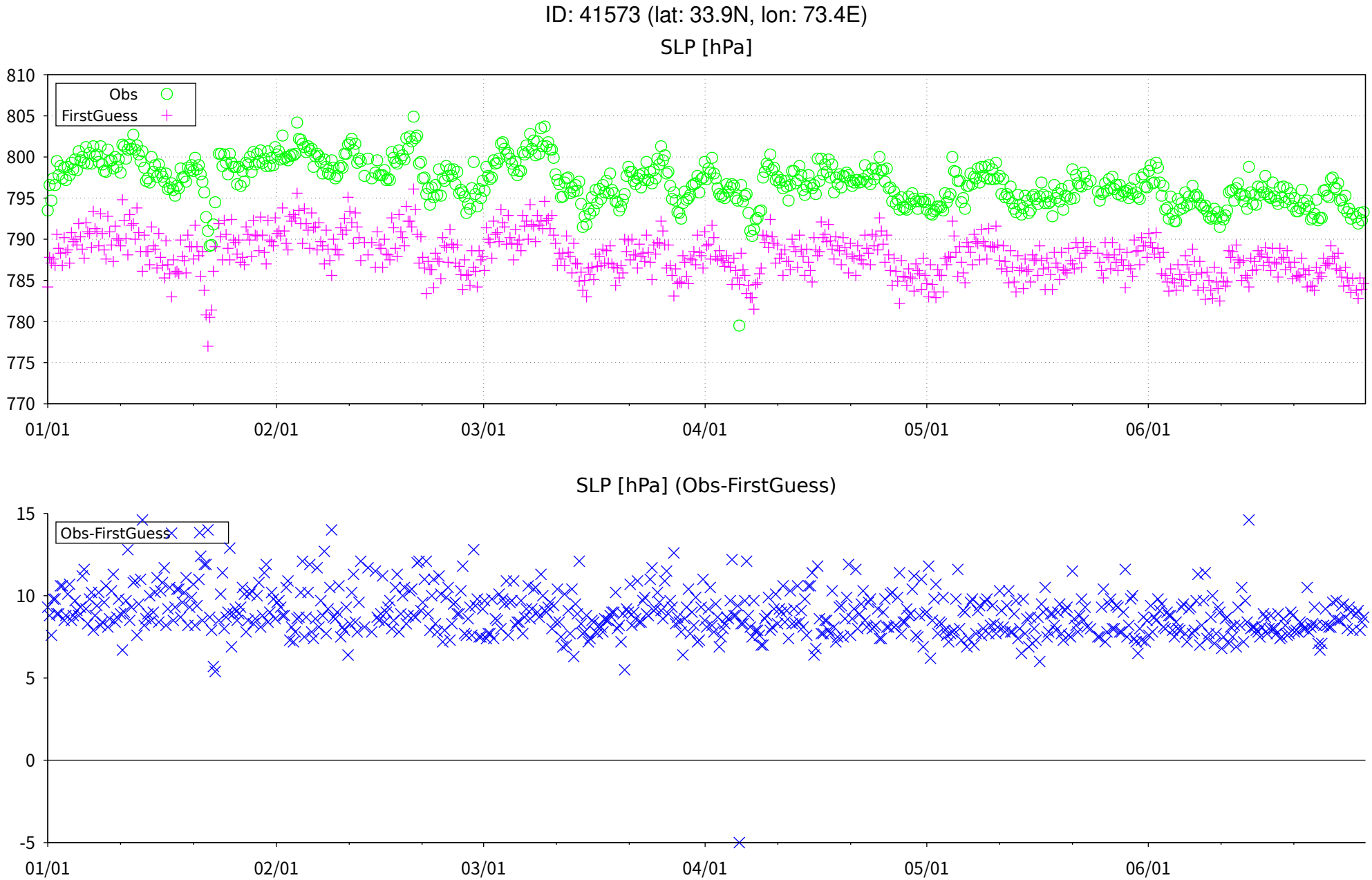


Figure 23 Time-series representation of SLP Obs minus FirstGuess for station 41573

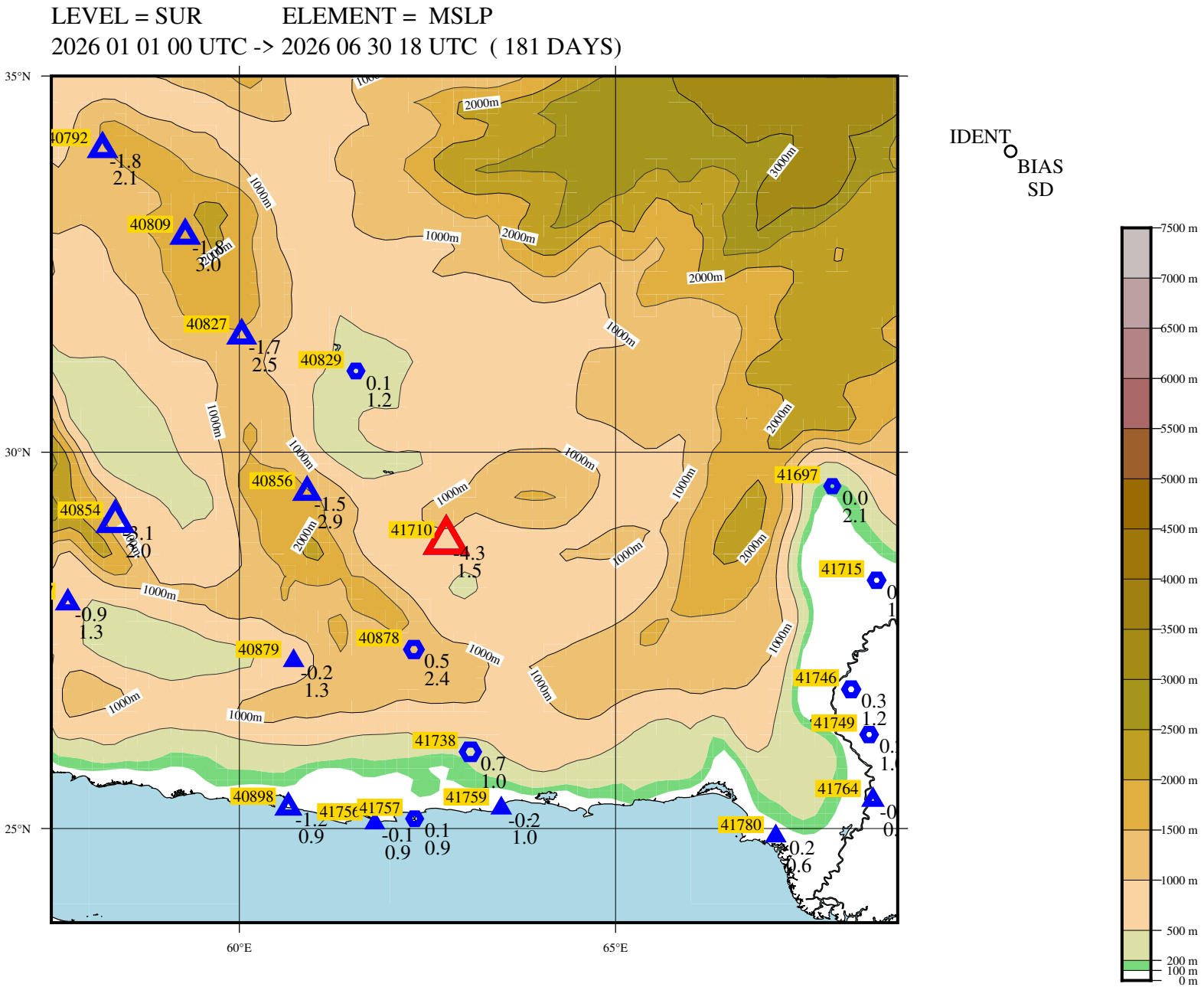


Figure 24 BIAS and SD of MSLP for station 41710 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

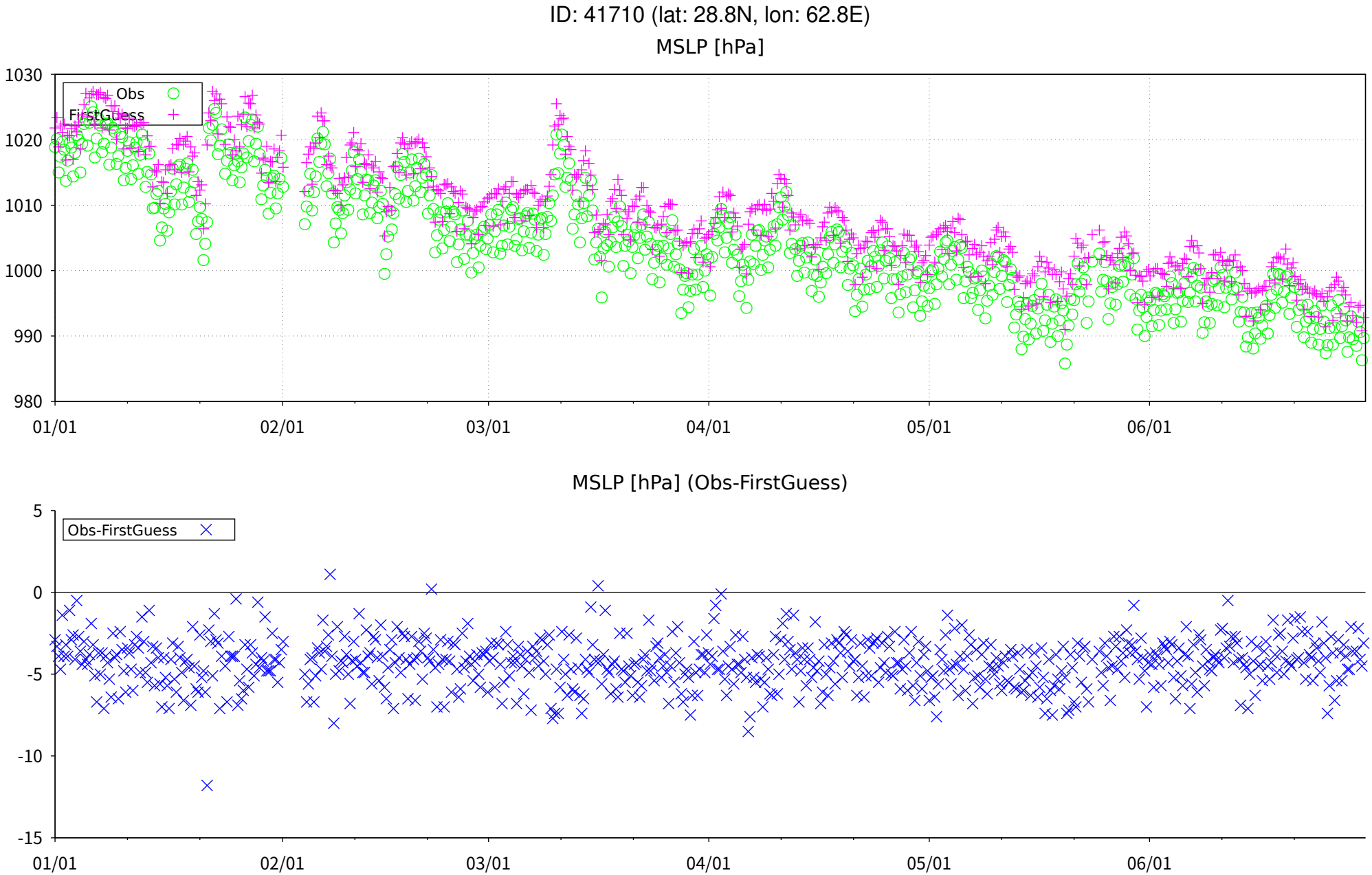


Figure 25 Time-series representation of MSLP Obs minus FirstGuess for station 41710

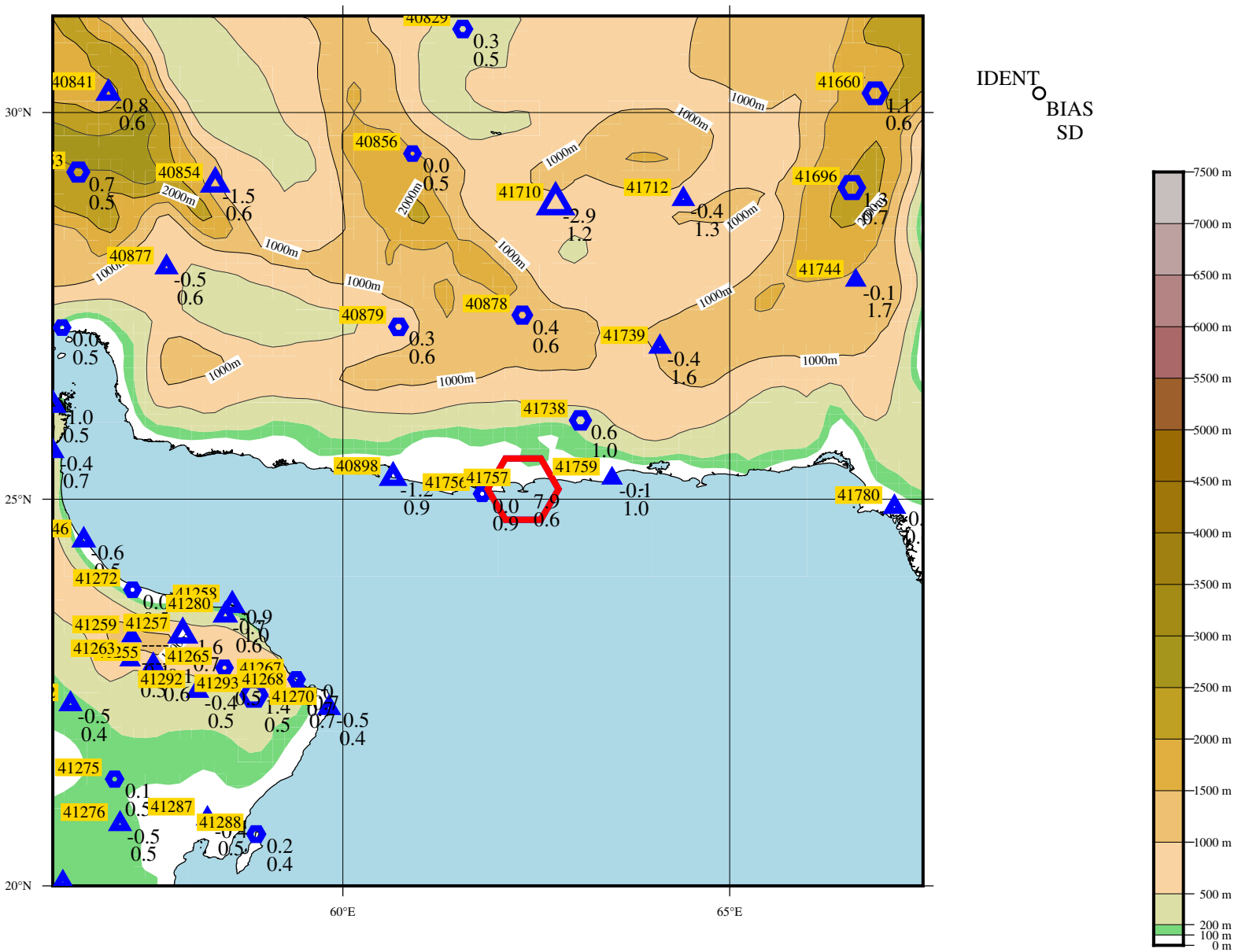


Figure 26 BIAS and SD of SLP for station 41757 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

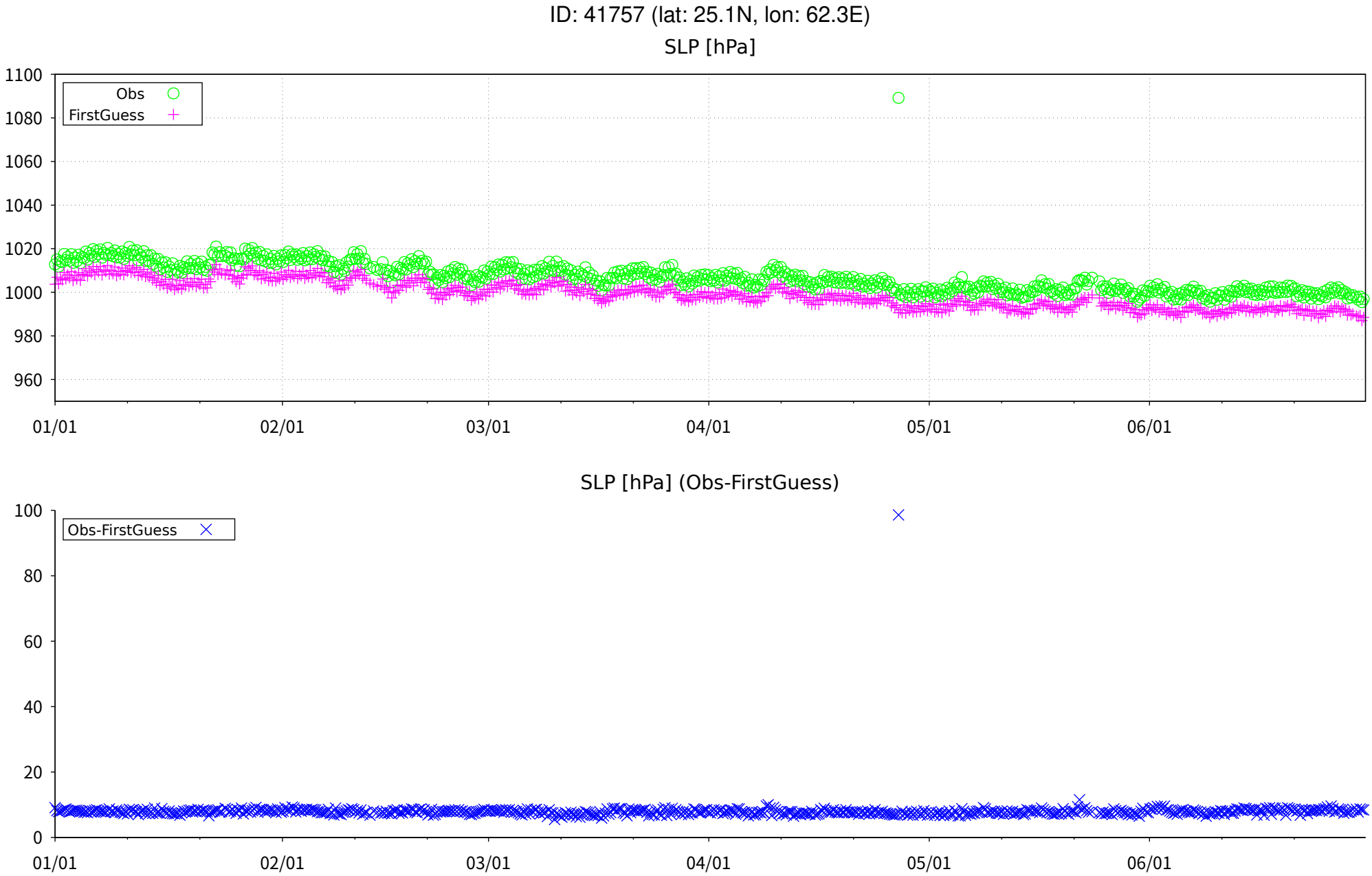


Figure 27 Time-series representation of SLP Obs minus FirstGuess for station 41757

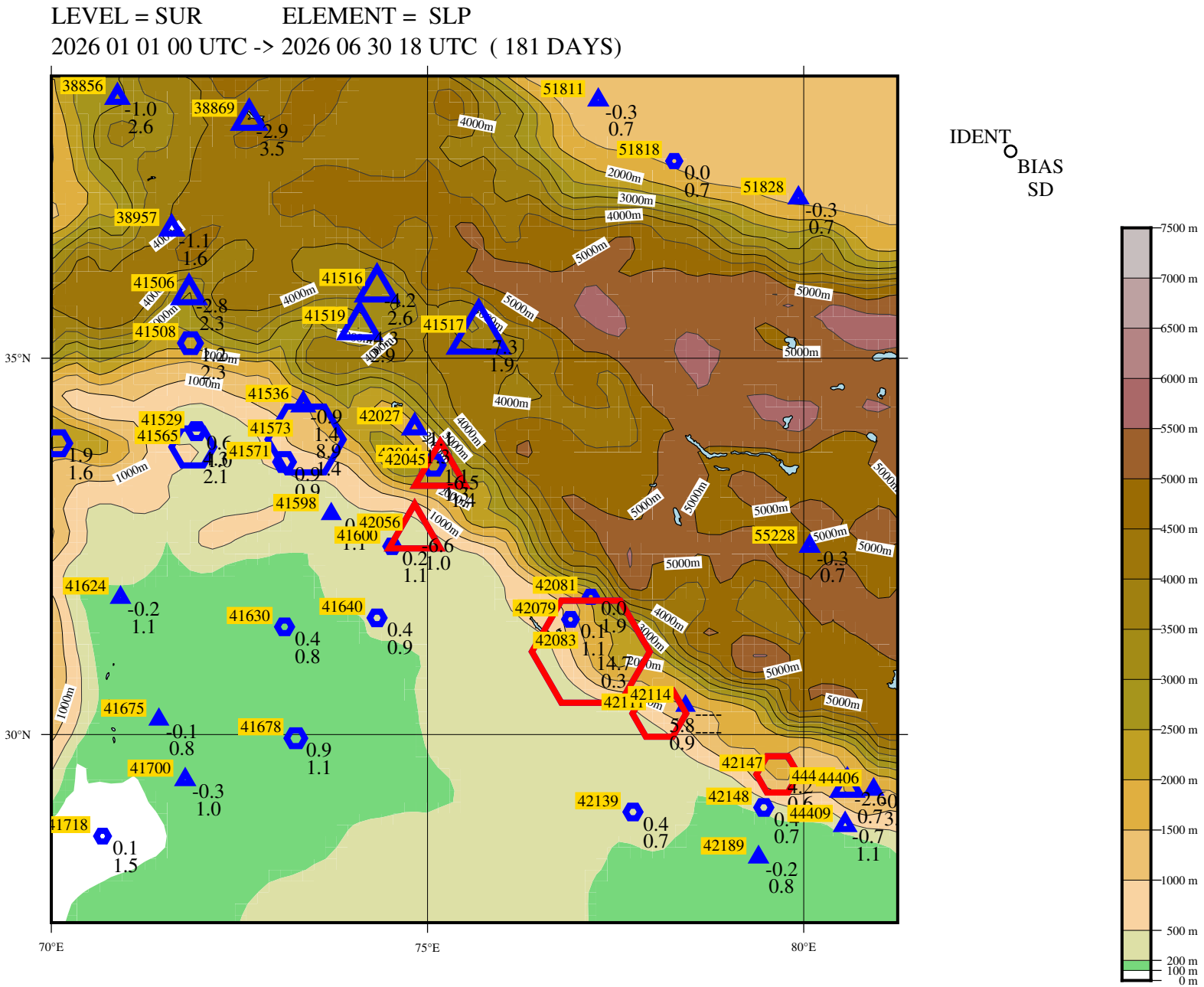


Figure 28 BIAS and SD of SLP for station 42045, 42056, 42083, 42111, 42147 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

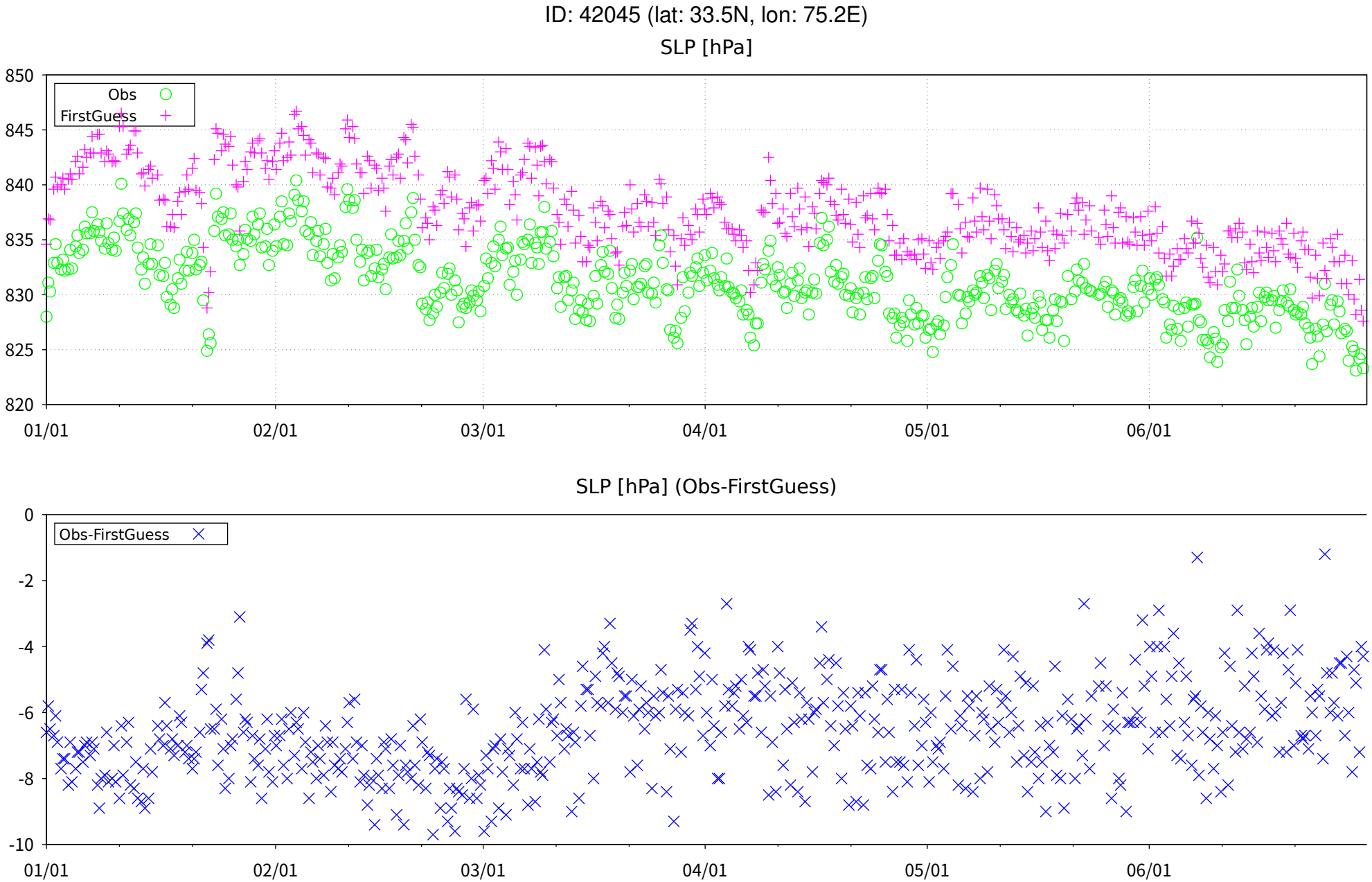


Figure 29(a) Time-series representation of SLP Obs minus FirstGuess for station 42045

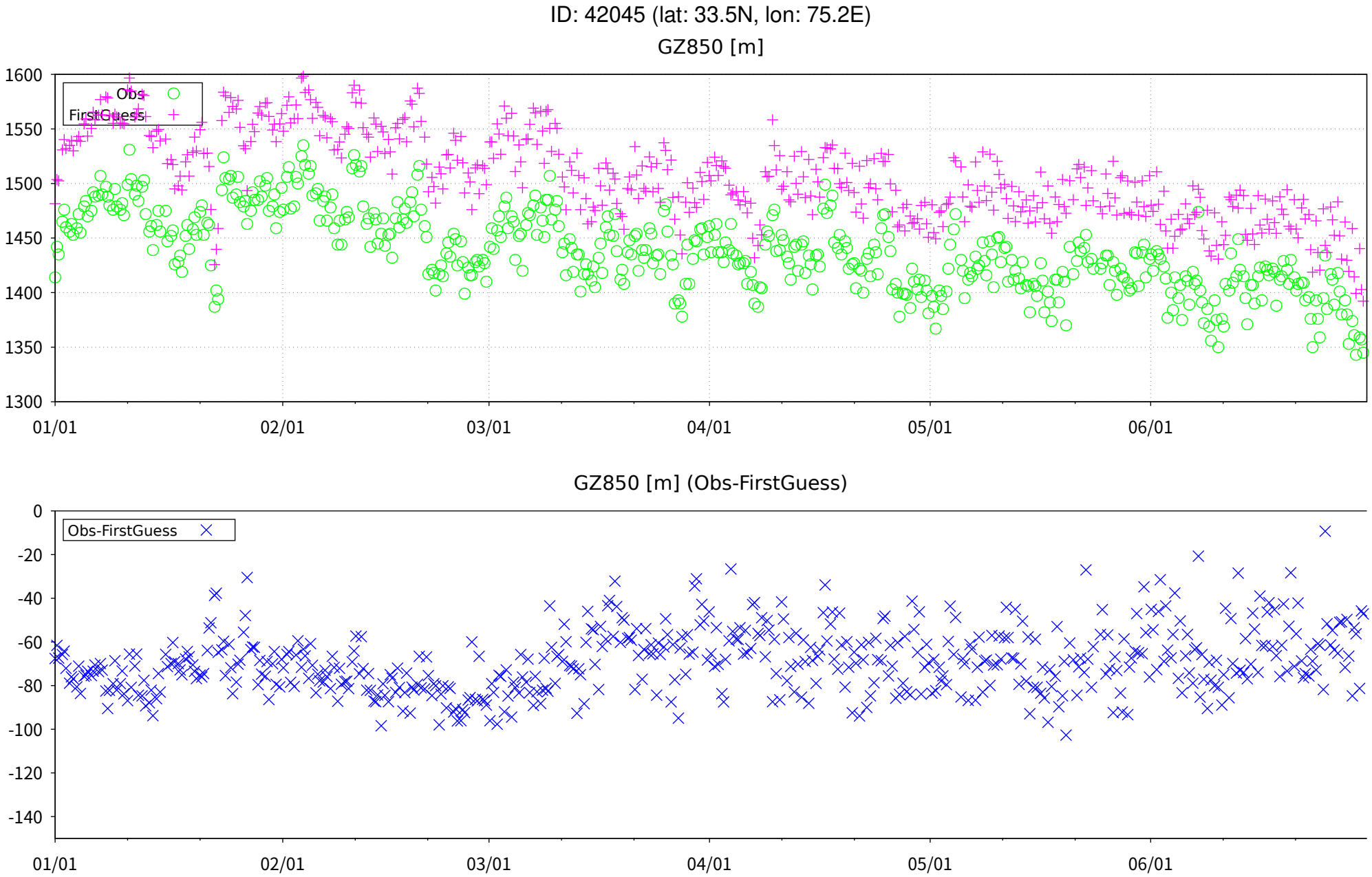


Figure 29(b) Time-series representation of GZ850 Obs minus FirstGuess for station 42045

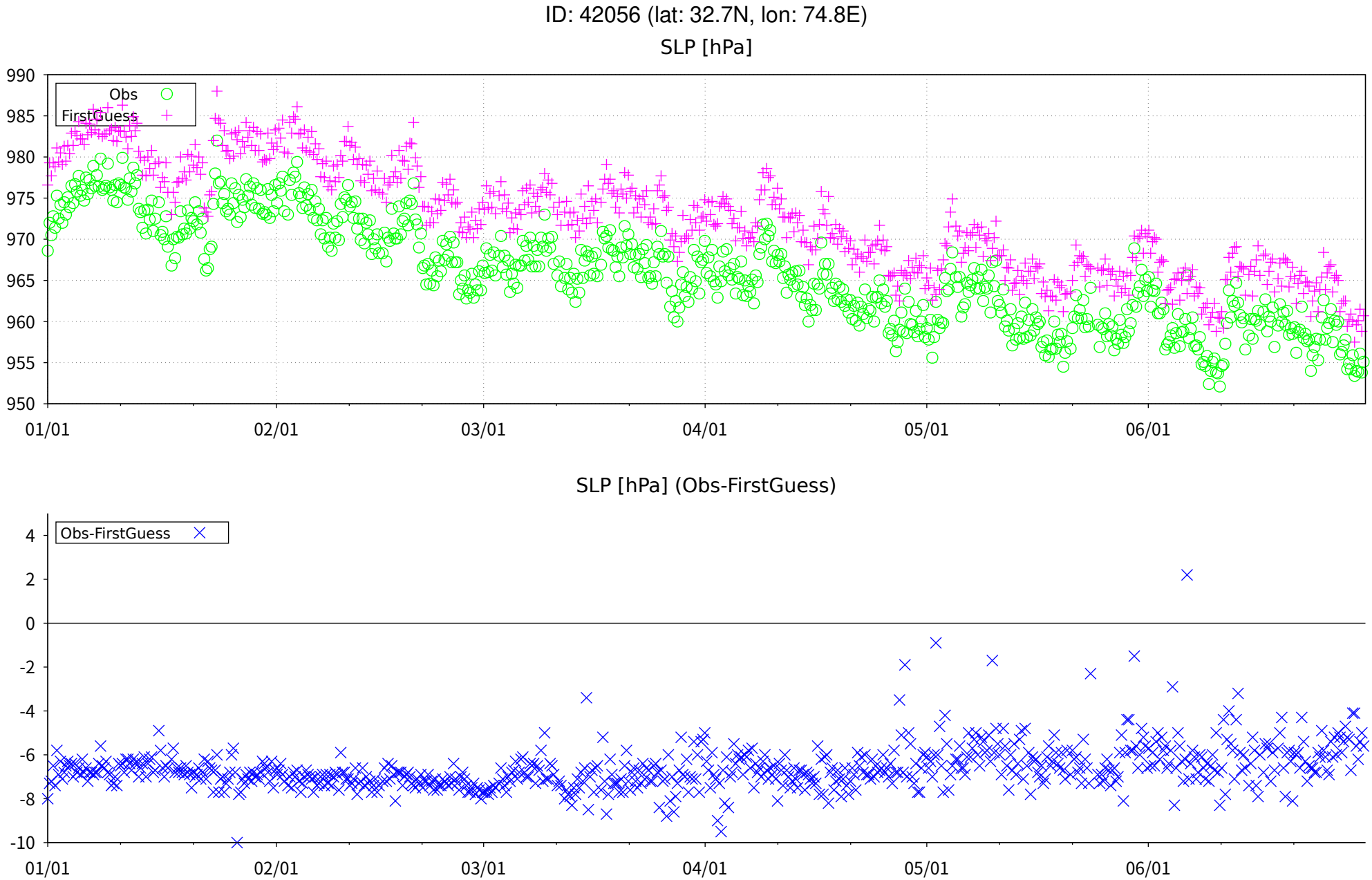


Figure 30 Time-series representation of SLP Obs minus FirstGuess for station 42056

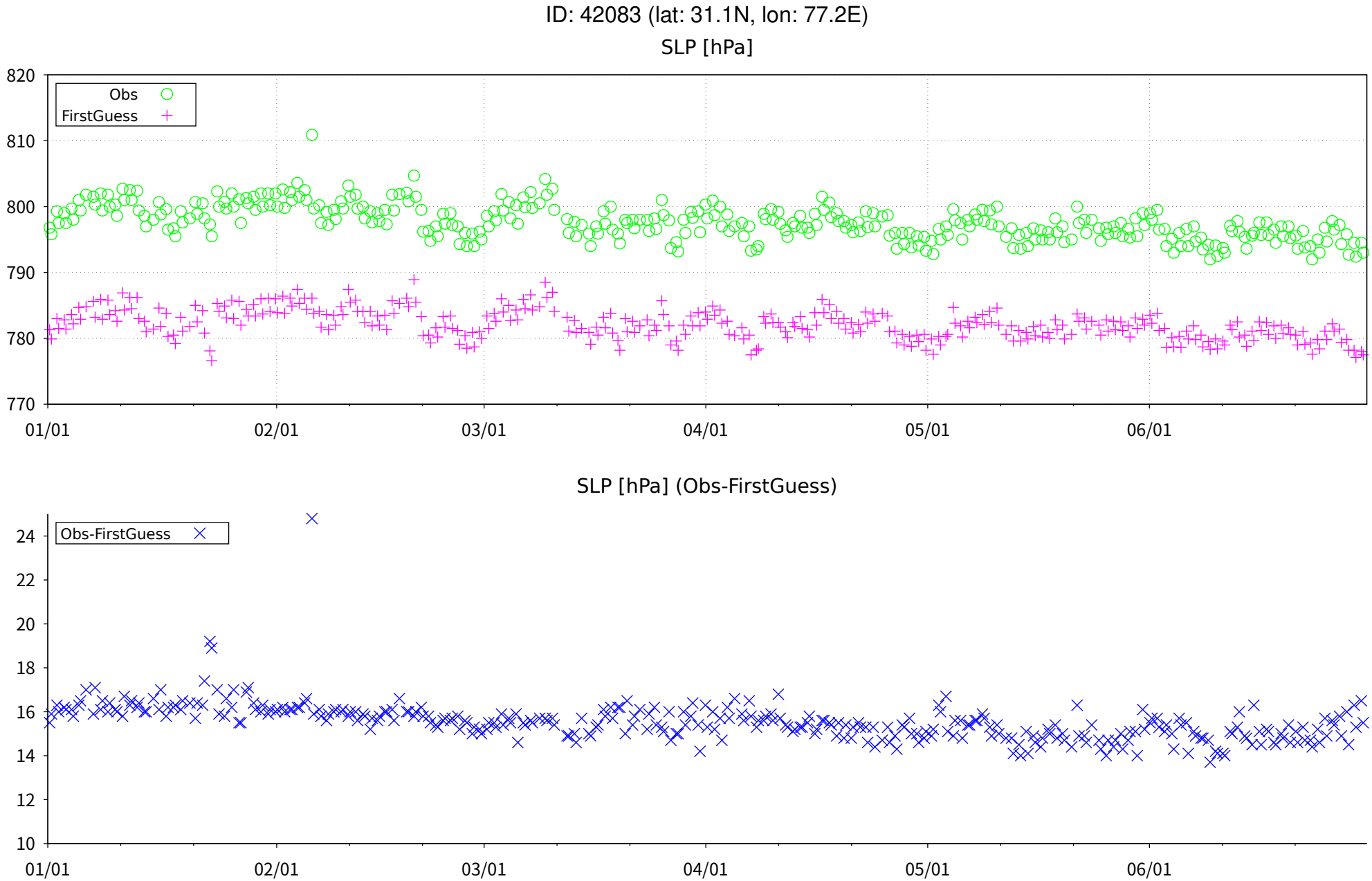


Figure 31 Time-series representation of SLP Obs minus FirstGuess for station 42083

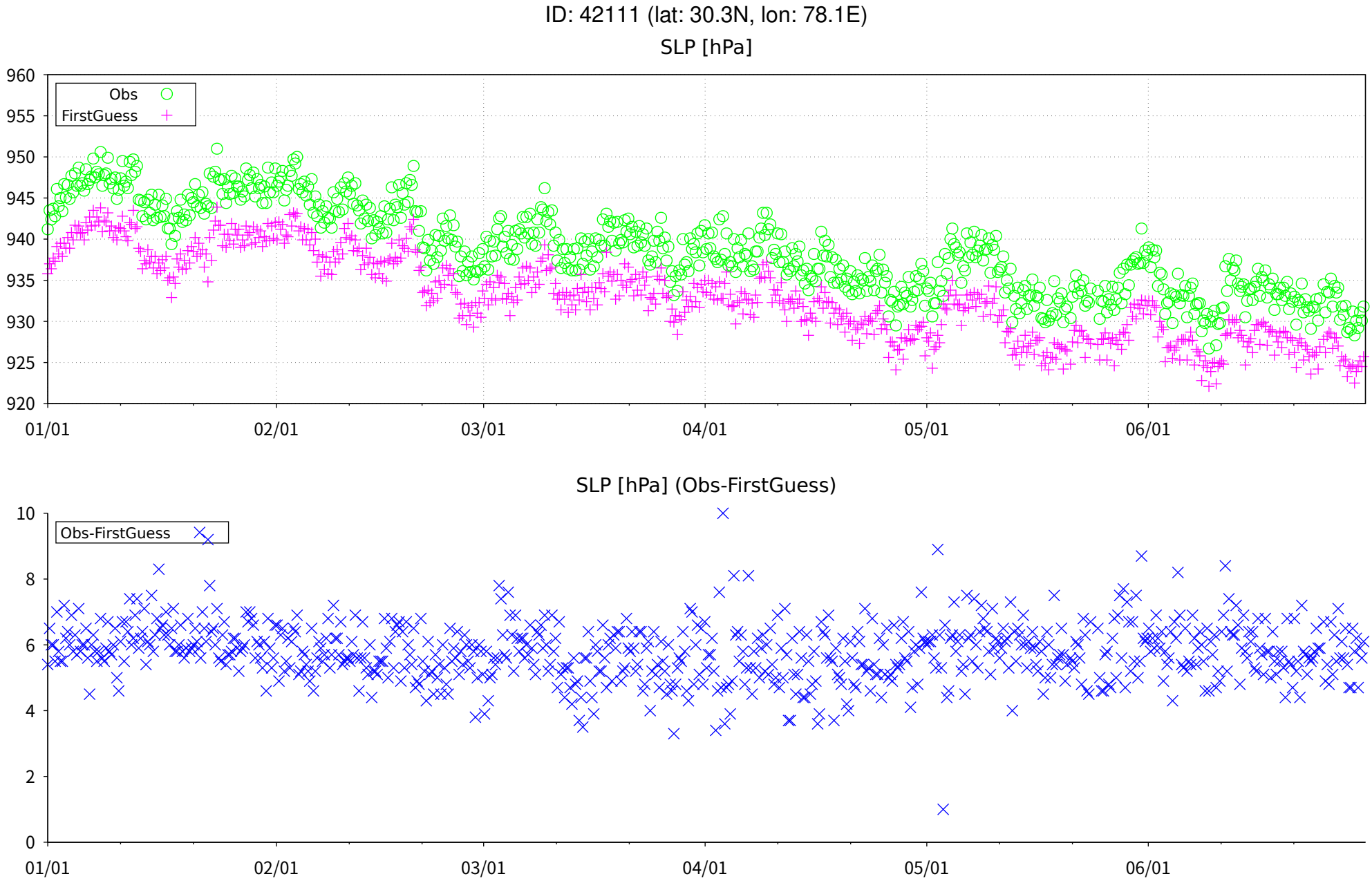


Figure 32 Time-series representation of SLP Obs minus FirstGuess for station 42111

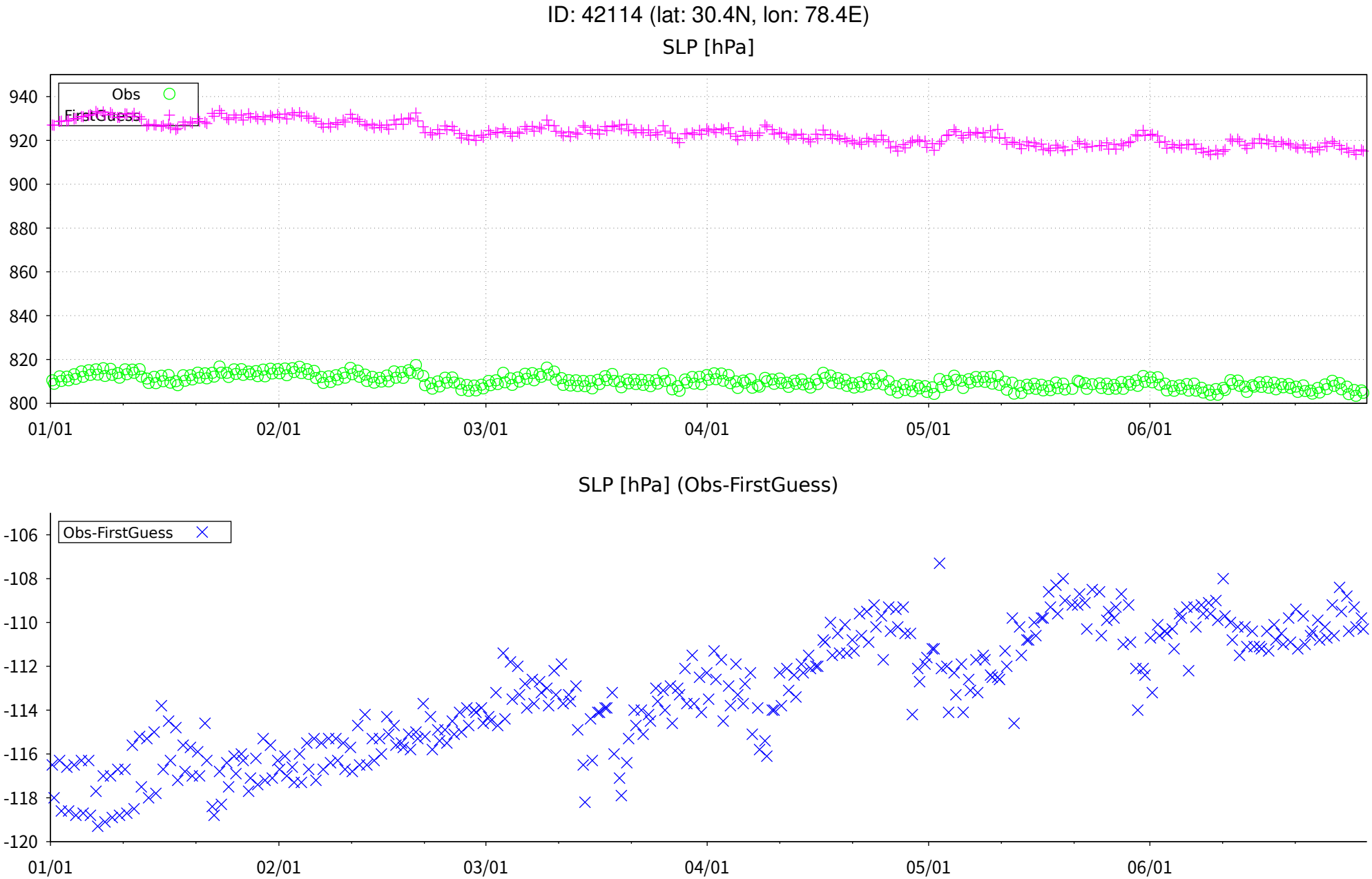


Figure 33 Time-series representation of SLP Obs minus FirstGuess for station 42114

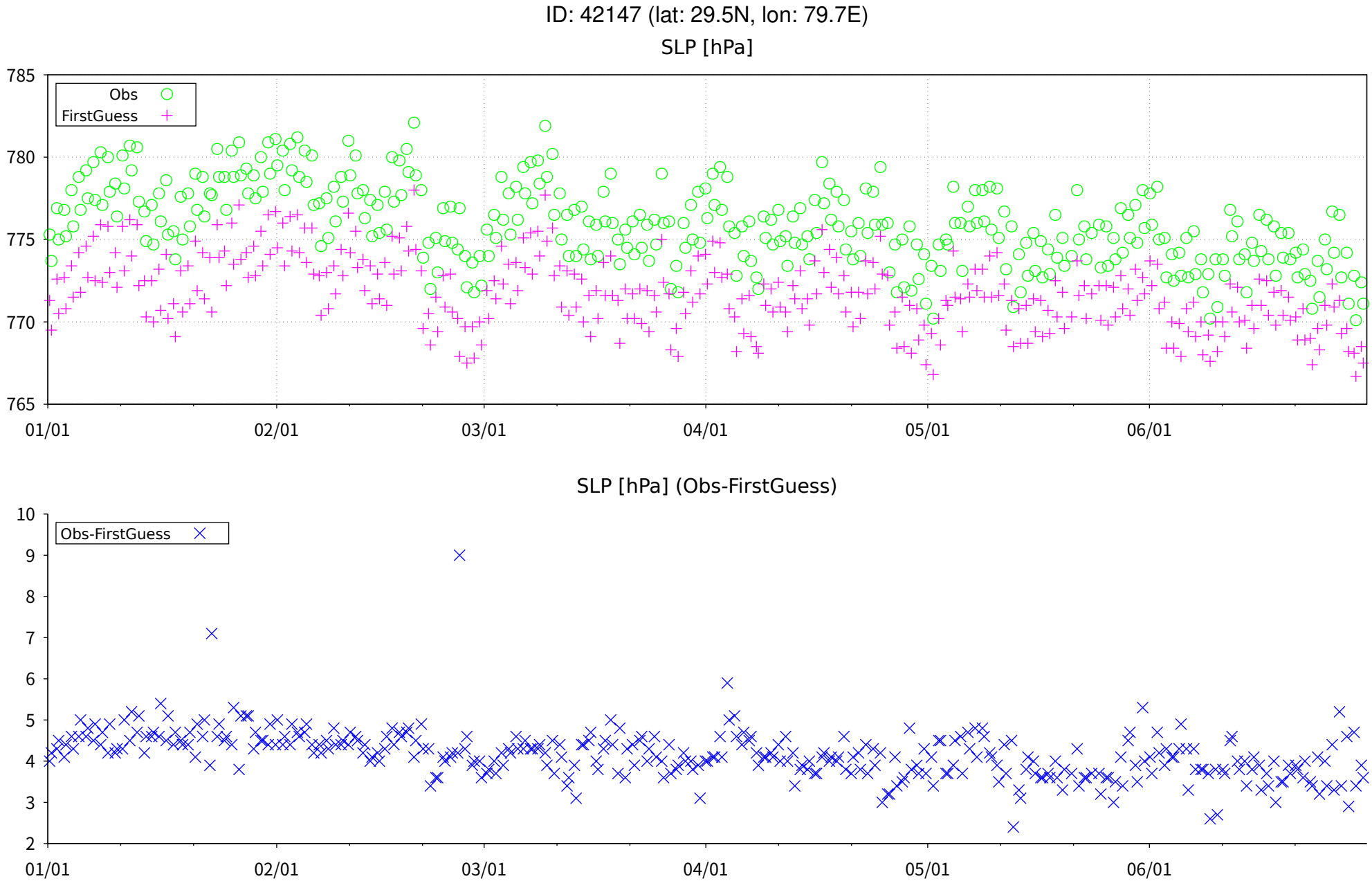


Figure 34 Time-series representation of SLP Obs minus FirstGuess for station 42147

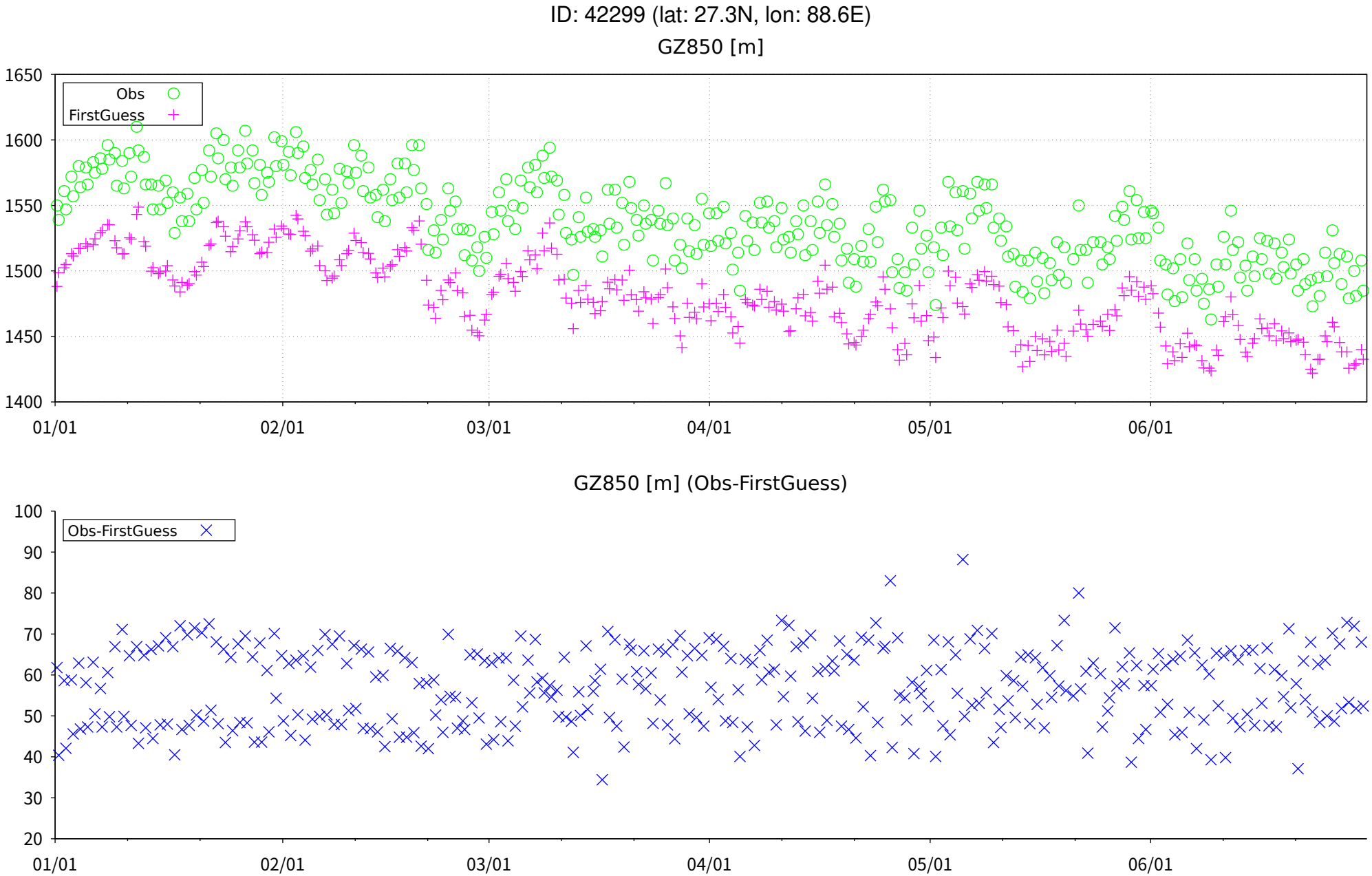


Figure 35 Time-series representation of GZ850 Obs minus FirstGuess for station 42299

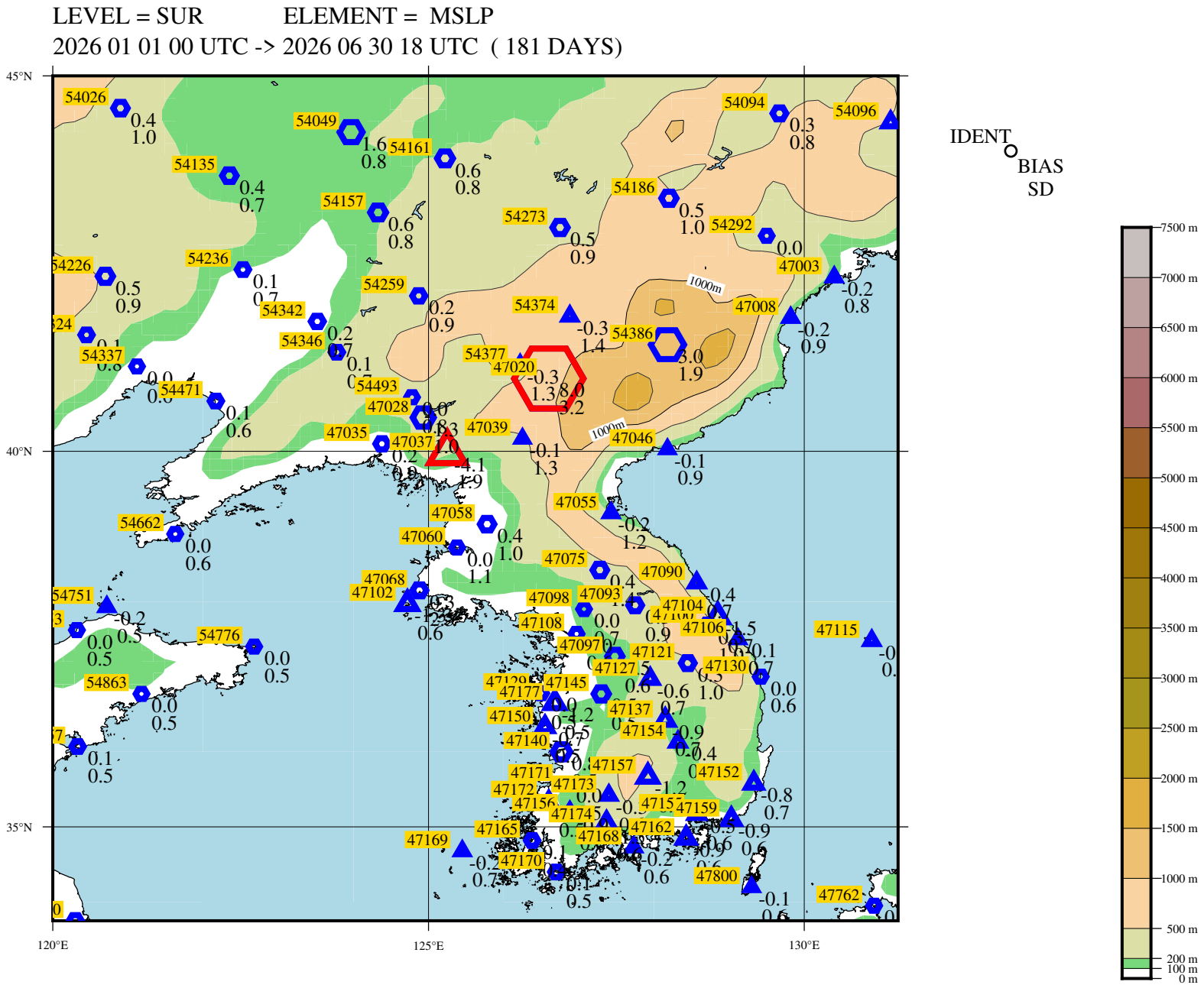


Figure 36 BIAS and SD of MSLP for station 47020, 47037 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

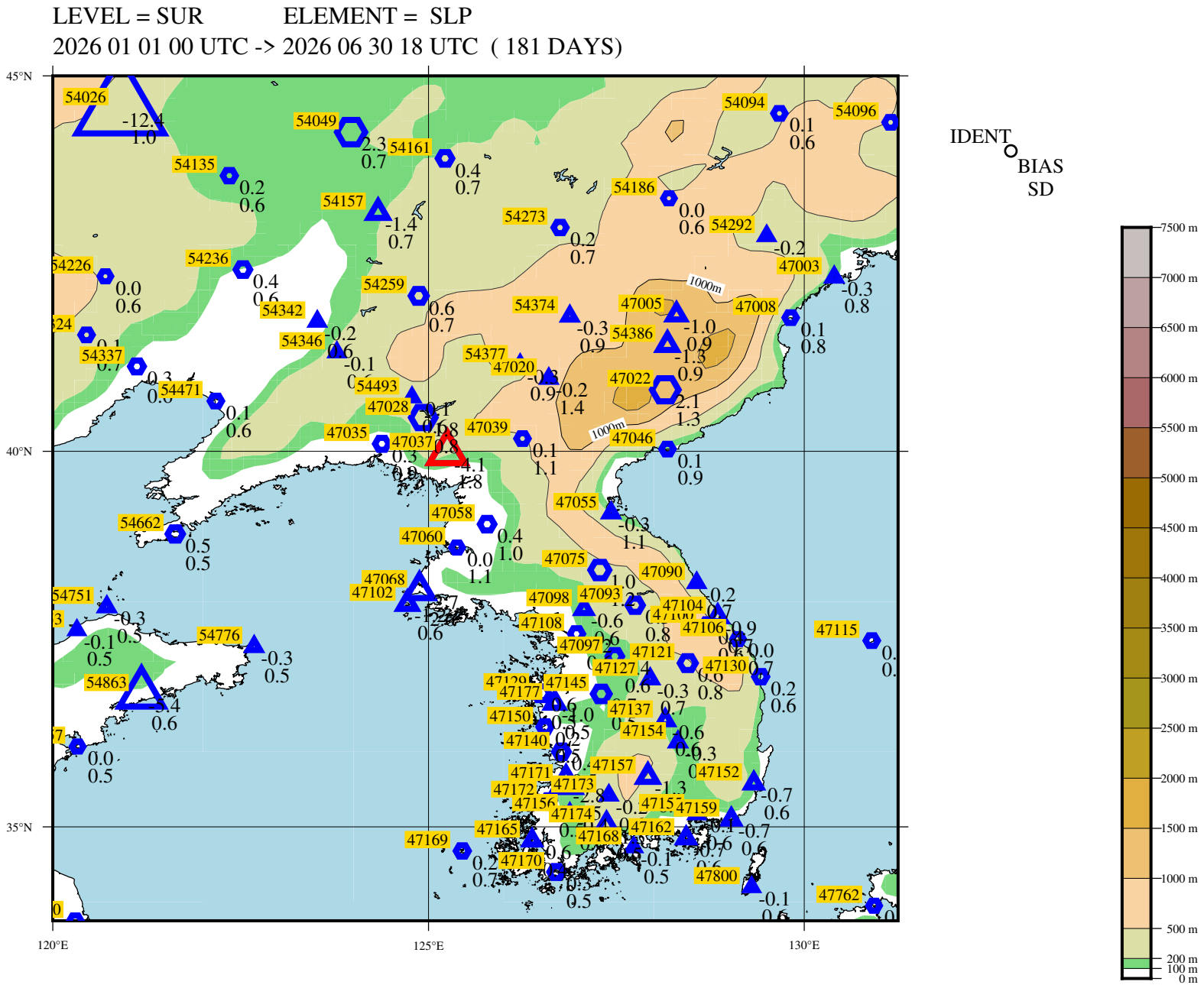


Figure 37 BIAS and SD of SLP for station 47037 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

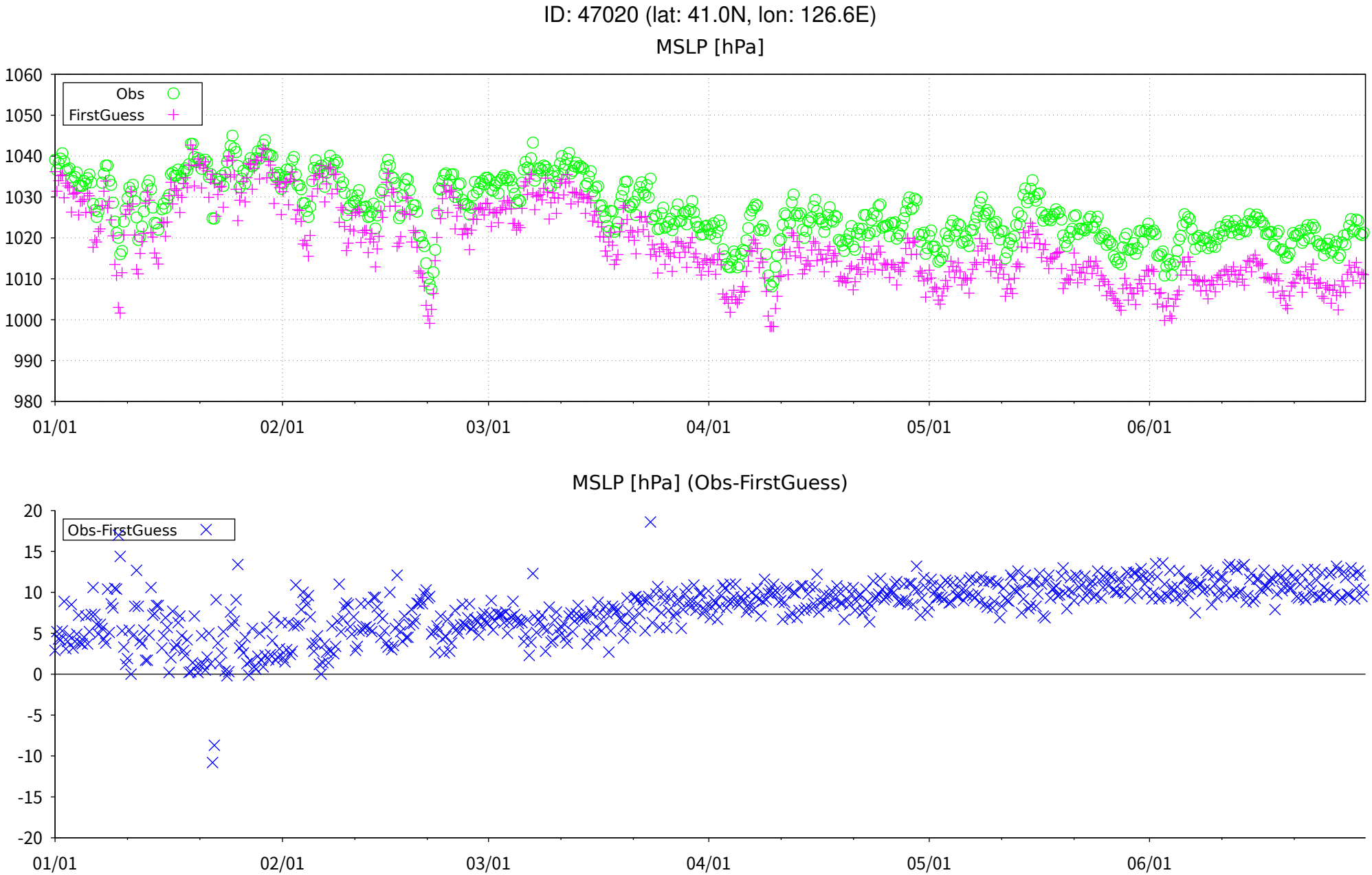


Figure 38 Time-series representation of MSLP Obs minus FirstGuess for station 47020

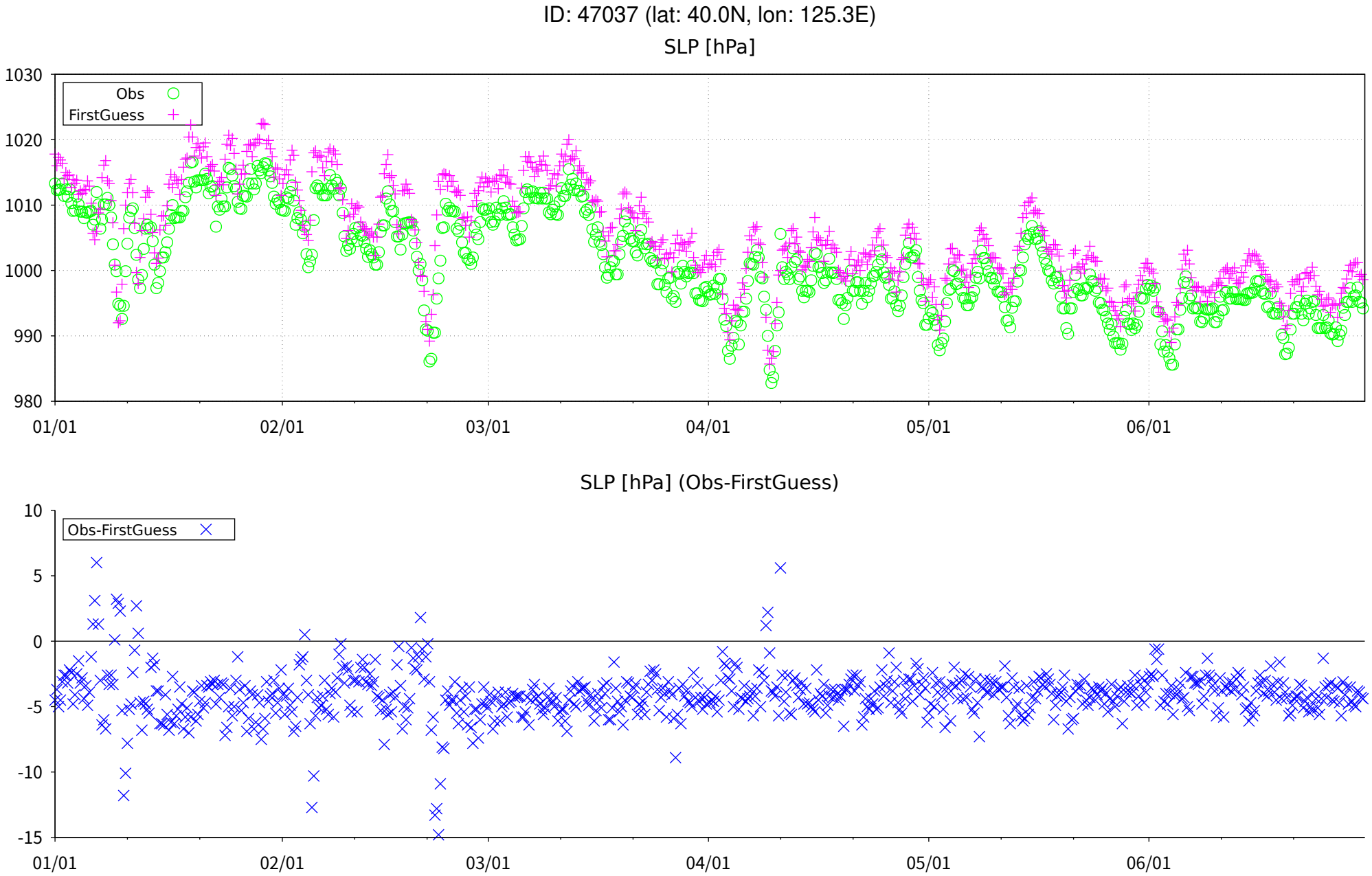


Figure 39(a) Time-series representation of SLP Obs minus FirstGuess for station 47037

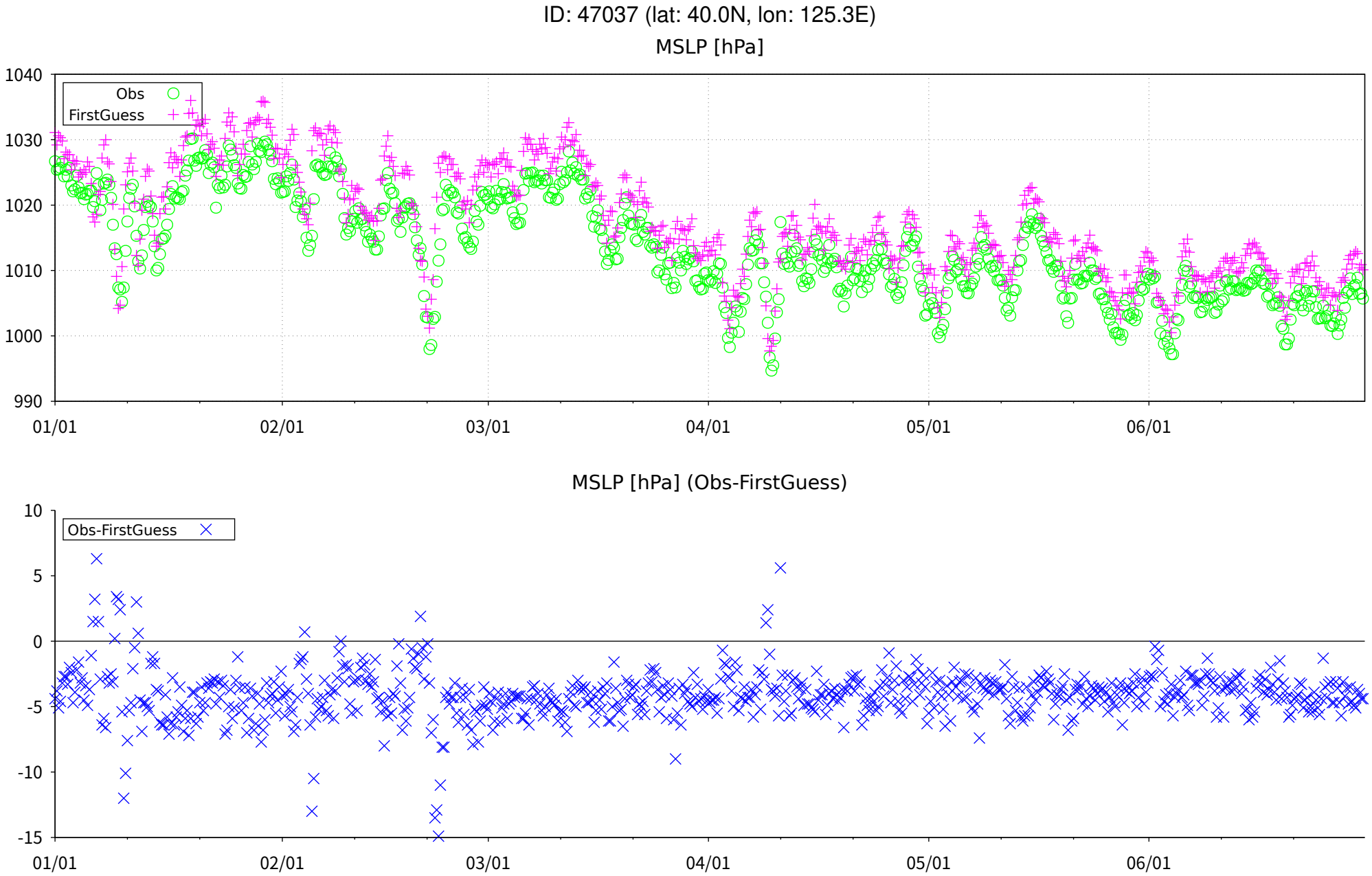


Figure 39(b) Time-series representation of MSLP Obs minus FirstGuess for station 47037



Figure 40 Time-series representation of GZ850 Obs minus FirstGuess for station 48043

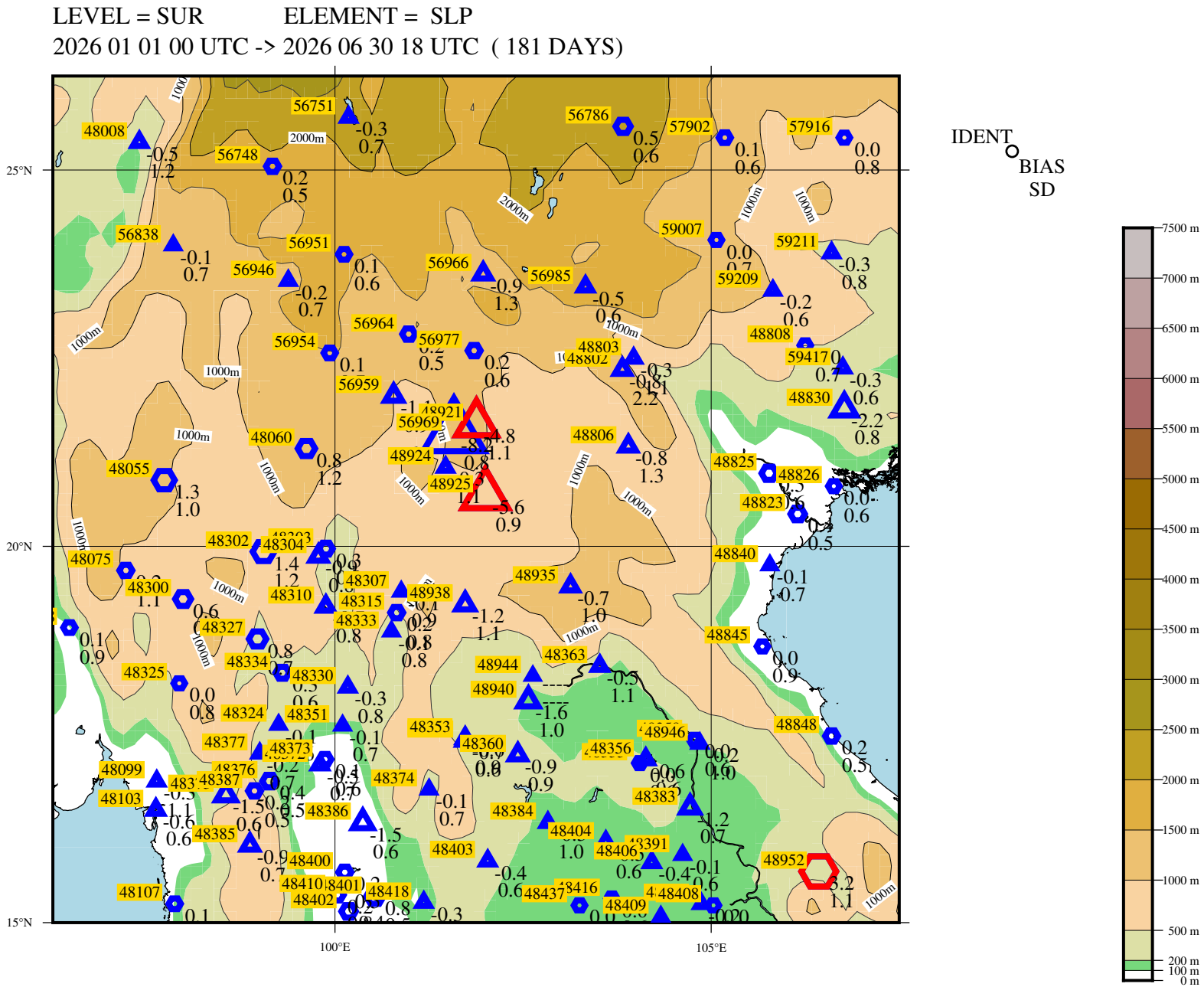


Figure 41 BIAS and SD of SLP for station 48921, 48925, 48952 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

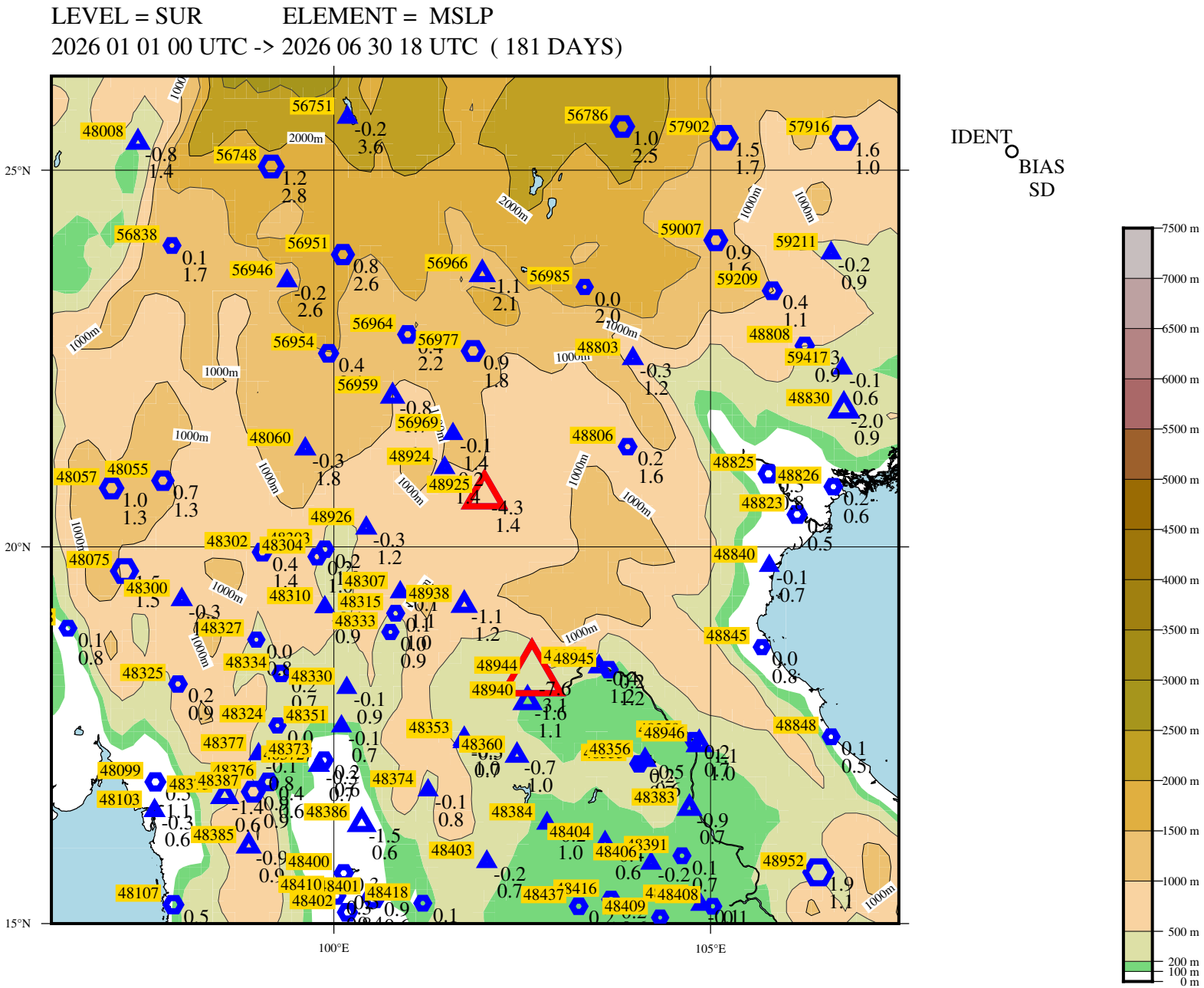


Figure 42 BIAS and SD of MSLP for station 48925, 48944 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

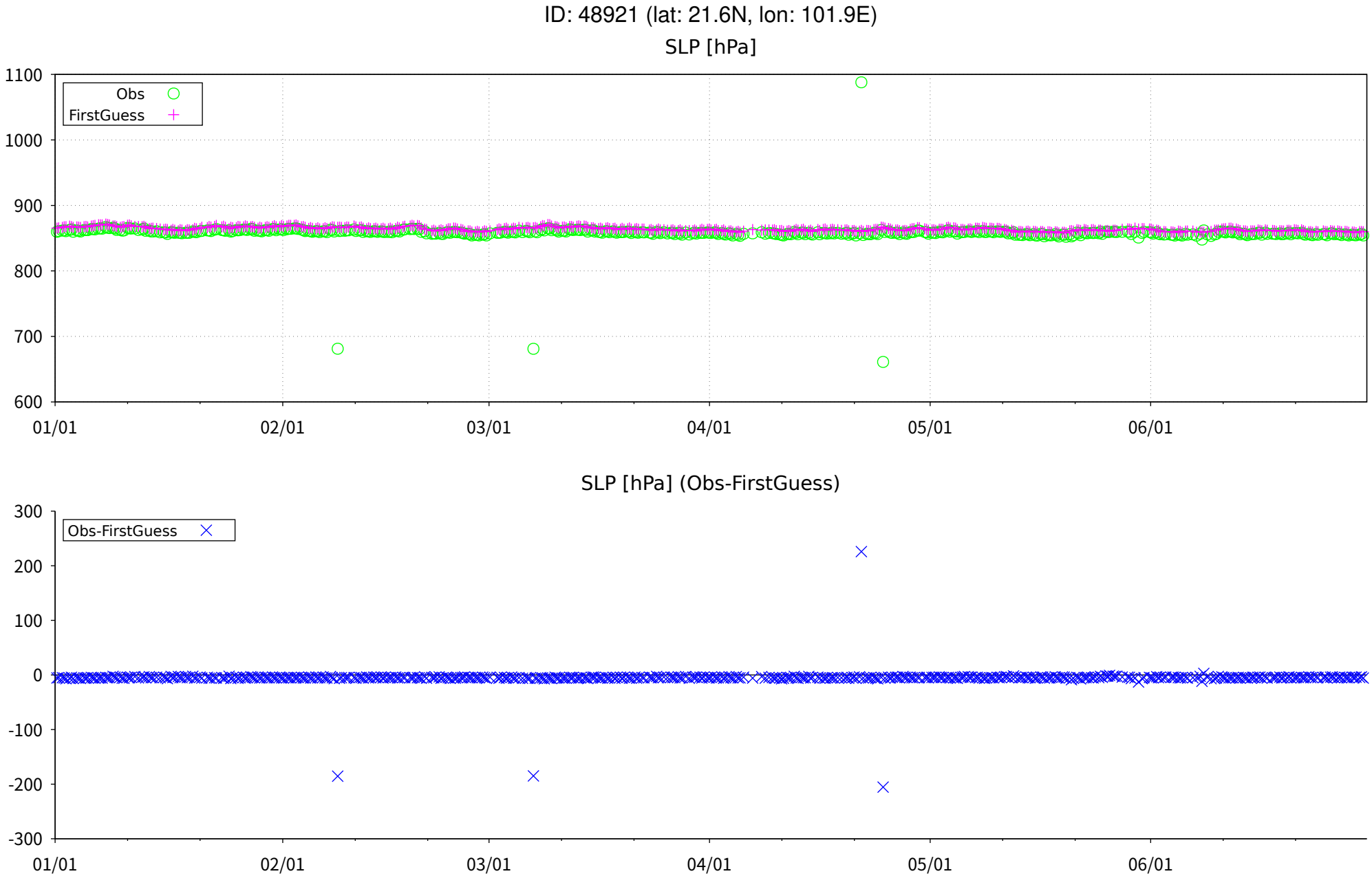


Figure 43(a) Time-series representation of SLP Obs minus FirstGuess for station 48921

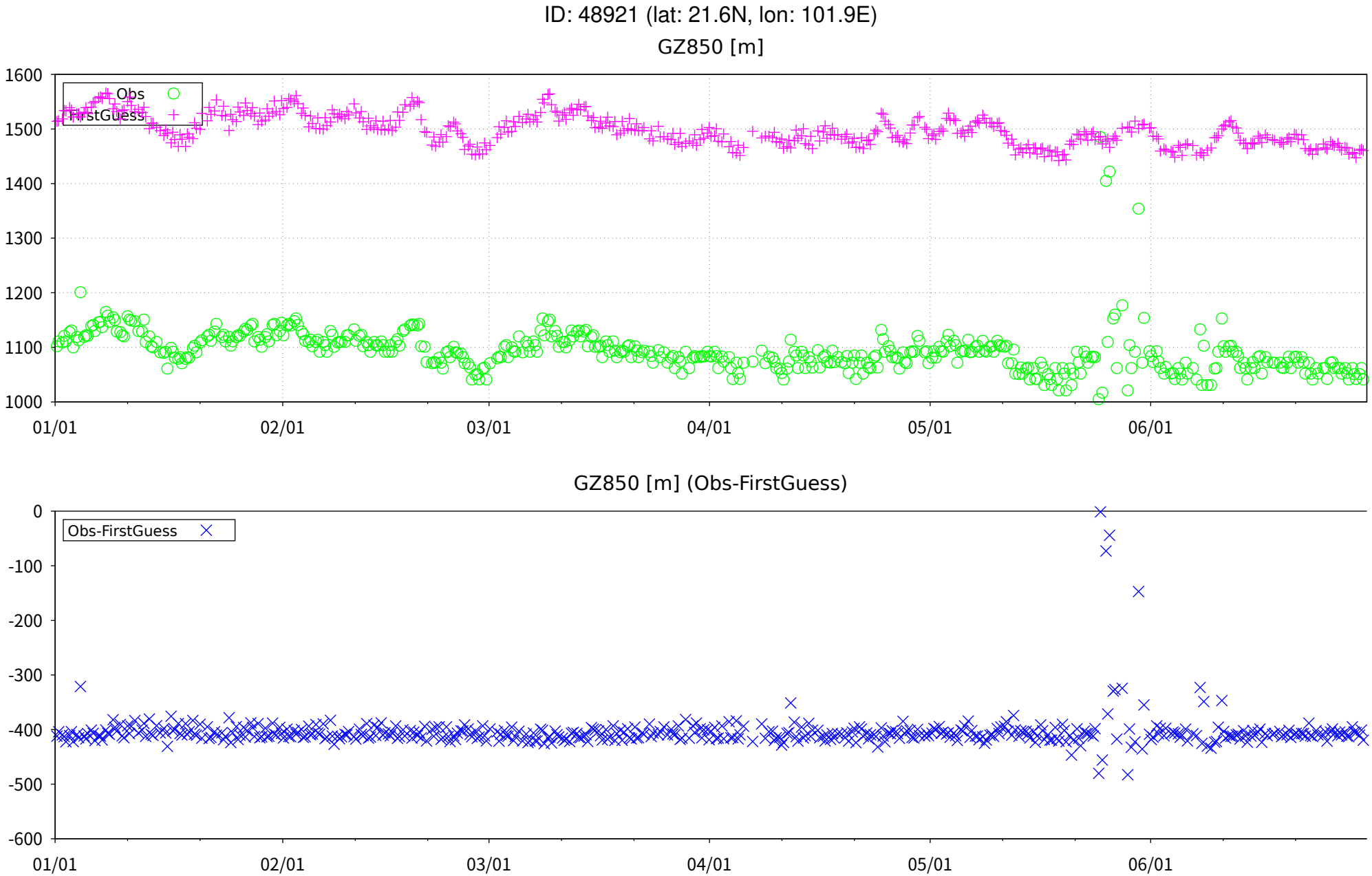


Figure 43(b) Time-series representation of GZ850 Obs minus FirstGuess for station 48921

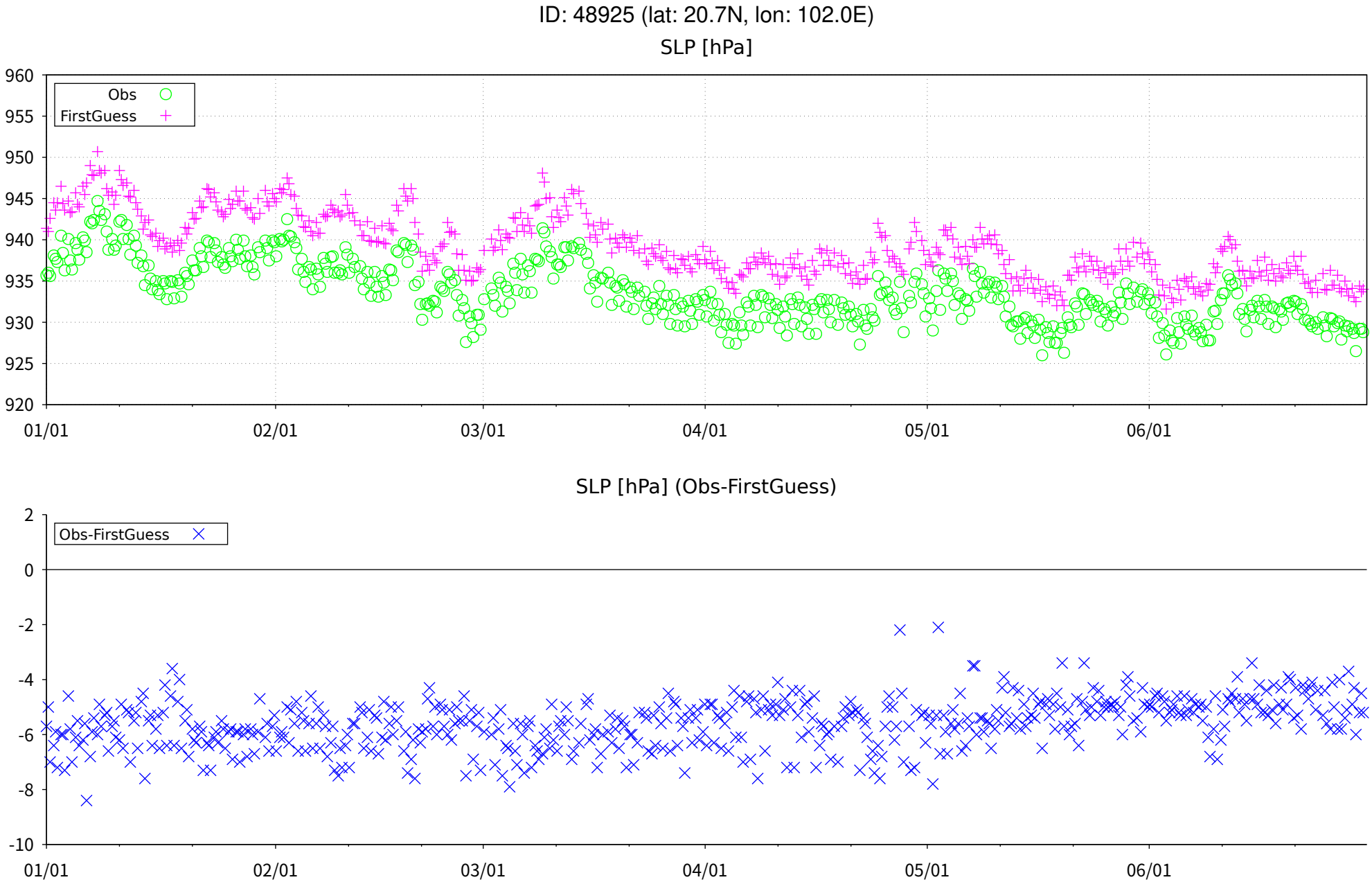


Figure 44(a) Time-series representation of SLP Obs minus FirstGuess for station 48925

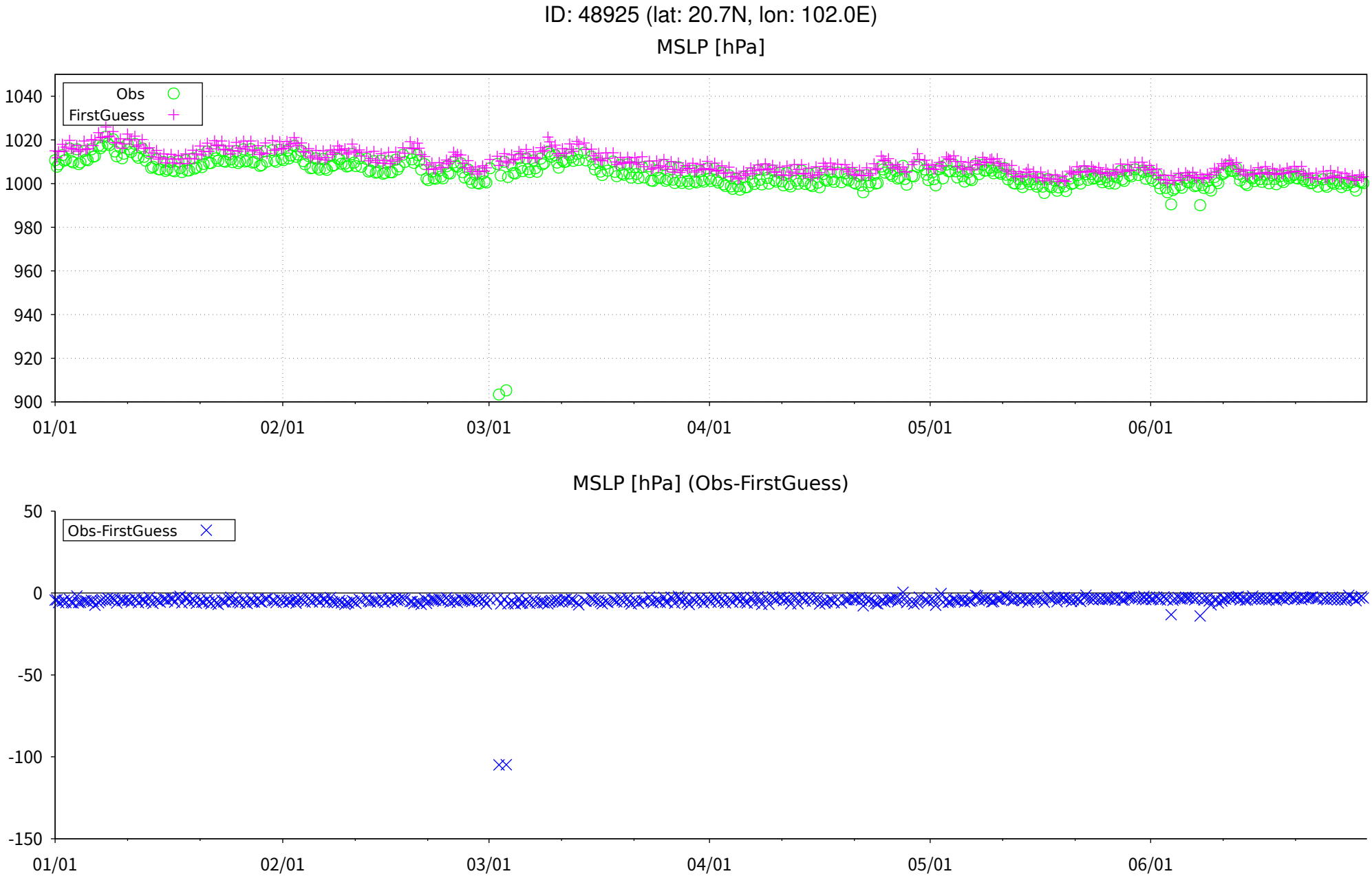


Figure 44(b) Time-series representation of MSLP Obs minus FirstGuess for station 48925

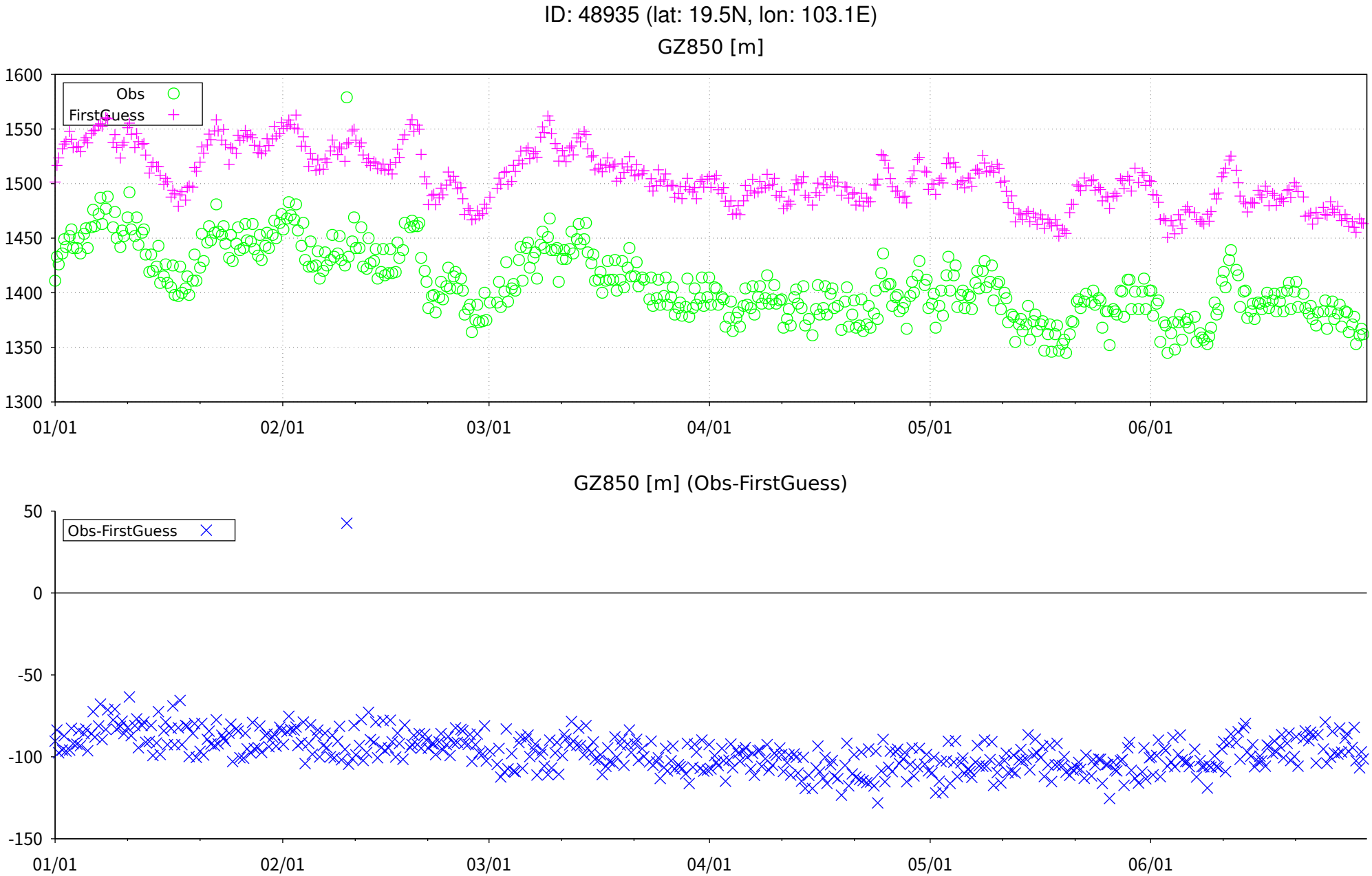


Figure 45 Time-series representation of GZ850 Obs minus FirstGuess for station 48935

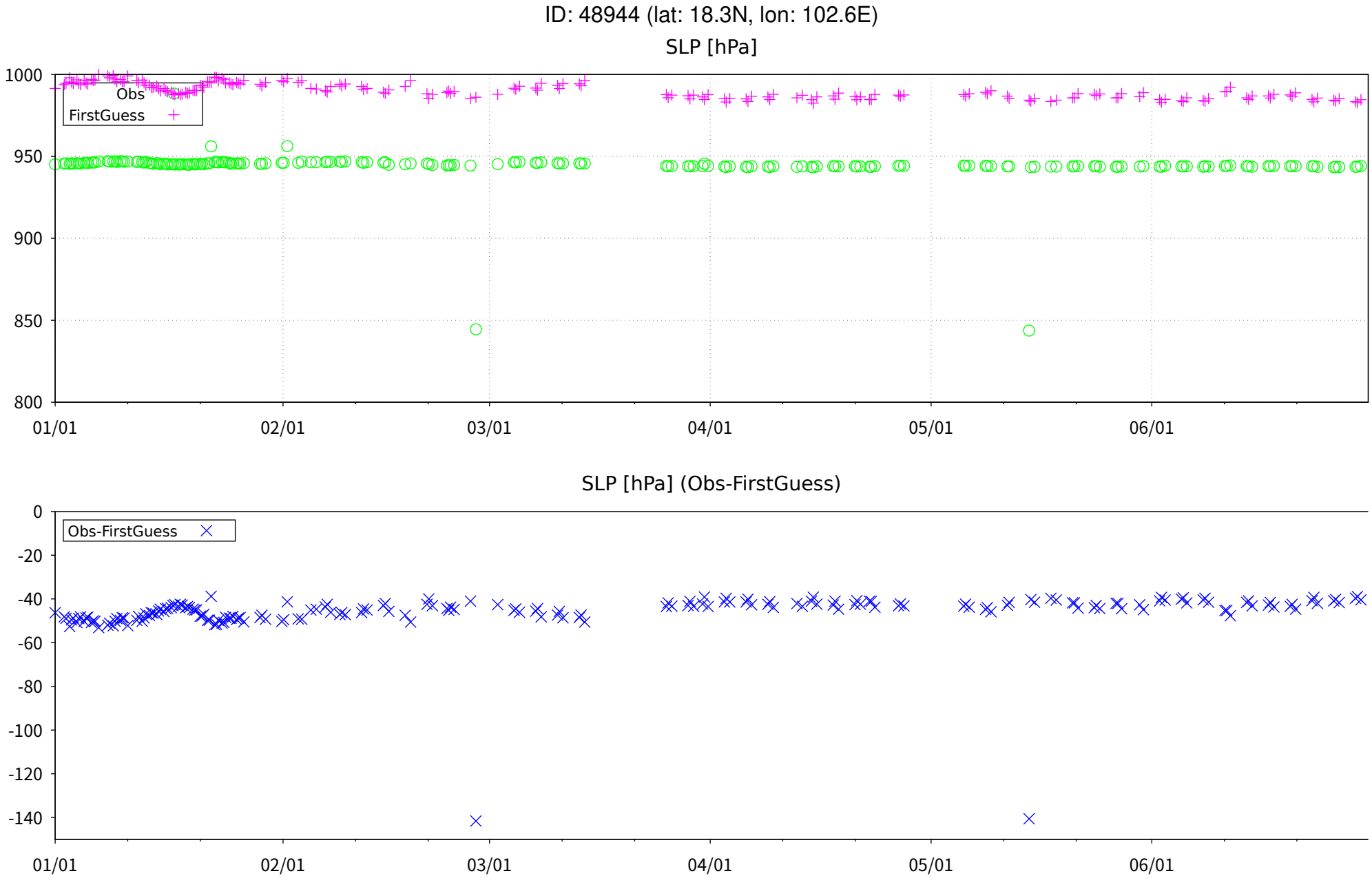


Figure 46(a) Time-series representation of SLP Obs minus FirstGuess for station 48944

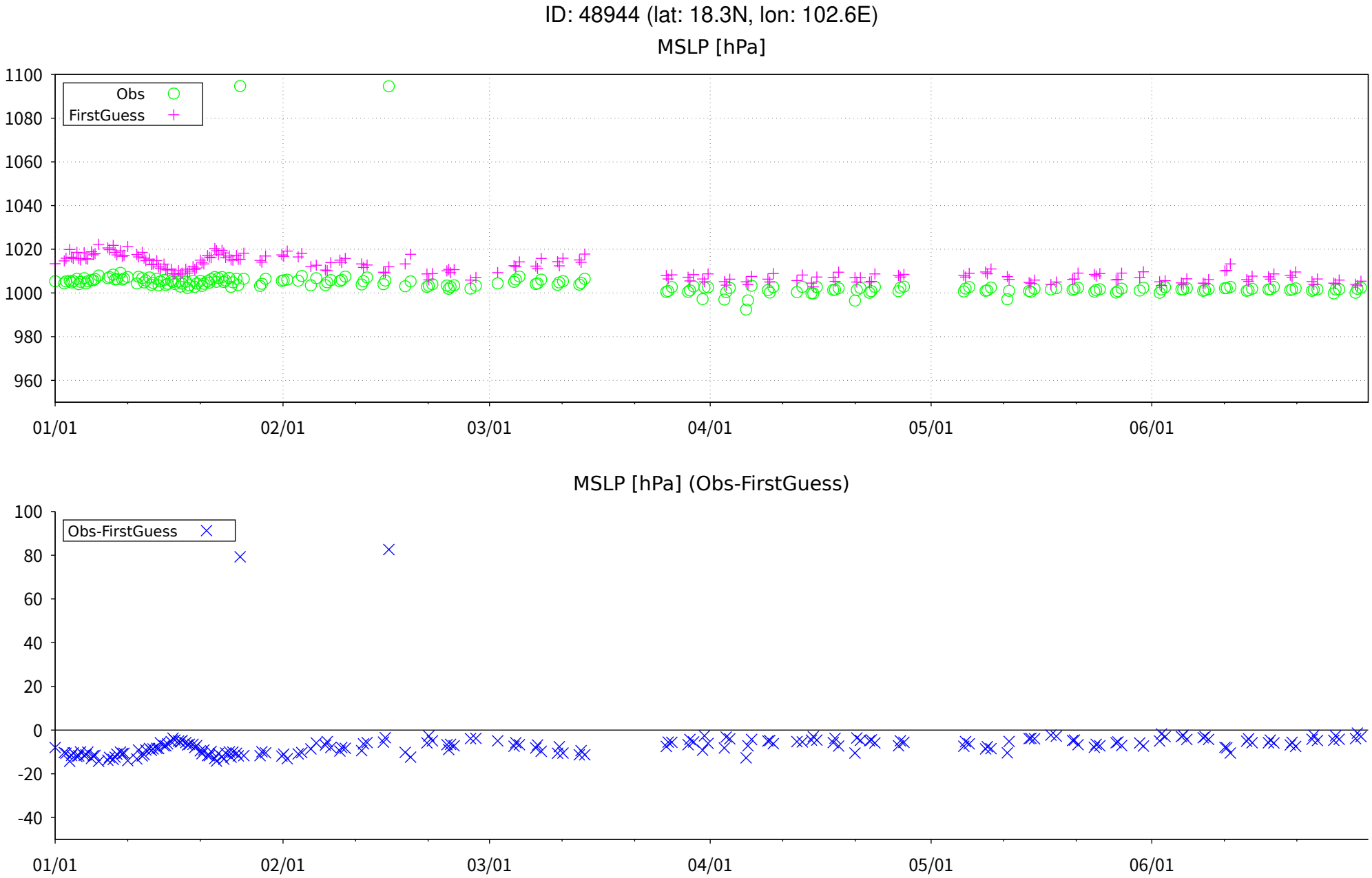


Figure 46(b) Time-series representation of MSLP Obs minus FirstGuess for station 48944

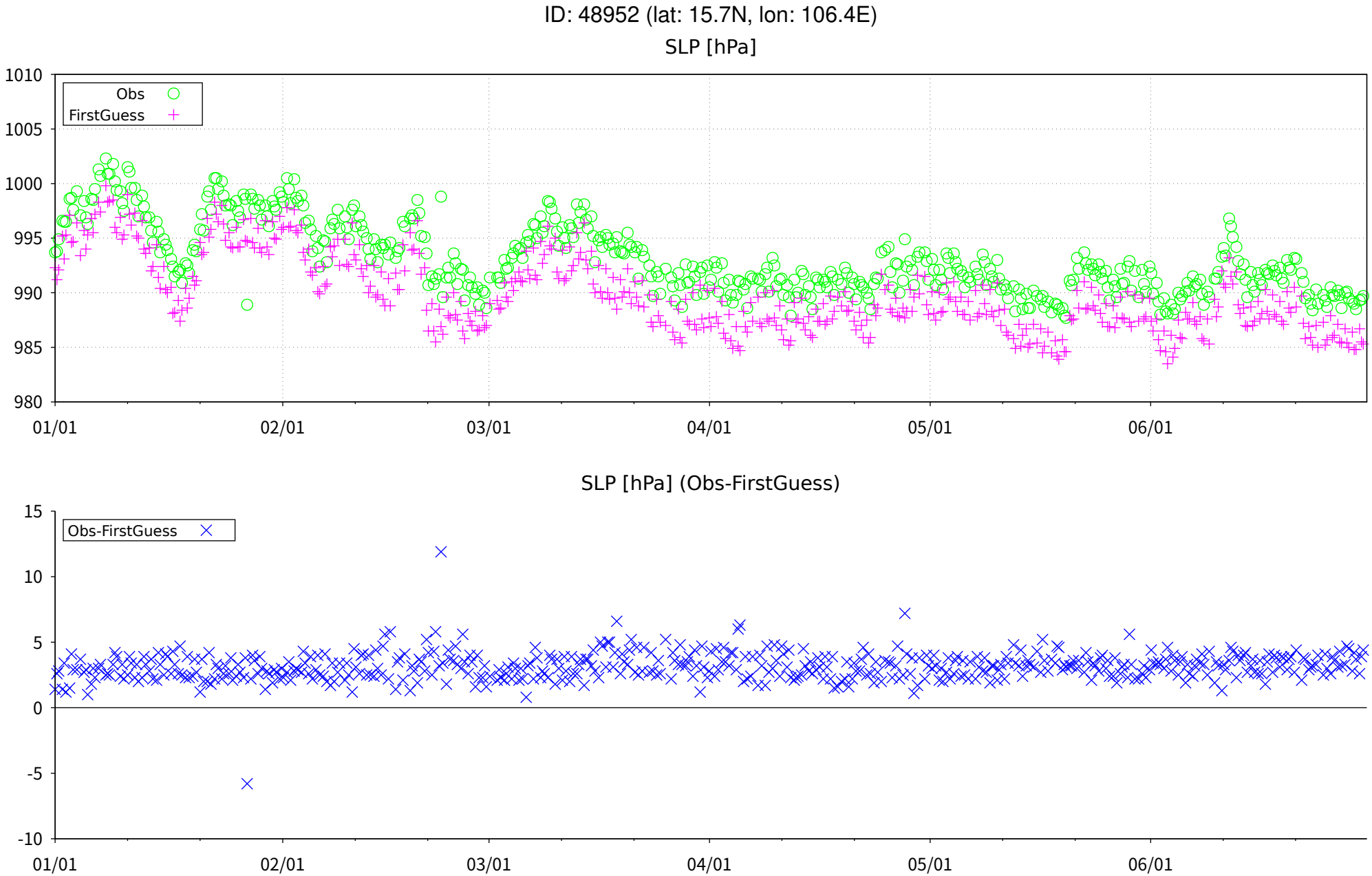


Figure 47 Time-series representation of SLP Obs minus FirstGuess for station 48952

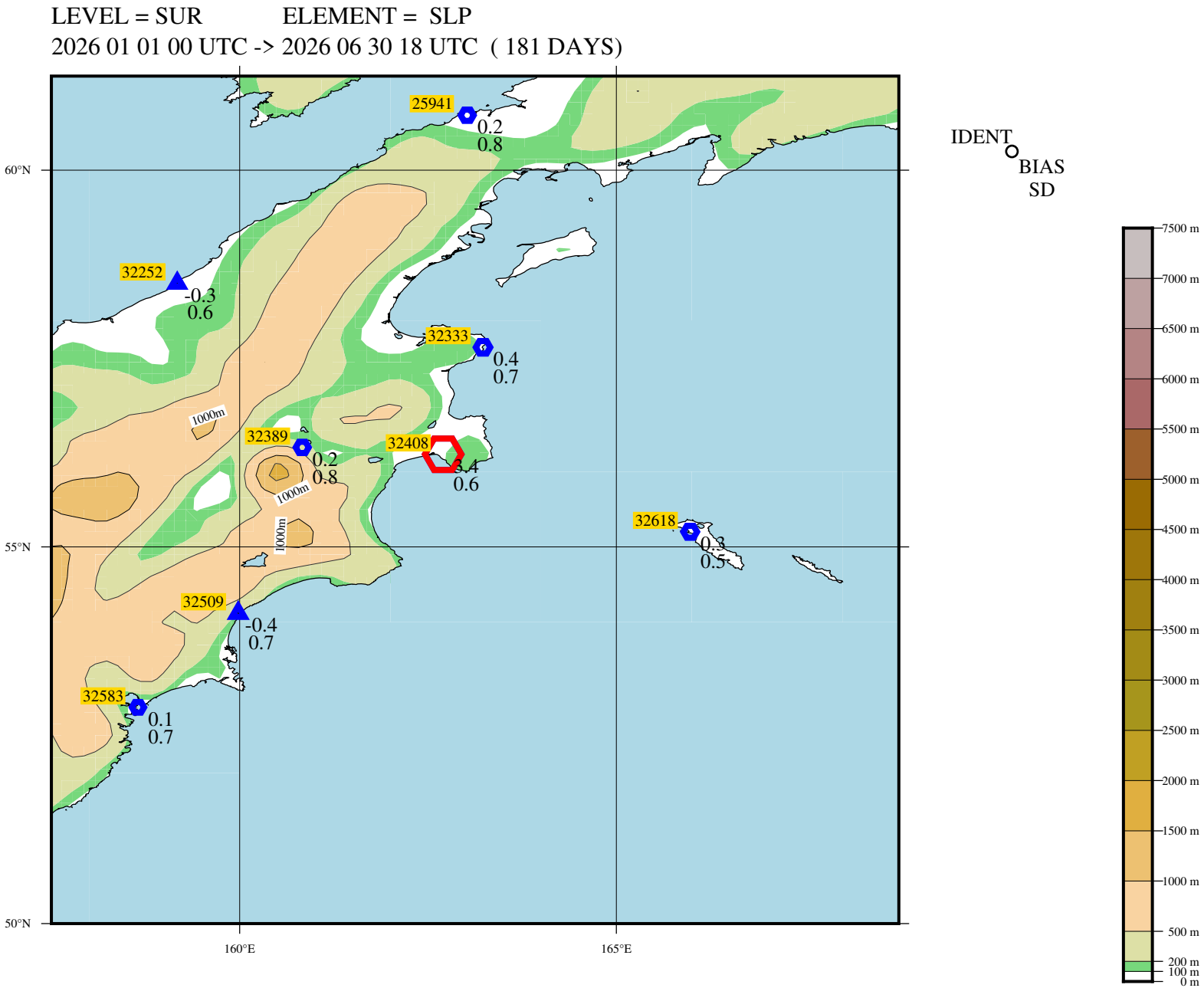


Figure 48 BIAS and SD of SLP for station 32408 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

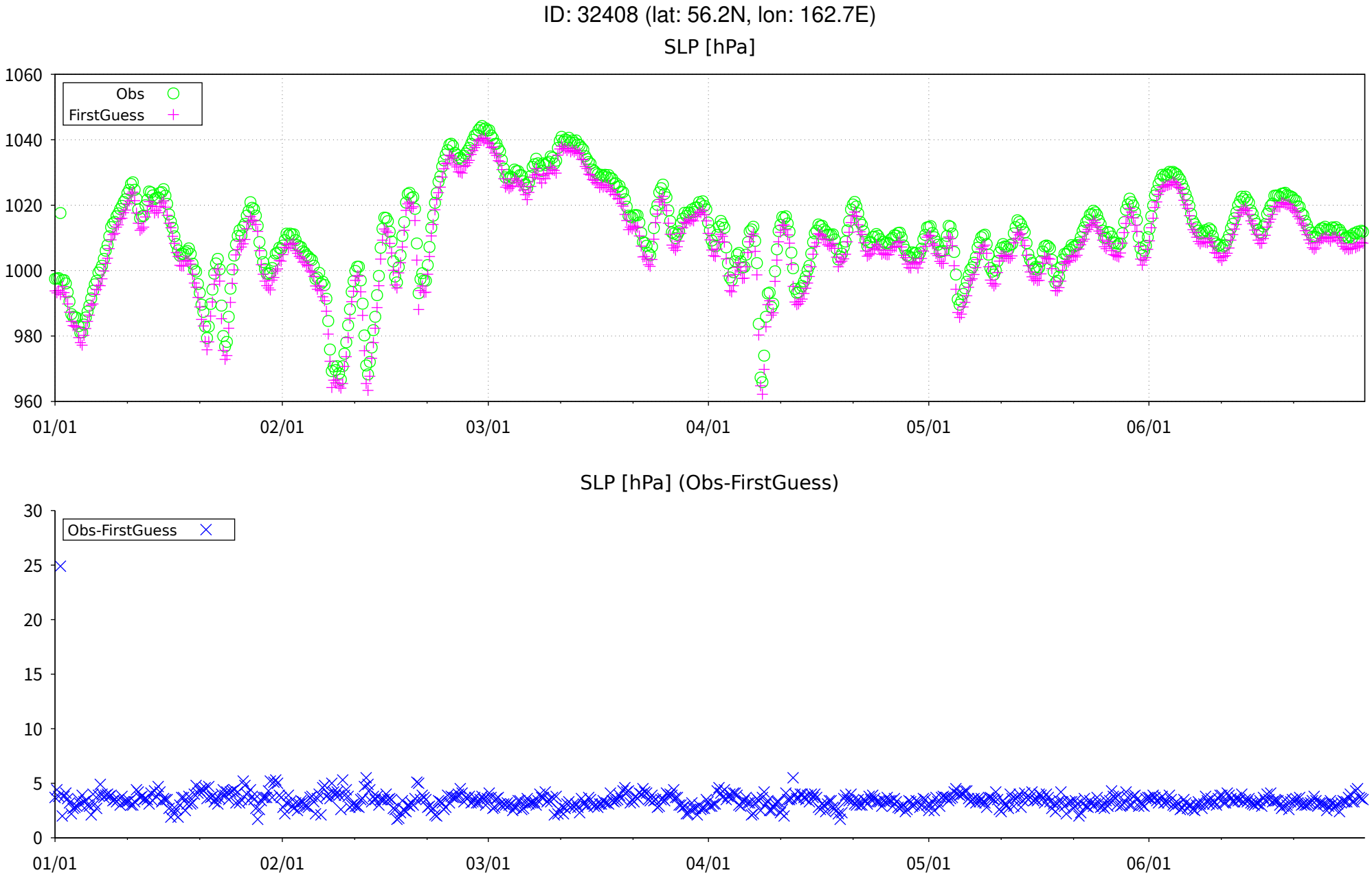


Figure 49 Time-series representation of SLP Obs minus FirstGuess for station 32408

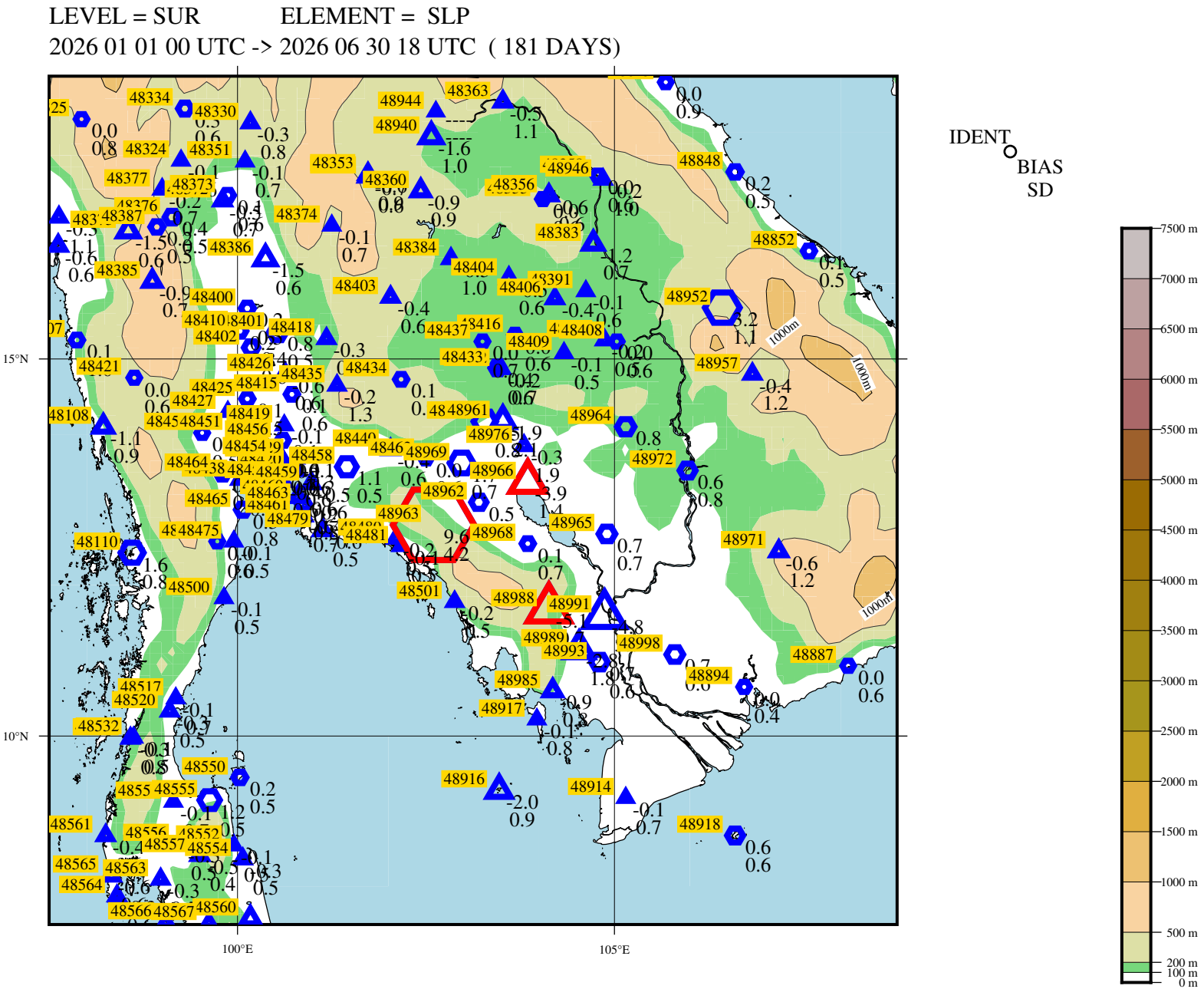


Figure 50 BIAS and SD of SLP for station 48963, 48966, 48988 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

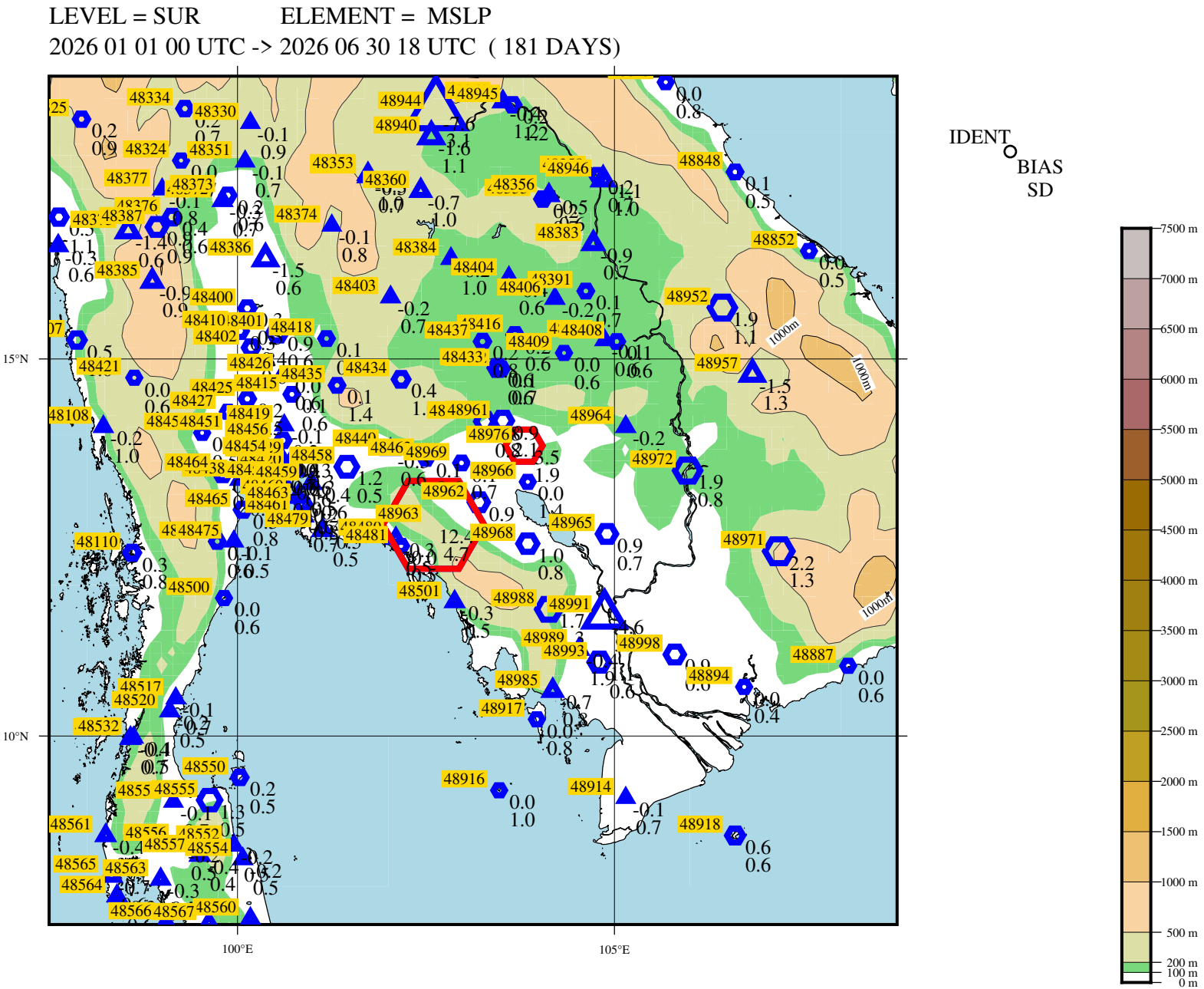


Figure 51 BIAS and SD of MSLP for station 48963, 48976 (red) and surrounding stations (blue).
The number to the upper left of each symbol is the WMO IDENT, and those to the lower right are the values of BIAS and SD.
The size of each symbol is proportional to the value of BIAS, with hexagonal forms representing positive bias and triangular forms representing negative bias.

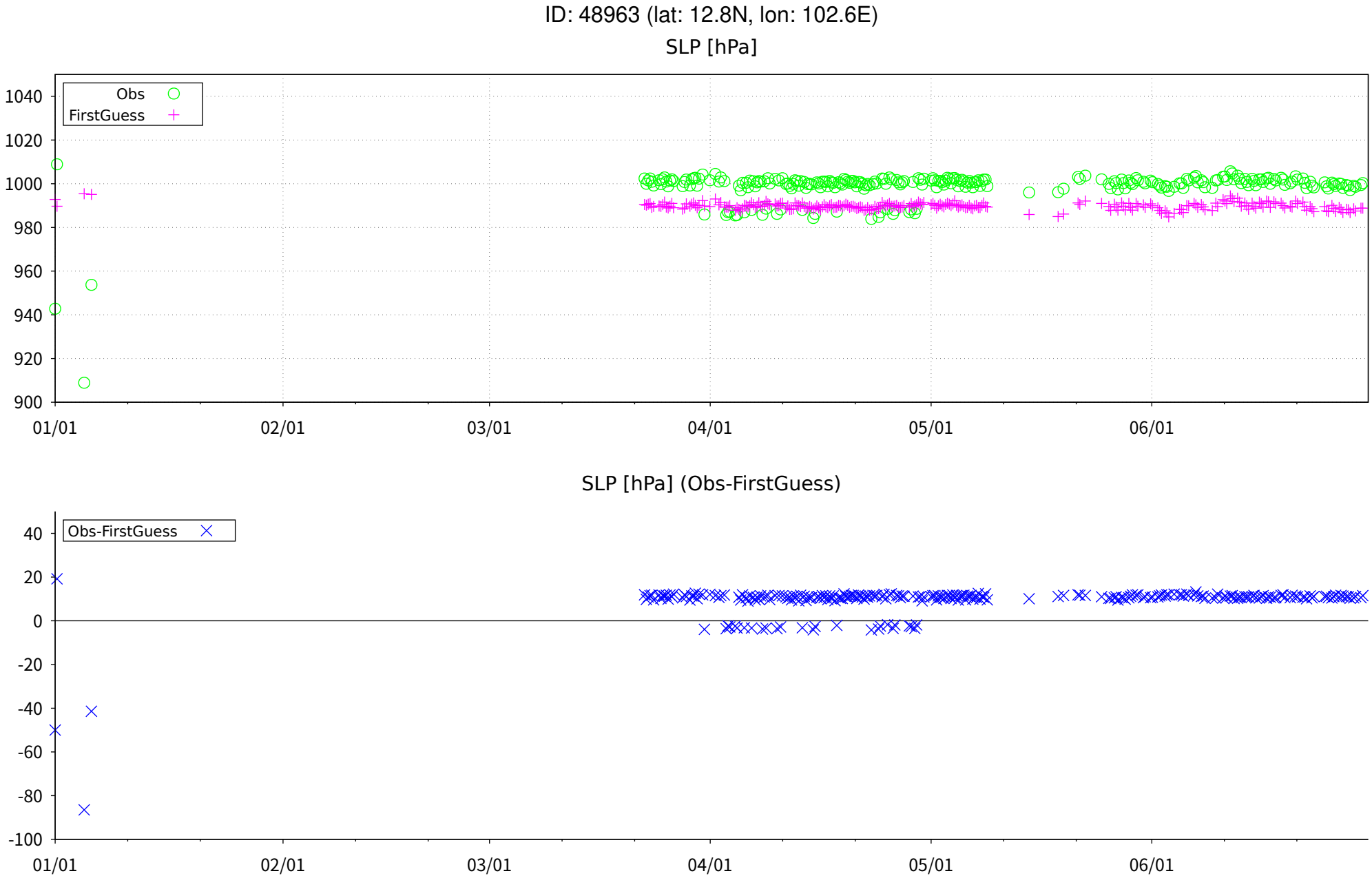


Figure 52(a) Time-series representation of SLP Obs minus FirstGuess for station 48963

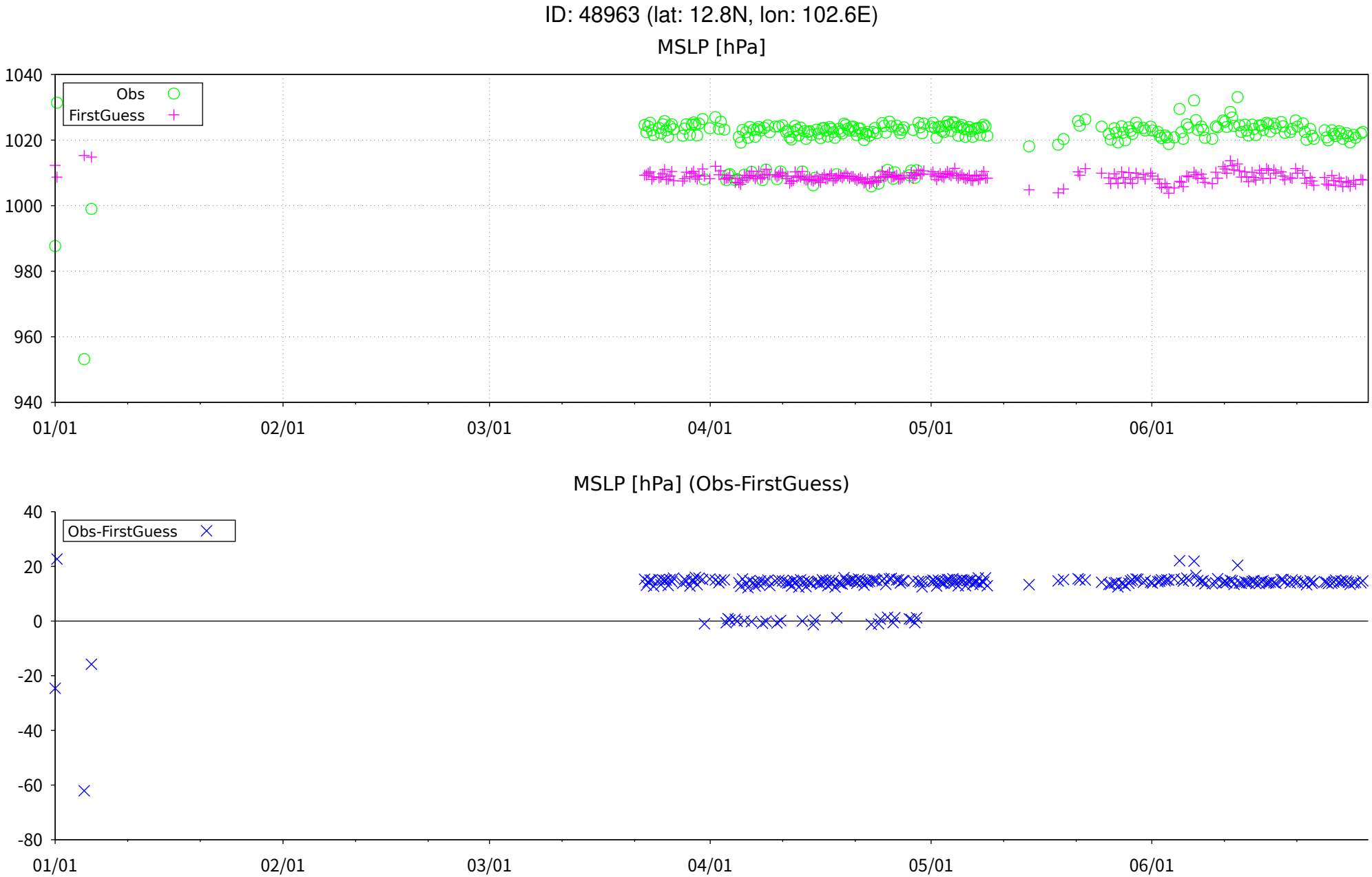


Figure 52(b) Time-series representation of MSLP Obs minus FirstGuess for station 48963

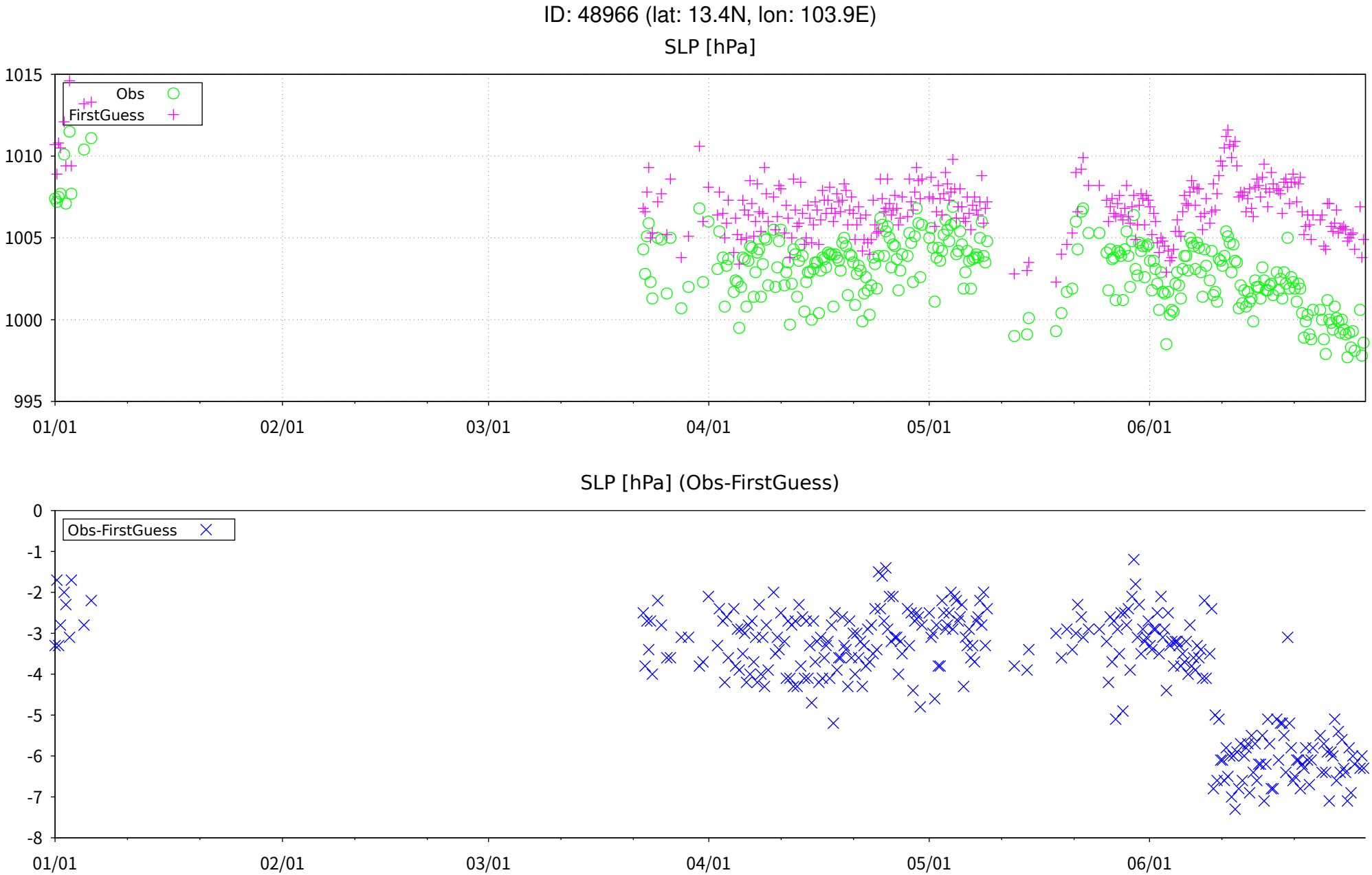


Figure 53 Time-series representation of SLP Obs minus FirstGuess for station 48966

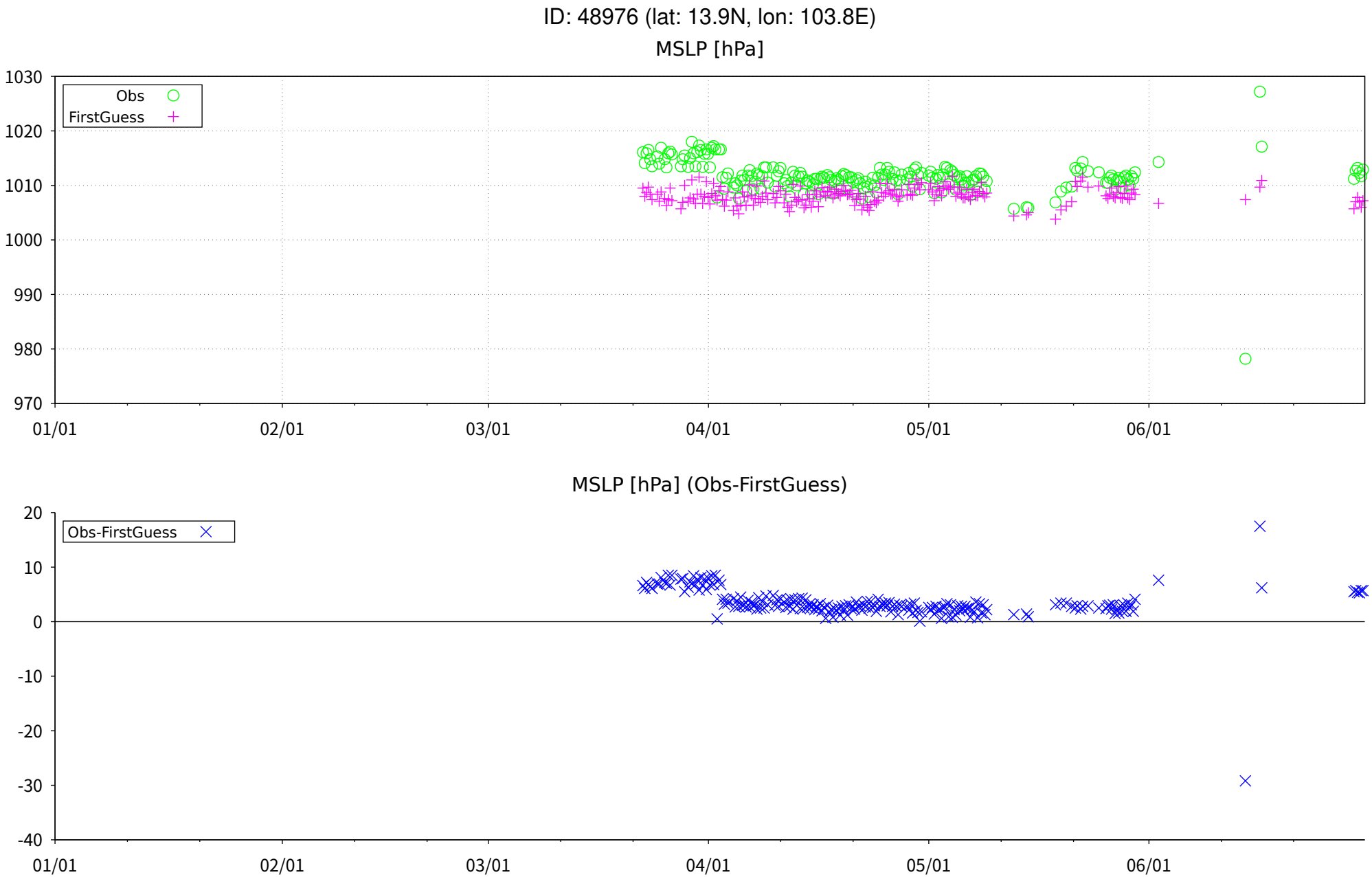


Figure 54 Time-series representation of MSLP Obs minus FirstGuess for station 48976

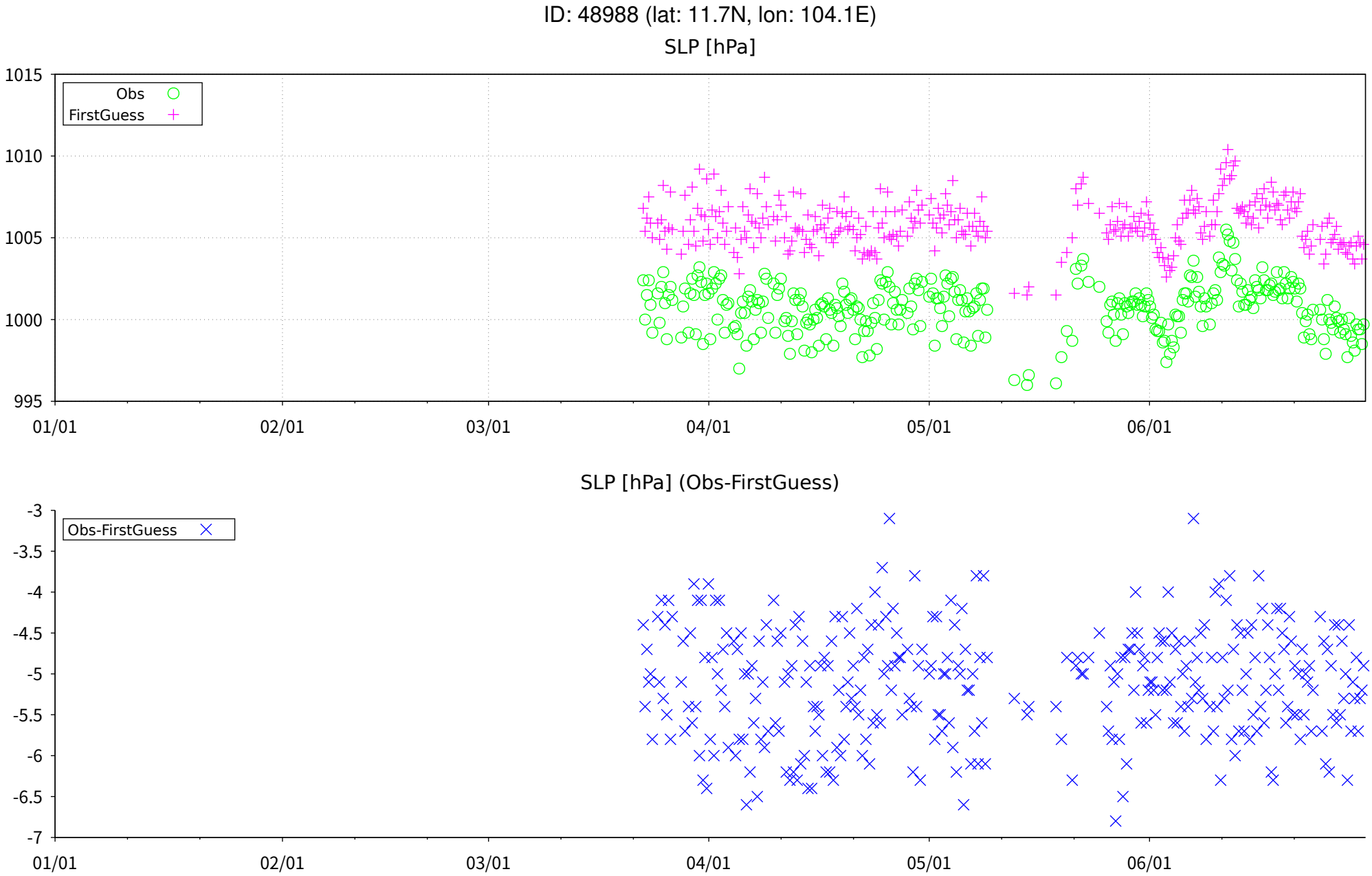


Figure 55 Time-series representation of SLP Obs minus FirstGuess for station 48988

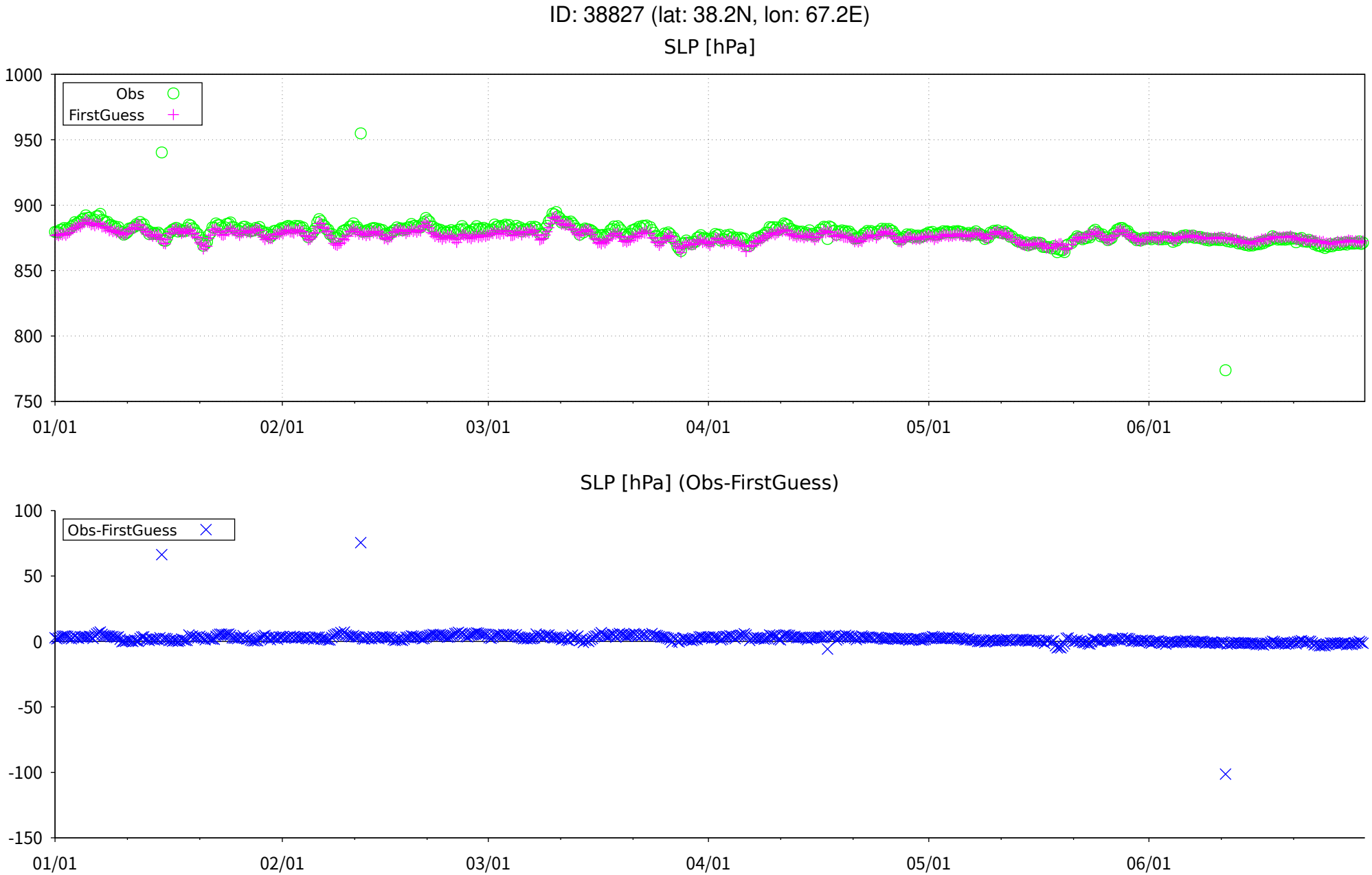


Figure 56(a) Time-series representation of SLP Obs minus FirstGuess for station 38827

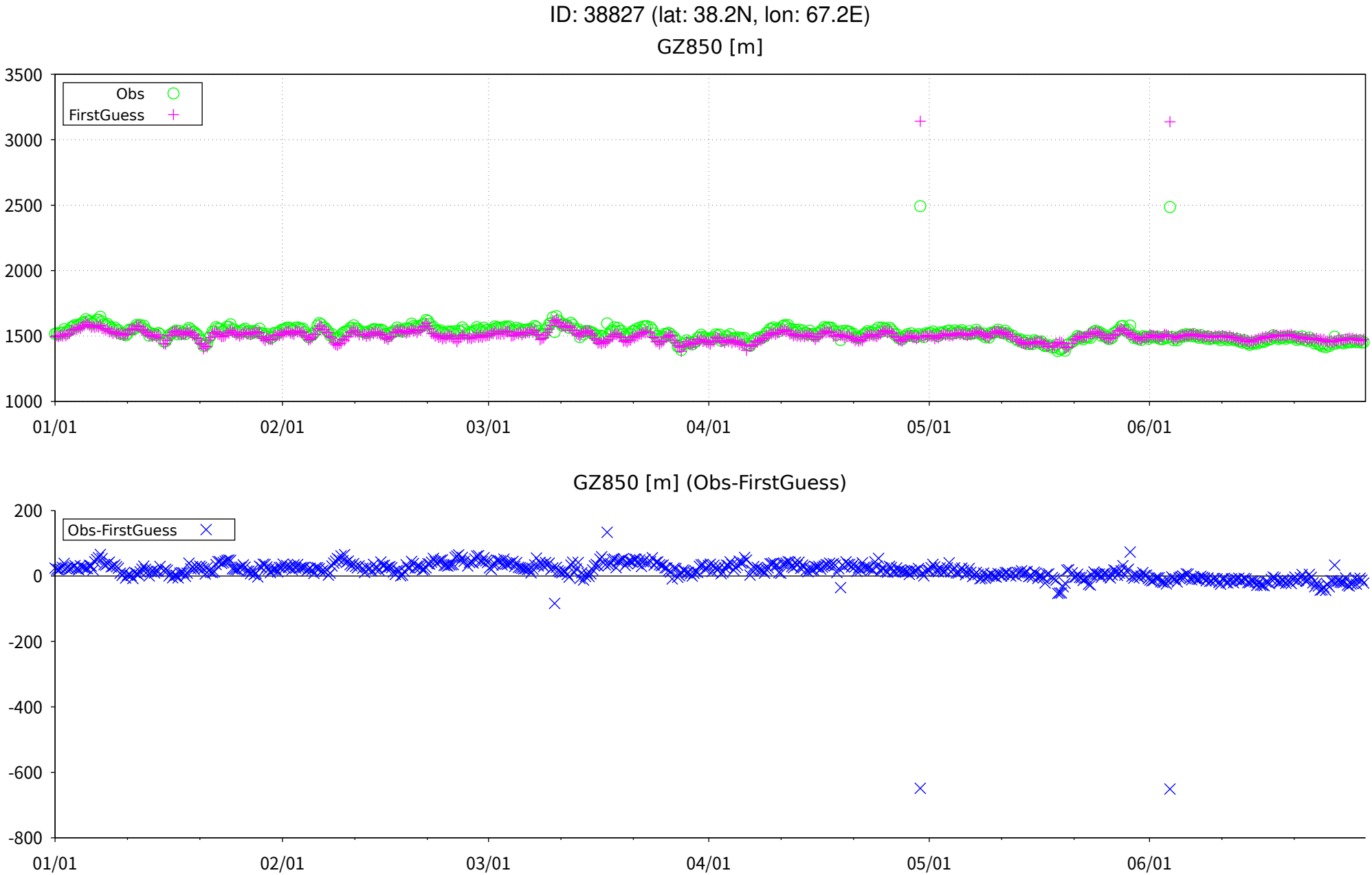


Figure 56(b) Time-series representation of GZ850 Obs minus FirstGuess for station 38827

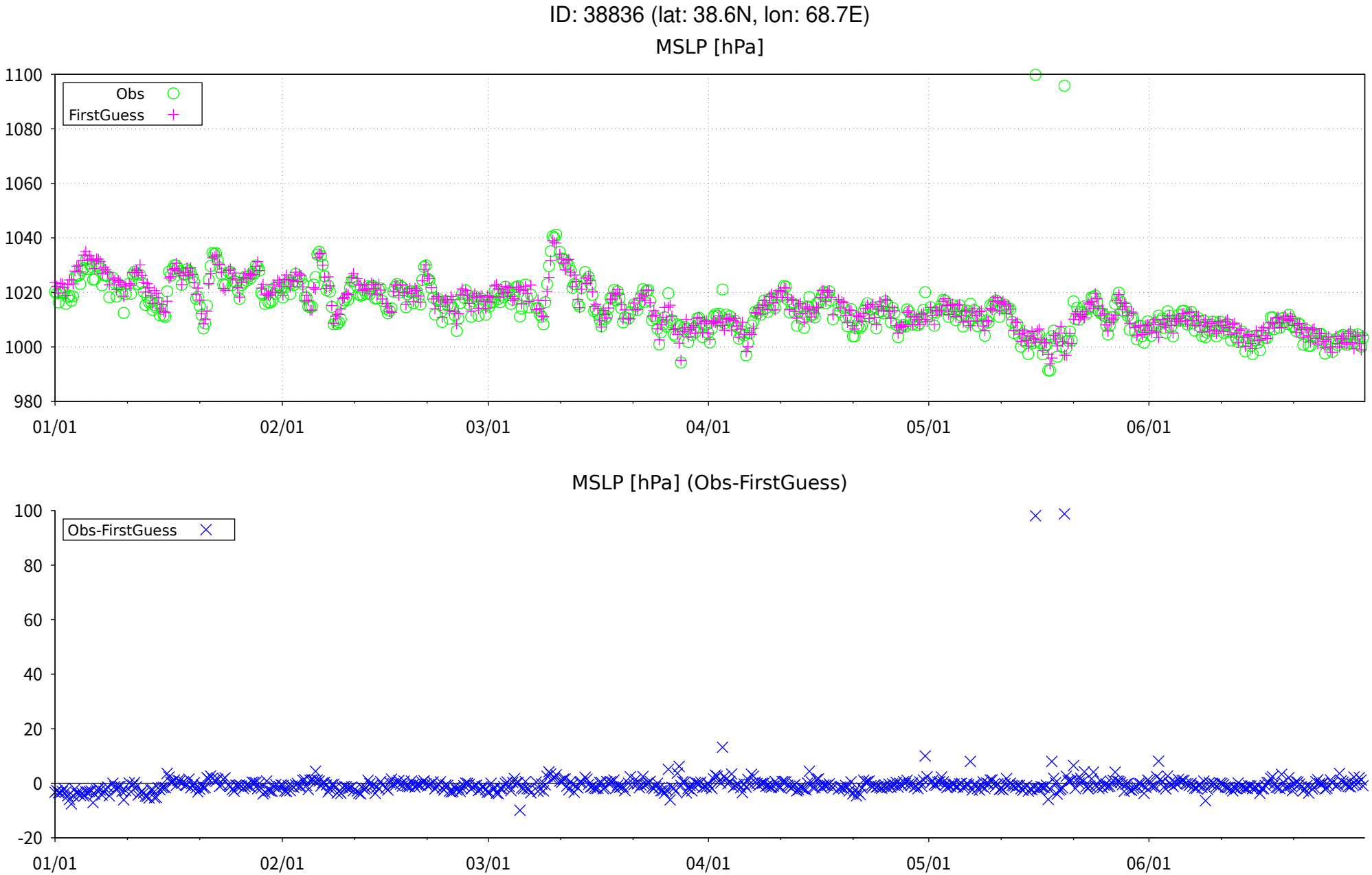


Figure 57 Time-series representation of MSLP Obs minus FirstGuess for station 38836

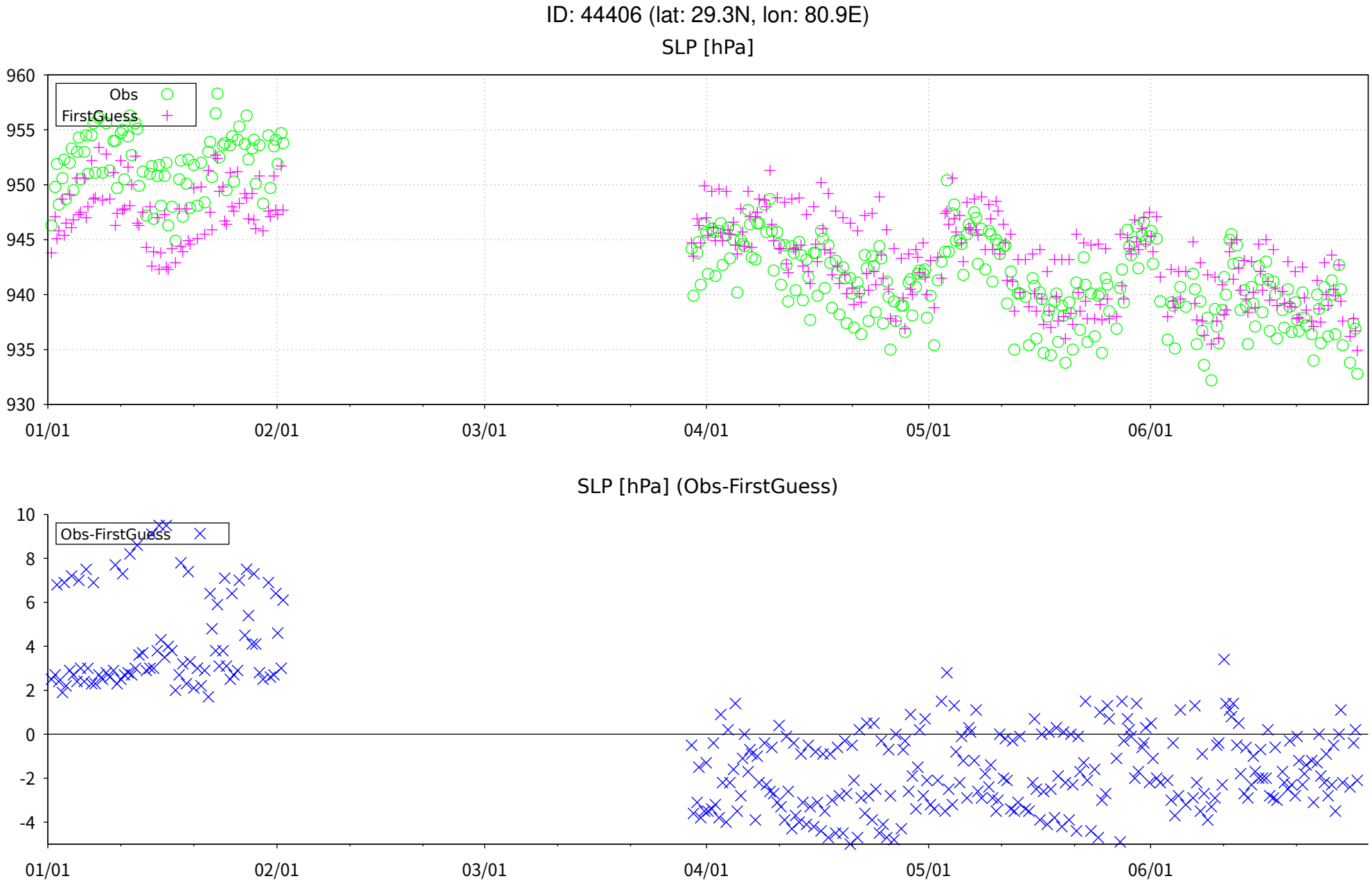


Figure 58 Time-series representation of SLP Obs minus FirstGuess for station 44406

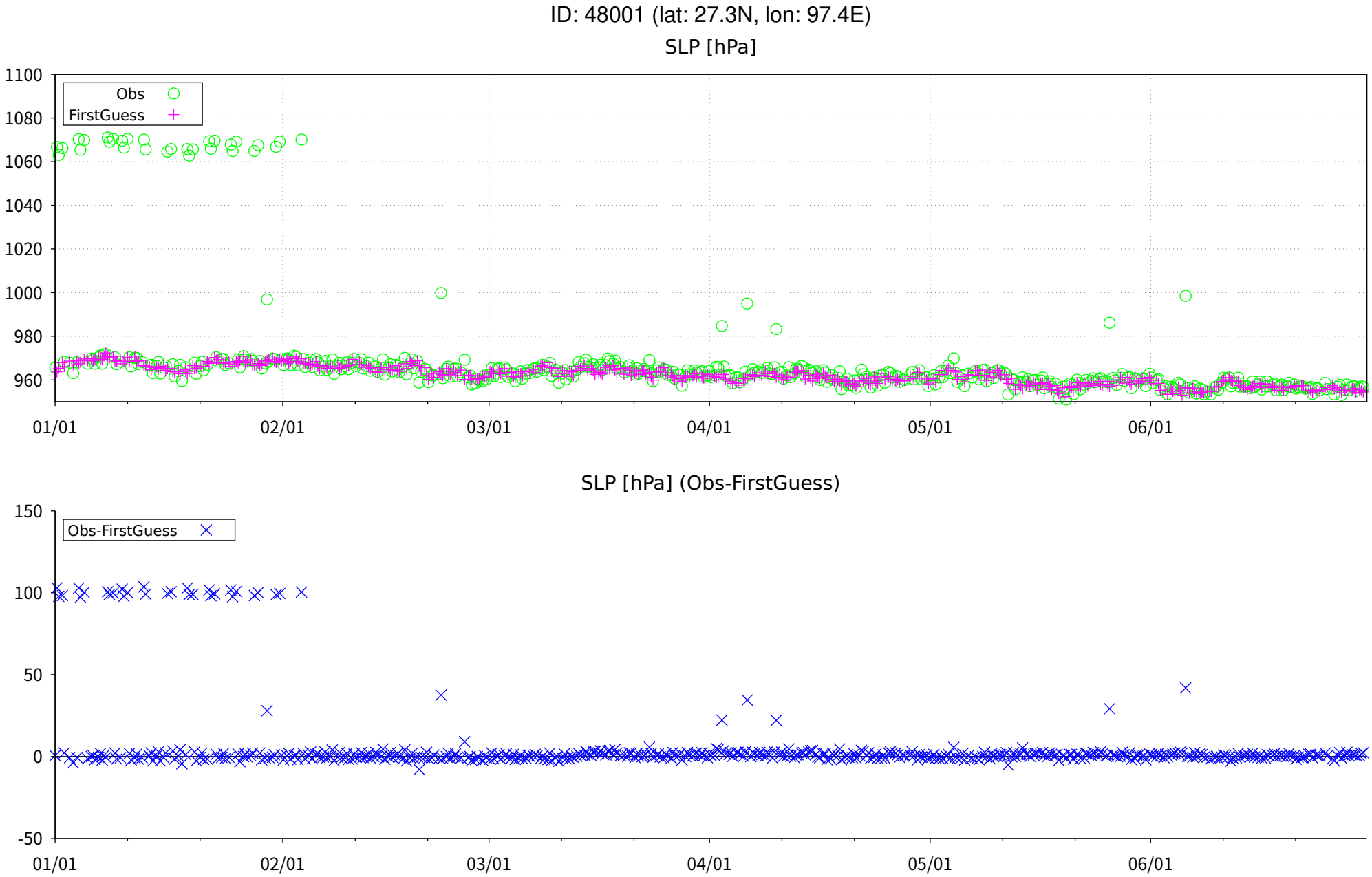


Figure 59 Time-series representation of SLP Obs minus FirstGuess for station 48001

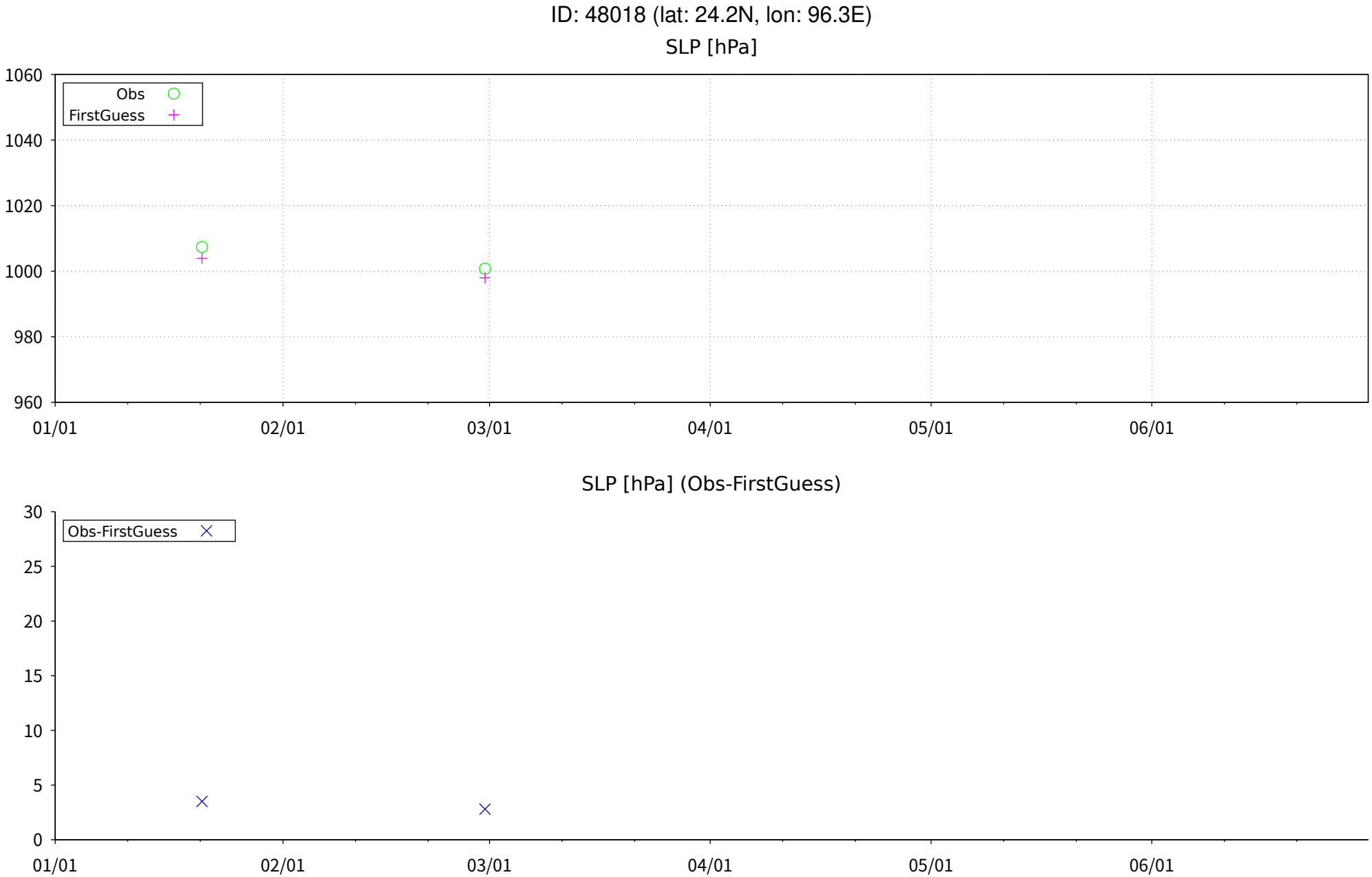


Figure 60 Time-series representation of SLP Obs minus FirstGuess for station 48018