



South West Seismic Zone 2002, GPS Analysis

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This document overviews the GPS data analysis undertaken using the 2002 Geoscience Australia South West Seismic Zone (SWSZ) GPS data set.

GPS data analysis overview :-

1. Campaign span : 30 April 2002 (02:120) to 22 May 2002 (02:143)
2. Analysis software : BERNESE 4.2 software suite
3. Orbit : IGS Precise final product
4. Earth Orientation : IGS Precise final Earth orientation
5. Reference Frame : ITRF2000 (IGS cumulative solution)
6. Observable : L3 carrier phase
7. Elevation cutoff : 10 degrees
8. Sampling Rate : 30 seconds
9. Weighting : elevation dependent, cosine(elevation)
10. Ocean loading : applied, GOT00.2
11. Ambiguities : resolved if possible using QIF (Quasi-Ionosphere-Free) Algorithm
12. Antenna modelling : relative elevation dependent antenna modelling applied using PHAS IGS.01 (NGS models used when IGS model unavailable)

Unless specified otherwise all further dates in this report follow the SINEX date convention - YY:DDD[:SSSS], where YY is a two digit year, DDD is the day of year and SSSS is the second of the day. GPS antenna and receiver names follow the International GPS Service (IGS) convention.

1 GPS Data

1.1 SWSZ GPS Data

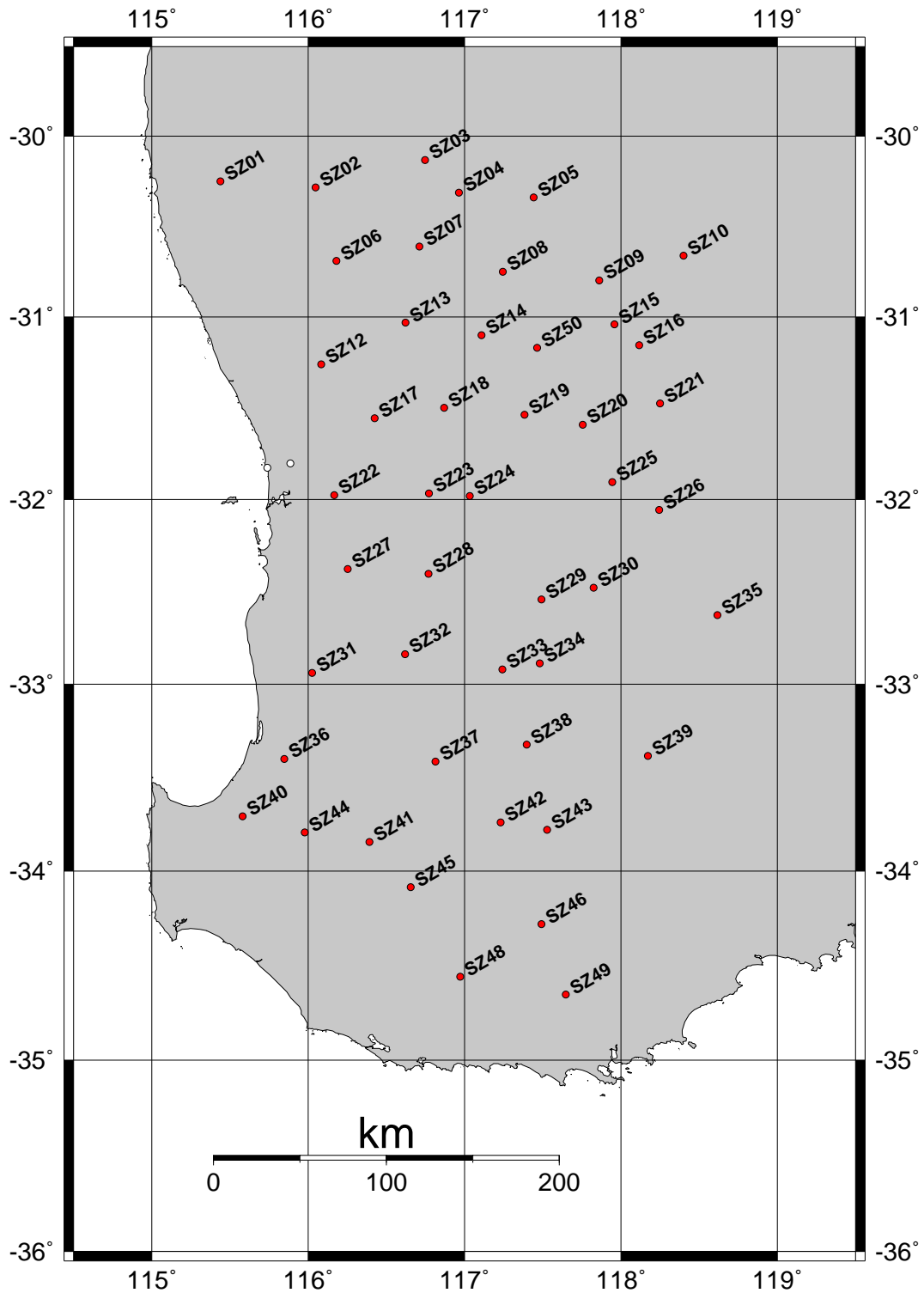


Figure 1: South West Seismic Zone (SWSZ) GPS Stations, 2002

1.2 Regional GPS Data

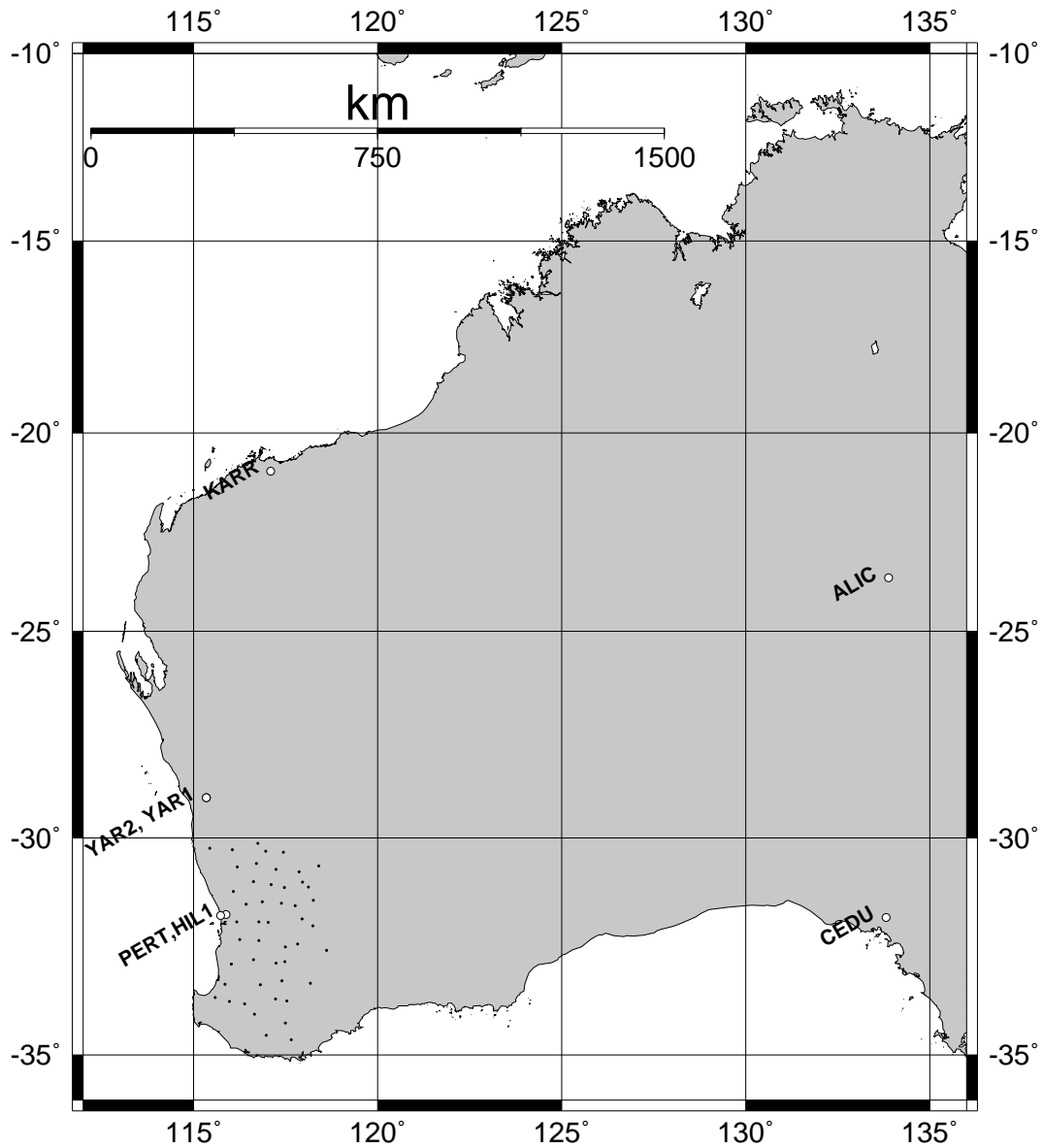


Figure 2: Regional GPS Network used in the processing. Australian Regional GPS Network (ARGN) Stations include Alice Springs (ALIC), Karratha (KARR), Yaragadee (YAR2), Ceduna (CEDU) and Hillary's (HIL1). International GPS Service (IGS) station include Perth (PERT) and Yaragadee (YAR1).

2 Shim Usage

To allow each antenna to be oriented North a combination of shims of different thicknesses were applied. Station eccentricities were computed using adopted shim thicknesses of 0.25, 0.4, 0.6, 1.5, 2.3 and 3.1 mm for shims 0, 1, 2, 3, 4, 5 shims respectively. Additional spacers were used at several sites. Shim and spacer use and antenna orientations are given below.

SITE	SHIM	SPACER	START	END	ORIENTATION
SZ01	- - - - 4	- 0.0000	02:121:00000	02:143:86400	12.0E MAG
SZ02	- - - - 4	- 0.0000	02:121:00000	02:143:86400	0.0E MAG
SZ03	- - - - 5	0.0000	02:121:00000	02:143:86400	18.0E MAG
SZ04	0 - - - -	- 0.0000	02:121:00000	02:143:86400	2.0E MAG
SZ05	0 1 2 - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ06	- - - 3 - -	- 0.0000	02:121:00000	02:143:86400	5.0W MAG
SZ07	- - - - 4	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ08	- 1 2 3 - -	- 0.0000	02:121:00000	02:143:86400	9.0W MAG
SZ09	0 1 2 3 - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ10	0 - 2 - - -	- 0.0000	02:121:00000	02:128:86400	TRUE ---
SZ10	- 1 2 - - -	- 0.0000	02:130:00000	02:135:86400	TRUE ---
SZ11	- - - - -	- 0.0000	02:121:00000	02:143:86400	----- ---
SZ12	- - - - 4	- 0.0000	02:121:00000	02:143:86400	0.0E MAG
SZ13	0 - - 3 4 5	0.0230	02:121:00000	02:143:86400	0.0E MAG
SZ14	- - 2 3 - -	- 0.0000	02:121:00000	02:143:86400	3.0E MAG
SZ15	- - - 3 - -	- 0.0000	02:121:00000	02:128:86400	TRUE ---
SZ15	- - - - -	- 0.0000	02:135:00000	02:142:86000	TRUE ---
SZ16	- - 2 - - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ17	0 1 - - - -	- 0.0000	02:131:00000	02:135:86400	TRUE ---
SZ18	- - - - 4	- 0.0000	02:121:00000	02:143:86400	----- ---
SZ19	0 - - - - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ20	- - - - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ21	- - 2 3 - 5	0.0000	02:121:00000	02:143:86400	TRUE ---
SZ22	- - 2 - - -	- 0.0000	02:120:00000	02:143:86400	TRUE ---
SZ23	- 1 - 3 - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ24	- - 2 - - 5	0.0000	02:121:00000	02:143:86400	TRUE ---
SZ25	- 1 2 3 - 5	0.0000	02:121:00000	02:143:86400	TRUE ---
SZ26	- - - - 5	0.0000	02:121:00000	02:143:86400	TRUE ---
SZ27	- - 2 - - -	- 0.0000	02:121:00000	02:143:86400	10.0E MAG
SZ28	0 1 2 - - 5	0.0230	02:121:00000	02:143:86400	6.0E MAG
SZ29	- - 2 - - 5	0.0000	02:121:00000	02:143:86400	TRUE ---
SZ30	0 - 2 - - 5	0.0000	02:121:00000	02:143:86400	8.0E MAG
SZ31	- 1 2 - 4 -	- 0.0000	02:121:00000	02:143:86400	----- ---
SZ32	- - - 3 4 -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ33	- 1 - 3 - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ34	- 1 - - - -	- 0.0000	02:121:00000	02:143:86400	2.0W MAG
SZ35	- 1 - - - 5	0.0000	02:121:00000	02:143:86400	TRUE ---
SZ36	- 1 - 3 4 -	- 0.0000	02:121:00000	02:143:86400	0.0E MAG
SZ37	- - - - -	- 0.0000	02:121:00000	02:143:86400	2.0E MAG
SZ38	- 1 - 3 - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ39	- - - - 4	- 0.0000	02:121:00000	02:143:86400	5.0W ---
SZ40	- 1 - 3 - -	- 0.0000	02:121:00000	02:143:86400	4.0E ---
SZ41	- - 2 - - 5	0.0230	02:121:00000	02:143:86400	4.0W ---
SZ42	- 1 - - 4 -	- 0.0000	02:121:00000	02:143:86400	8.0E ---
SZ43	- - 2 3 - -	- 0.0000	02:121:00000	02:143:86400	10.0W ---
SZ44	- 1 2 - 4 -	- 0.0000	02:121:00000	02:143:86400	4.0W ---
SZ45	0 - - 3 - -	- 0.0000	02:121:00000	02:143:86400	15.0E ---
SZ46	0 1 2 - - -	- 0.0000	02:121:00000	02:143:86400	10.0W ---
SZ47	- - - - -	- 0.0000	02:121:00000	02:143:86400	----- ---
SZ48	- 1 2 - - -	- 0.0000	02:121:00000	02:143:86400	TRUE ---
SZ49	- - - - 4	- 0.0000	02:121:00000	02:143:86400	8.0W ---
SZ50	- - - - 4	- 0.0000	02:121:00000	02:143:86400	TRUE ---

3 GPS Receivers

SITE		START	END	RECEIVER				
SZ01	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ02	A	----	P	02:121:00000	02:143:86400	LEICA CRS1000	-----	-----
SZ03	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ04	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ05	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ06	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ07	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ08	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ09	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ10	A	----	P	02:121:00000	02:128:86400	LEICA CRS1000	-----	-----
SZ10	A	----	P	02:130:00000	02:135:86400	ASHTECH Z-XII3	-----	-----
SZ11	A	----	P	02:121:00000	02:143:86400	-----	-----	-----
SZ12	A	----	P	02:121:00000	02:143:86400	LEICA CRS1000	-----	-----
SZ13	A	----	P	02:121:00000	02:143:86400	ASHTECH Z-XII3	-----	-----
SZ14	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ15	A	----	P	02:121:00000	02:128:86400	LEICA CRS1000	-----	-----
SZ15	A	----	P	02:135:00000	02:142:86000	ASHTECH UZ-12	-----	-----
SZ16	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ17	A	----	P	02:131:00000	02:135:86400	LEICA CRS1000	-----	-----
SZ18	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ19	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ20	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ21	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ22	A	----	P	02:120:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ23	A	----	P	02:121:00000	02:143:86400	LEICA CRS1000	-----	-----
SZ24	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ25	A	----	P	02:121:00000	02:143:86400	LEICA CRS1000	-----	-----
SZ26	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ27	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ28	A	----	P	02:121:00000	02:143:86400	ASHTECH Z-XII3	-----	-----
SZ29	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ30	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ31	A	----	P	02:121:00000	02:143:86400	LEICA CRS1000	-----	-----
SZ32	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ33	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ34	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ35	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ36	A	----	P	02:121:00000	02:143:86400	LEICA CRS1000	-----	-----
SZ37	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ38	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ39	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ40	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ41	A	----	P	02:121:00000	02:143:86400	ASHTECH Z-XII3	-----	-----
SZ42	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ43	A	----	P	02:121:00000	02:143:86400	LEICA CRS1000	-----	-----
SZ44	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ45	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ46	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ47	A	----	P	02:121:00000	02:143:86400	-----	-----	-----
SZ48	A	----	P	02:121:00000	02:143:86400	ASHTECH UZ-12	-----	-----
SZ49	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----
SZ50	A	----	P	02:121:00000	02:143:86400	TRIMBLE 5700	-----	-----

4 GPS Antennas

SITE		START	END	ANTENNA				
SZ01	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ02	A	----	P	02:121:00000	02:143:86400	LEIAT504	-----	-----
SZ03	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ04	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ05	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ06	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ07	A	----	P	02:121:00000	02:143:86400	ASH701945C_M	-----	-----
SZ08	A	----	P	02:121:00000	02:143:86400	ASH700718A	-----	-----
SZ09	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ10	A	----	P	02:121:00000	02:128:86400	LEIAT504	-----	-----
SZ10	A	----	P	02:130:00000	02:135:86400	ASH701945C_M	-----	-----
SZ11	A	----	P	02:121:00000	02:143:86400	-----	-----	-----
SZ12	A	----	P	02:121:00000	02:143:86400	LEIAT504	-----	-----
SZ13	A	----	P	02:121:00000	02:143:86400	ASH700228D	-----	-----
SZ14	A	----	P	02:121:00000	02:143:86400	ASH701975.01Agp	-----	-----
SZ15	A	----	P	02:121:00000	02:128:86400	LEIAT504	-----	-----
SZ15	A	----	P	02:135:00000	02:142:86000	ASH701945C_M	-----	-----
SZ16	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ17	A	----	P	02:131:00000	02:135:86400	LEIAT504	-----	-----
SZ18	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ19	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ20	A	----	P	02:121:00000	02:143:86400	ASH701945C_M	-----	-----
SZ21	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ22	A	----	P	02:120:00000	02:143:86400	ASH701945C_M	-----	-----
SZ23	A	----	P	02:121:00000	02:143:86400	LEIAT504	-----	-----
SZ24	A	----	P	02:121:00000	02:143:86400	ASH701008.01B	-----	-----
SZ25	A	----	P	02:121:00000	02:143:86400	LEIAT504	-----	-----
SZ26	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ27	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ28	A	----	P	02:121:00000	02:143:86400	ASH700228D	-----	-----
SZ29	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ30	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ31	A	----	P	02:121:00000	02:143:86400	LEIAT504	-----	-----
SZ32	A	----	P	02:121:00000	02:143:86400	ASH701008.01B	-----	-----
SZ33	A	----	P	02:121:00000	02:143:86400	ASH701945C_M	-----	-----
SZ34	A	----	P	02:121:00000	02:143:86400	ASH701975.01Agp	-----	-----
SZ35	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ36	A	----	P	02:121:00000	02:143:86400	LEIAT504	-----	-----
SZ37	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ38	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ39	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ40	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ41	A	----	P	02:121:00000	02:143:86400	ASH700228D	-----	-----
SZ42	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ43	A	----	P	02:121:00000	02:143:86400	LEIAT504	-----	-----
SZ44	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ45	A	----	P	02:121:00000	02:143:86400	ASH701975.01Agp	-----	-----
SZ46	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ47	A	----	P	02:121:00000	02:143:86400	-----	-----	-----
SZ48	A	----	P	02:121:00000	02:143:86400	ASH701945B_M	-----	-----
SZ49	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----
SZ50	A	----	P	02:121:00000	02:143:86400	TRM41249.00	-----	-----

5 Station Eccentricities

Computed station eccentricities (ground mark to antenna reference point) are given below.

SITE		START	END		ECCENTRICITY		
SZ01	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000
SZ02	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000
SZ03	A ---- P	02:121:00000	02:143:86400	UNE	0.0031	0.0000	0.0000
SZ04	A ---- P	02:121:00000	02:143:86400	UNE	0.0002	0.0000	0.0000
SZ05	A ---- P	02:121:00000	02:143:86400	UNE	0.0012	0.0000	0.0000
SZ06	A ---- P	02:121:00000	02:143:86400	UNE	0.0015	0.0000	0.0000
SZ07	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000
SZ08	A ---- P	02:121:00000	02:143:86400	UNE	0.0025	0.0000	0.0000
SZ09	A ---- P	02:121:00000	02:143:86400	UNE	0.0028	0.0000	0.0000
SZ10	A ---- P	02:121:00000	02:128:86400	UNE	0.0008	0.0000	0.0000
SZ10	A ---- P	02:130:00000	02:135:86400	UNE	0.0010	0.0000	0.0000
SZ11	A ---- P	02:121:00000	02:143:86400	UNE	0.0000	0.0000	0.0000
SZ12	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000
SZ13	A ---- P	02:121:00000	02:143:86400	UNE	0.0302	0.0000	0.0000
SZ14	A ---- P	02:121:00000	02:143:86400	UNE	0.0021	0.0000	0.0000
SZ15	A ---- P	02:121:00000	02:128:86400	UNE	0.0015	0.0000	0.0000
SZ15	A ---- P	02:135:00000	02:142:86000	UNE	0.0000	0.0000	0.0000
SZ16	A ---- P	02:121:00000	02:143:86400	UNE	0.0006	0.0000	0.0000
SZ17	A ---- P	02:131:00000	02:135:86400	UNE	0.0006	0.0000	0.0000
SZ18	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000
SZ19	A ---- P	02:121:00000	02:143:86400	UNE	0.0002	0.0000	0.0000
SZ20	A ---- P	02:121:00000	02:143:86400	UNE	0.0000	0.0000	0.0000
SZ21	A ---- P	02:121:00000	02:143:86400	UNE	0.0052	0.0000	0.0000
SZ22	A ---- P	02:120:00000	02:143:86400	UNE	0.0006	0.0000	0.0000
SZ23	A ---- P	02:121:00000	02:143:86400	UNE	0.0019	0.0000	0.0000
SZ24	A ---- P	02:121:00000	02:143:86400	UNE	0.0037	0.0000	0.0000
SZ25	A ---- P	02:121:00000	02:143:86400	UNE	0.0056	0.0000	0.0000
SZ26	A ---- P	02:121:00000	02:143:86400	UNE	0.0031	0.0000	0.0000
SZ27	A ---- P	02:121:00000	02:143:86400	UNE	0.0006	0.0000	0.0000
SZ28	A ---- P	02:121:00000	02:143:86400	UNE	0.0274	0.0000	0.0000
SZ29	A ---- P	02:121:00000	02:143:86400	UNE	0.0037	0.0000	0.0000
SZ30	A ---- P	02:121:00000	02:143:86400	UNE	0.0040	0.0000	0.0000
SZ31	A ---- P	02:121:00000	02:143:86400	UNE	0.0033	0.0000	0.0000
SZ32	A ---- P	02:121:00000	02:143:86400	UNE	0.0038	0.0000	0.0000
SZ33	A ---- P	02:121:00000	02:143:86400	UNE	0.0019	0.0000	0.0000
SZ34	A ---- P	02:121:00000	02:143:86400	UNE	0.0004	0.0000	0.0000
SZ35	A ---- P	02:121:00000	02:143:86400	UNE	0.0035	0.0000	0.0000
SZ36	A ---- P	02:121:00000	02:143:86400	UNE	0.0042	0.0000	0.0000
SZ37	A ---- P	02:121:00000	02:143:86400	UNE	0.0000	0.0000	0.0000
SZ38	A ---- P	02:121:00000	02:143:86400	UNE	0.0019	0.0000	0.0000
SZ39	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000
SZ40	A ---- P	02:121:00000	02:143:86400	UNE	0.0019	0.0000	0.0000
SZ41	A ---- P	02:121:00000	02:143:86400	UNE	0.0267	0.0000	0.0000
SZ42	A ---- P	02:121:00000	02:143:86400	UNE	0.0027	0.0000	0.0000
SZ43	A ---- P	02:121:00000	02:143:86400	UNE	0.0021	0.0000	0.0000
SZ44	A ---- P	02:121:00000	02:143:86400	UNE	0.0033	0.0000	0.0000
SZ45	A ---- P	02:121:00000	02:143:86400	UNE	0.0018	0.0000	0.0000
SZ46	A ---- P	02:121:00000	02:143:86400	UNE	0.0012	0.0000	0.0000
SZ47	A ---- P	02:121:00000	02:143:86400	UNE	0.0000	0.0000	0.0000
SZ48	A ---- P	02:121:00000	02:143:86400	UNE	0.0010	0.0000	0.0000
SZ49	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000
SZ50	A ---- P	02:121:00000	02:143:86400	UNE	0.0023	0.0000	0.0000

6 Results

Daily (UT) normal equations were generated, a final normal equation combination was then undertaken resulting in a consistent 24 day solution. Carrier phase ambiguities were resolved if possible using the QIF (Quasi-Ionosphere-Free) Algorithm with better than 80 % success rate on all baselines and up to 100 % success on short baselines. Relative velocities between stations used in the computation were assumed to zero over the 24 day campaign. Coordinates were derived by initially fixing Alice Springs (ALIC), Karratha (KARR) Ceduna (CEDU) and Perth (PERT) GPS stations to their ITRF2000 positions at epoch. In a second stage computation the derived coordinates for each of the South West Seismic Zone stations were re-introduced to a combination process using a fiducial free network constraint ('inner constraint'). Daily residuals are computed in this process. The final resulting coordinate variance-covariance were scaled based on the χ^2 statistic of the daily solutions with respect to the final combined solution.

6.1 ARGN/IGS Station Repeatability and Precision

The Root Mean Square (RMS) error of the daily estimated coordinates and the final combined formal precision estimates (1σ) of the ARGN/IGS GPS stations are given below.

SITE	RMS_{East} (mm)	RMS_{North} (mm)	RMS_{Up} (mm)	σ_{East} (mm)	σ_{North} (mm)	σ_{Up} (mm)
PERT	1.0	0.7	3.9	0.6	0.7	4.0
ALIC	1.6	2.3	5.5	0.9	0.8	4.3
YAR1	1.7	1.4	6.2	1.2	1.2	8.7
KARR	1.1	1.4	5.1	0.6	0.8	4.1
CEDU	1.8	2.1	6.3	0.9	0.8	4.7
HIL1	2.0	0.9	4.4	0.6	0.7	3.7
YAR2	1.5	1.4	5.5	0.6	0.7	3.9

6.2 SWSZ Station Repeatability and Precision

The Root Mean Square (RMS) error of the daily estimated coordinates and the final combined formal precision estimates (1σ) of the SWSZ GPS stations are given below.

SITE	RMS_{East} (mm)	RMS_{North} (mm)	RMS_{Up} (mm)	σ_{East} (mm)	σ_{North} (mm)	σ_{Up} (mm)
SZ01	1.2	0.7	1.3	1.4	1.5	7.8
SZ02	0.9	0.9	2.3	1.1	1.2	6.5
SZ03	1.2	1.1	3.3	1.0	1.2	6.3
SZ04	1.0	1.2	2.4	1.0	1.1	6.1
SZ05	0.5	0.6	6.6	1.1	1.2	6.7
SZ06	1.0	1.1	4.9	1.0	1.1	6.1
SZ07	0.6	0.7	3.3	0.6	0.7	3.7
SZ08	1.3	1.0	4.2	1.1	1.2	6.8
SZ09	1.1	0.7	1.8	1.0	1.1	6.2
SZ10	1.0	0.8	4.4	1.2	1.4	7.5
SZ12	1.1	0.9	5.3	1.1	1.2	6.4
SZ13	2.9	1.8	7.7	1.2	1.2	6.8
SZ14	0.9	1.1	4.1	1.0	1.1	6.0
SZ15	2.1	1.6	2.6	0.9	1.1	5.6
SZ16	0.9	0.7	3.6	0.9	1.1	5.8
SZ17	0.6	0.5	2.3	1.2	1.4	7.6
SZ18	1.1	0.8	3.3	1.1	1.3	7.1
SZ19	0.3	0.7	4.6	1.0	1.1	6.1
SZ20	0.5	0.7	2.9	0.6	0.7	3.9
SZ21	0.6	0.7	1.7	1.0	1.1	6.0
SZ22	0.7	0.5	2.5	1.0	1.1	7.2
SZ23	2.8	0.5	6.2	3.3	3.7	20.5
SZ24	0.6	0.8	2.1	1.0	1.2	6.2
SZ25	0.3	0.5	1.7	1.1	1.3	6.6
SZ26	0.5	0.8	1.7	1.0	1.2	5.9
SZ27	0.9	0.7	5.0	1.3	1.5	8.3
SZ28	0.9	1.2	4.9	1.0	1.2	6.7
SZ29	0.4	0.8	2.9	1.0	1.2	6.1
SZ30	0.5	0.7	3.0	1.1	1.2	6.4
SZ31	1.3	0.7	3.3	1.0	1.2	7.2
SZ32	1.0	0.6	2.2	0.9	1.1	5.7
SZ33	0.5	0.8	2.9	0.6	0.7	3.6
SZ34	0.5	0.6	4.7	1.0	1.2	6.3
SZ35	0.3	0.7	1.9	1.0	1.2	6.0
SZ36	1.2	2.8	9.4	3.4	8.3	21.8
SZ37	0.8	0.4	2.8	1.0	1.3	6.6
SZ38	0.3	0.2	1.7	0.9	1.2	5.7
SZ39	0.3	0.4	1.9	1.0	1.2	6.0
SZ40	1.1	0.6	5.1	1.1	1.3	8.8
SZ41	0.8	0.5	3.3	1.0	1.2	6.1
SZ42	0.4	0.3	3.1	0.9	1.1	5.4
SZ43	0.5	0.4	0.9	1.0	1.2	5.8
SZ44	0.6	0.3	4.2	0.9	1.1	5.6
SZ45	0.6	0.3	2.5	0.9	1.2	5.9
SZ46	0.4	0.4	4.0	0.9	1.2	5.6
SZ48	0.6	0.8	3.4	0.6	0.7	3.5
SZ49	0.7	0.5	4.0	1.0	1.2	5.9
SZ50	0.7	0.9	2.2	1.0	1.2	6.2

6.3 Final Computed Coordinates

Final computed geographic coordinates (ITRF2000 @ 02:135, GRS80 ellipsoid) are given below.

LONGITUDE	LATITUDE	HEIGHT	SITE
115 26	18.4955 -30 -14 -56.9820	252.0994	SZ01
116 2	50.8993 -30 -16 -58.3751	273.5354	SZ02
116 44	46.2908 -30 -7 -54.0907	340.3401	SZ03
116 57	47.5813 -30 -18 -48.1848	346.8963	SZ04
117 26	28.8028 -30 -20 -23.5361	331.7438	SZ05
116 10	51.3882 -30 -41 -27.0289	252.8395	SZ06
116 42	38.3297 -30 -36 -38.4831	307.2231	SZ07
117 14	37.7699 -30 -44 -59.3038	352.5656	SZ08
117 51	36.7298 -30 -47 -52.1697	356.1396	SZ09
118 23	57.9088 -30 -39 -43.4026	323.1680	SZ10
116 4	58.9849 -31 -15 -37.4486	182.5188	SZ12
116 37	17.0970 -31 -1 -48.8218	303.6589	SZ13
117 6	27.5052 -31 -5 -57.9594	316.6748	SZ14
117 57	26.5232 -31 -2 -24.4976	375.7898	SZ15
118 6	57.4734 -31 -9 -15.2392	333.6465	SZ16
116 25	33.3190 -31 -33 -19.0947	134.0393	SZ17
116 52	5.2797 -31 -29 -52.4360	266.6029	SZ18
117 22	56.8074 -31 -32 -6.7386	293.6077	SZ19
117 45	20.7587 -31 -35 -24.3519	303.8279	SZ20
118 14	58.0666 -31 -28 -25.5112	311.0133	SZ21
116 10	0.0063 -31 -58 -29.9376	144.7364	SZ22
116 46	17.1769 -31 -57 -53.1751	313.0803	SZ23
117 1	56.7012 -31 -58 -48.0644	218.3307	SZ24
117 56	43.8016 -31 -54 -14.1557	277.5698	SZ25
118 14	44.9030 -32 -3 -19.9879	315.6509	SZ26
116 15	14.2544 -32 -22 -36.8760	318.0106	SZ27
116 46	8.0007 -32 -24 -13.3488	286.1540	SZ28
117 29	30.2262 -32 -32 -34.6521	288.2168	SZ29
117 49	26.5354 -32 -28 -38.8372	298.0209	SZ30
116 1	27.2669 -32 -56 -15.8244	452.1572	SZ31
116 37	13.5442 -32 -50 -15.1787	232.2296	SZ32
117 14	27.5309 -32 -55 -15.4828	370.7064	SZ33
117 28	54.5695 -32 -53 -16.5989	390.5158	SZ34
118 36	59.9291 -32 -37 -34.6305	375.3281	SZ35
115 50	52.3483 -33 -24 -3.4949	173.7950	SZ36
116 48	53.9898 -33 -24 -58.5538	213.9165	SZ37
117 23	54.4242 -33 -19 -29.1111	283.4584	SZ38
118 10	19.7418 -33 -23 -3.7537	368.2373	SZ39
115 34	50.2912 -33 -42 -26.3765	122.5700	SZ40
116 23	31.1383 -33 -50 -38.8189	188.6789	SZ41
117 13	51.0326 -33 -44 -23.4689	347.9799	SZ42
117 31	39.9033 -33 -46 -44.4914	347.8387	SZ43
115 58	44.8374 -33 -47 -38.7774	171.6461	SZ44
116 39	20.5765 -34 -5 -7.7721	259.3983	SZ45
117 29	34.9287 -34 -16 -52.7842	217.6259	SZ46
116 58	20.1071 -34 -33 -36.0363	212.3189	SZ48
117 38	50.4788 -34 -39 -18.6605	373.3640	SZ49
117 27	52.4766 -31 -10 -5.4338	326.5092	SZ50

7 Final Comments and Recommendations

1. Antenna orientation using the 'shim' approach of this campaign may need to be modified since several field parties failed to adequately orient their antennas to true north. Incorrectly oriented antennas will introduce coordinate bias and while if the actual orientation is measured this can be corrected it is not normal or good survey practice for high precision GPS surveys. Rotating antenna mounts, that allow antenna orientation change while maintaining a constant height of antenna, may need to be considered/constructed for use in future campaigns.
2. If future campaigns utilise multiple GPS receiver/antenna types then more site re-occupations would be useful to better quantify instrumental biases. In this campaign only one station (SZ15) was reoccupied twice, initially by a Leica then Ashtech receiver. Multiple site occupations would enable actual coordinate accuracy (recoverability) to be better quantified.
3. For future campaigns the planned 7 day observation sessions should be retained, unmodelled tidal effects tend to cancel over this period. Several sites displayed jumps in their time series and while these are small the 7 day time series will average to a more reliable final result. As demonstrated in this campaign equipment failures are common and a 7 day observation session allows some insurance that all sites will have at least multiple day occupations.
4. The concept of a set of 4-5 receivers observing down the 'spine' of the network for the duration of the campaign should be retained. These 'spine' receivers improved consistency across the entire network.

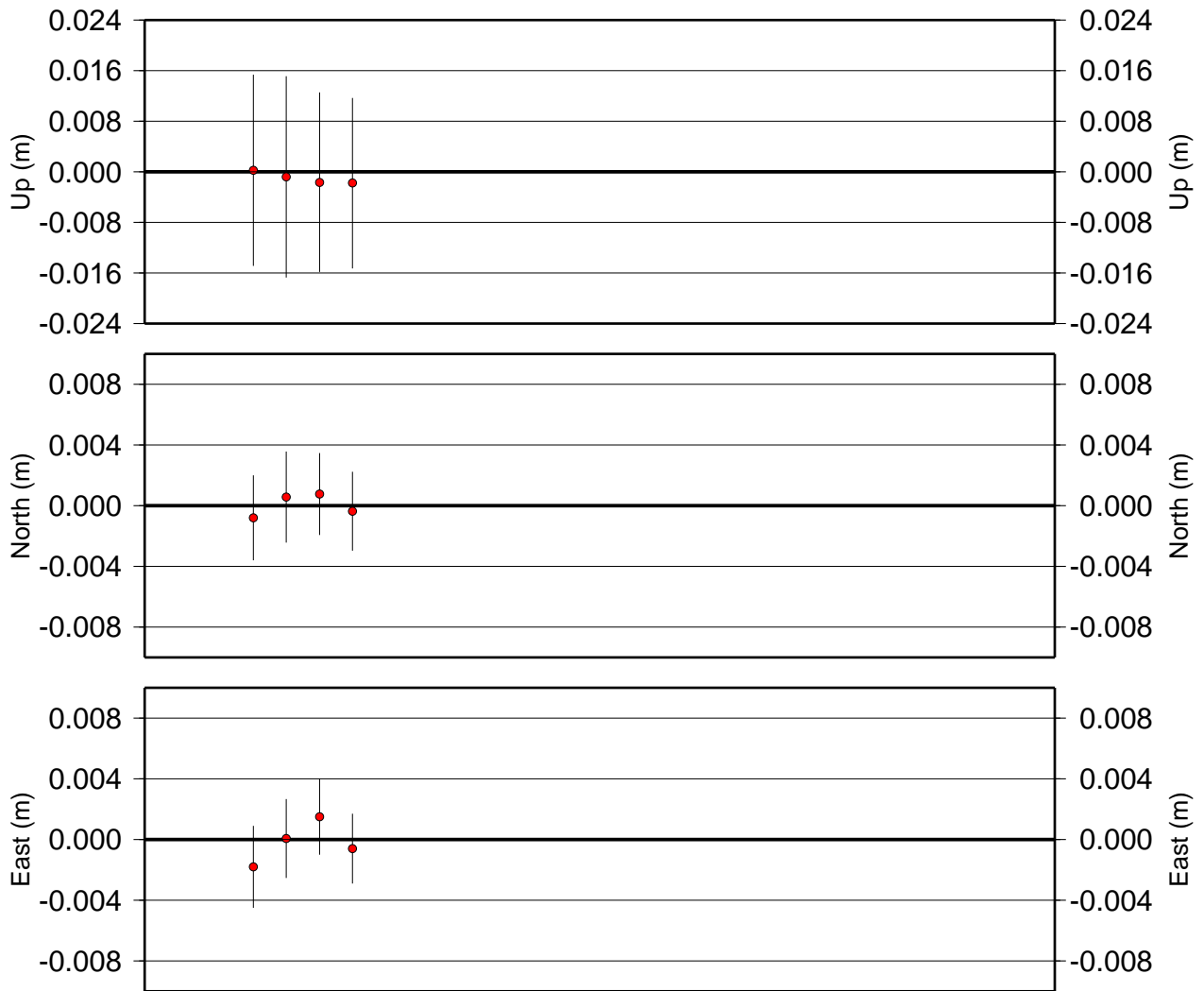
8 GPS Time Series, SWSZ Stations

1. This GPS campaign solution has been aligned to International Terrestrial Reference Frame 2000 (ITRF2000) using the latest available International GPS Service (IGS) combined cumulative solution. The reference epoch for all station coordinates is 15 May 2002.
2. Error bars are 1σ (top to bottom represents 2σ). All variance-covariances have been re-scaled to better reflect actual precision.
3. Each solution 'circle' represents a daily (UT) solution. Outliers are not shown on plots.
4. Please note the scale difference between the vertical and horizontal components.
5. POS XYZ gives the final cartesian coordinates and +/- ENU gives its formal 1σ precision in east, north and up components respectively.
6. RMS ENU gives the root mean square error of the daily coordinates in east, north and up components respectively.
7. VEL XYZ gives the final cartesian velocities, VEL ENU gives the final geodetic velocities and +/- ENU gives its formal 1σ precision in east, north and up components respectively.
8. The Time series begins 02:120 (30 April 2002) and ends on 02:143 (22 May 2002).
9. The following outliers were removed from the final solution: SZ07 (02:142), SZ13 (02:129), SZ15 (02:125), SZ24 (02:135), SZ28 (02:136), SZ36 (02:136), SZ36 (02:139), SZ41 (02:143).

8.1 SZ01

SZ01_----- AT 2002:05:15

Year



Year

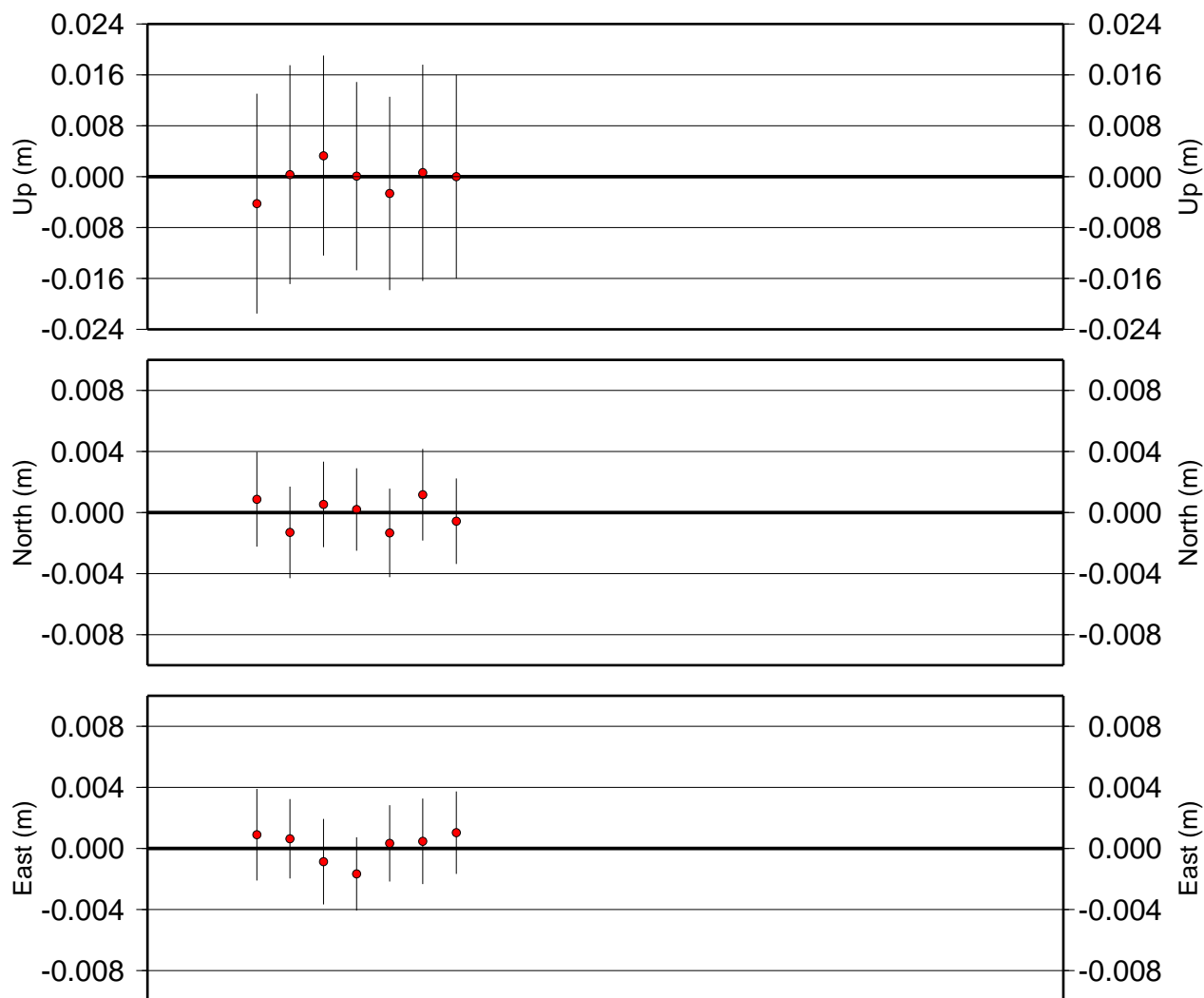
#SOLUTIONS=4 SZ01_----- AT 2002:05:15

POS	XYZ	-2368755.1756	4979954.3649	-3194390.8588	M
+/-	ENU	0.0014	0.0015	0.0078	M
RMS	ENU	0.0012	0.0007	0.0013	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.2 SZ02

SZ02_----- AT 2002:05:15

Year



Year

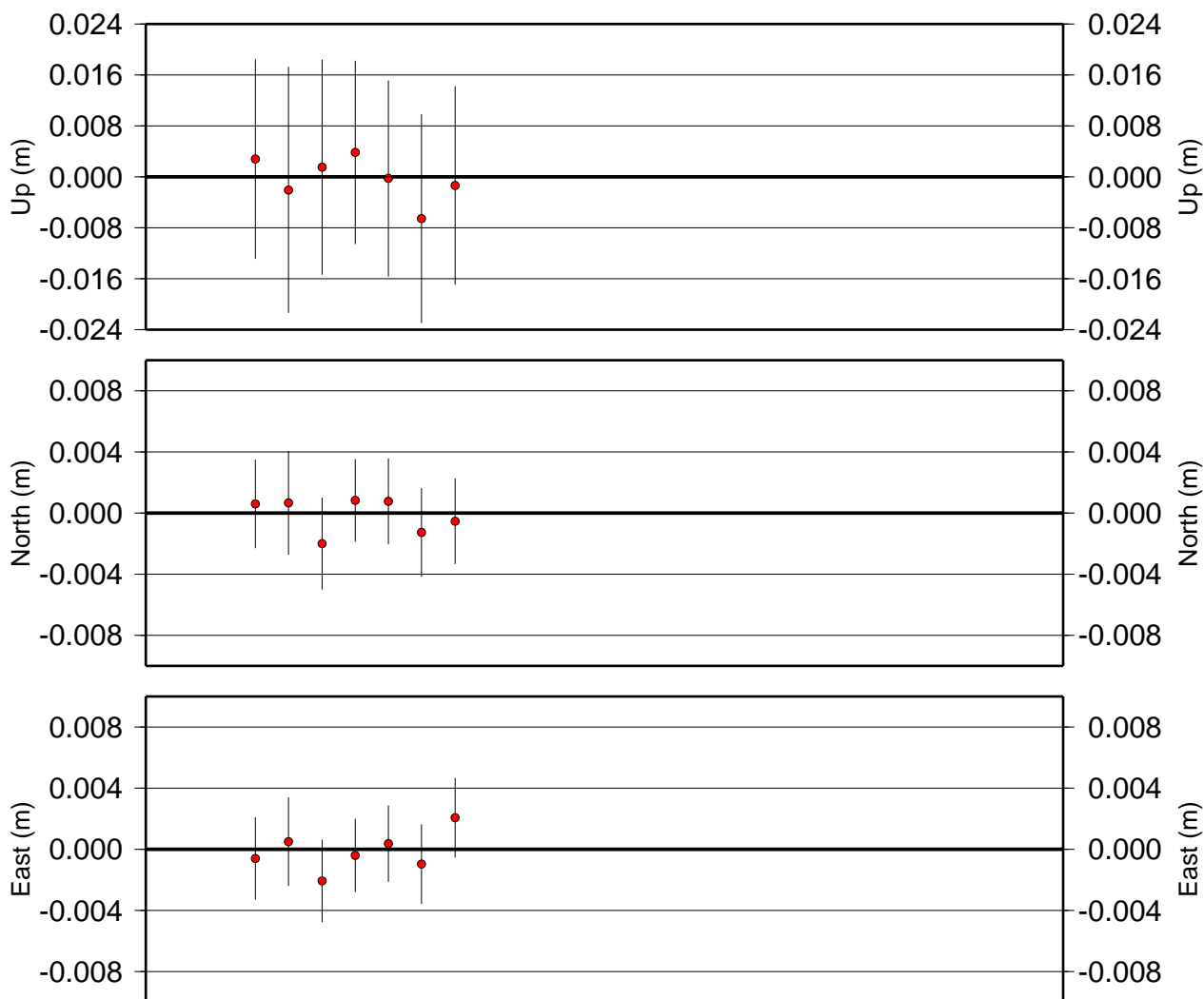
#SOLUTIONS=7 SZ02_----- AT 2002:05:15

POS	XYZ	-2420733.4410	4952819.7110	-3197630.3996	M
+/-	ENU	0.0011	0.0012	0.0065	M
RMS	ENU	0.0009	0.0009	0.0023	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.3 SZ03

SZ03_----- AT 2002:05:15

Year



Year

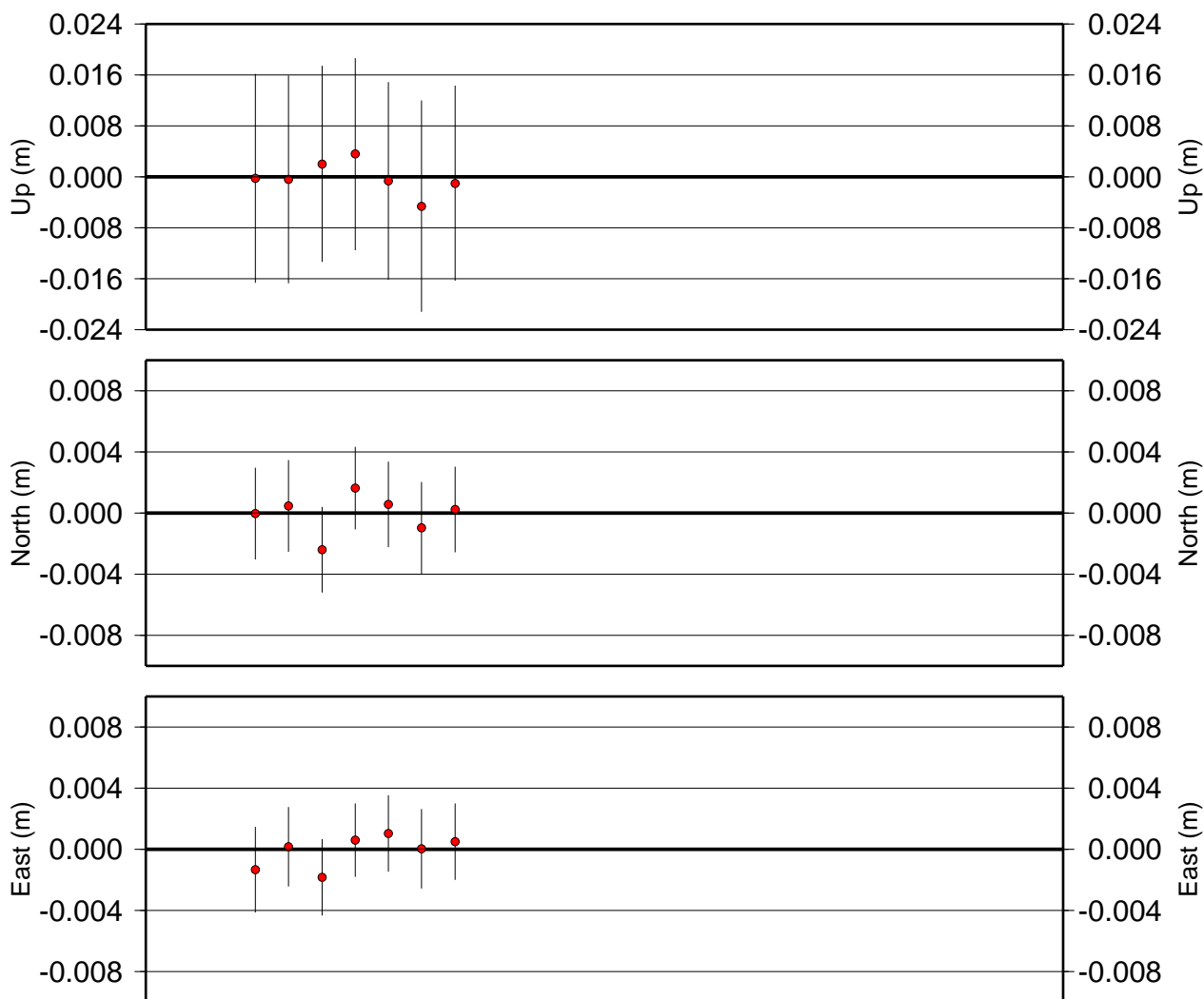
#SOLUTIONS=7 SZ03_----- AT 2002:05:15

POS	XYZ	-2484772.5647	4930513.7316	-3183178.8637	M
+/-	ENU	0.0010	0.0012	0.0063	M
RMS	ENU	0.0012	0.0011	0.0033	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.4 SZ04

SZ04_----- AT 2002:05:15

Year



Year

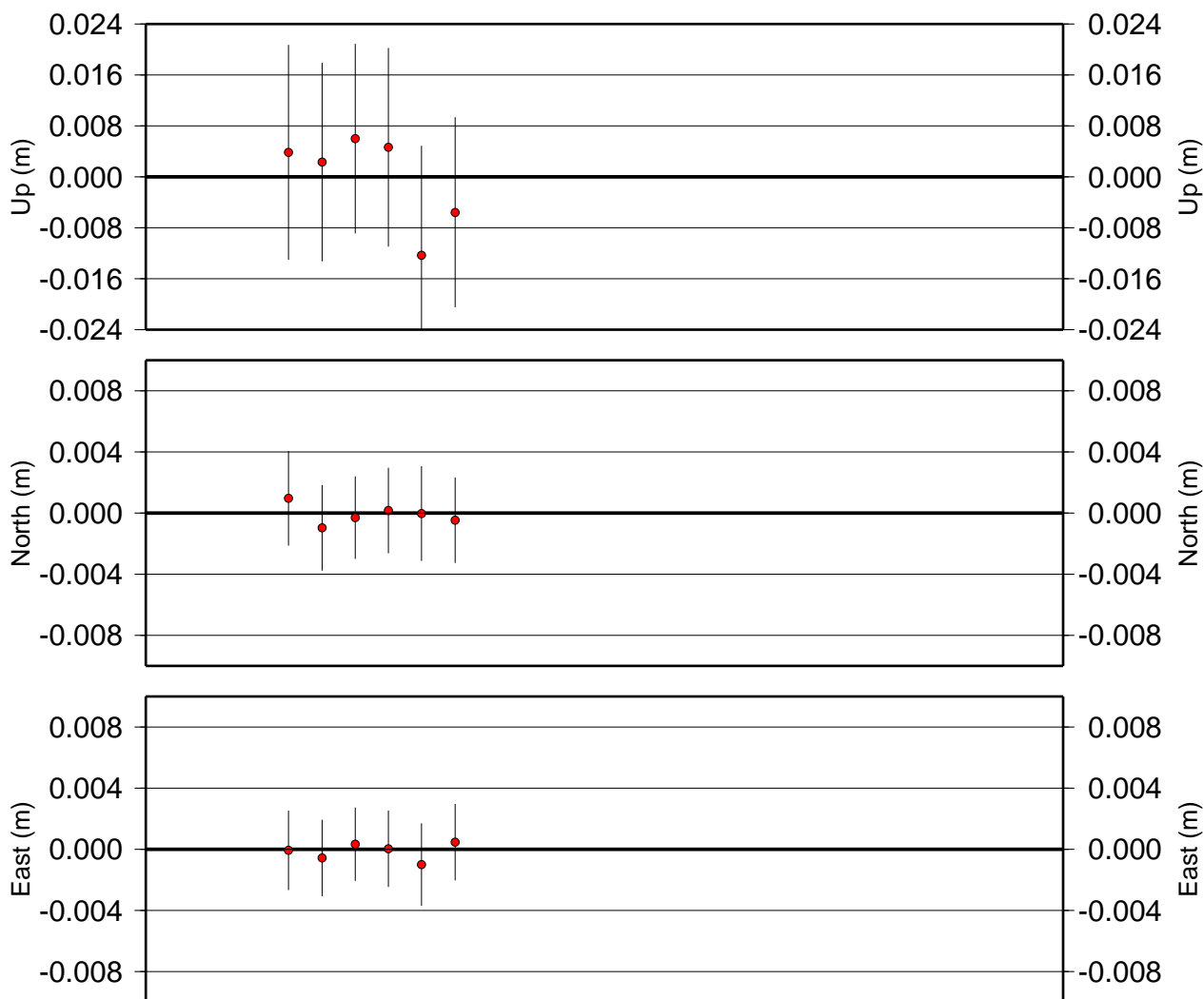
#SOLUTIONS=7 SZ04_----- AT 2002:05:15

POS	XYZ	-2498835.8235	4912034.6408	-3200587.1391	M
+/-	ENU	0.0010	0.0011	0.0061	M
RMS	ENU	0.0010	0.0012	0.0024	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.5 SZ05

SZ05_----- AT 2002:05:15

Year



Year

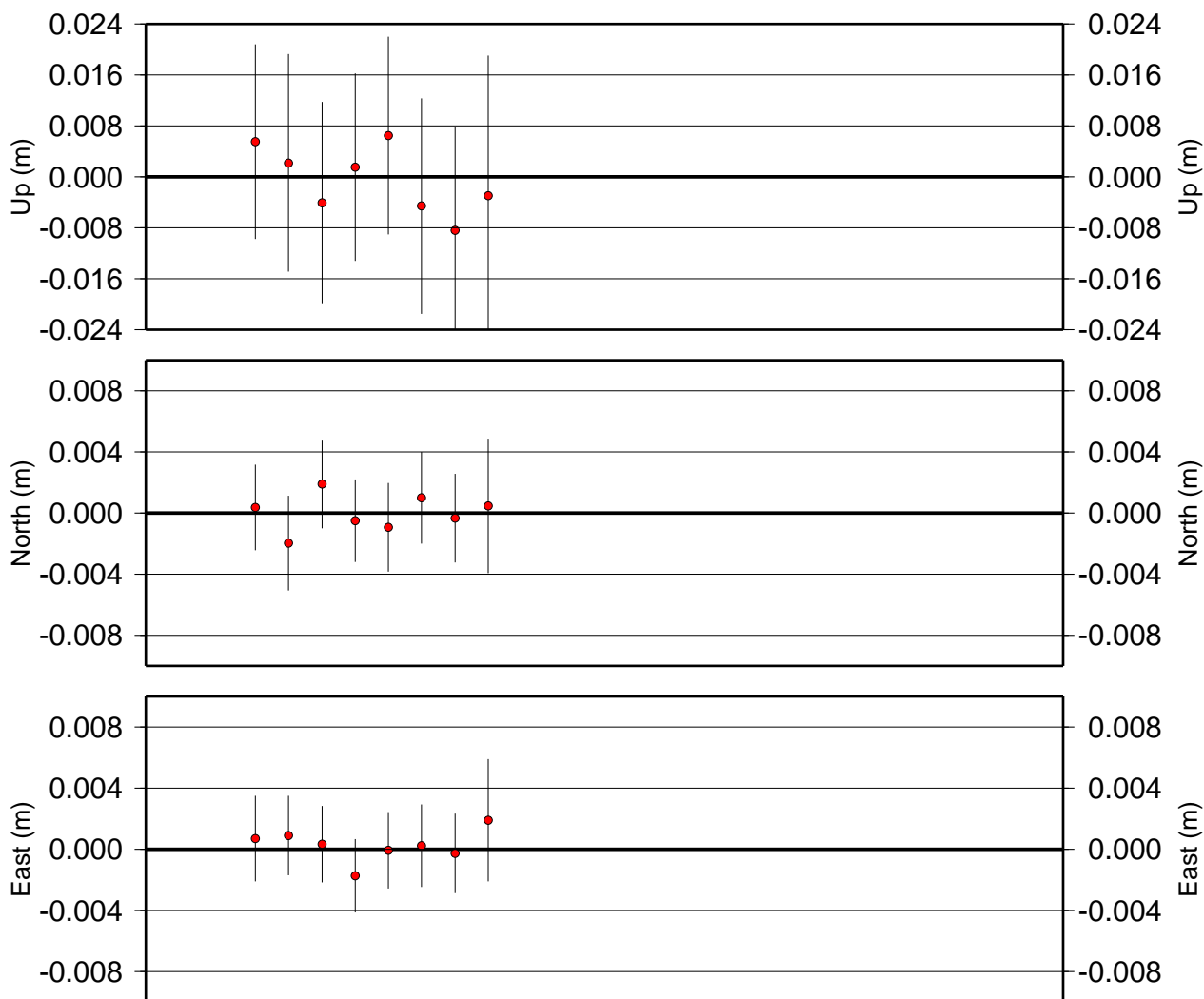
#SOLUTIONS=6 SZ05_----- AT 2002:05:15

POS	XYZ	-2539048.5852	4889684.3299	-3203114.0691	M
+/-	ENU	0.0011	0.0012	0.0067	M
RMS	ENU	0.0005	0.0006	0.0066	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.6 SZ06

SZ06_----- AT 2002:05:15

Year



Year

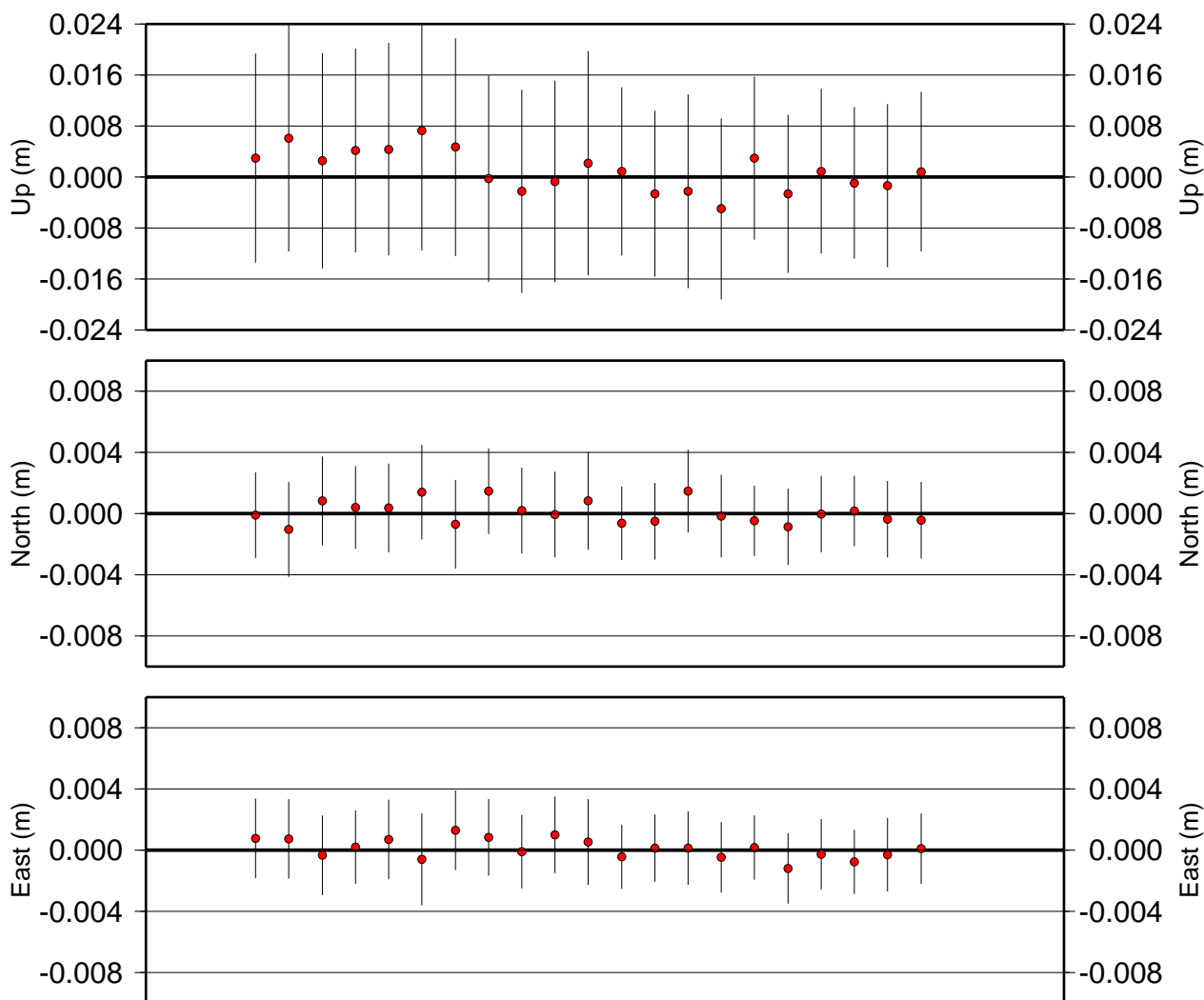
#SOLUTIONS=8 SZ06_----- AT 2002:05:15

POS	XYZ	-2422132.4207	4926559.1660	-3236595.3023	M
+/-	ENU	0.0010	0.0011	0.0061	M
RMS	ENU	0.0010	0.0011	0.0049	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.7 SZ07

SZ07_----- AT 2002:05:15

Year



Year

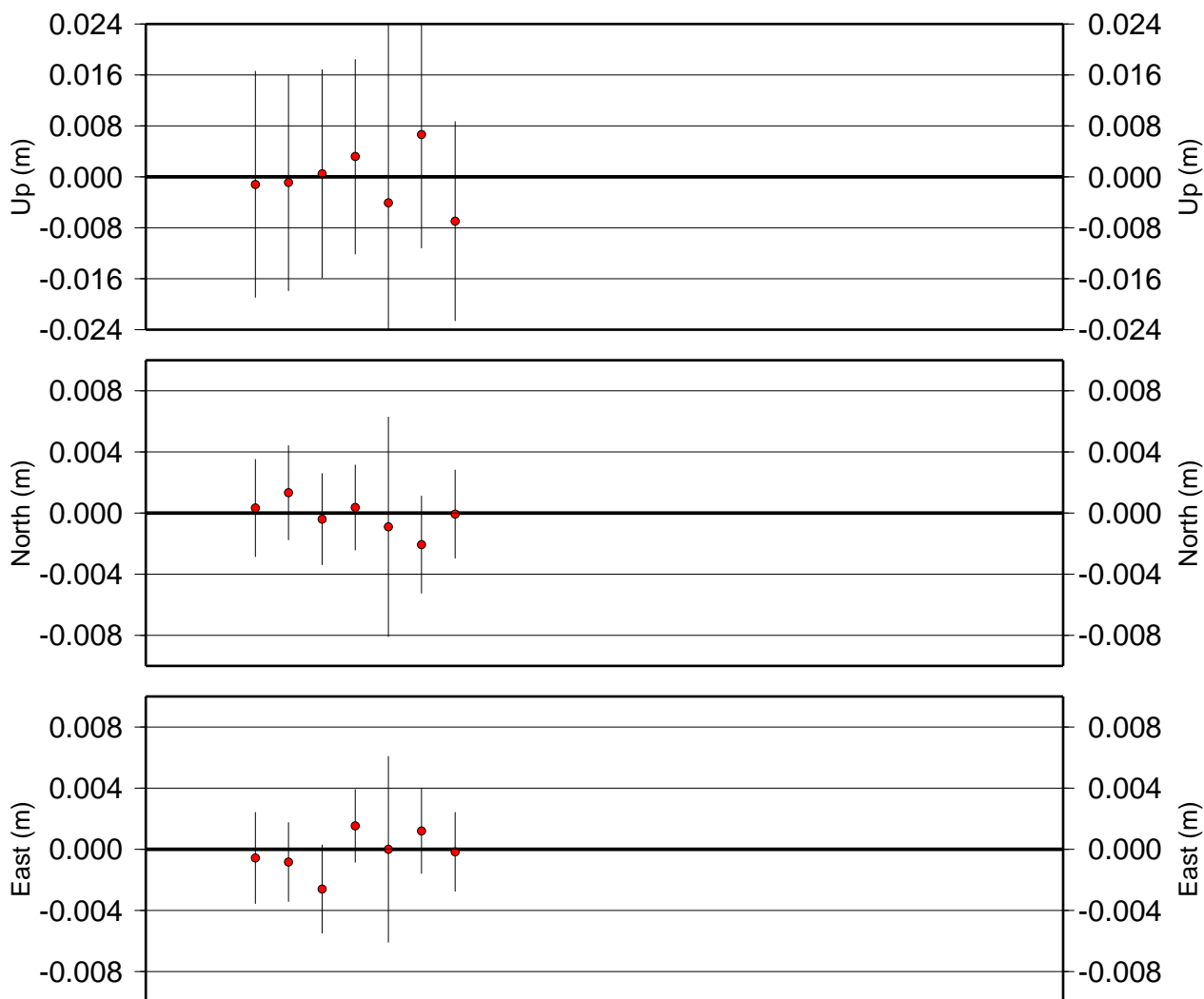
#SOLUTIONS=21 SZ07_----- AT 2002:05:15

POS	XYZ	-2469632.1721	4908044.6731	-3228978.2464	M
+/-	ENU	0.0006	0.0007	0.0037	M
RMS	ENU	0.0006	0.0007	0.0033	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.8 SZ08

SZ08_----- AT 2002:05:15

Year



Year

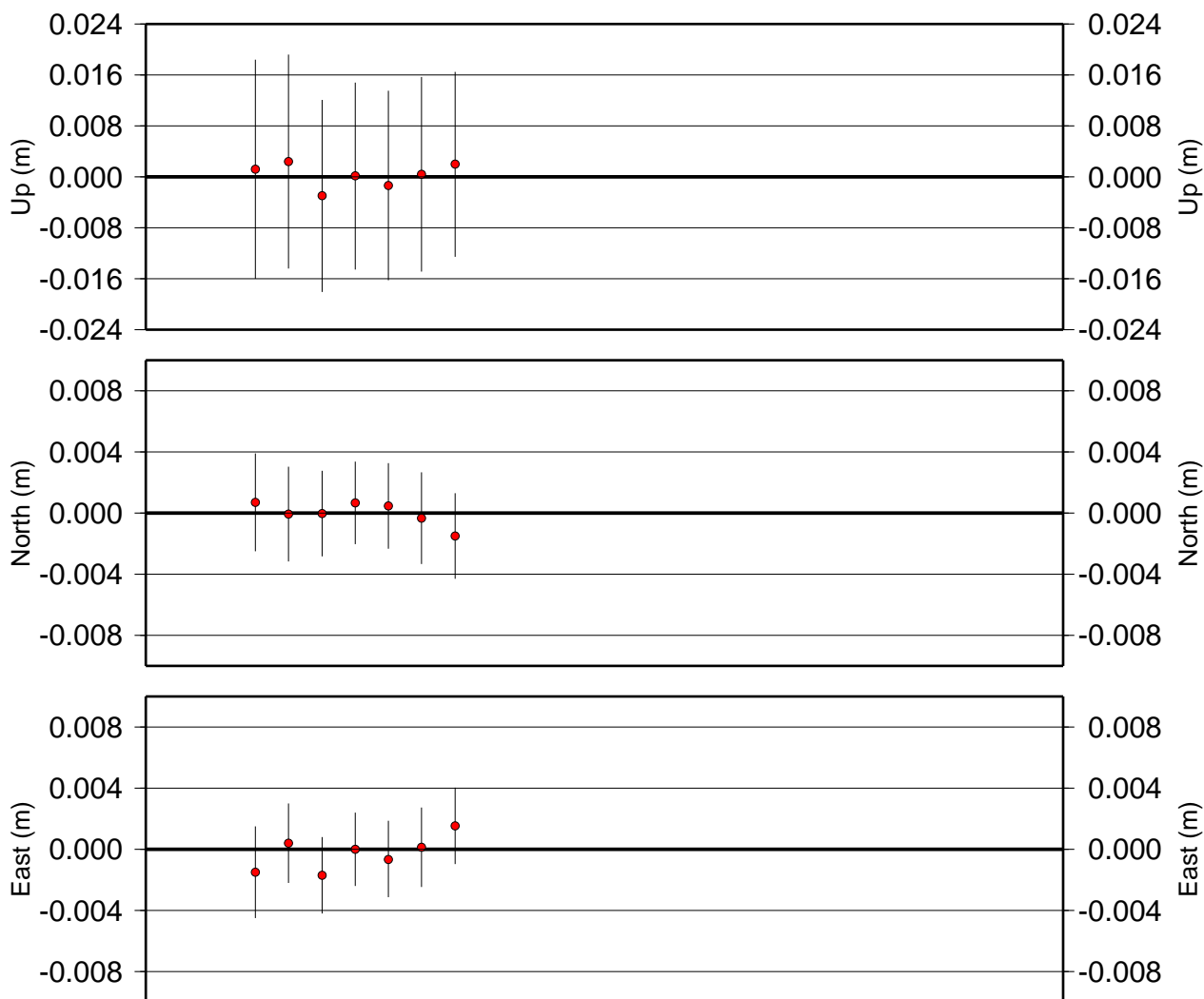
#SOLUTIONS=7 SZ08_----- AT 2002:05:15

POS	XYZ	-2511612.5703	4877888.5694	-3242266.3262	M
+/-	ENU	0.0011	0.0012	0.0068	M
RMS	ENU	0.0013	0.0010	0.0042	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.9 SZ09

SZ09_----- AT 2002:05:15

Year



Year

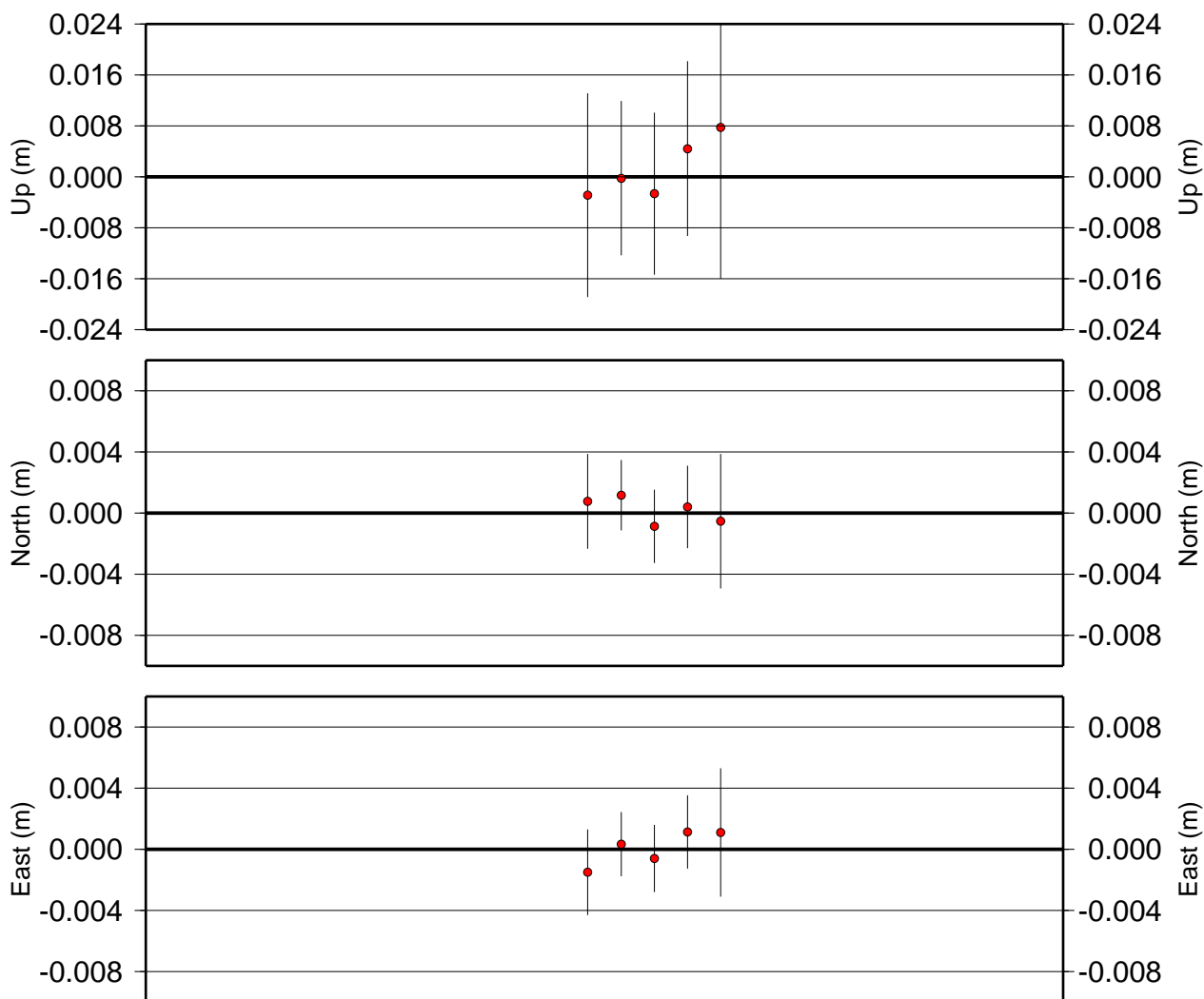
#SOLUTIONS=7 SZ09_----- AT 2002:05:15

POS	XYZ	-2562670.1618	4848181.8408	-3246842.3934	M
+/-	ENU	0.0010	0.0011	0.0062	M
RMS	ENU	0.0011	0.0007	0.0018	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.10 SZ10

SZ10_----- AT 2002:05:15

Year



Year

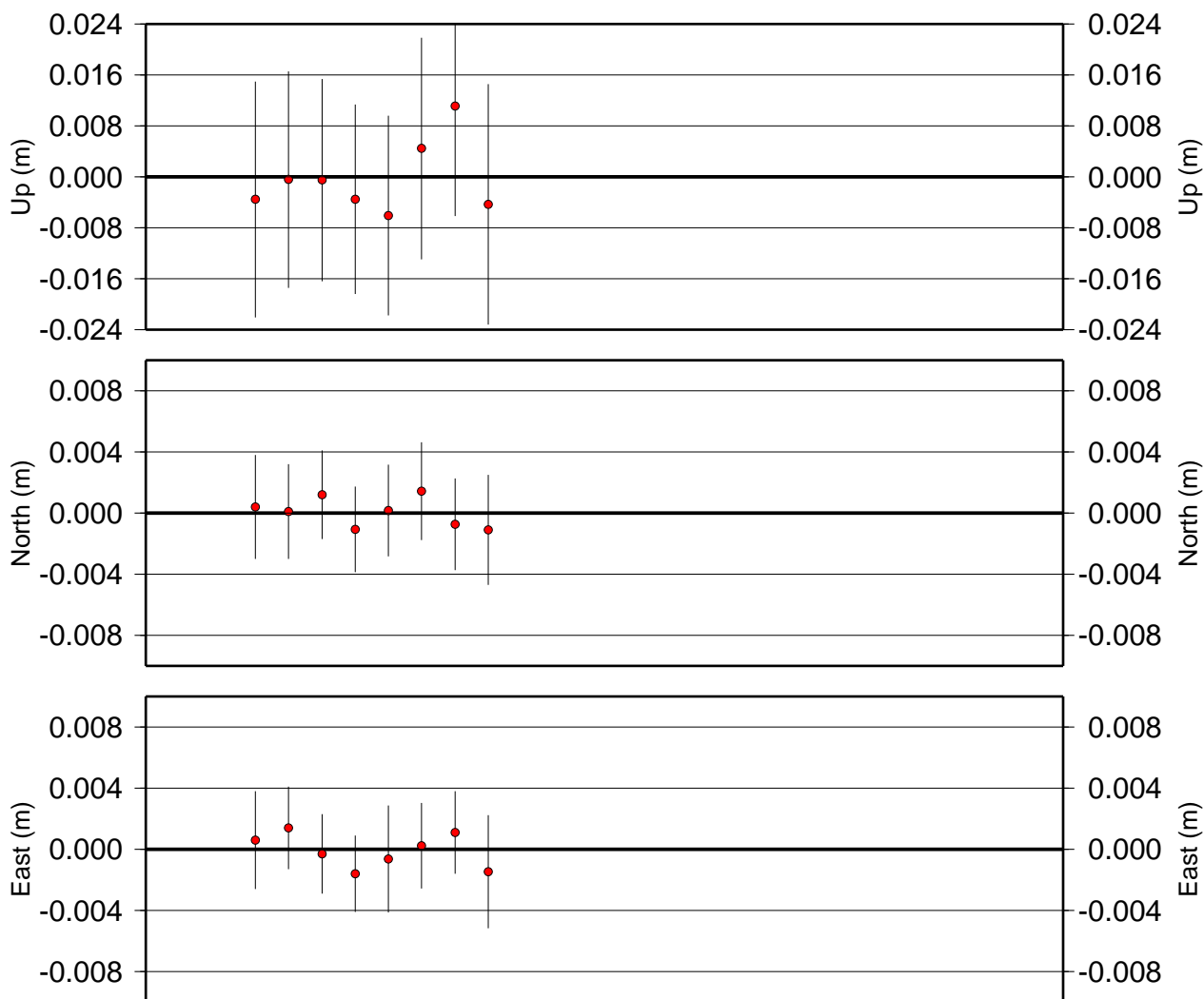
#SOLUTIONS=5 SZ10_----- AT 2002:05:15

POS	XYZ	-2611827.6139	4830591.1781	-3233886.4070	M
+/-	ENU	0.0012	0.0014	0.0075	M
RMS	ENU	0.0010	0.0008	0.0044	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.11 SZ12

SZ12_----- AT 2002:05:15

Year



Year

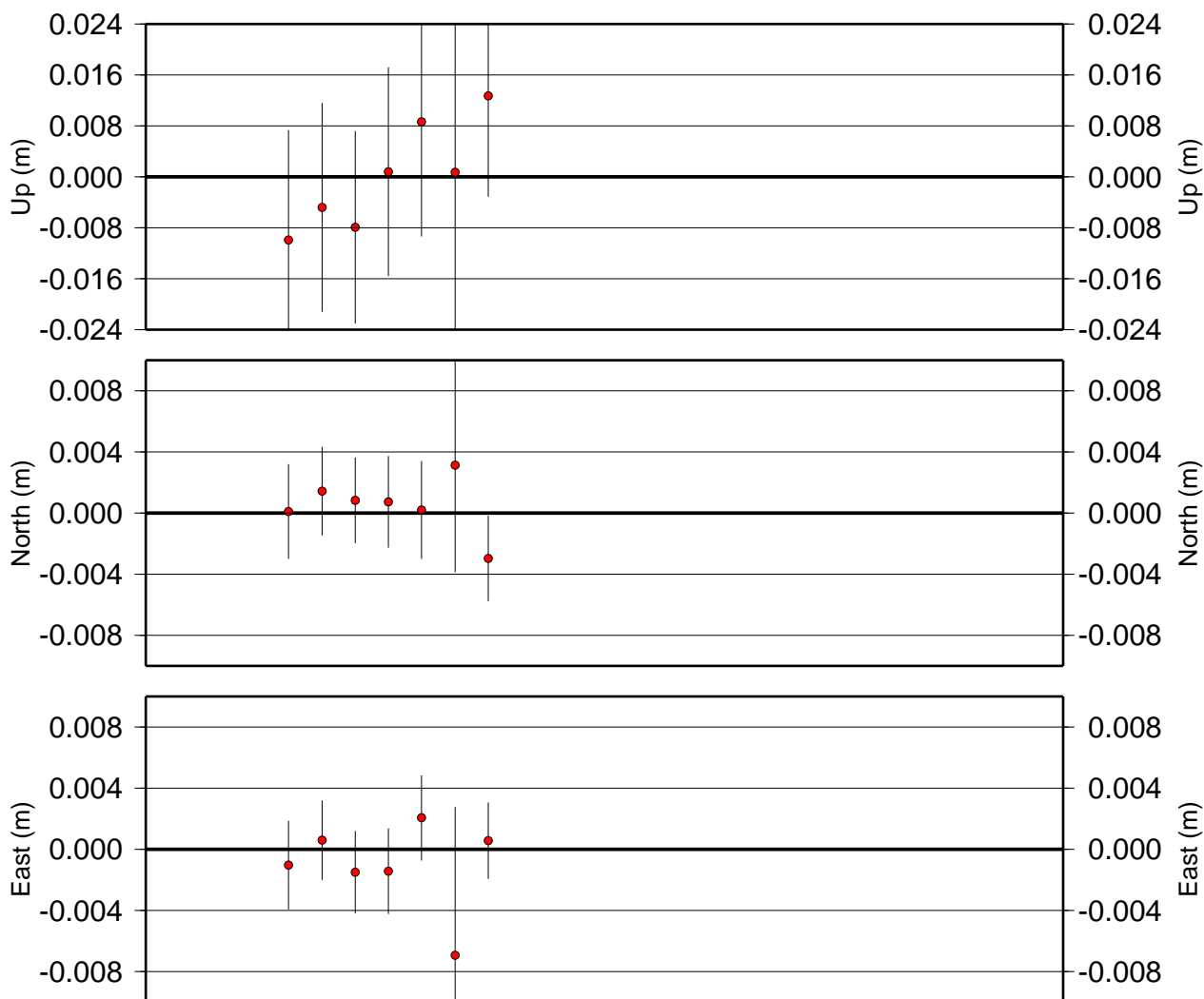
#SOLUTIONS=8 SZ12_----- AT 2002:05:15

POS	XYZ	-2399395.5738	4901445.0997	-3290701.8529	M
+/-	ENU	0.0011	0.0012	0.0064	M
RMS	ENU	0.0011	0.0009	0.0053	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.12 SZ13

SZ13_----- AT 2002:05:15

Year



Year

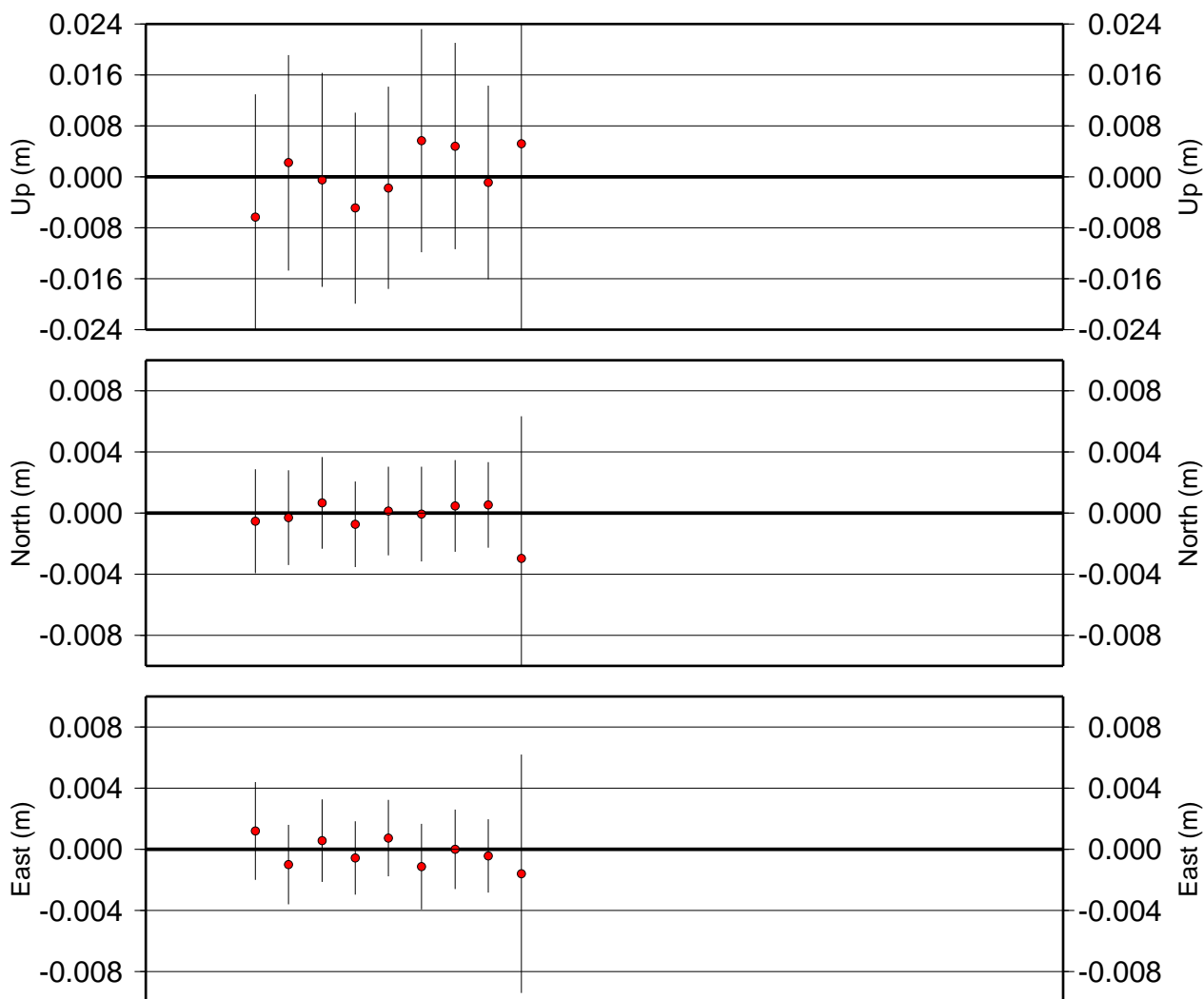
#SOLUTIONS=7 SZ13_----- AT 2002:05:15

POS	XYZ	-2451305.2186	4890576.7660	-3268922.3054	M
+/-	ENU	0.0012	0.0012	0.0068	M
RMS	ENU	0.0029	0.0018	0.0077	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.13 SZ14

SZ14_----- AT 2002:05:15

Year



Year

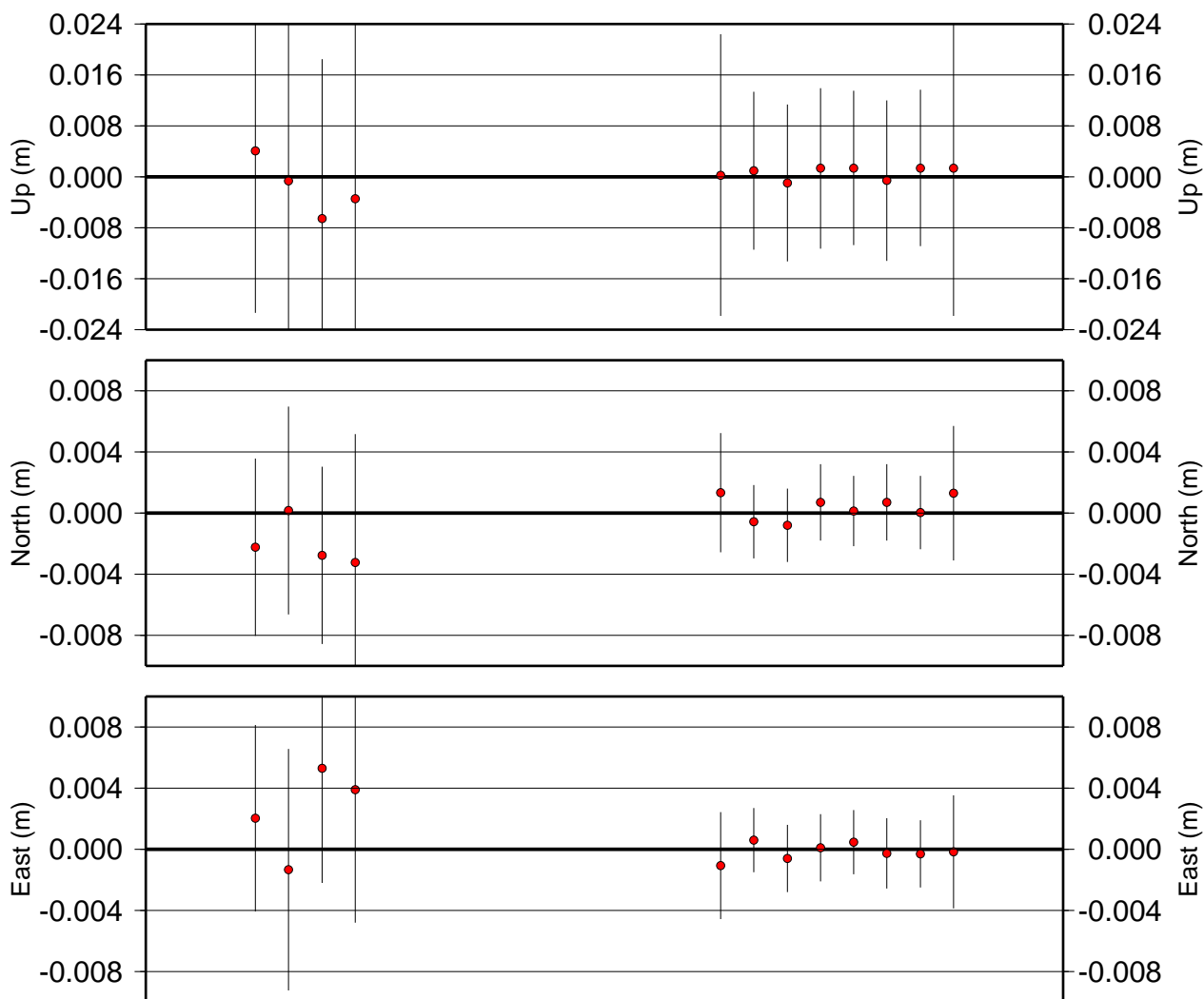
#SOLUTIONS=9 SZ14_----- AT 2002:05:15

POS	XYZ	-2490919.8778	4866084.0538	-3275501.7283	M
+/-	ENU	0.0010	0.0011	0.0060	M
RMS	ENU	0.0009	0.0011	0.0041	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.14 SZ15

SZ15_----- AT 2002:05:15

Year



Year

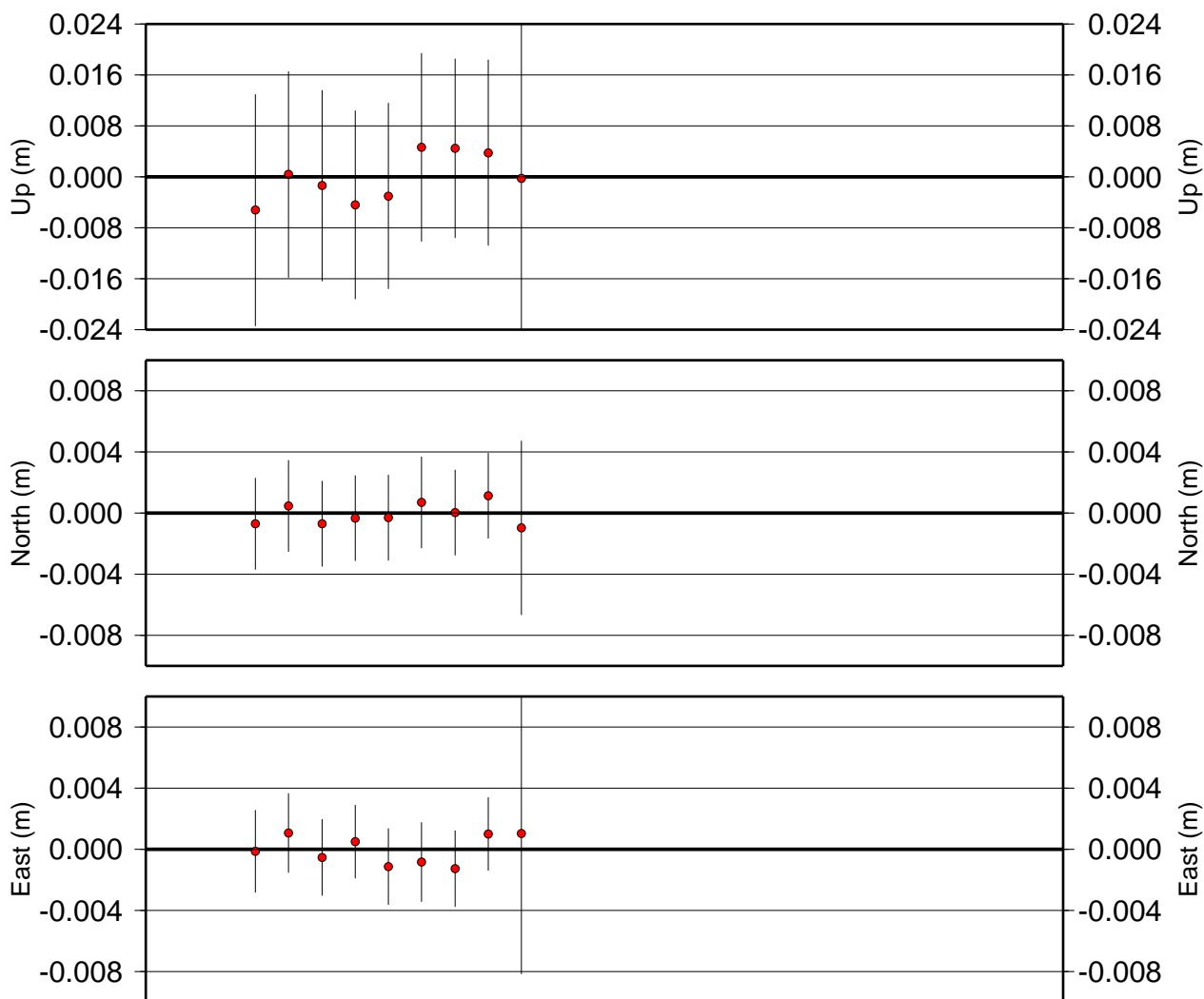
#SOLUTIONS=12 SZ15_----- AT 2002:05:15

POS	XYZ	-2564424.3482	4831650.3008	-3269900.9792	M
+/-	ENU	0.0009	0.0011	0.0056	M
RMS	ENU	0.0021	0.0016	0.0026	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.15 SZ16

SZ16_----- AT 2002:05:15

Year



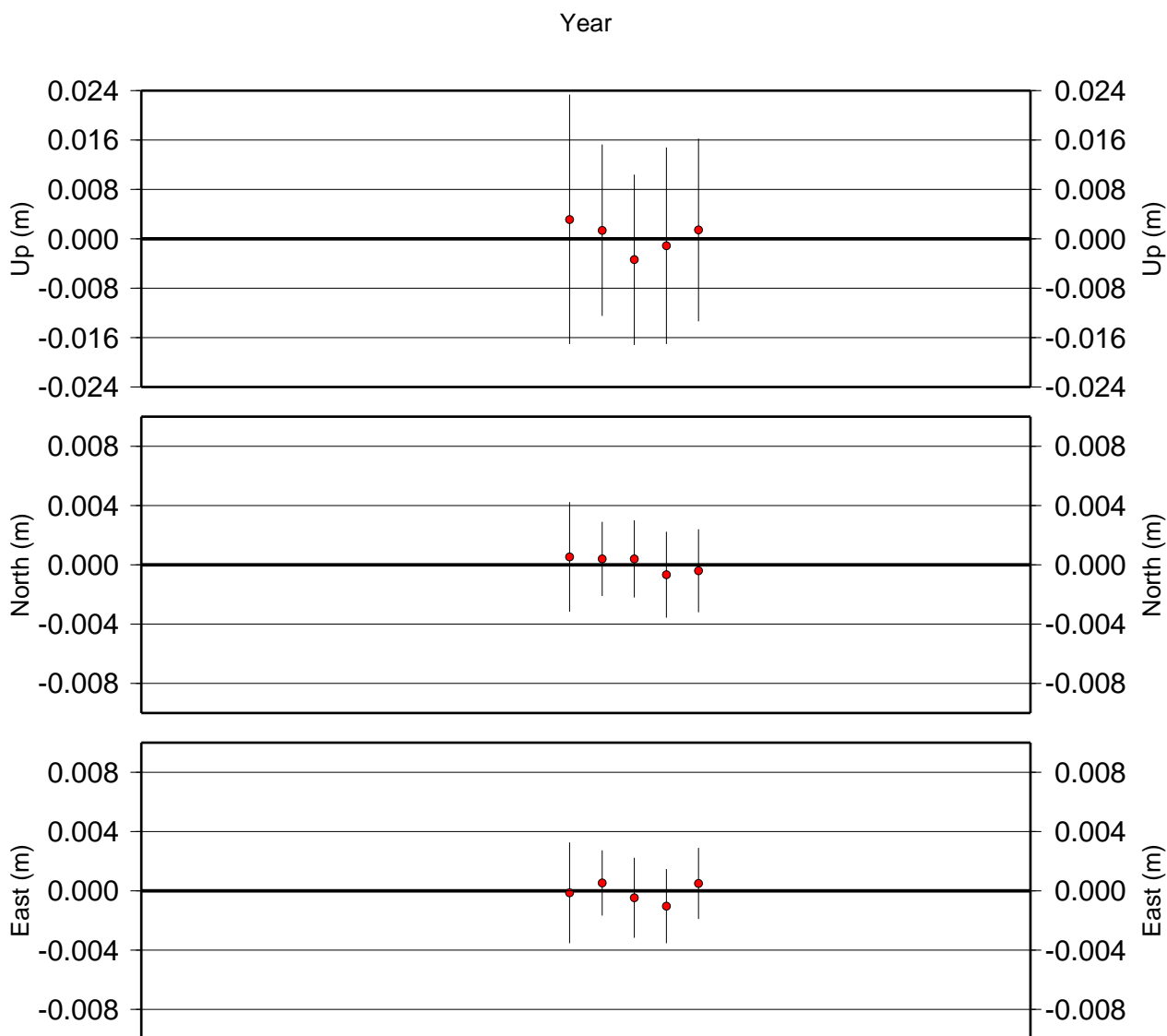
Year

#SOLUTIONS=9 SZ16_----- AT 2002:05:15

POS	XYZ	-2574692.5778	4818738.6679	-3280711.7693	M
+/-	ENU	0.0009	0.0011	0.0058	M
RMS	ENU	0.0009	0.0007	0.0036	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.16 SZ17

SZ17_----- AT 2002:05:15



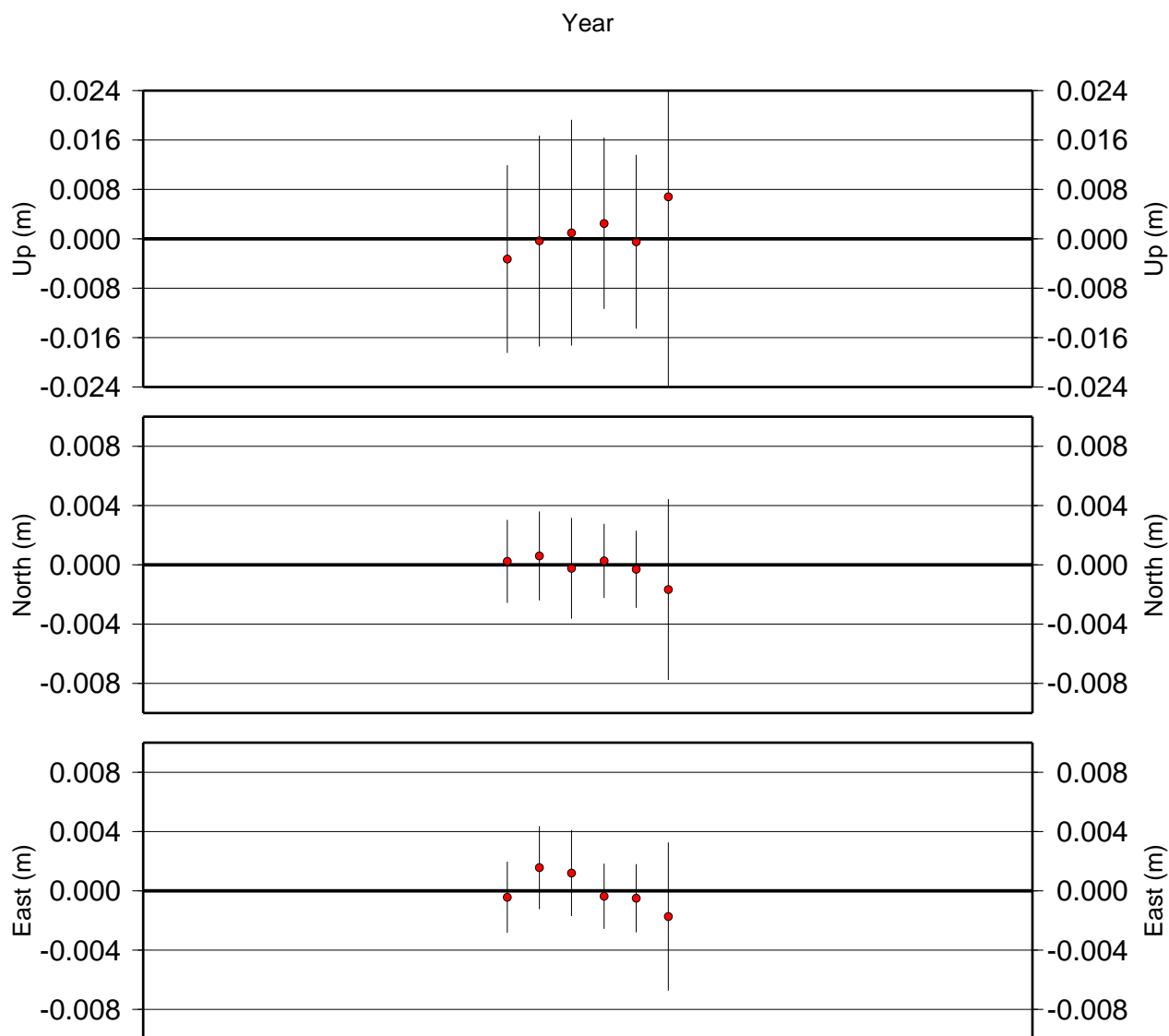
Year

#SOLUTIONS=5 SZ17_----- AT 2002:05:15

POS	XYZ	-2421081.8482	4871702.3316	-3318584.0382	M
+/-	ENU	0.0012	0.0014	0.0076	M
RMS	ENU	0.0006	0.0005	0.0023	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.17 SZ18

SZ18_----- AT 2002:05:15



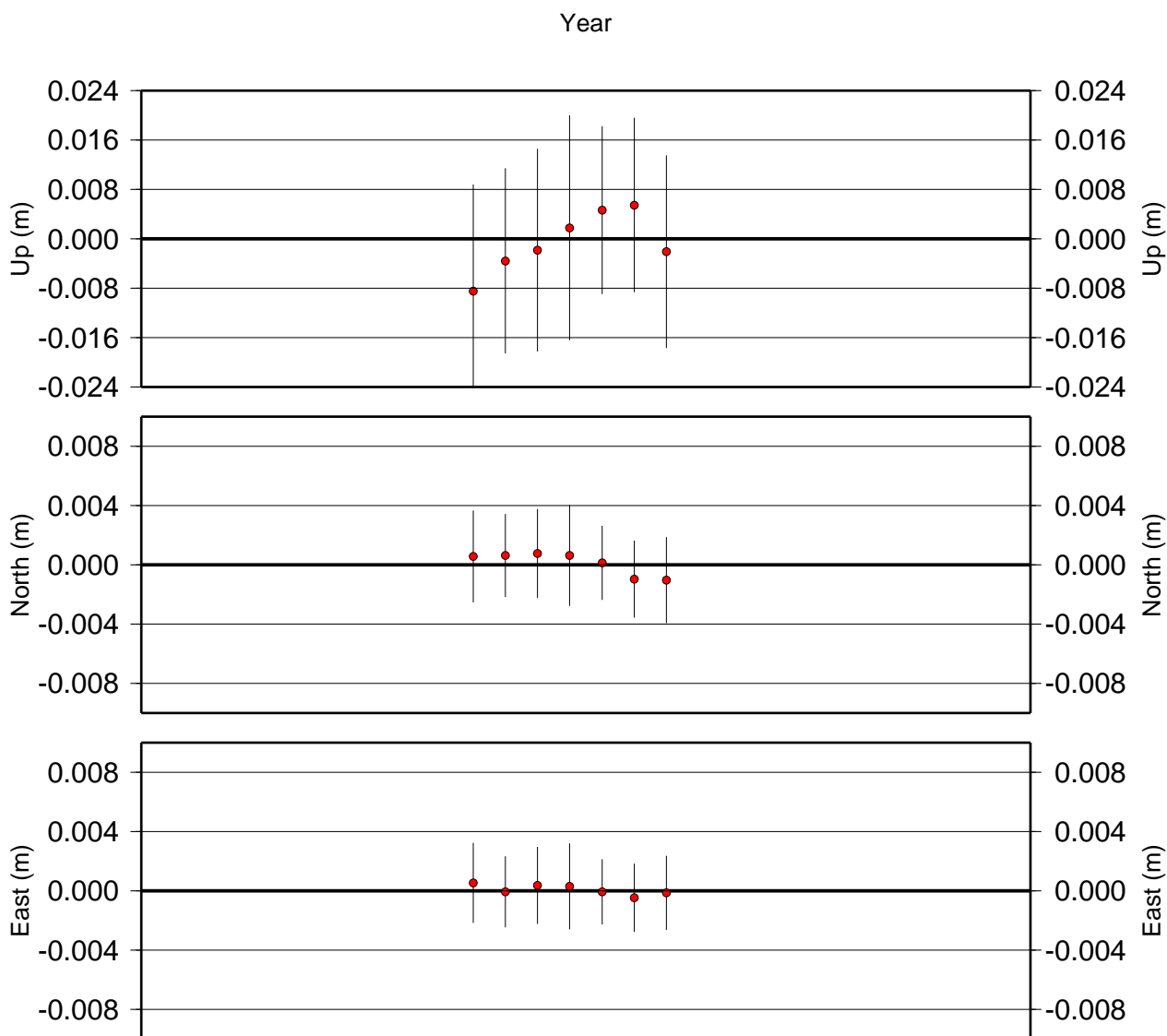
Year

#SOLUTIONS=6 SZ18_----- AT 2002:05:15

POS	XYZ	-2460164.6458	4855941.2365	-3313227.6681	M
+/-	ENU	0.0011	0.0013	0.0071	M
RMS	ENU	0.0011	0.0008	0.0033	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.18 SZ19

SZ19_----- AT 2002:05:15



Year

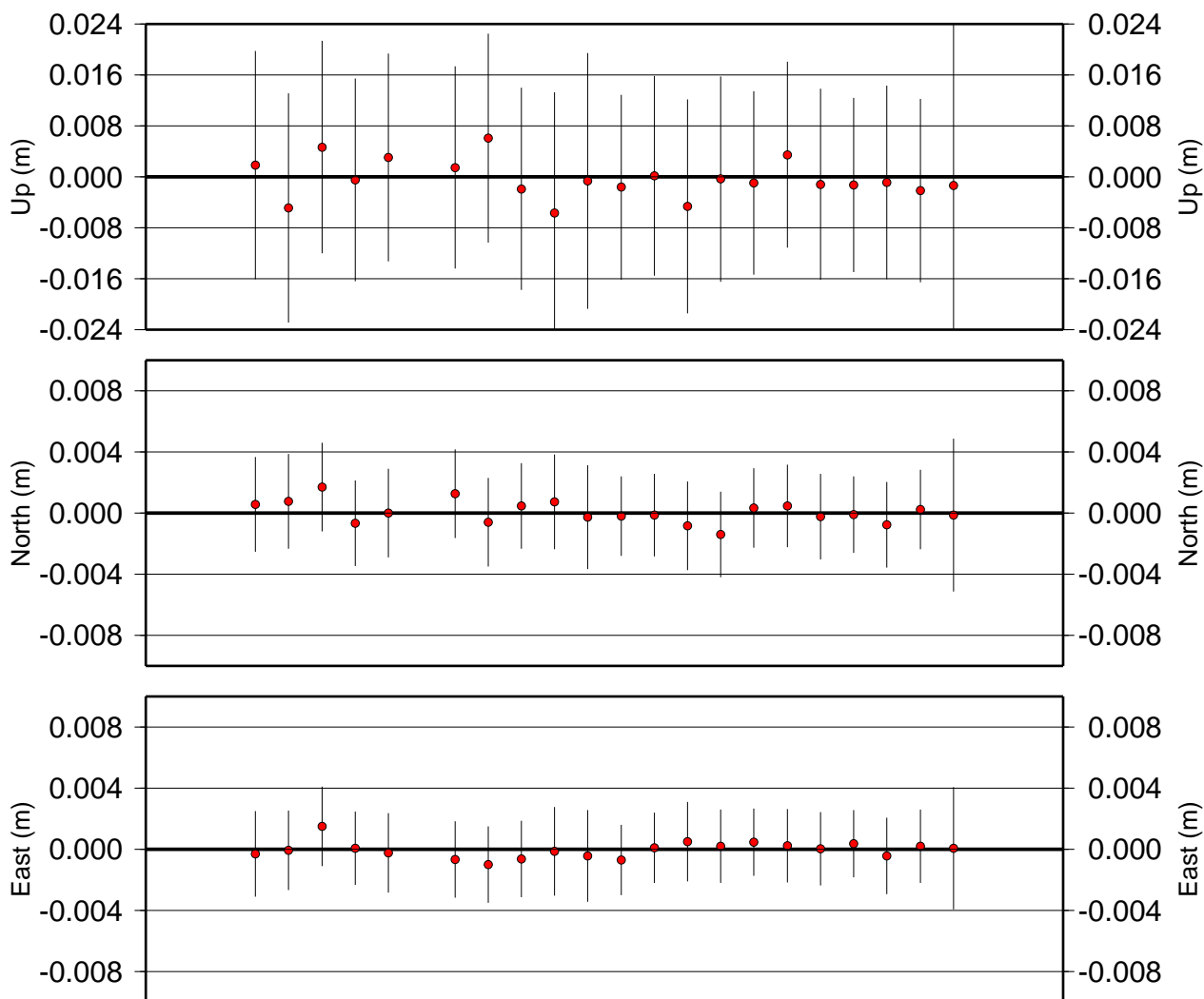
#SOLUTIONS=7 SZ19_----- AT 2002:05:15

POS	XYZ	-2502670.1413	4831762.6449	-3316768.2285	M
+/-	ENU	0.0010	0.0011	0.0061	M
RMS	ENU	0.0003	0.0007	0.0046	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.19 SZ20

SZ20_----- AT 2002:05:15

Year



Year

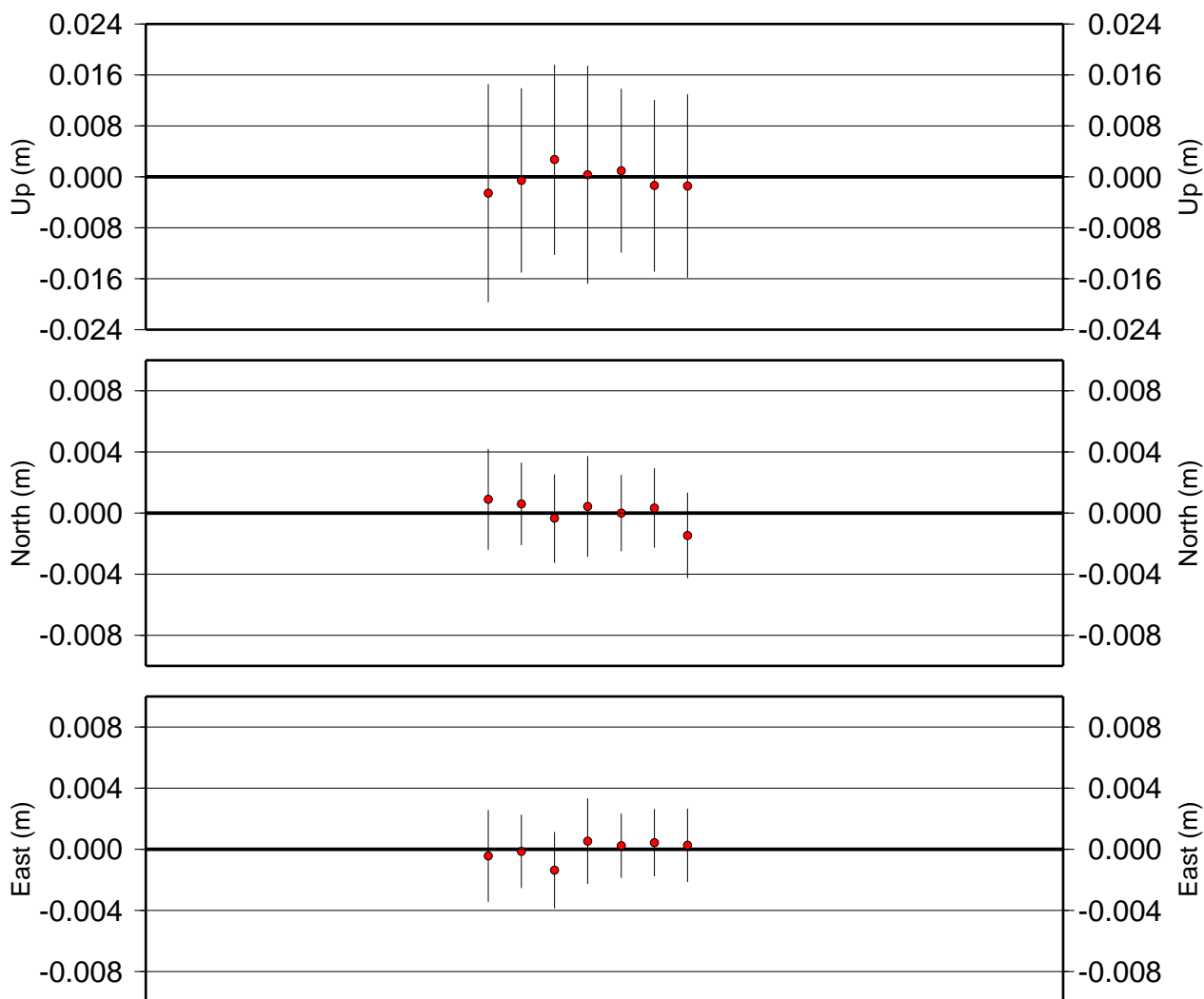
#SOLUTIONS=21 SZ20_----- AT 2002:05:15

POS	XYZ	-2532619.2480	4812541.9522	-3321959.8888	M
+/-	ENU	0.0006	0.0007	0.0039	M
RMS	ENU	0.0005	0.0007	0.0029	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.20 SZ21

SZ21_----- AT 2002:05:15

Year



Year

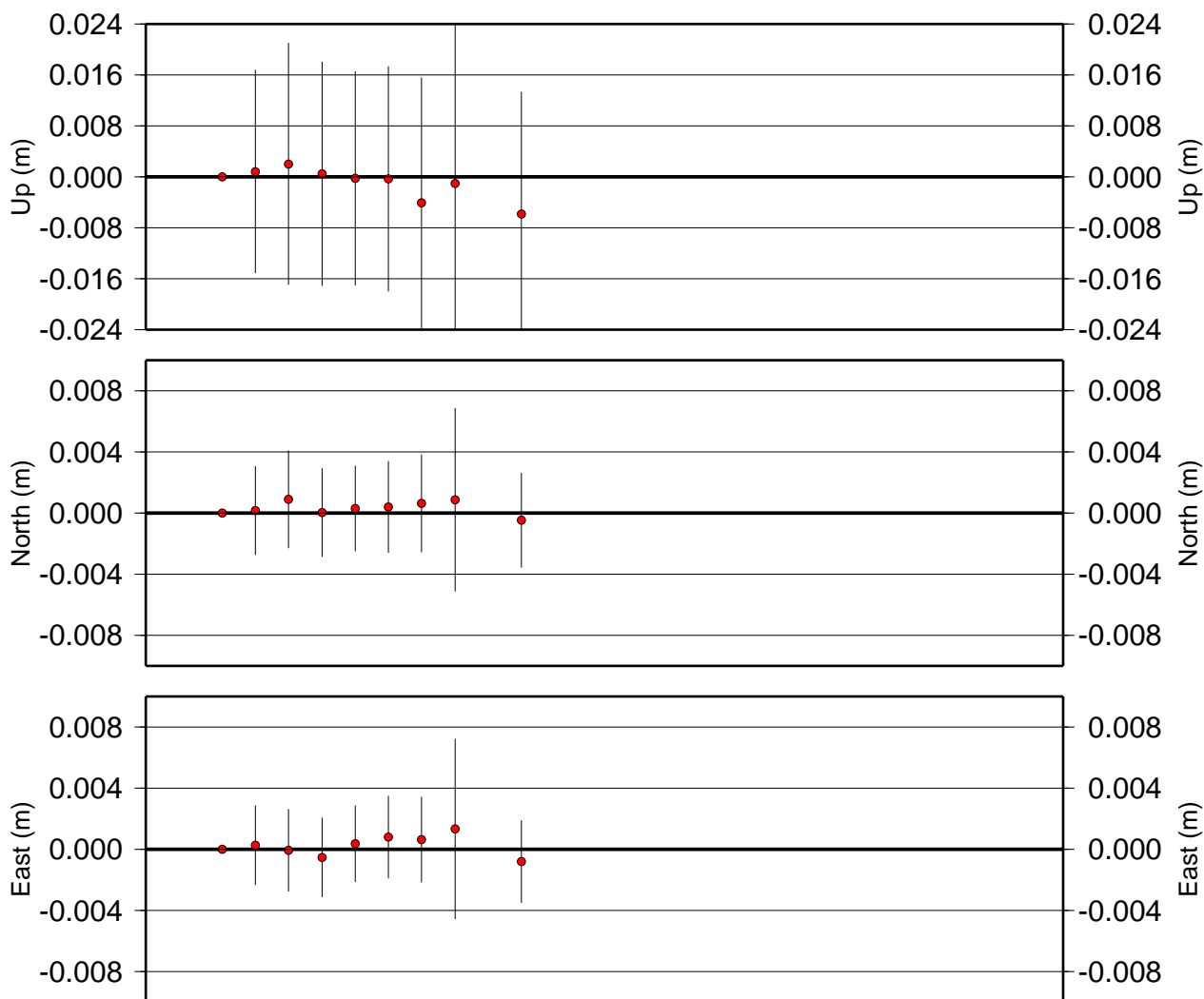
#SOLUTIONS=7 SZ21_----- AT 2002:05:15

POS	XYZ	-2577188.8341	4796489.4981	-3310967.6999	M
+/-	ENU	0.0010	0.0011	0.0060	M
RMS	ENU	0.0006	0.0007	0.0017	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.21 SZ22

SZ22_----- AT 2002:05:15

Year



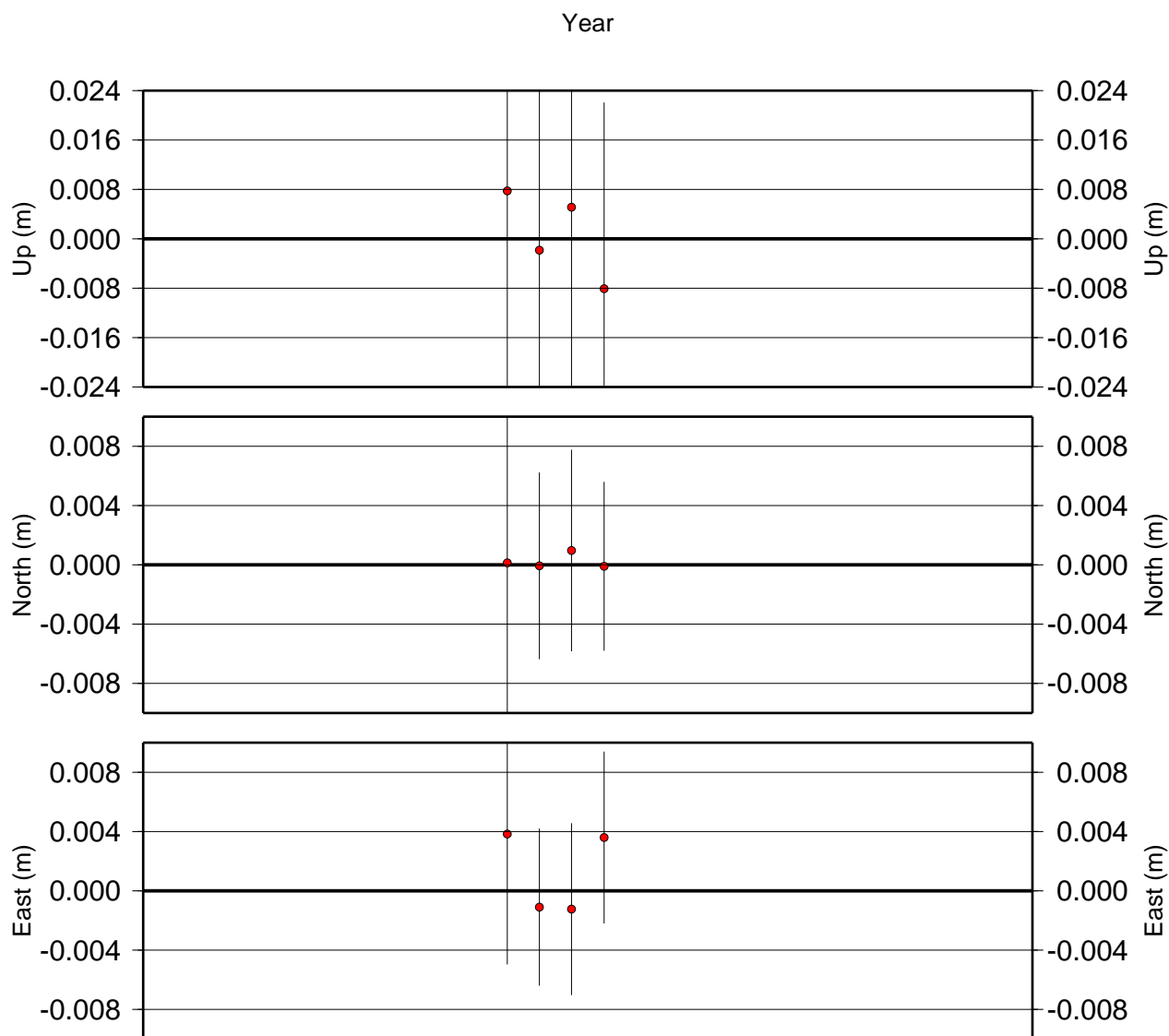
Year

#SOLUTIONS=9 SZ22_----- AT 2002:05:15

POS	XYZ	-2388214.1573	4860627.9175	-3358155.1983	M
+/-	ENU	0.0010	0.0011	0.0072	M
RMS	ENU	0.0007	0.0005	0.0025	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.22 SZ23

SZ23_----- AT 2002:05:15



Year

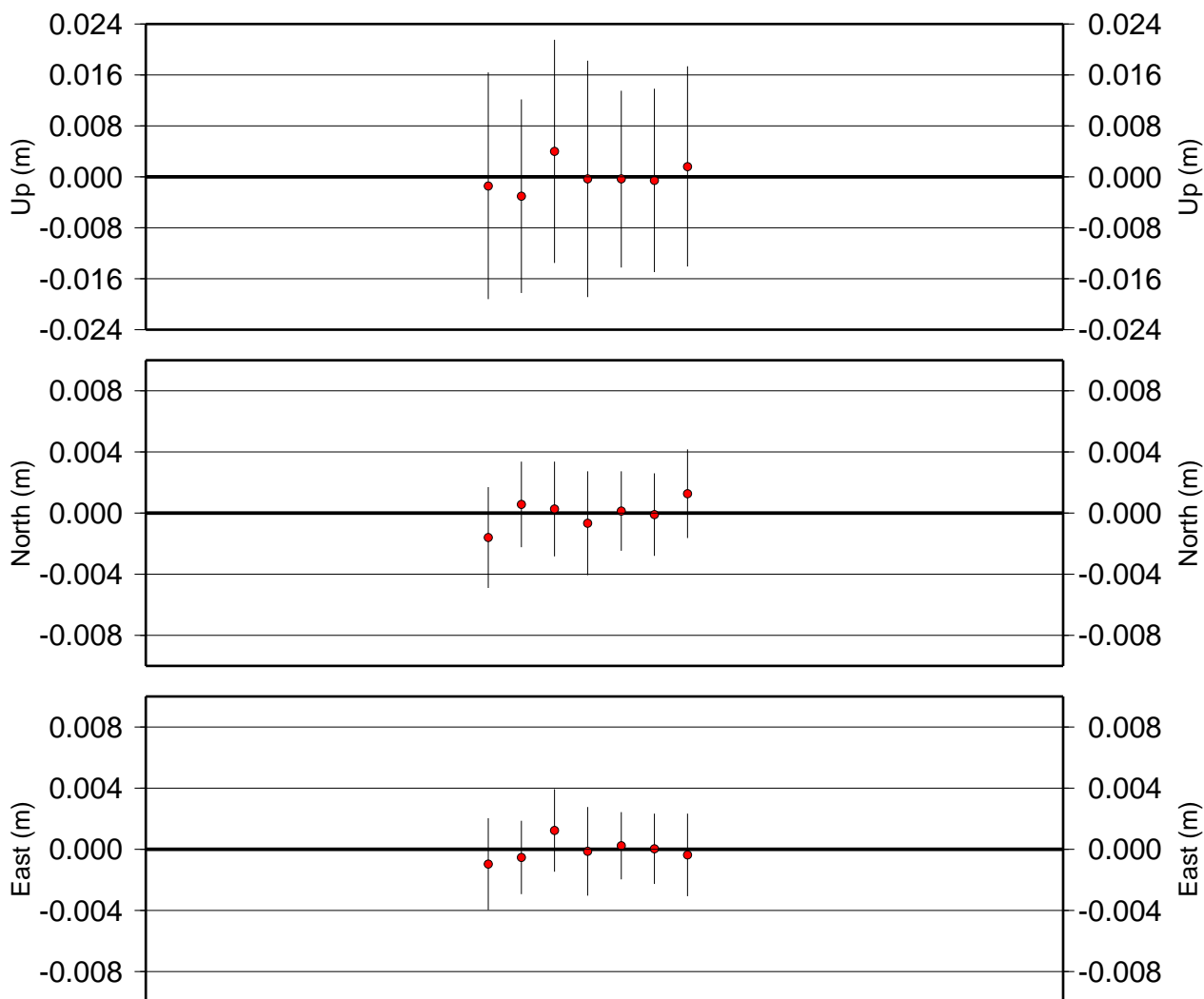
#SOLUTIONS=4 SZ23_----- AT 2002:05:15

POS	XYZ	-2439719.5620	4835812.2958	-3357283.6974	M
+/-	ENU	0.0033	0.0037	0.0205	M
RMS	ENU	0.0028	0.0005	0.0062	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.23 SZ24

SZ24_----- AT 2002:05:15

Year



Year

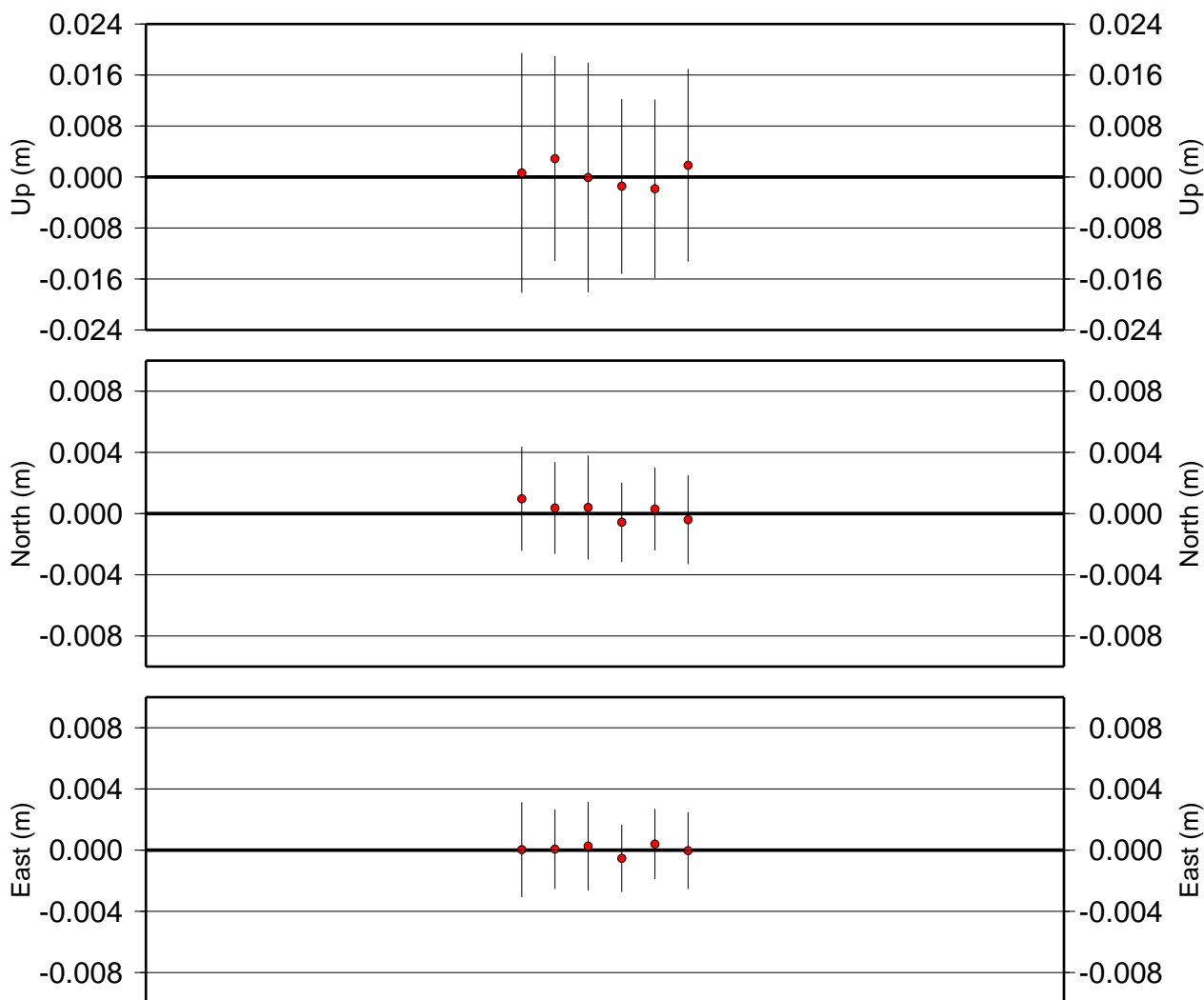
#SOLUTIONS=7 SZ24_----- AT 2002:05:15

POS	XYZ	-2461277.5932	4823780.3279	-3358667.8015	M
+/-	ENU	0.0010	0.0012	0.0062	M
RMS	ENU	0.0006	0.0008	0.0021	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.24 SZ25

SZ25_----- AT 2002:05:15

Year



Year

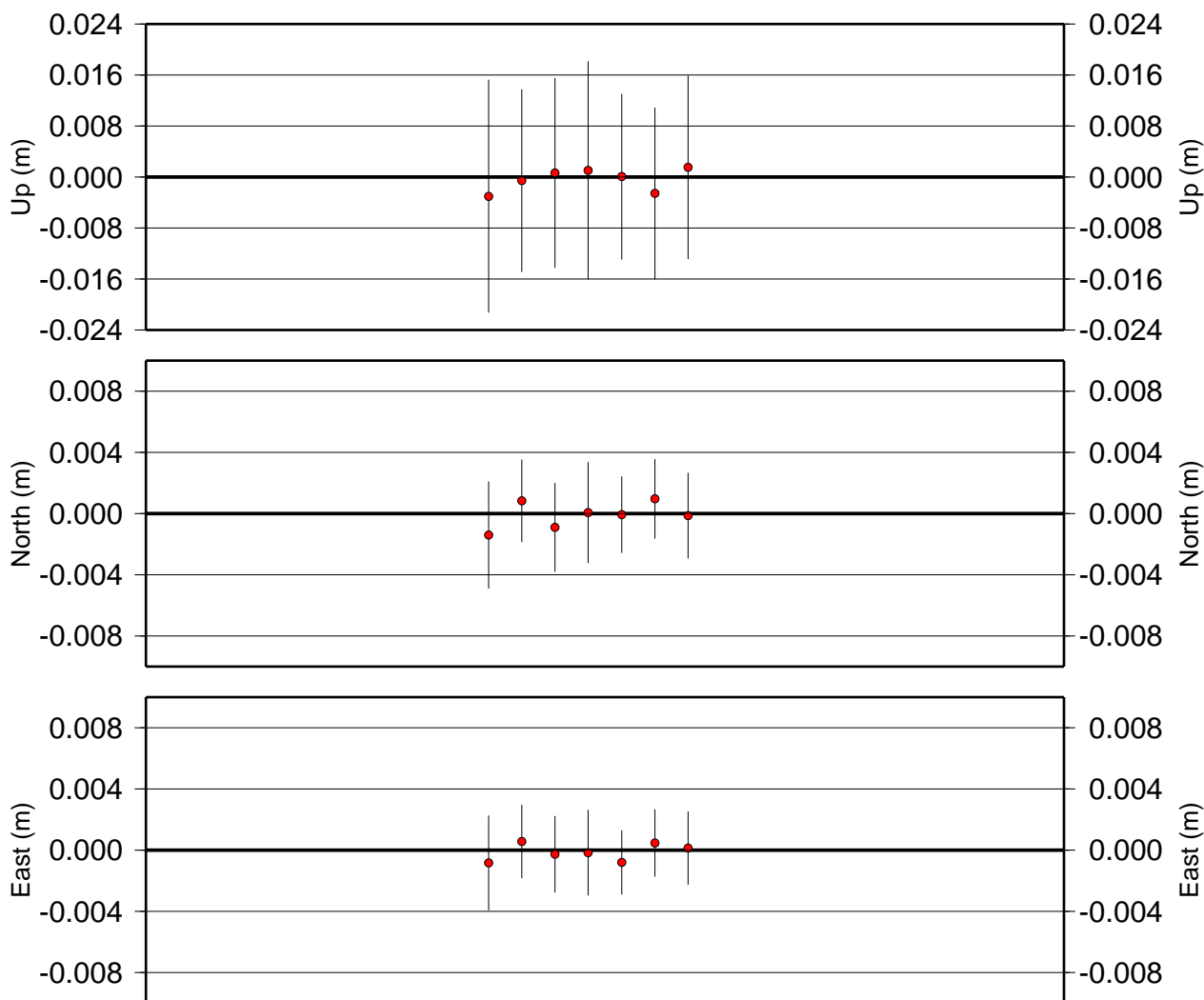
#SOLUTIONS=6 SZ25_----- AT 2002:05:15

POS	XYZ	-2539950.4956	4787933.4419	-3351539.5031	M
+/-	ENU	0.0011	0.0013	0.0066	M
RMS	ENU	0.0003	0.0005	0.0017	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.25 SZ26

SZ26_----- AT 2002:05:15

Year



Year

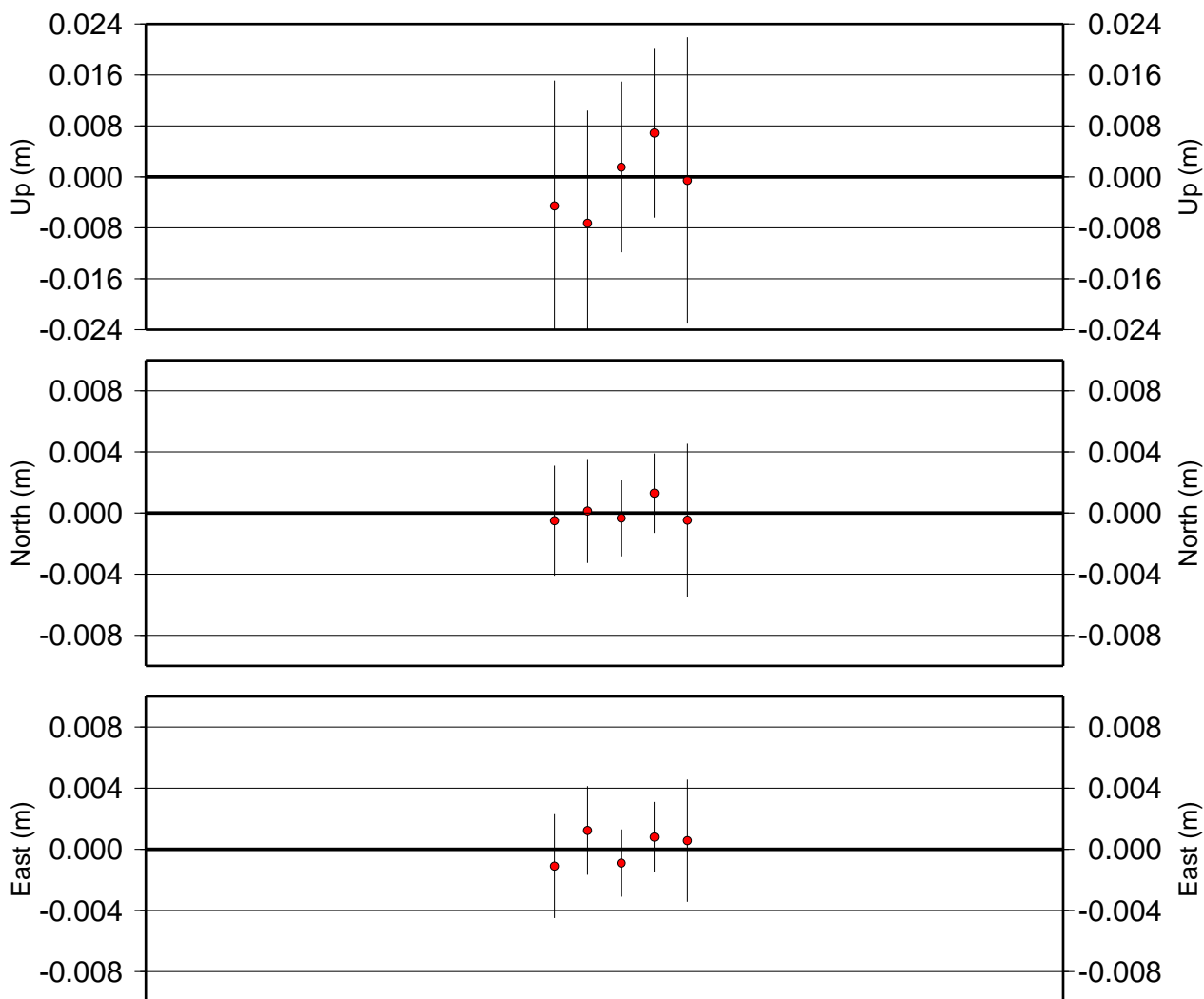
#SOLUTIONS=7 SZ26_----- AT 2002:05:15

POS	XYZ	-2560811.7124	4766739.1072	-3365821.3828	M
+/-	ENU	0.0010	0.0012	0.0059	M
RMS	ENU	0.0005	0.0008	0.0017	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.26 SZ27

SZ27_----- AT 2002:05:15

Year



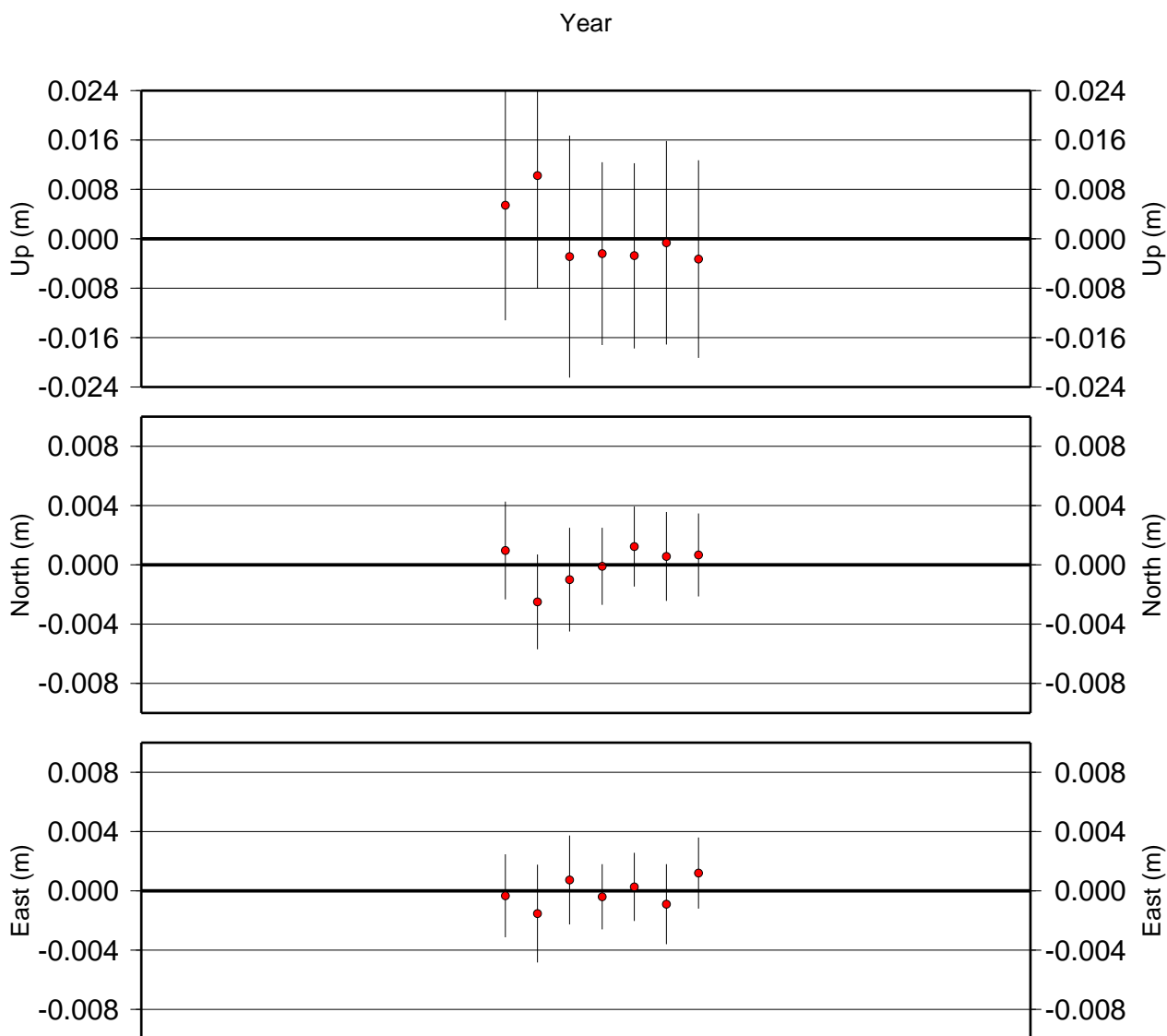
Year

#SOLUTIONS=5 SZ27_----- AT 2002:05:15

POS	XYZ	-2385182.2712	4835828.6770	-3395973.2930	M
+/-	ENU	0.0013	0.0015	0.0083	M
RMS	ENU	0.0009	0.0007	0.0050	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.27 SZ28

SZ28_----- AT 2002:05:15



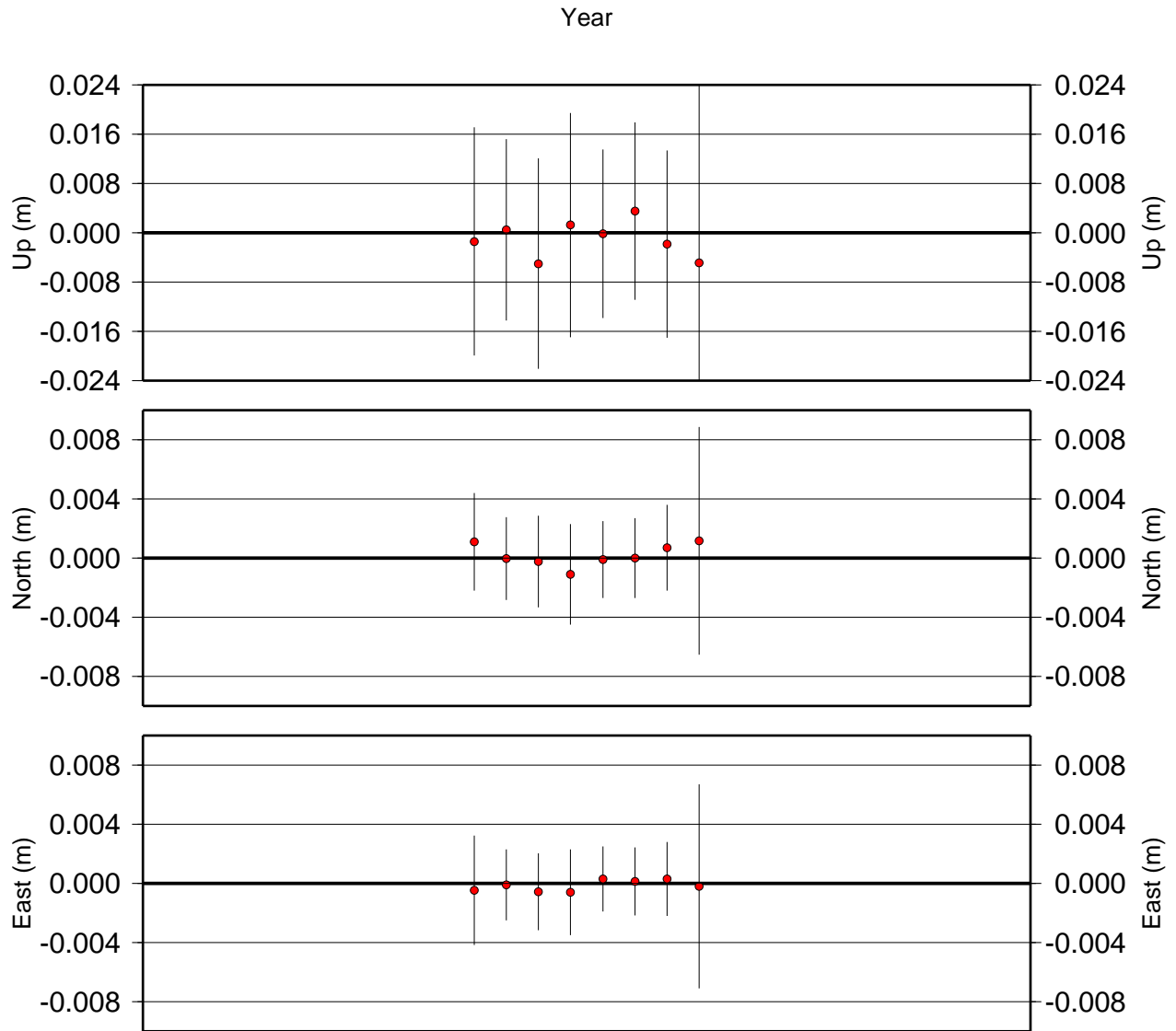
Year

#SOLUTIONS=7 SZ28_----- AT 2002:05:15

POS	XYZ	-2427816.8633	4812752.1357	-3398465.7300	M
+/-	ENU	0.0010	0.0012	0.0067	M
RMS	ENU	0.0009	0.0012	0.0049	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.28 SZ29

SZ29_----- AT 2002:05:15



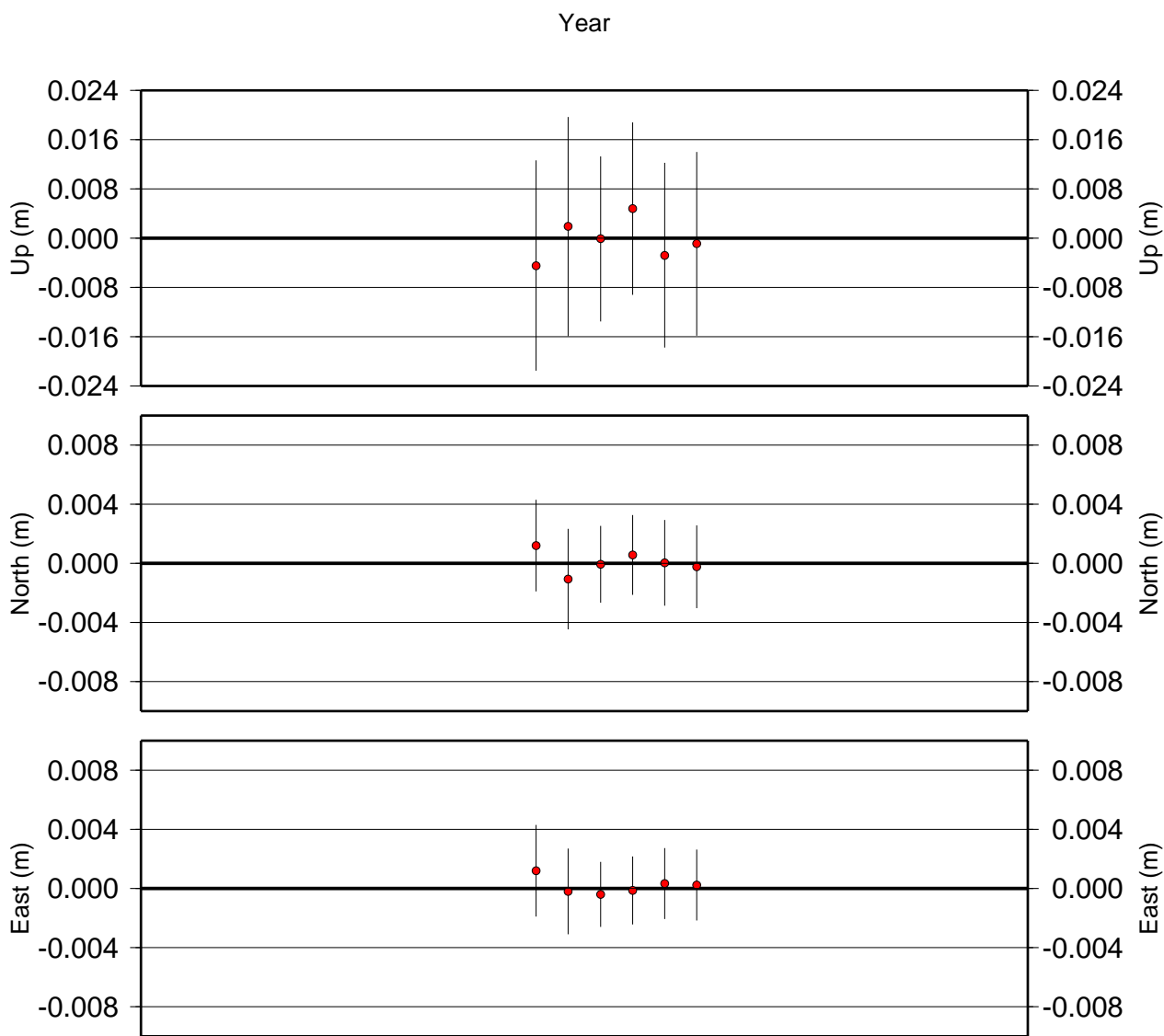
Year

#SOLUTIONS=8 SZ29_----- AT 2002:05:15

POS	XYZ	-2484512.7751	4774387.1538	-3411495.1428	M
+/-	ENU	0.0010	0.0012	0.0061	M
RMS	ENU	0.0004	0.0008	0.0029	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.29 SZ30

SZ30_----- AT 2002:05:15



Year

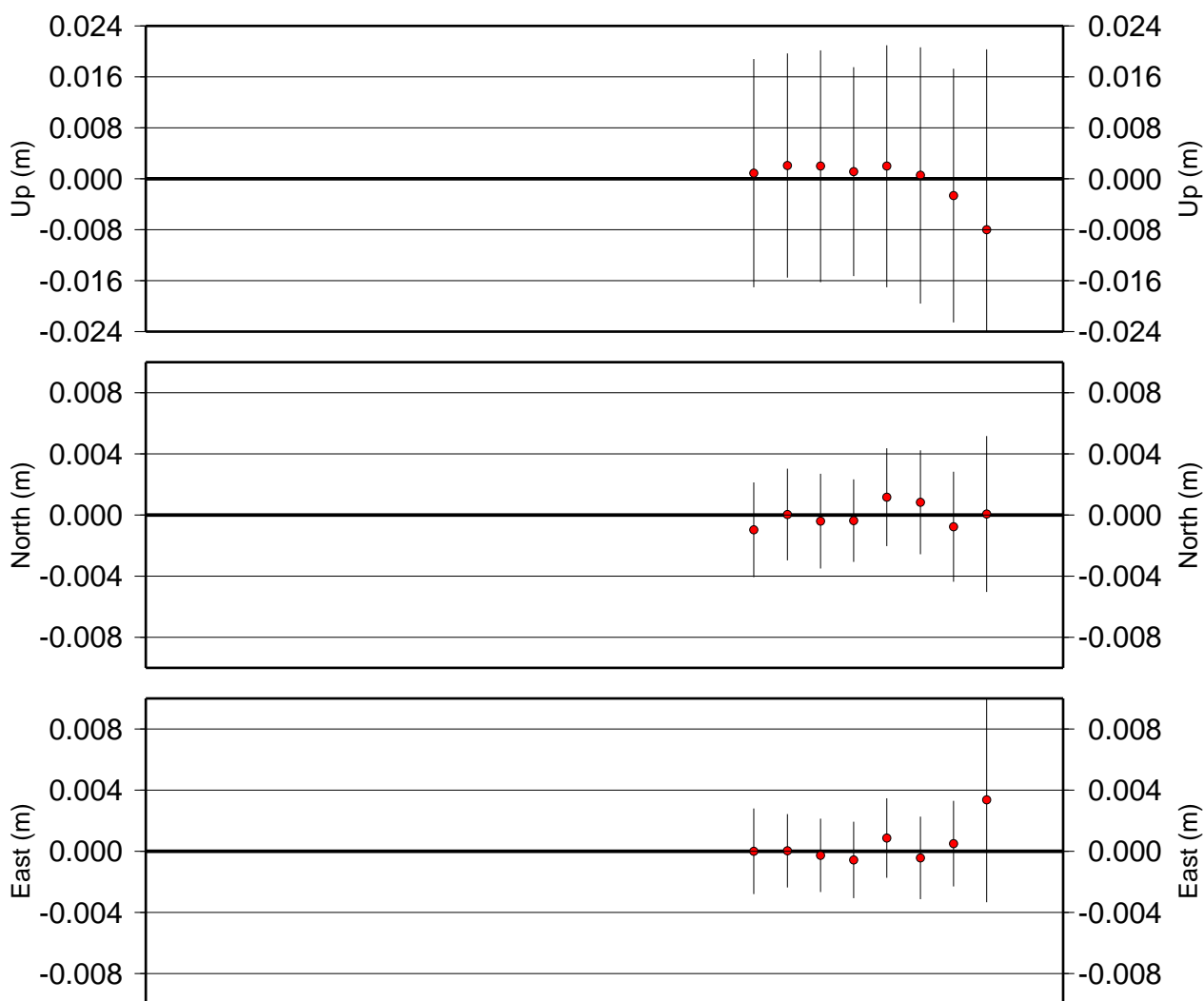
#SOLUTIONS=6 SZ30_----- AT 2002:05:15

POS	XYZ	-2513987.8767	4763357.2848	-3405374.3185	M
+/-	ENU	0.0011	0.0012	0.0064	M
RMS	ENU	0.0005	0.0007	0.0030	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.30 SZ31

SZ31_----- AT 2002:05:15

Year



Year

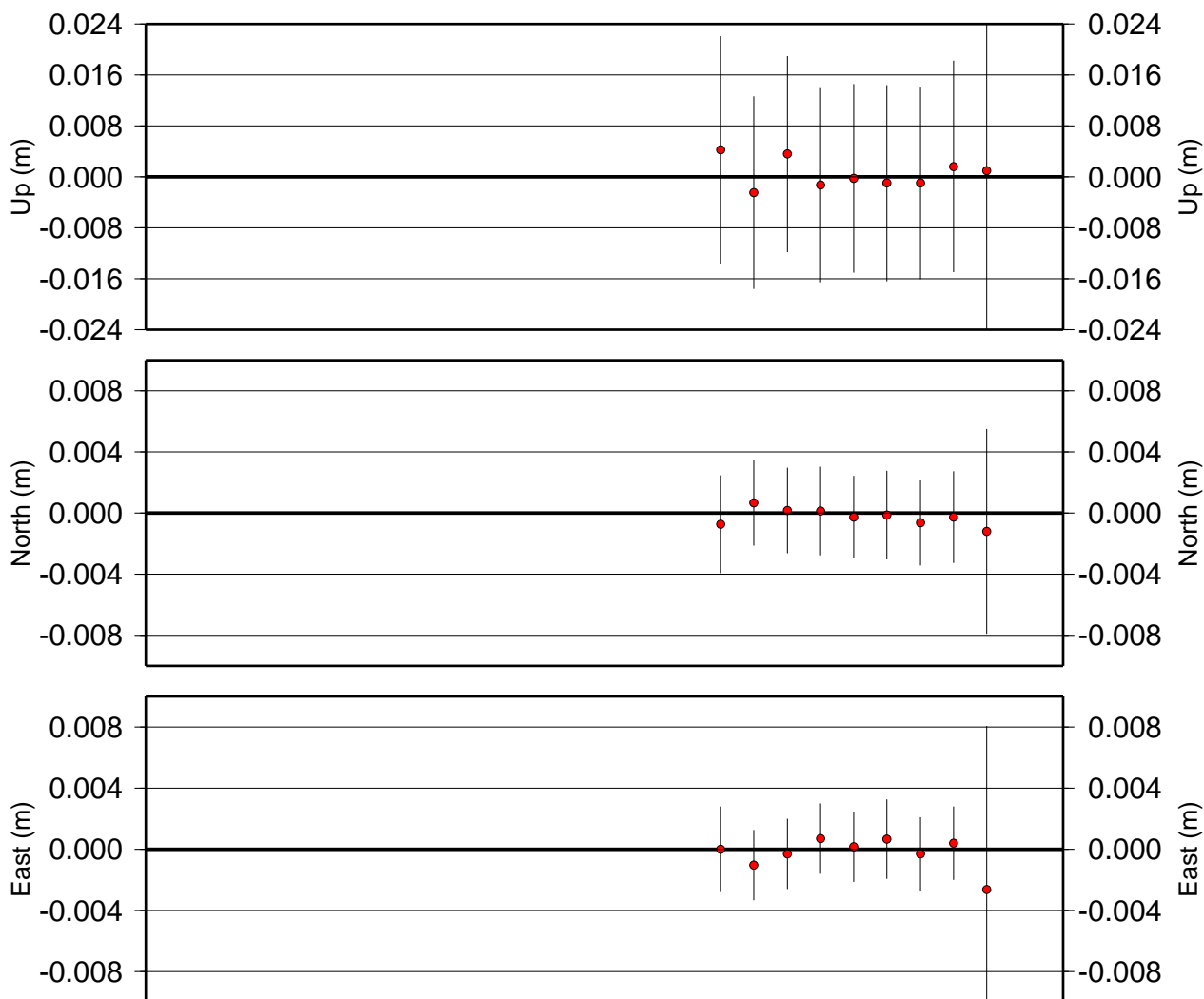
#SOLUTIONS=8 SZ31_----- AT 2002:05:15

POS	XYZ	-2351098.5566	4815294.6873	-3448410.5094	M
+/-	ENU	0.0010	0.0012	0.0072	M
RMS	ENU	0.0013	0.0007	0.0033	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.31 SZ32

SZ32_----- AT 2002:05:15

Year



Year

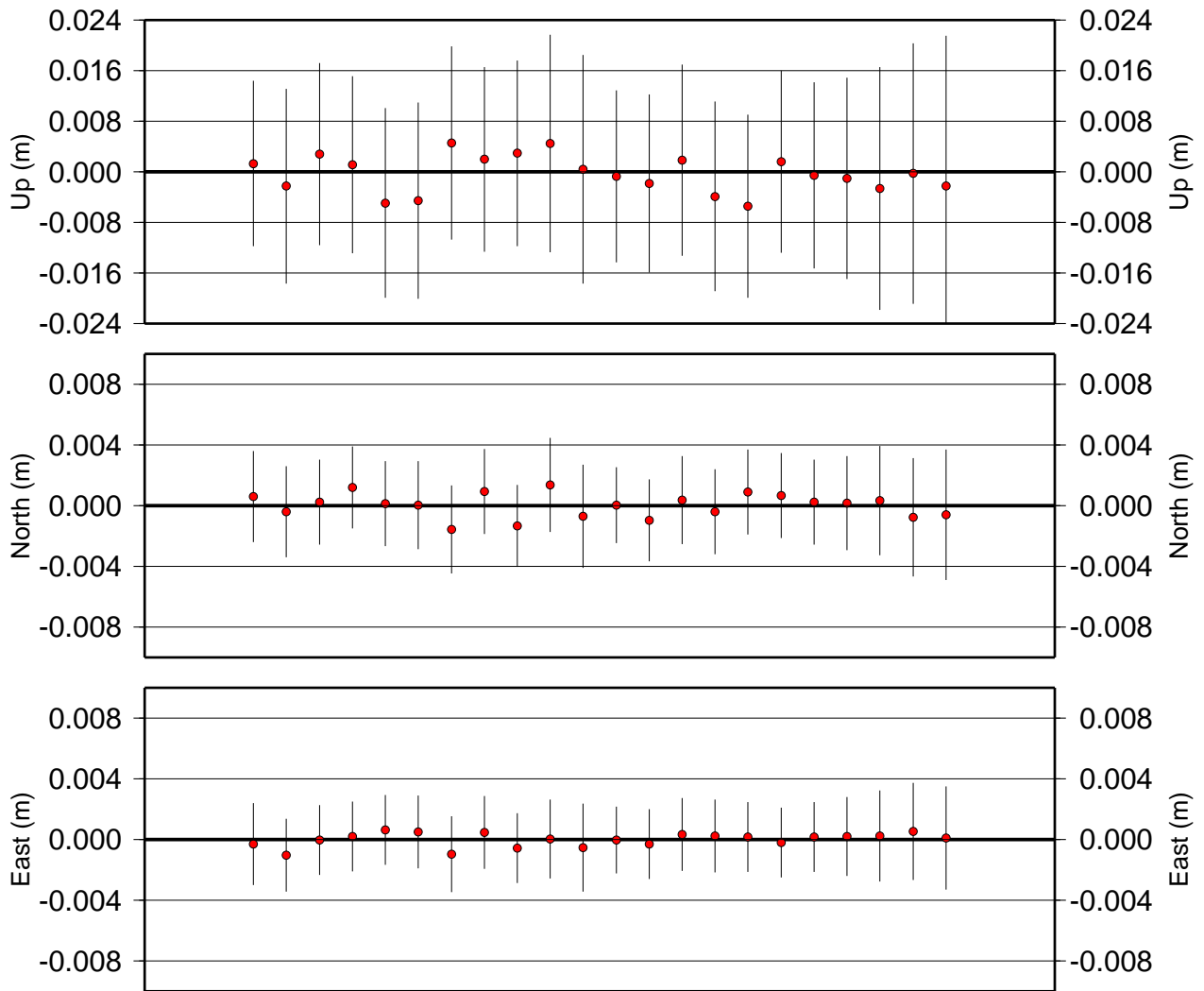
#SOLUTIONS=9 SZ32_----- AT 2002:05:15

POS	XYZ	-2403696.1884	4795798.6323	-3438960.9946	M
+/-	ENU	0.0009	0.0011	0.0057	M
RMS	ENU	0.0010	0.0006	0.0022	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.32 SZ33

SZ33_----- AT 2002:05:15

Year



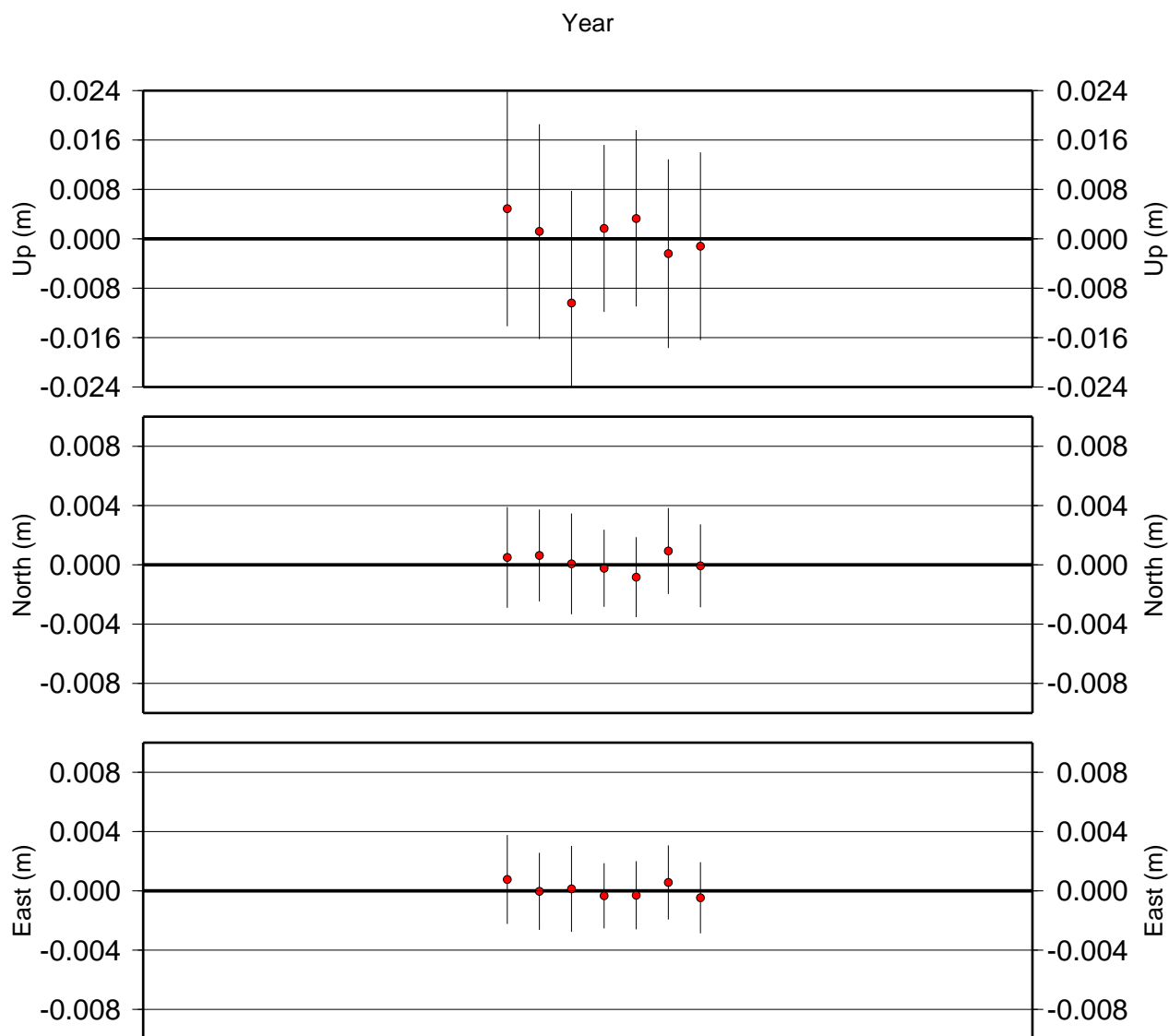
Year

#SOLUTIONS=22 SZ33_----- AT 2002:05:15

POS	XYZ	-2453250.2043	4765122.1991	-3446805.8709	M
+/-	ENU	0.0006	0.0007	0.0036	M
RMS	ENU	0.0005	0.0008	0.0029	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.33 SZ34

SZ34_----- AT 2002:05:15



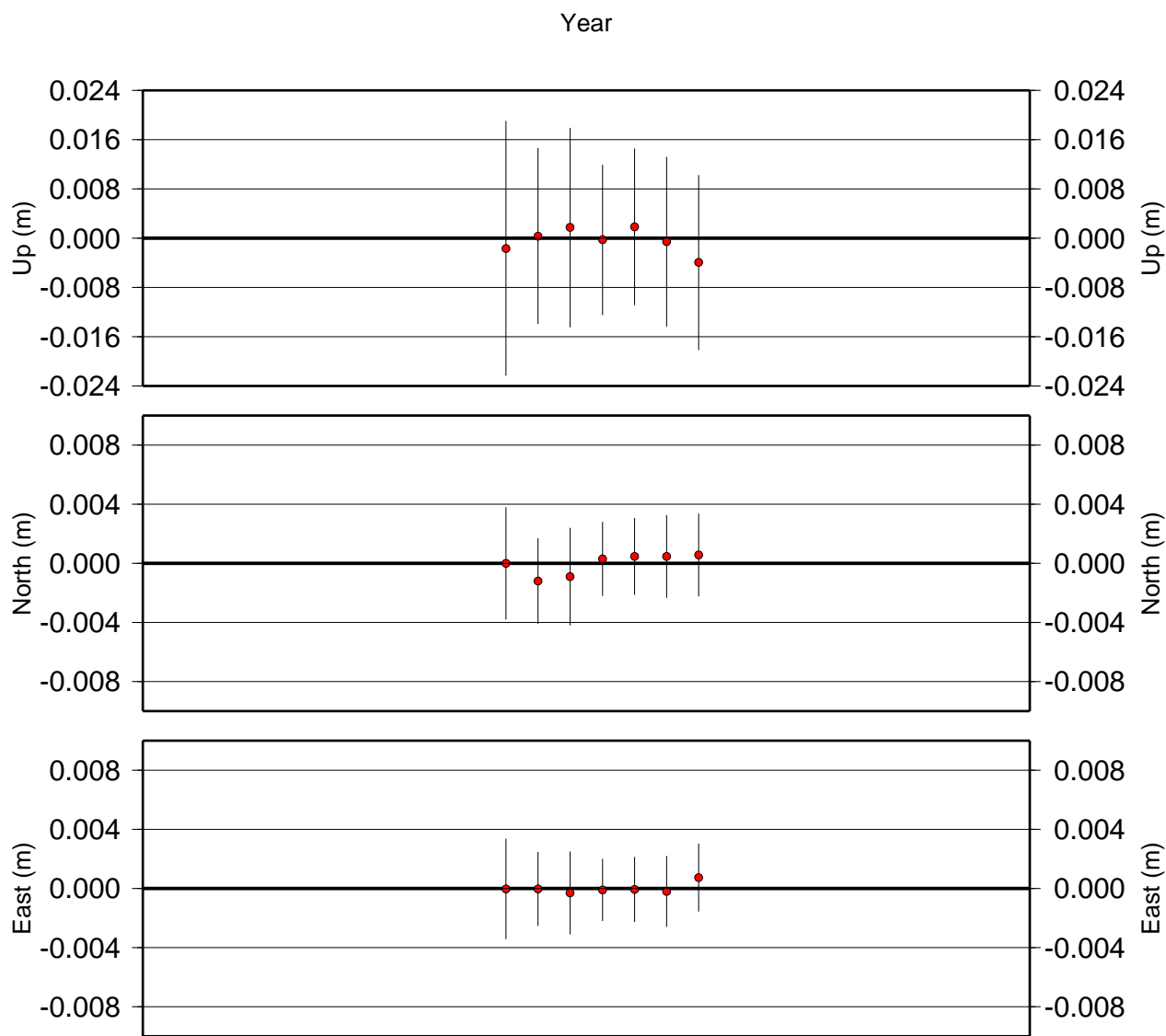
Year

#SOLUTIONS=7 SZ34_----- AT 2002:05:15

POS	XYZ	-2474184.6079	4756547.7422	-3443741.5993	M
+/-	ENU	0.0010	0.0012	0.0063	M
RMS	ENU	0.0005	0.0006	0.0047	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.34 SZ35

SZ35_----- AT 2002:05:15



Year

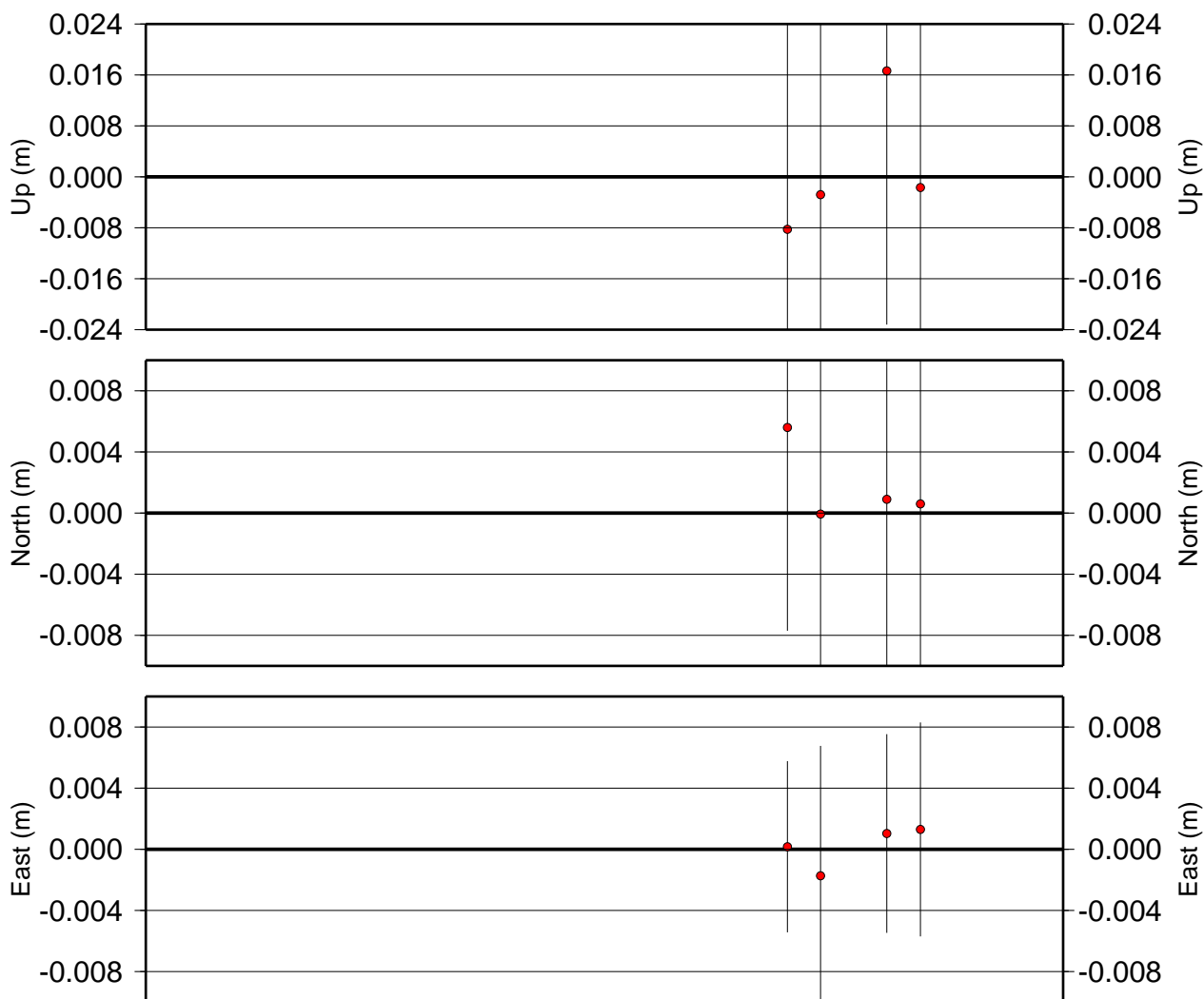
#SOLUTIONS=7 SZ35_----- AT 2002:05:15

POS	XYZ	-2575417.4272	4720385.9616	-3419328.6955	M
+/-	ENU	0.0010	0.0012	0.0060	M
RMS	ENU	0.0003	0.0007	0.0019	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.35 SZ36

SZ36_----- AT 2002:05:15

Year



Year

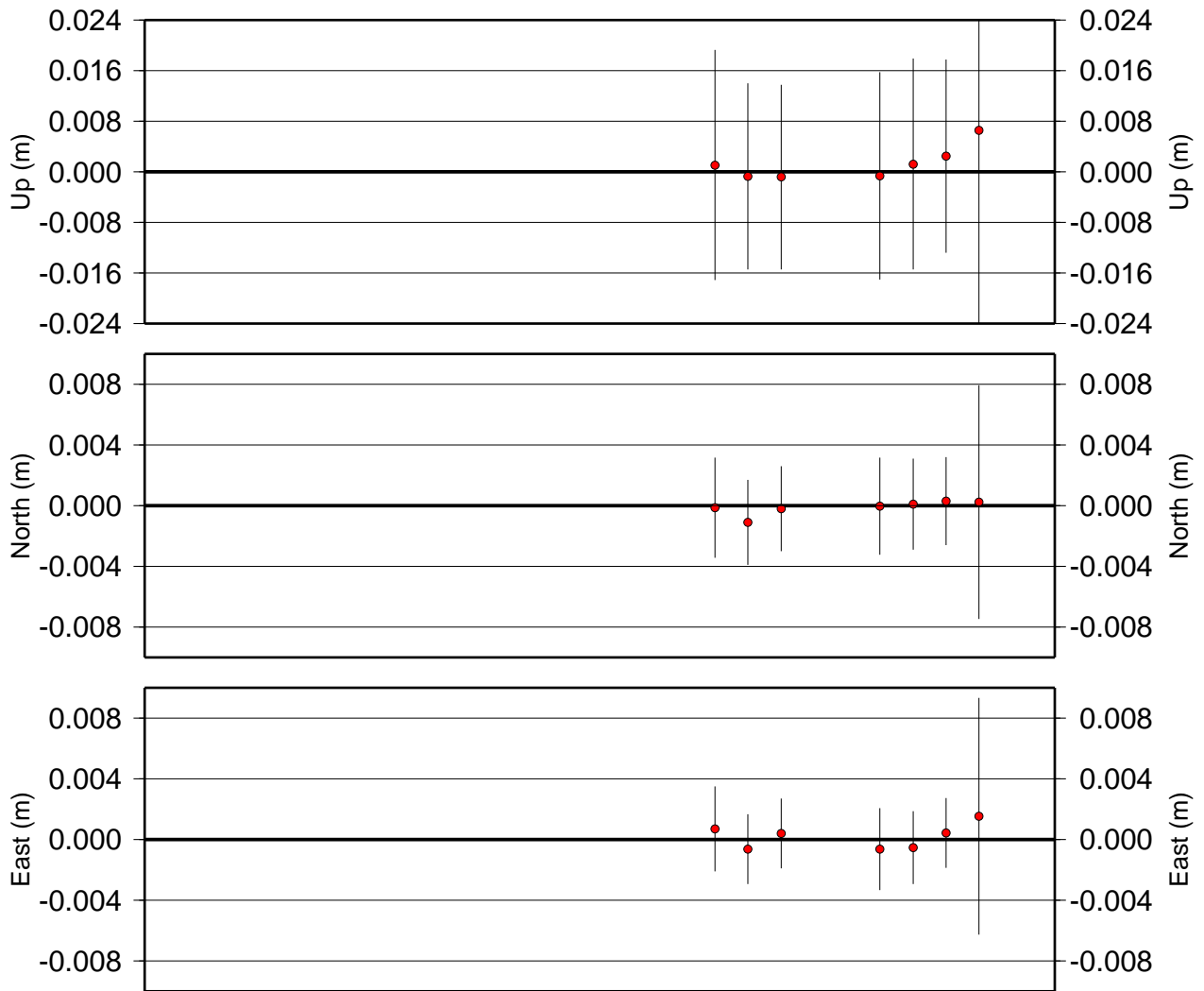
#SOLUTIONS=4 SZ36_----- AT 2002:05:15

POS	XYZ	-2323907.8649	4797001.1207	-3491265.6786	M
+/-	ENU	0.0034	0.0083	0.0218	M
RMS	ENU	0.0012	0.0028	0.0094	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.36 SZ37

SZ37_----- AT 2002:05:15

Year



Year

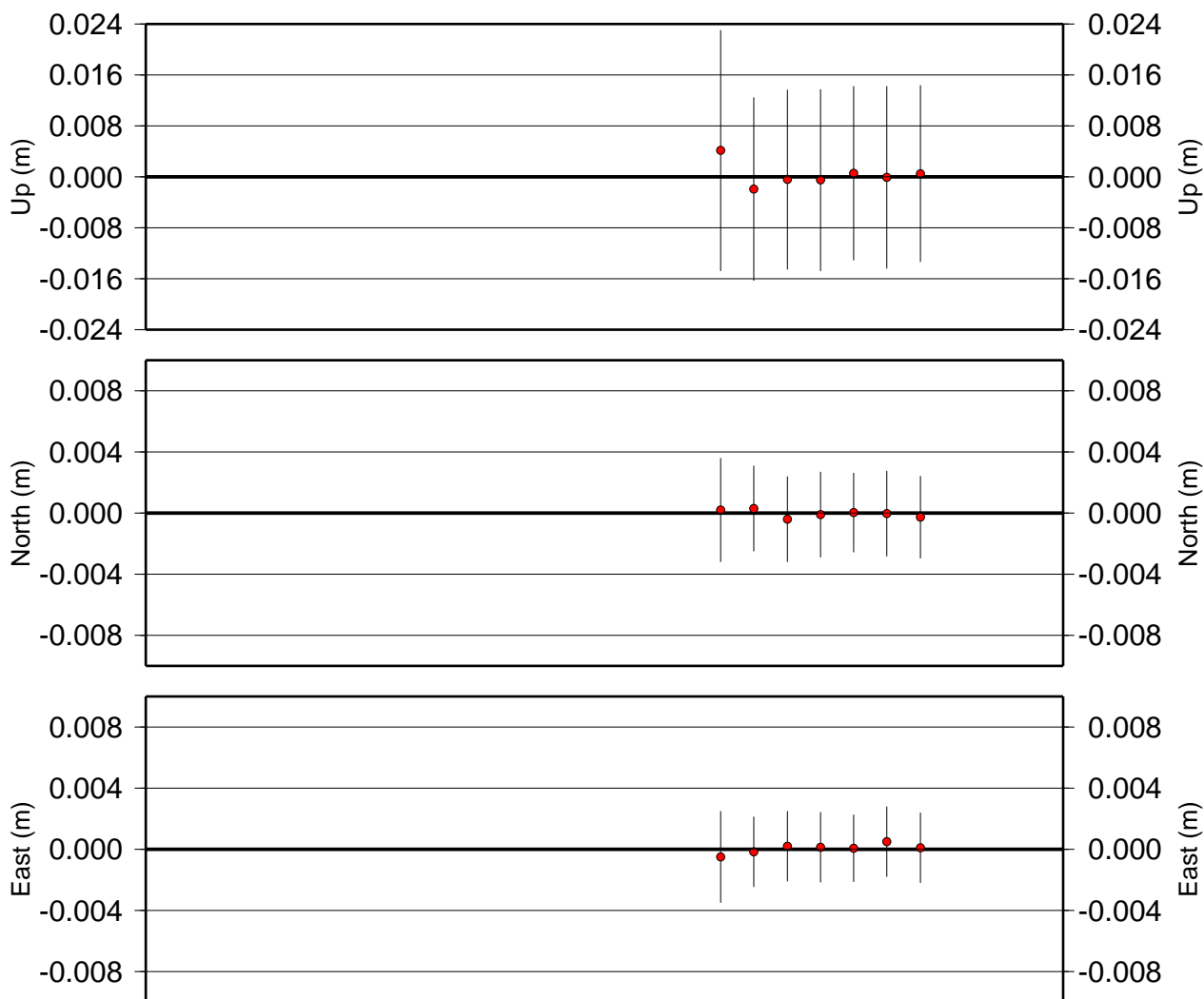
#SOLUTIONS=7 SZ37_----- AT 2002:05:15

POS	XYZ	-2404137.5857	4756289.5907	-3492703.8238	M
+/-	ENU	0.0010	0.0013	0.0066	M
RMS	ENU	0.0008	0.0004	0.0028	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.37 SZ38

SZ38_----- AT 2002:05:15

Year



Year

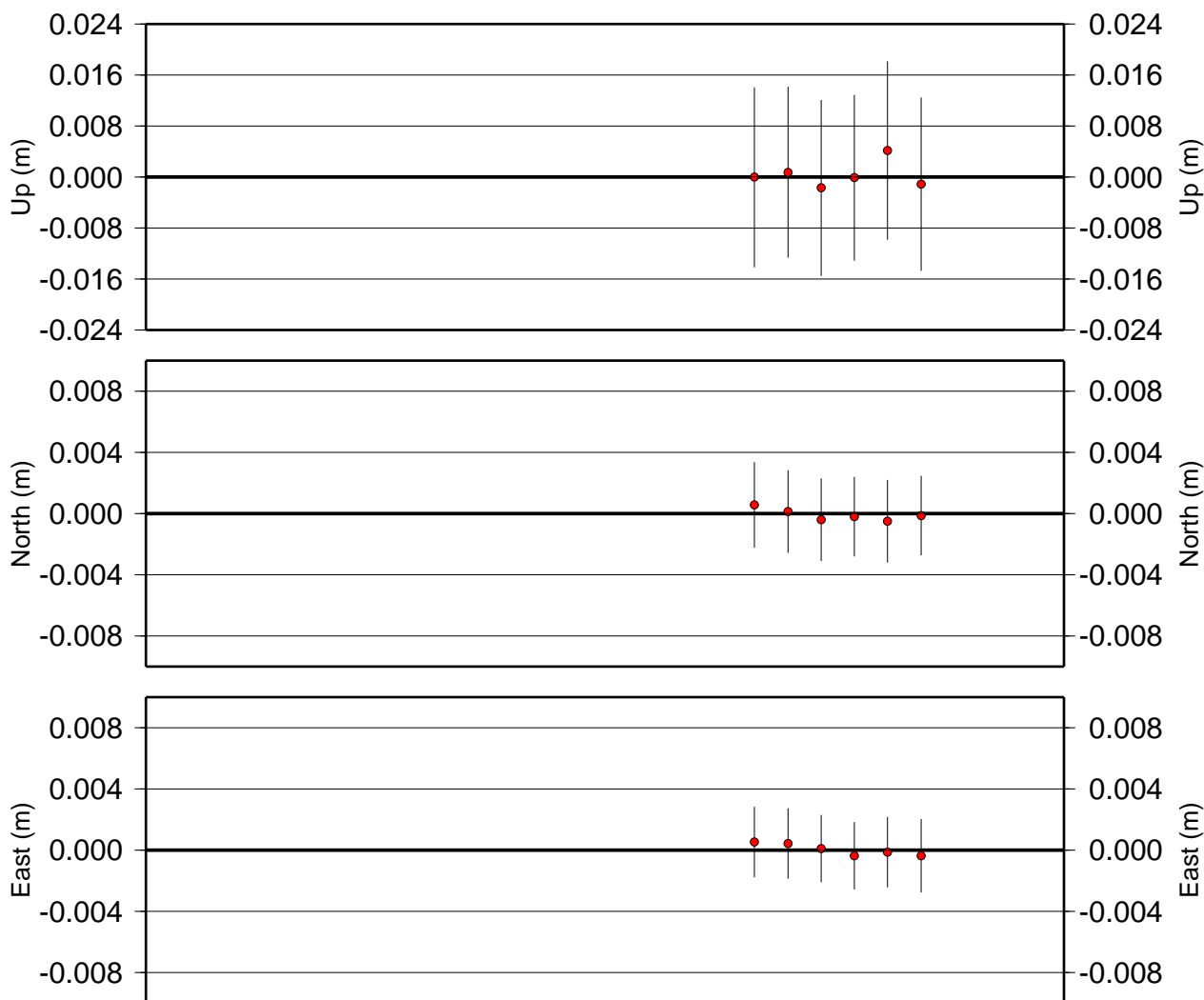
#SOLUTIONS=7 SZ38_----- AT 2002:05:15

POS	XYZ	-2455042.2289	4736569.9667	-3484265.4327	M
+/-	ENU	0.0009	0.0012	0.0057	M
RMS	ENU	0.0003	0.0002	0.0017	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.38 SZ39

SZ39_----- AT 2002:05:15

Year



Year

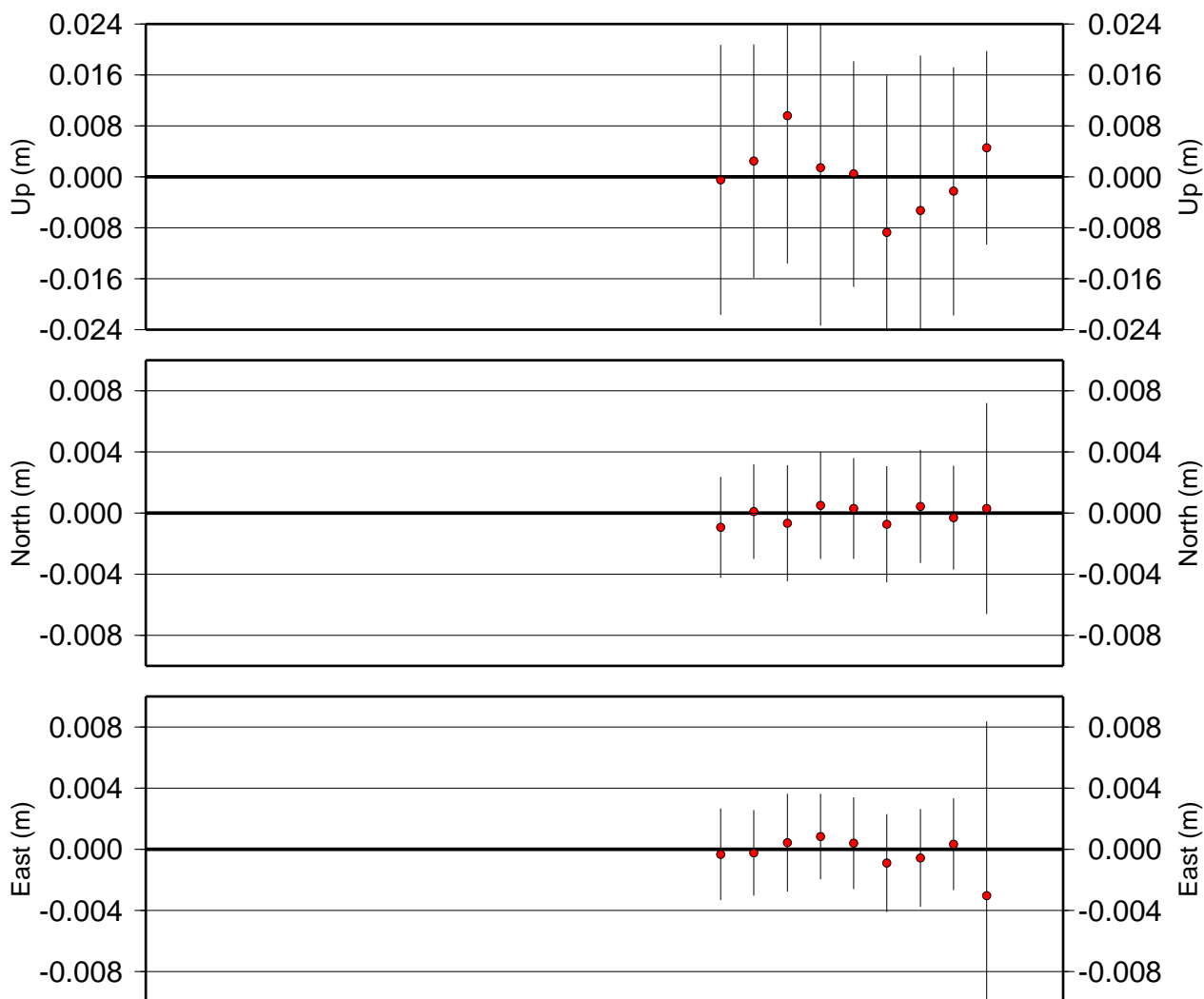
#SOLUTIONS=6 SZ39_----- AT 2002:05:15

POS	XYZ	-2517093.9794	4699844.3547	-3489835.9194	M
+/-	ENU	0.0010	0.0012	0.0060	M
RMS	ENU	0.0003	0.0004	0.0019	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.39 SZ40

SZ40_----- AT 2002:05:15

Year



Year

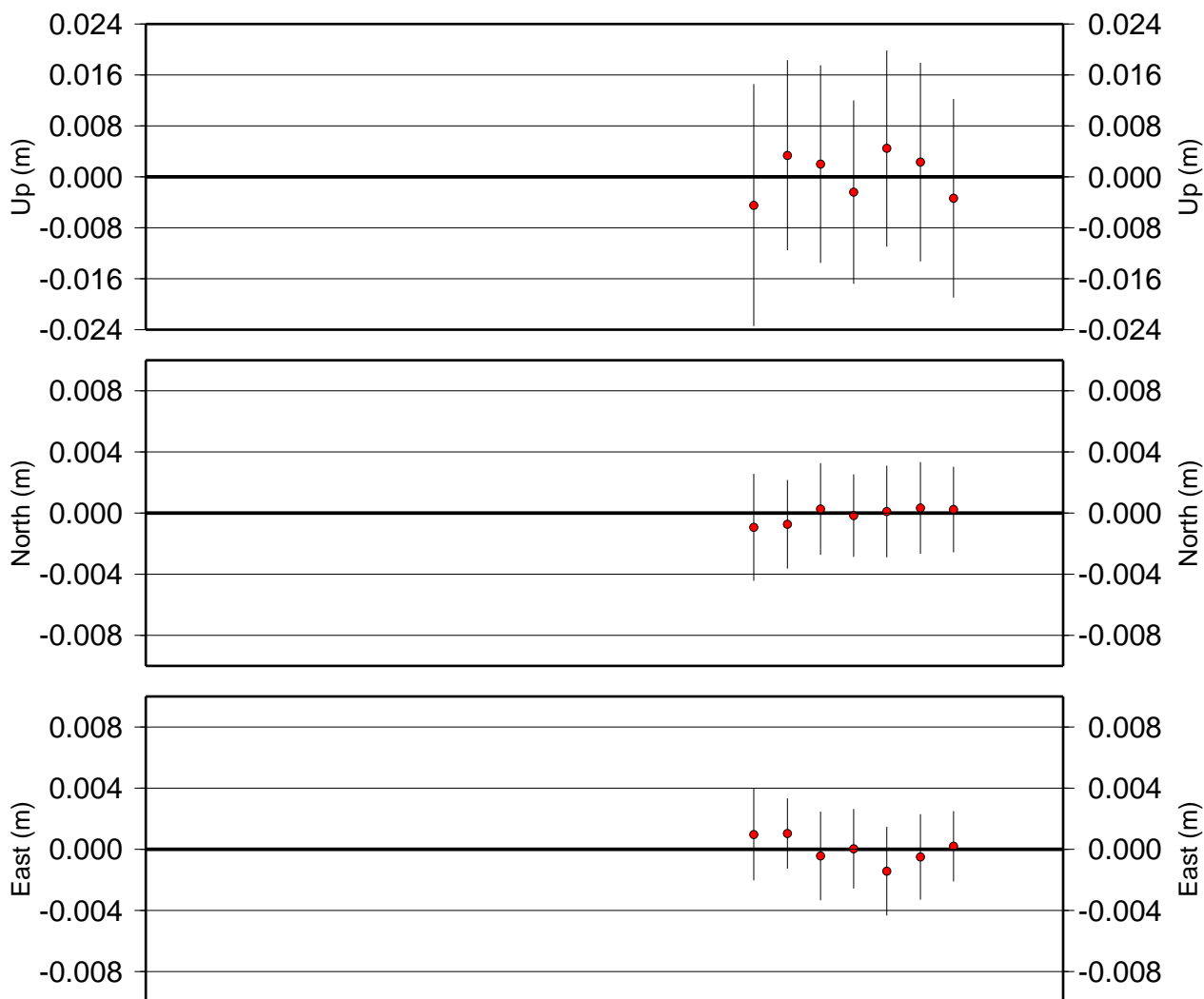
#SOLUTIONS=9 SZ40_----- AT 2002:05:15

POS	XYZ	-2293380.5988	4790808.9273	-3519555.0932	M
+/-	ENU	0.0011	0.0013	0.0088	M
RMS	ENU	0.0011	0.0006	0.0051	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.40 SZ41

SZ41_----- AT 2002:05:15

Year



Year

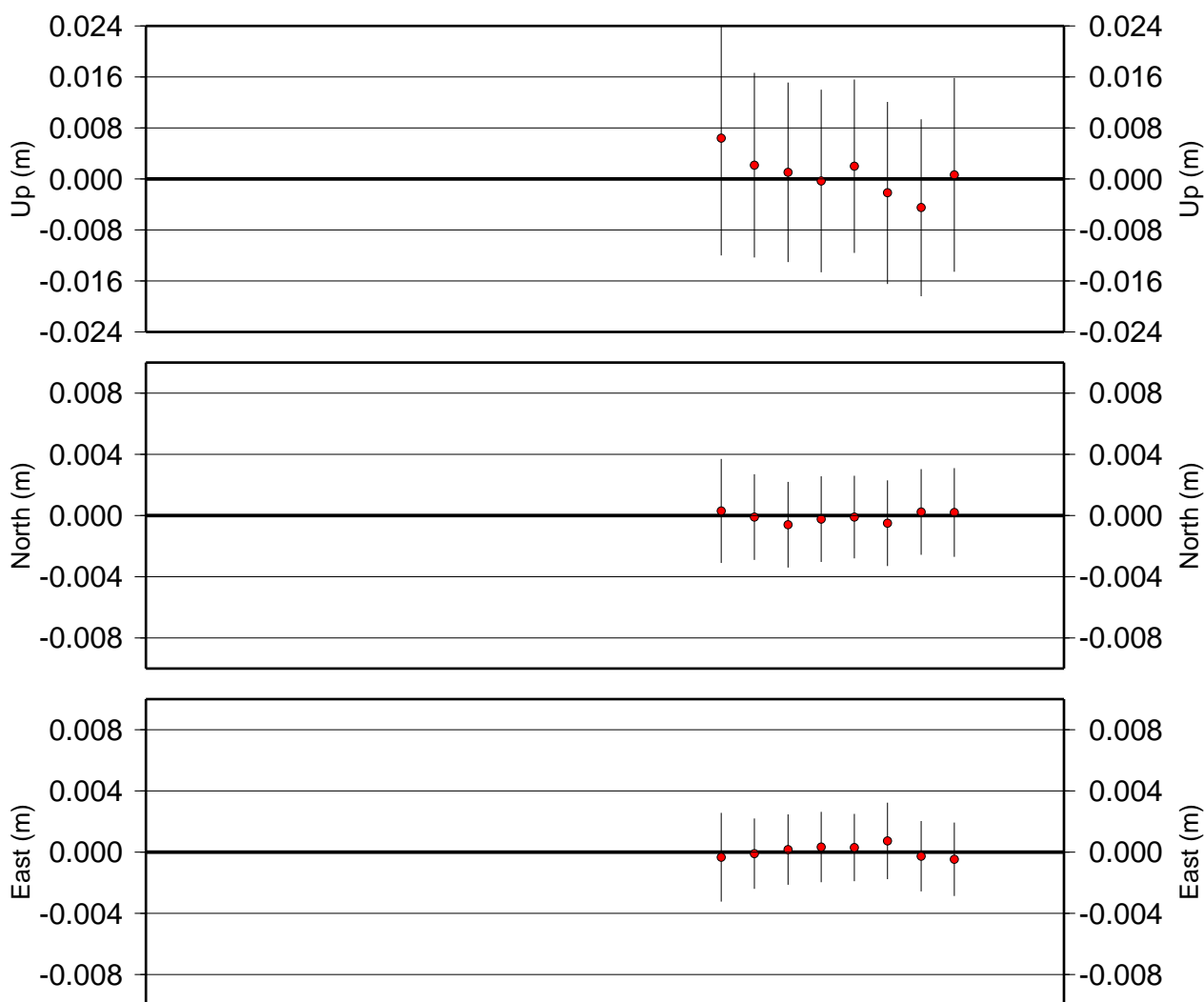
#SOLUTIONS=7 SZ41_----- AT 2002:05:15

POS	XYZ	-2357264.3210	4750347.0408	-3532203.8155	M
+/-	ENU	0.0010	0.0012	0.0061	M
RMS	ENU	0.0008	0.0005	0.0033	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.41 SZ42

SZ42_----- AT 2002:05:15

Year



Year

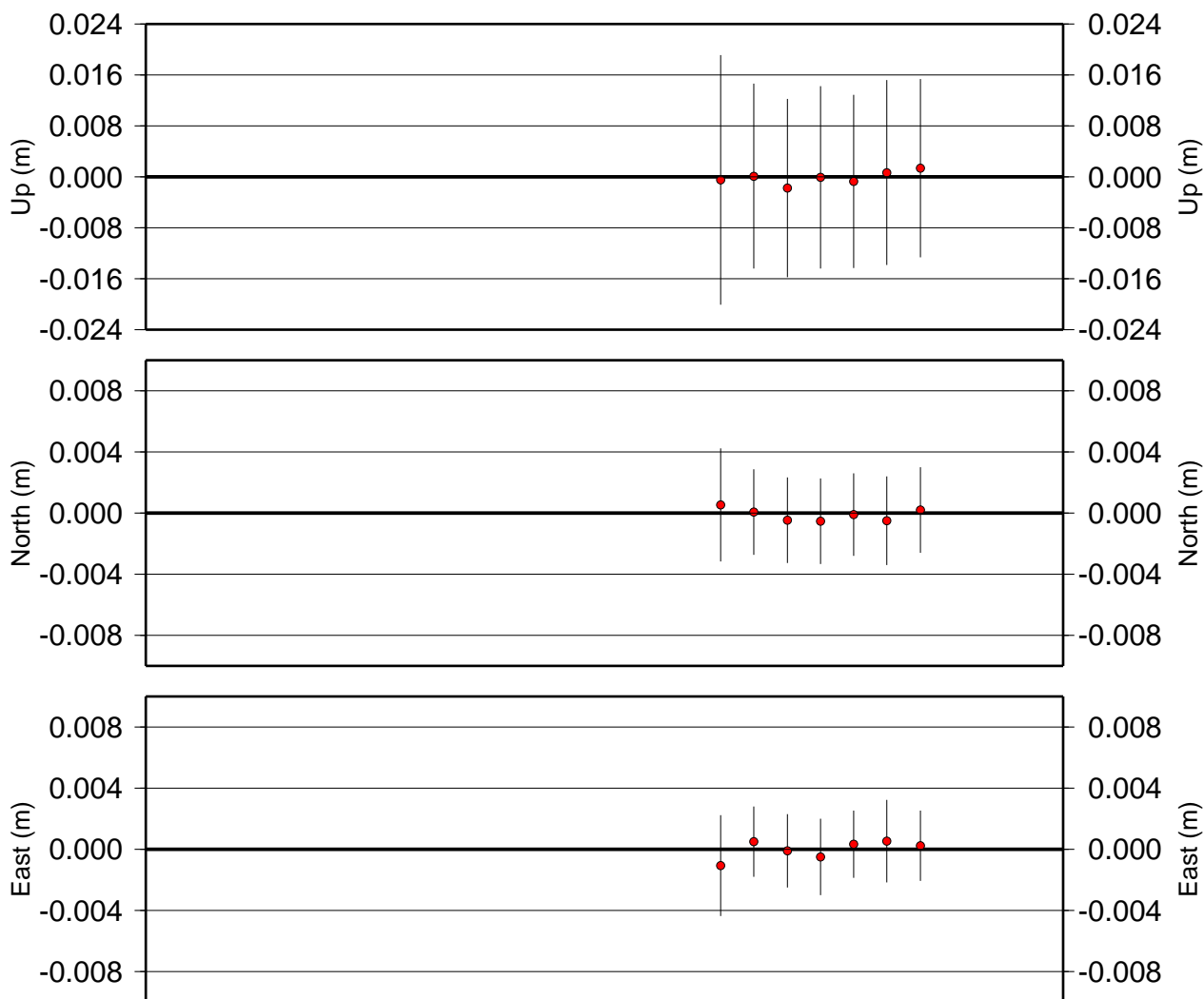
#SOLUTIONS=8 SZ42_----- AT 2002:05:15

POS	XYZ	-2429562.2478	4721163.9704	-3522680.9348	M
+/-	ENU	0.0009	0.0011	0.0054	M
RMS	ENU	0.0004	0.0003	0.0031	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.42 SZ43

SZ43_----- AT 2002:05:15

Year



Year

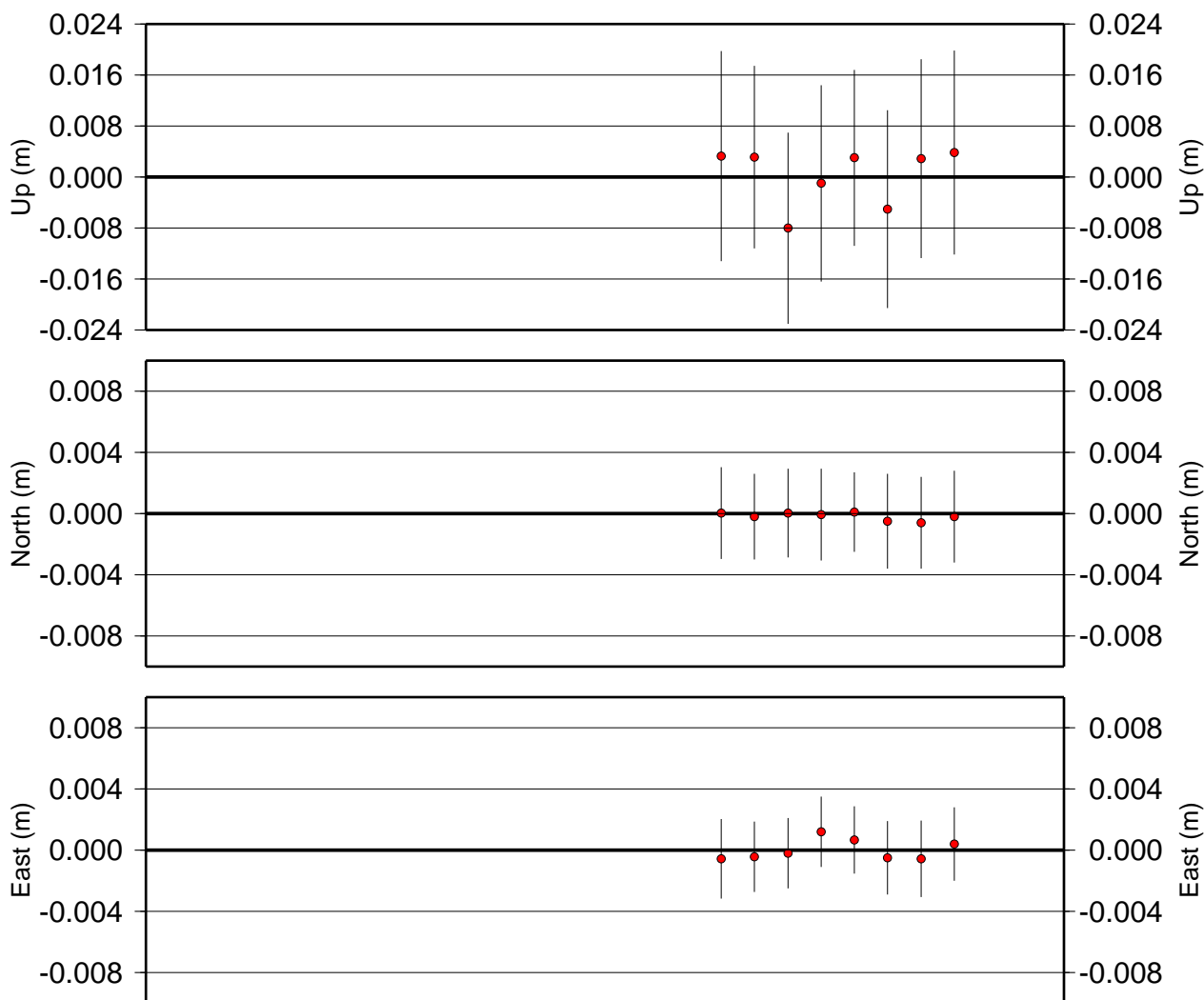
#SOLUTIONS=7 SZ43_----- AT 2002:05:15

POS	XYZ	-2452878.6748	4706369.1659	-3526293.3788	M
+/-	ENU	0.0010	0.0012	0.0058	M
RMS	ENU	0.0005	0.0004	0.0009	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.43 SZ44

SZ44_----- AT 2002:05:15

Year



Year

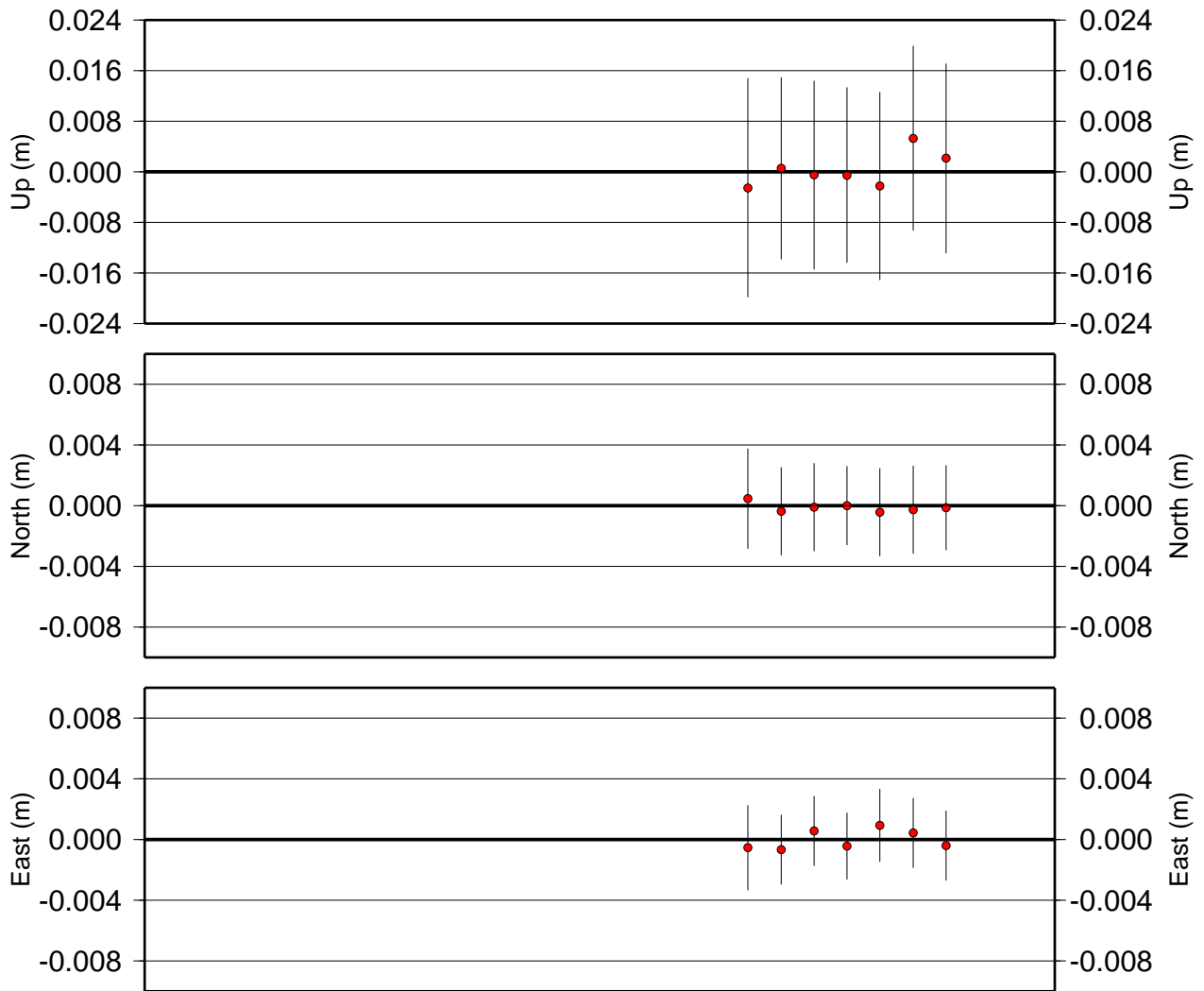
#SOLUTIONS=8 SZ44_----- AT 2002:05:15

POS	XYZ	-2324319.6868	4769972.3429	-3527585.5686	M
+/-	ENU	0.0009	0.0011	0.0056	M
RMS	ENU	0.0006	0.0003	0.0042	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.44 SZ45

SZ45_----- AT 2002:05:15

Year



Year

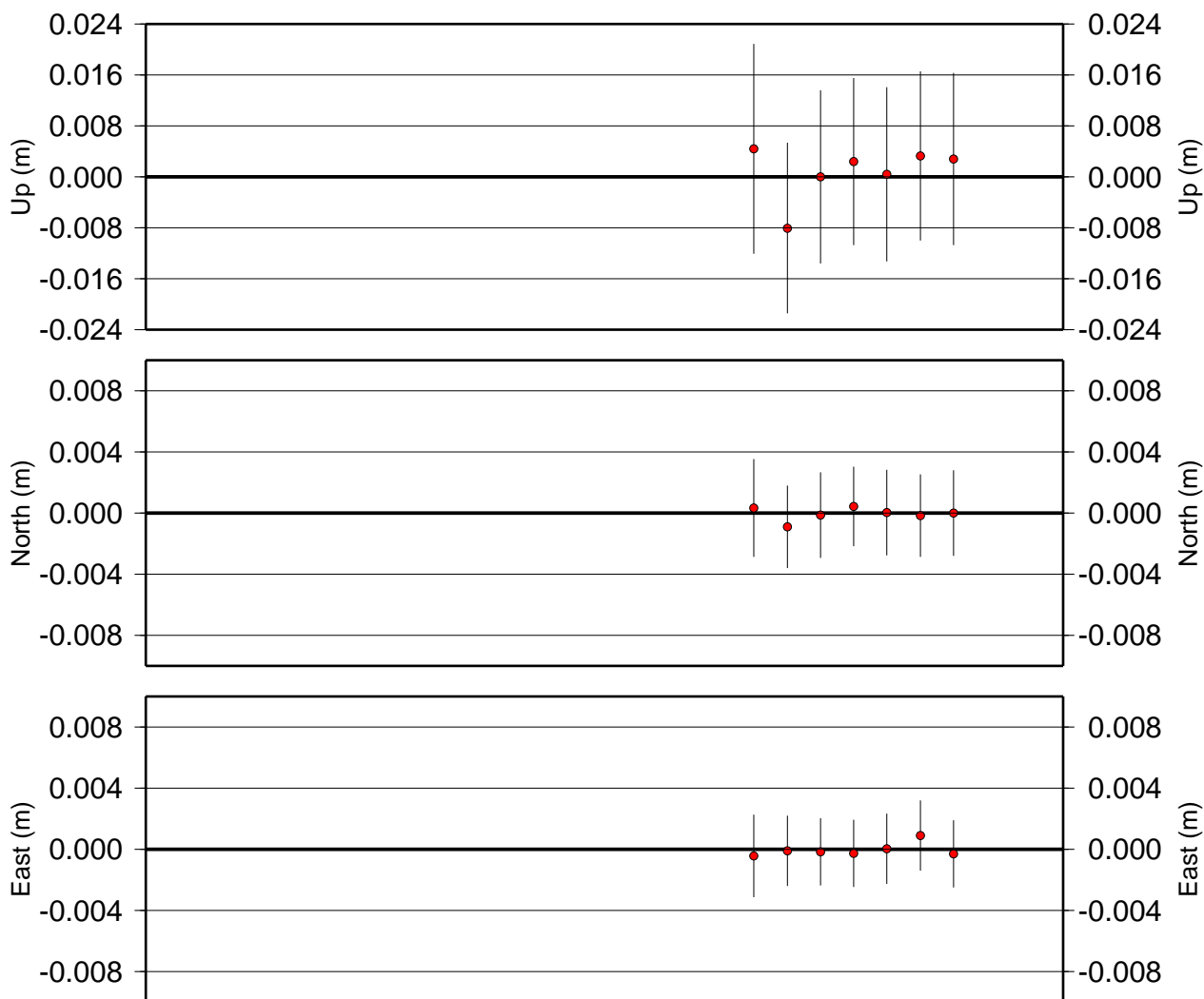
#SOLUTIONS=7 SZ45_----- AT 2002:05:15

POS	XYZ	-2372420.6010	4726129.8798	-3554449.8003	M
+/-	ENU	0.0009	0.0012	0.0059	M
RMS	ENU	0.0006	0.0003	0.0025	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.45 SZ46

SZ46_----- AT 2002:05:15

Year



Year

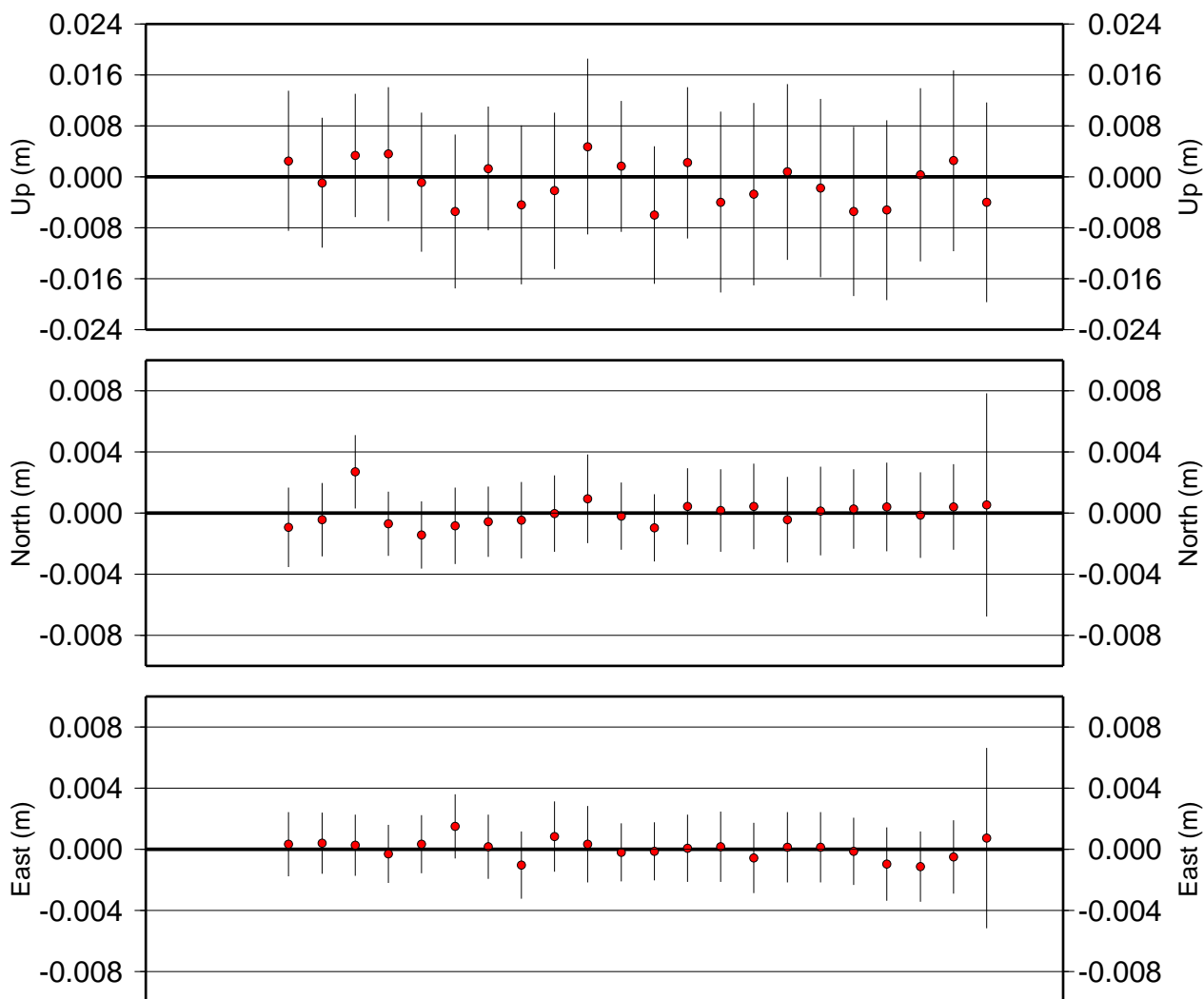
#SOLUTIONS=7 SZ46_----- AT 2002:05:15

POS	XYZ	-2435581.8926	4680098.1002	-3572397.4704	M
+/-	ENU	0.0009	0.0012	0.0056	M
RMS	ENU	0.0004	0.0004	0.0040	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.46 SZ48

SZ48_----- AT 2002:05:15

Year



Year

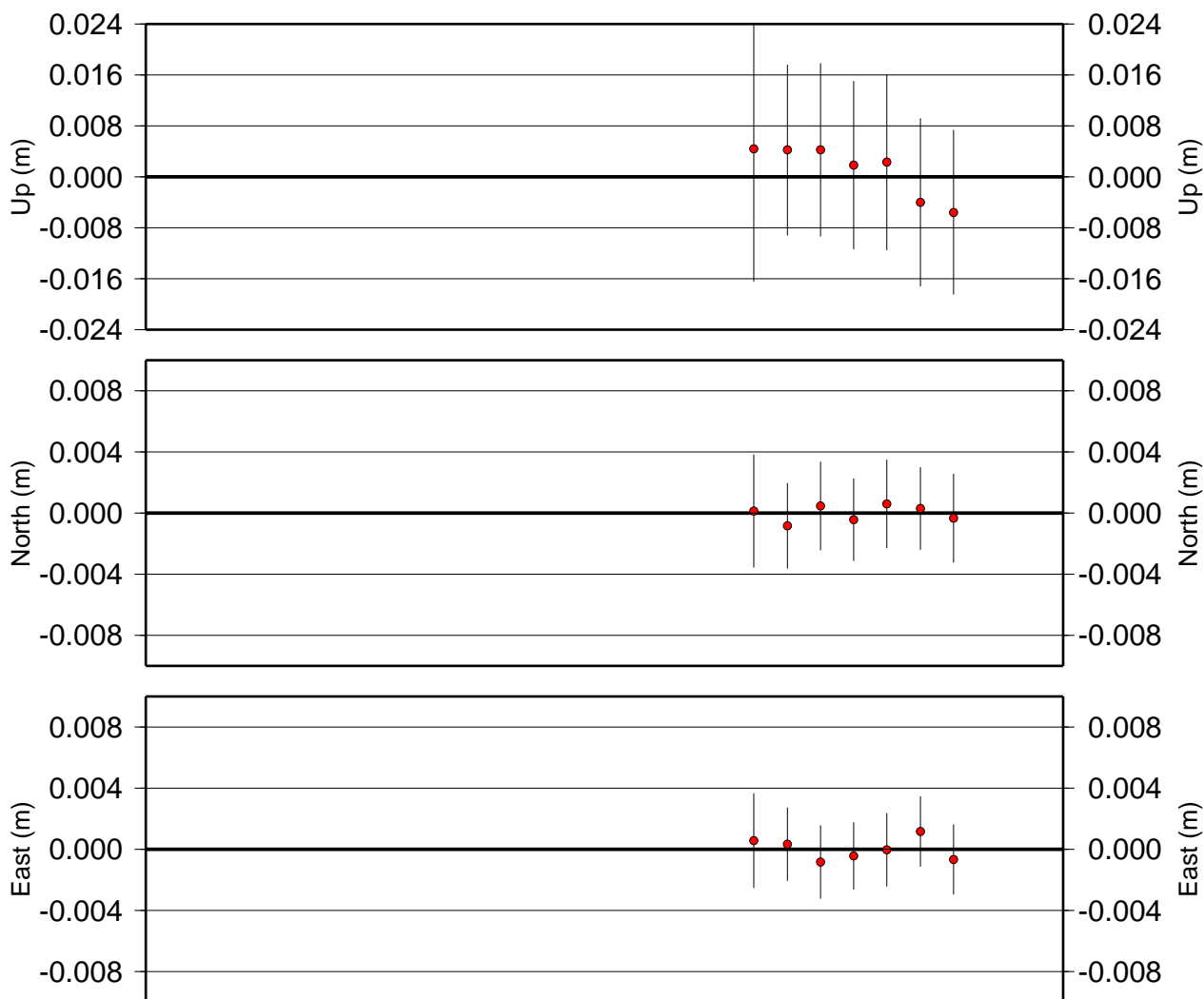
#SOLUTIONS=22 SZ48_----- AT 2002:05:15

POS	XYZ	-2385014.5949	4686464.1479	-3597896.6473	M
+/-	ENU	0.0006	0.0007	0.0035	M
RMS	ENU	0.0006	0.0008	0.0034	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.47 SZ49

SZ49_----- AT 2002:05:15

Year



Year

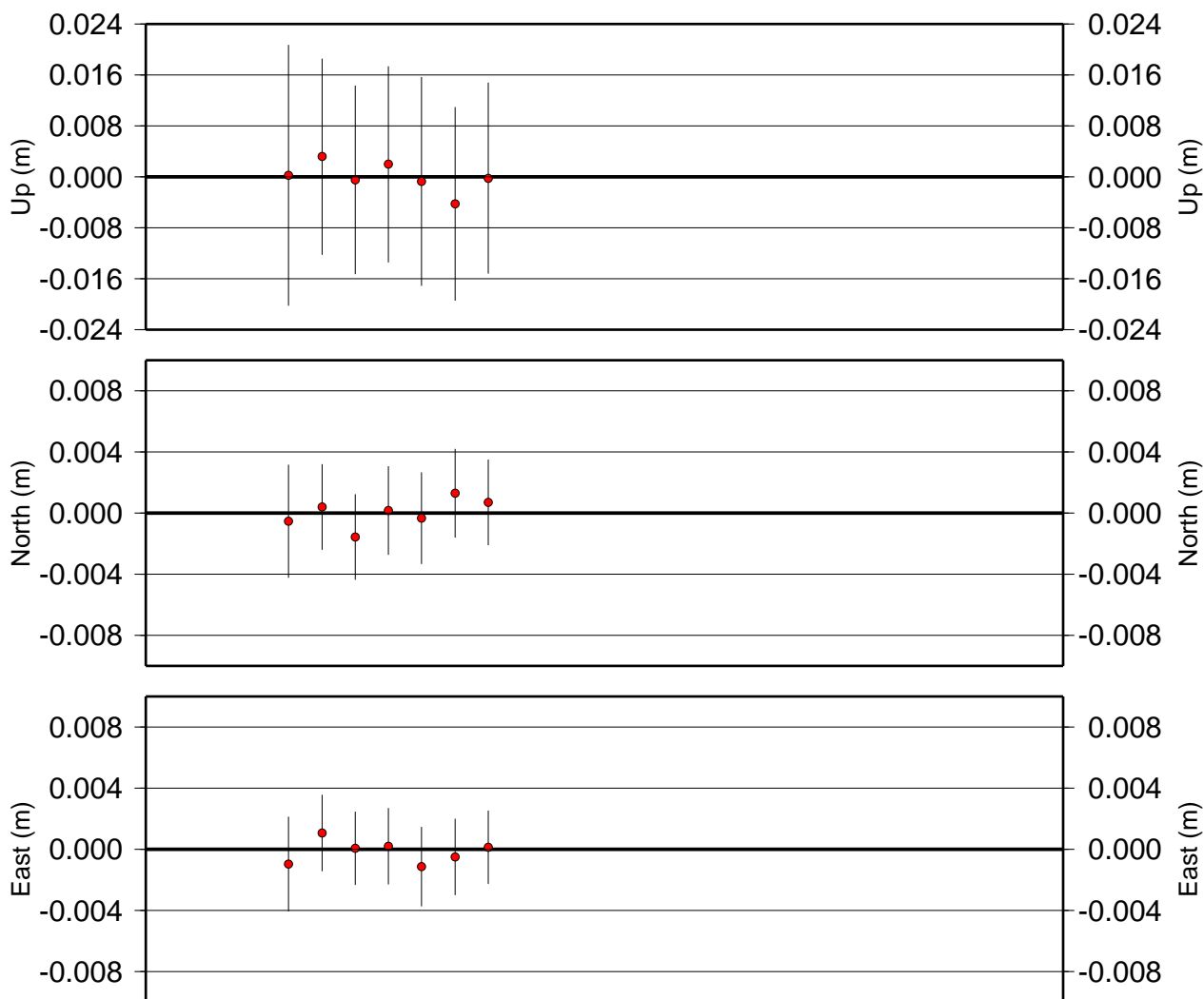
#SOLUTIONS=7 SZ49_----- AT 2002:05:15

POS	XYZ	-2437346.1910	4652842.8362	-3606678.3158	M
+/-	ENU	0.0010	0.0012	0.0059	M
RMS	ENU	0.0007	0.0005	0.0040	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

8.48 SZ50

SZ50_----- AT 2002:05:15

Year



Year

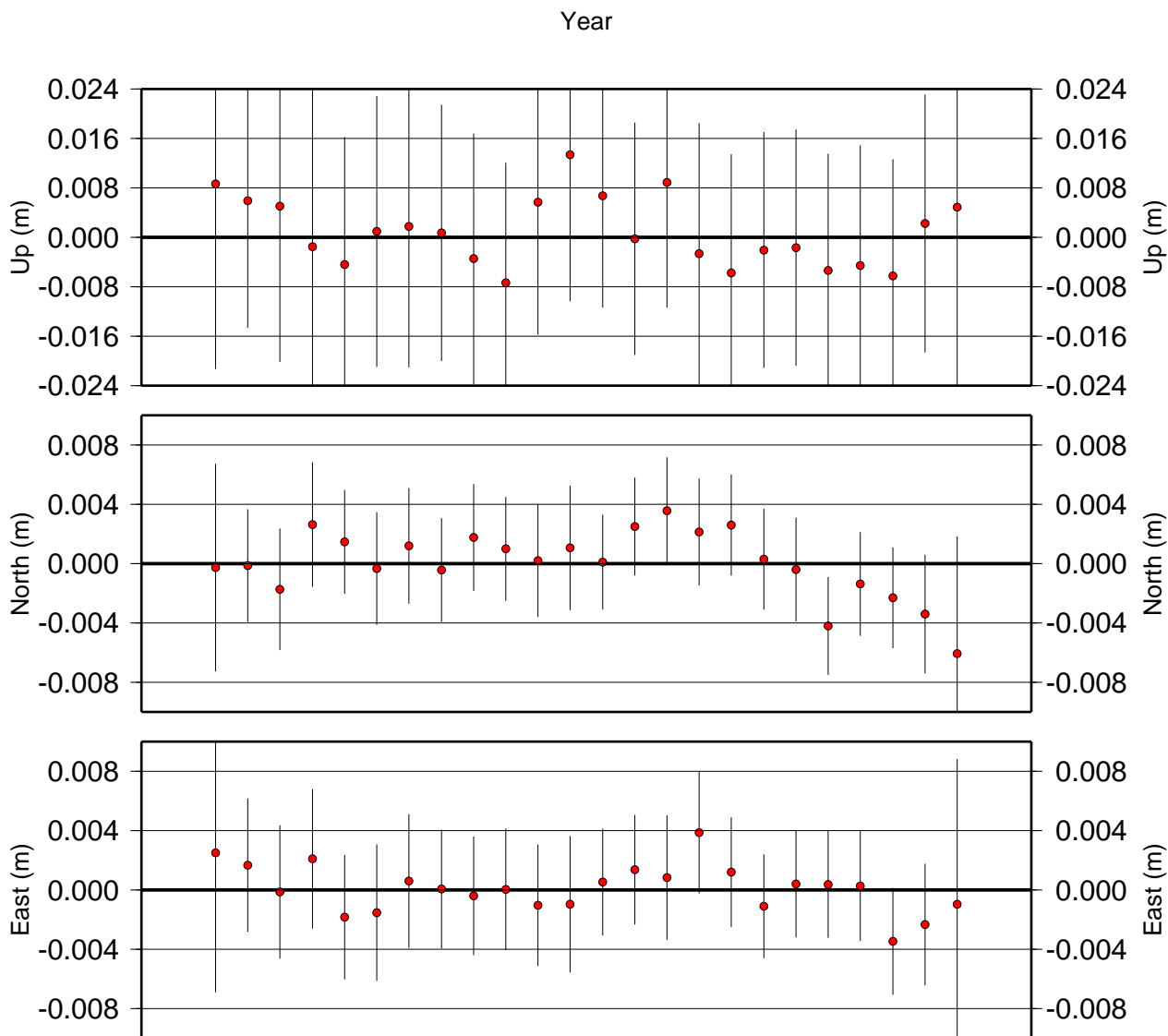
#SOLUTIONS=7 SZ50_----- AT 2002:05:15

POS	XYZ	-2519372.0221	4846982.7417	-3282030.9827	M
+/-	ENU	0.0010	0.0012	0.0062	M
RMS	ENU	0.0007	0.0009	0.0022	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

9 GPS Time Series, ARGN/IGS Stations

9.1 ALIC

ALIC_50137M001 AT 2002:05:15



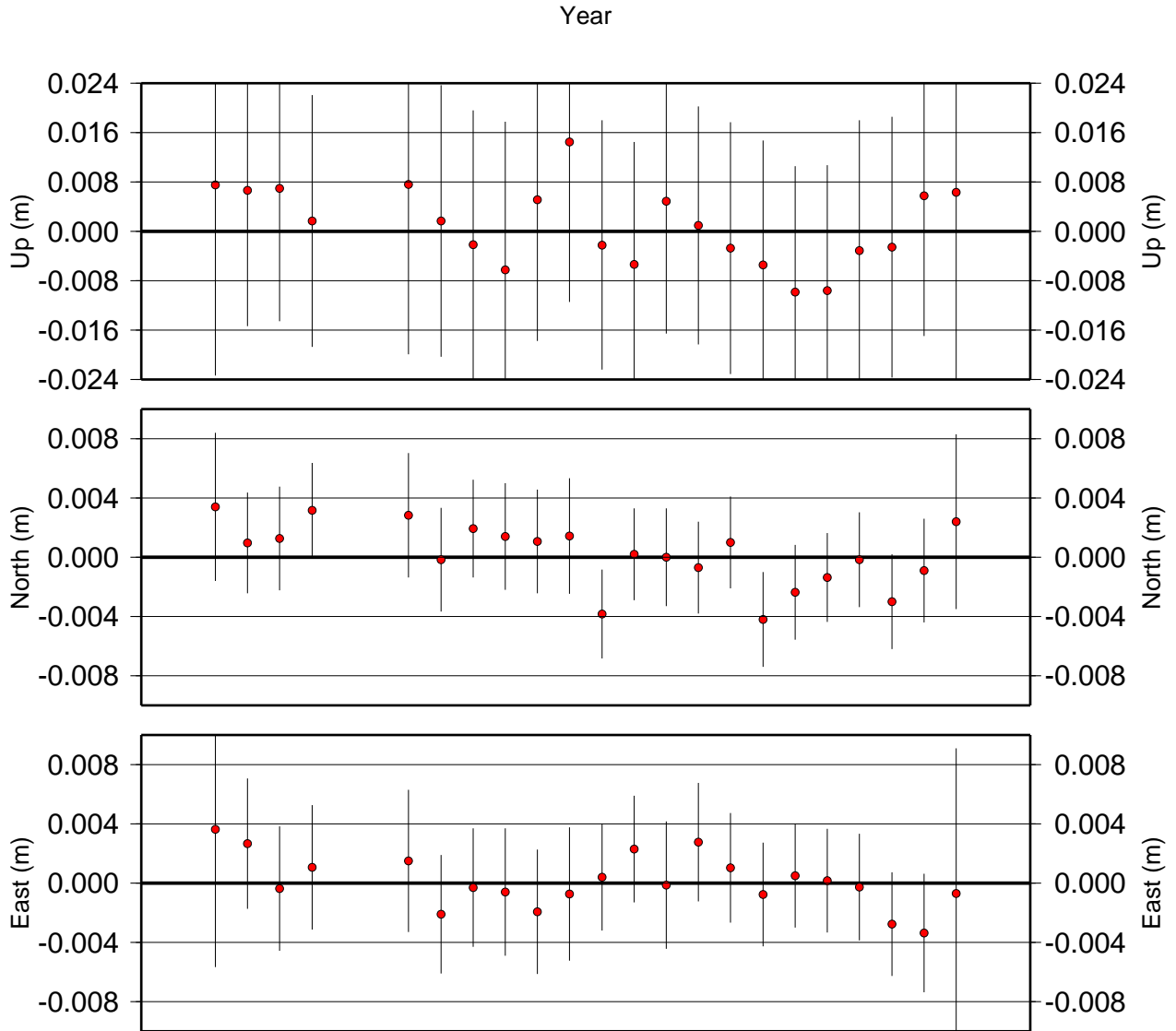
Year

#SOLUTIONS=24 ALIC_50137M001 AT 2002:05:15

POS	XYZ	-4052052.0442	4212836.0863	-2545105.5628	M
+/-	ENU	0.0009	0.0008	0.0043	M
RMS	ENU	0.0016	0.0023	0.0055	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

9.2 CEDU

CEDU_50138M001 AT 2002:05:15



Year

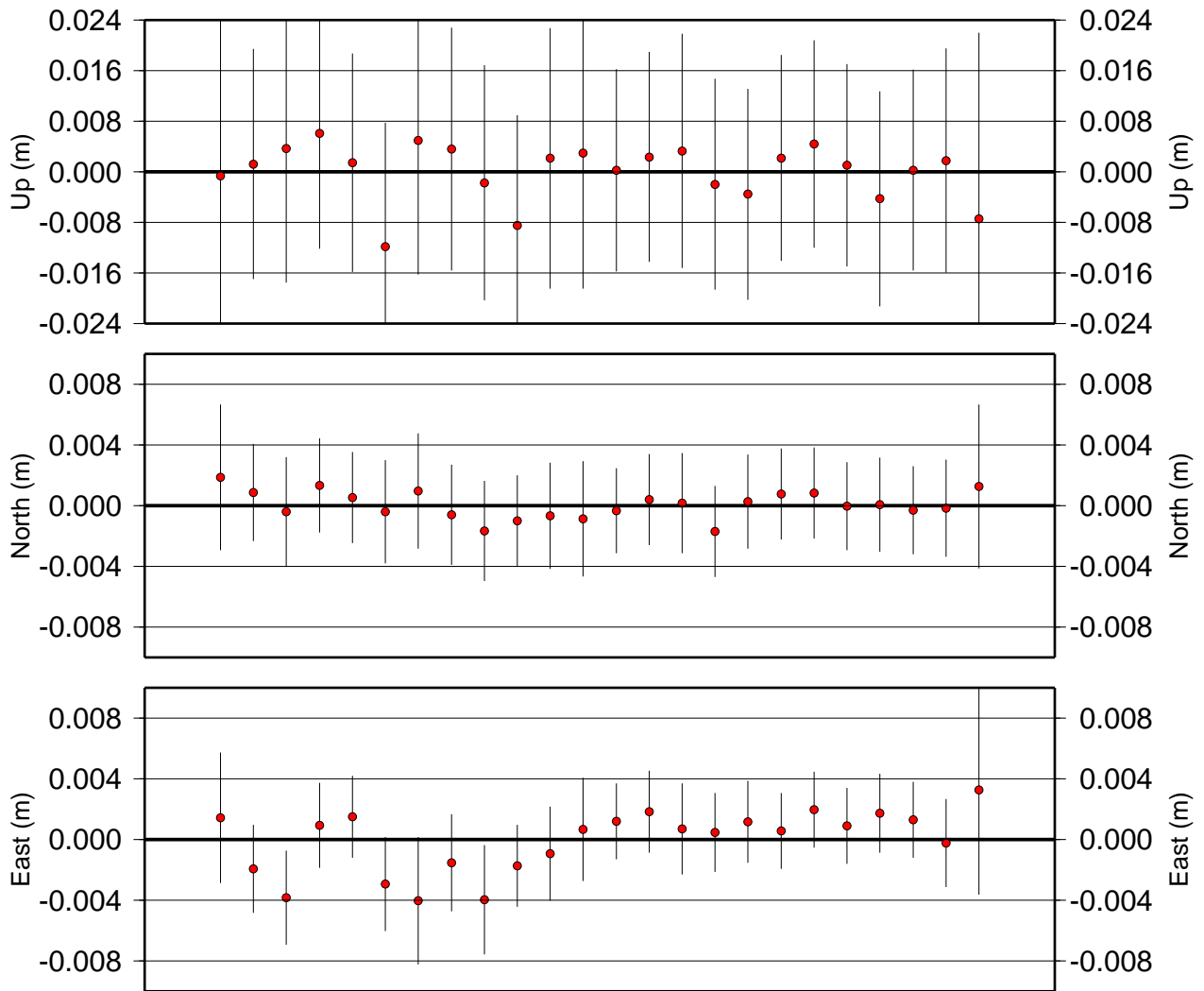
#SOLUTIONS=22 CEDU_50138M001 AT 2002:05:15

POS	XYZ	-3753472.4603	3912741.0072	-3347960.6064	M
+/-	ENU	0.0009	0.0008	0.0047	M
RMS	ENU	0.0018	0.0021	0.0063	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

9.3 HIL1

HIL1_50141S001 AT 2002:05:15

Year



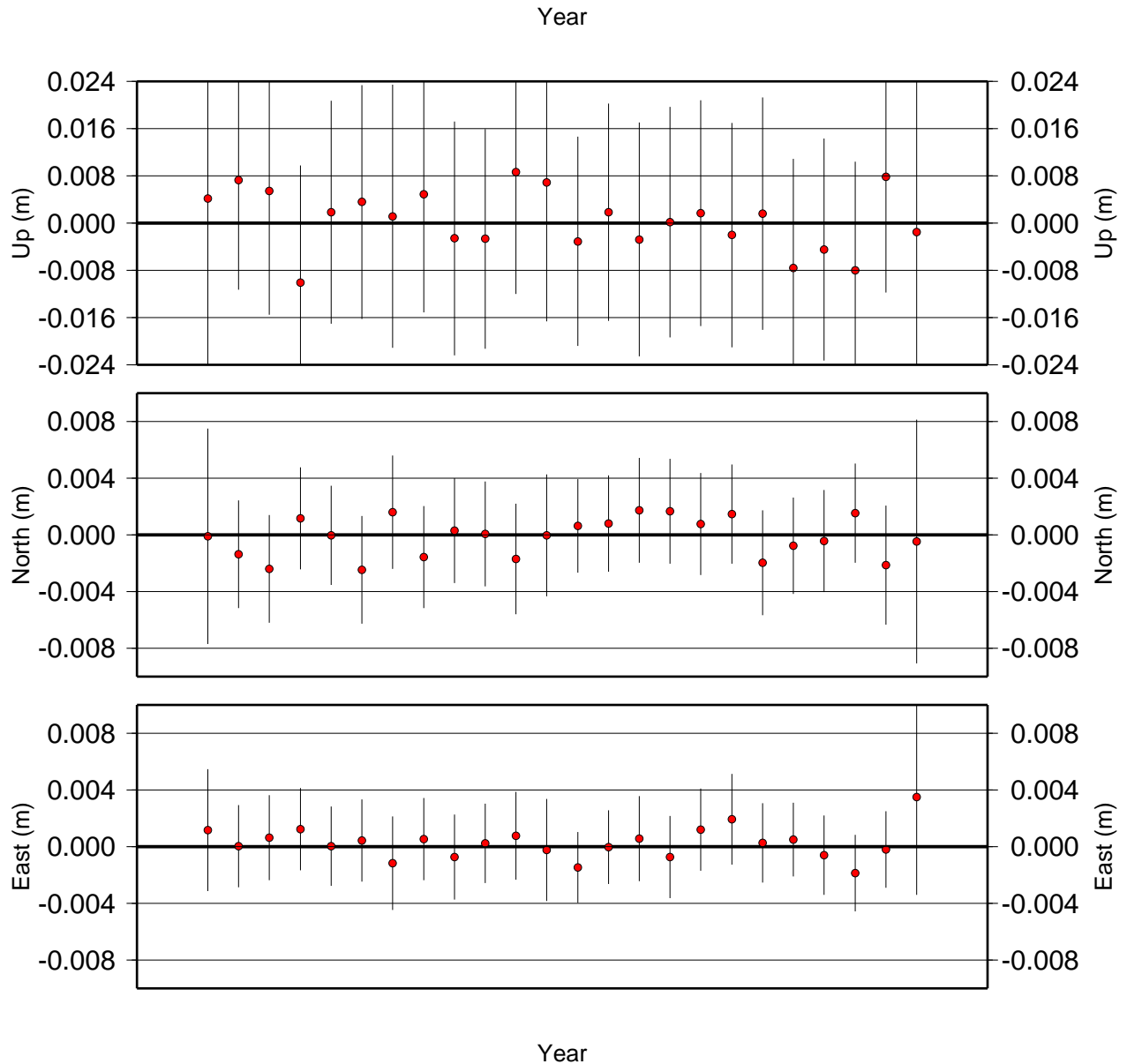
Year

#SOLUTIONS=24 HIL1_50141S001 AT 2002:05:15

POS	XYZ	-2355571.2770	4886093.0651	-3343994.5612	M
+/-	ENU	0.0006	0.0007	0.0037	M
RMS	ENU	0.0020	0.0009	0.0044	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

9.4 KARR

KARR_50139M001 AT 2002:05:15



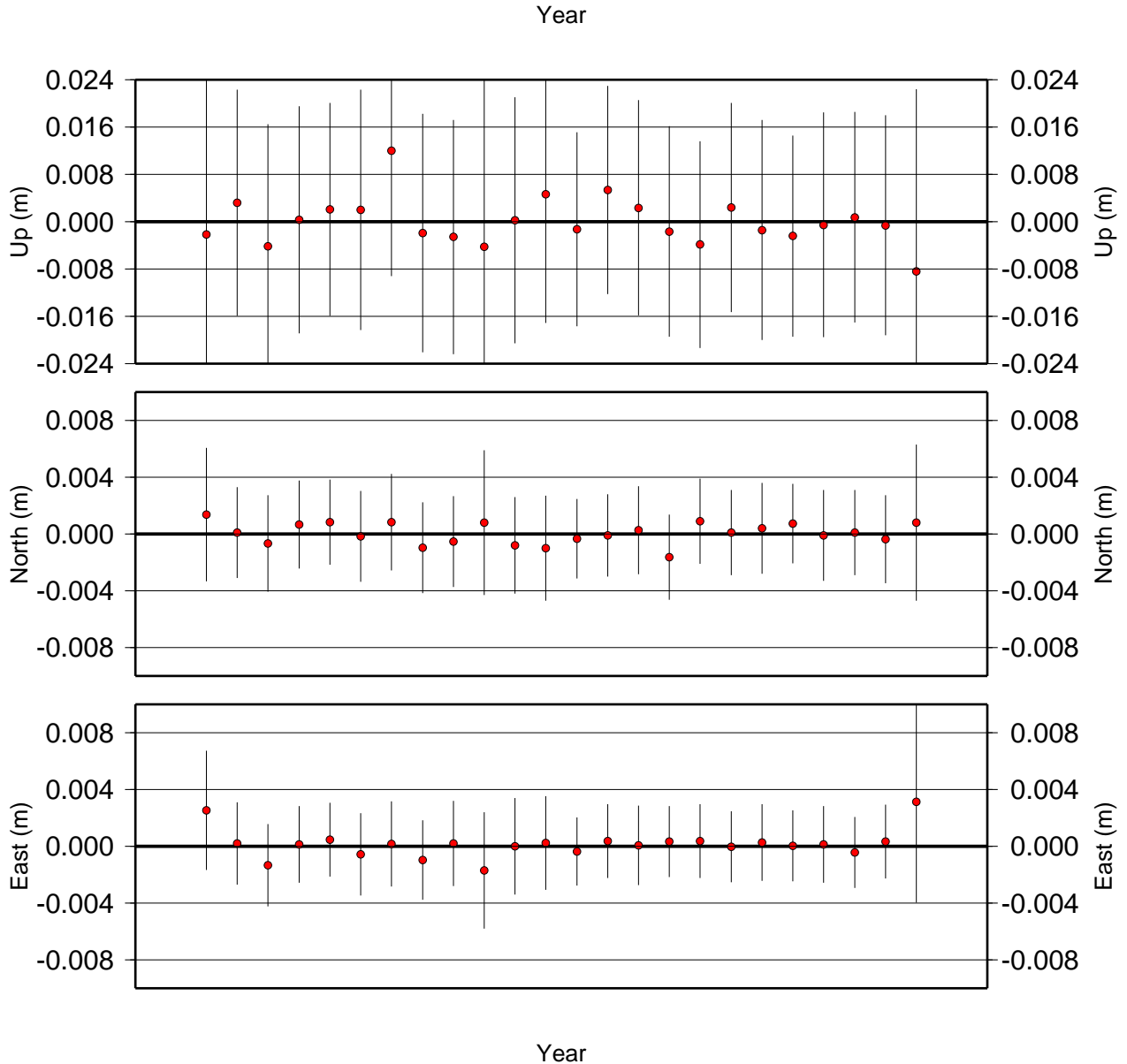
Year

#SOLUTIONS=24 KARR_50139M001 AT 2002:05:15

POS	XYZ	-2713832.4991	5303935.1053	-2269514.7376	M
+/-	ENU	0.0006	0.0008	0.0041	M
RMS	ENU	0.0011	0.0014	0.0051	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

9.5 PERT

PERT_50133M001 AT 2002:05:15

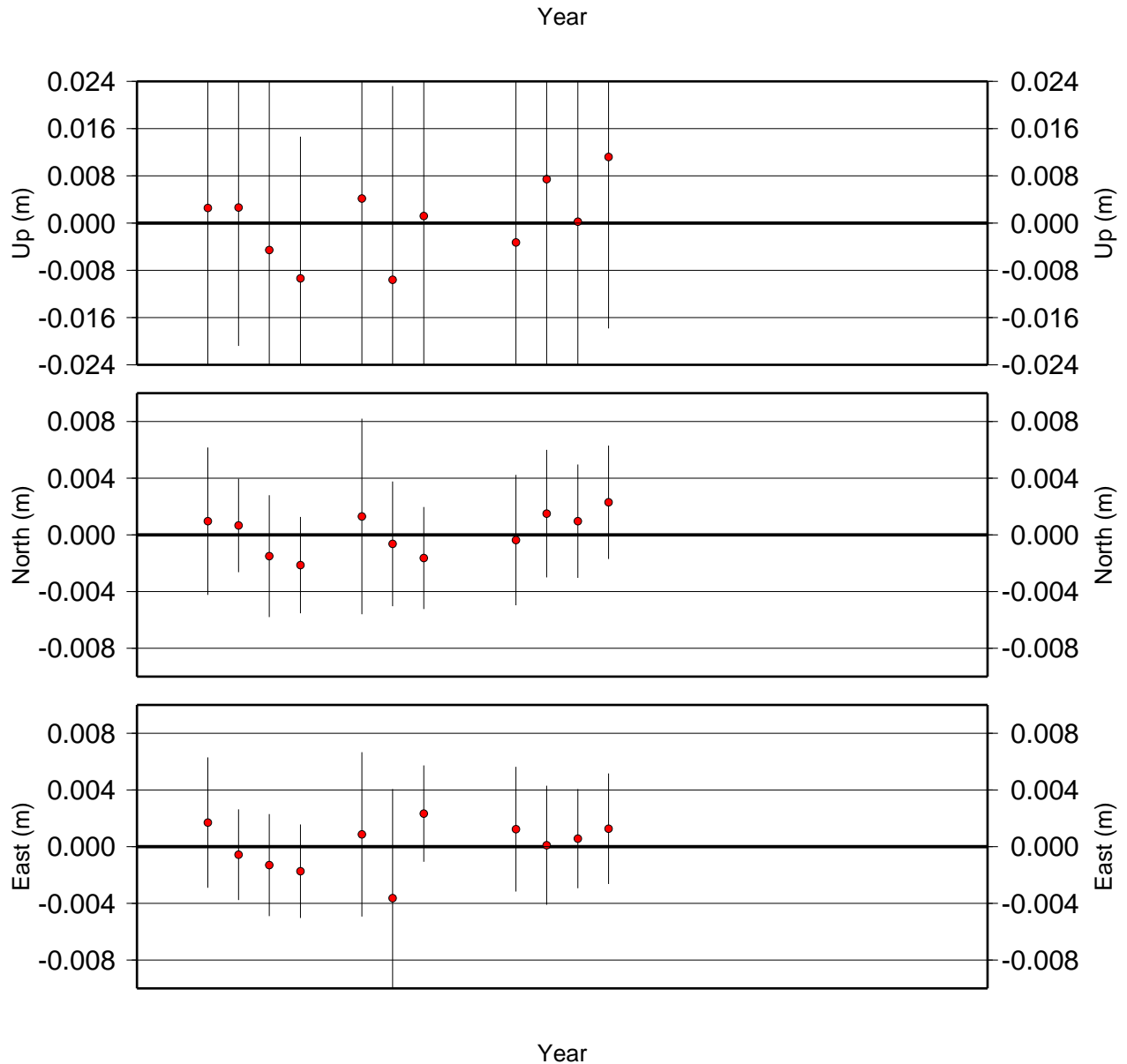


#SOLUTIONS=24 PERT_50133M001 AT 2002:05:15

POS	XYZ	-2368687.2204	4881316.5592	-3341795.8925	M
+/-	ENU	0.0006	0.0007	0.0040	M
RMS	ENU	0.0010	0.0007	0.0039	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

9.6 YAR1

YAR1_50107M004 AT 2002:05:15



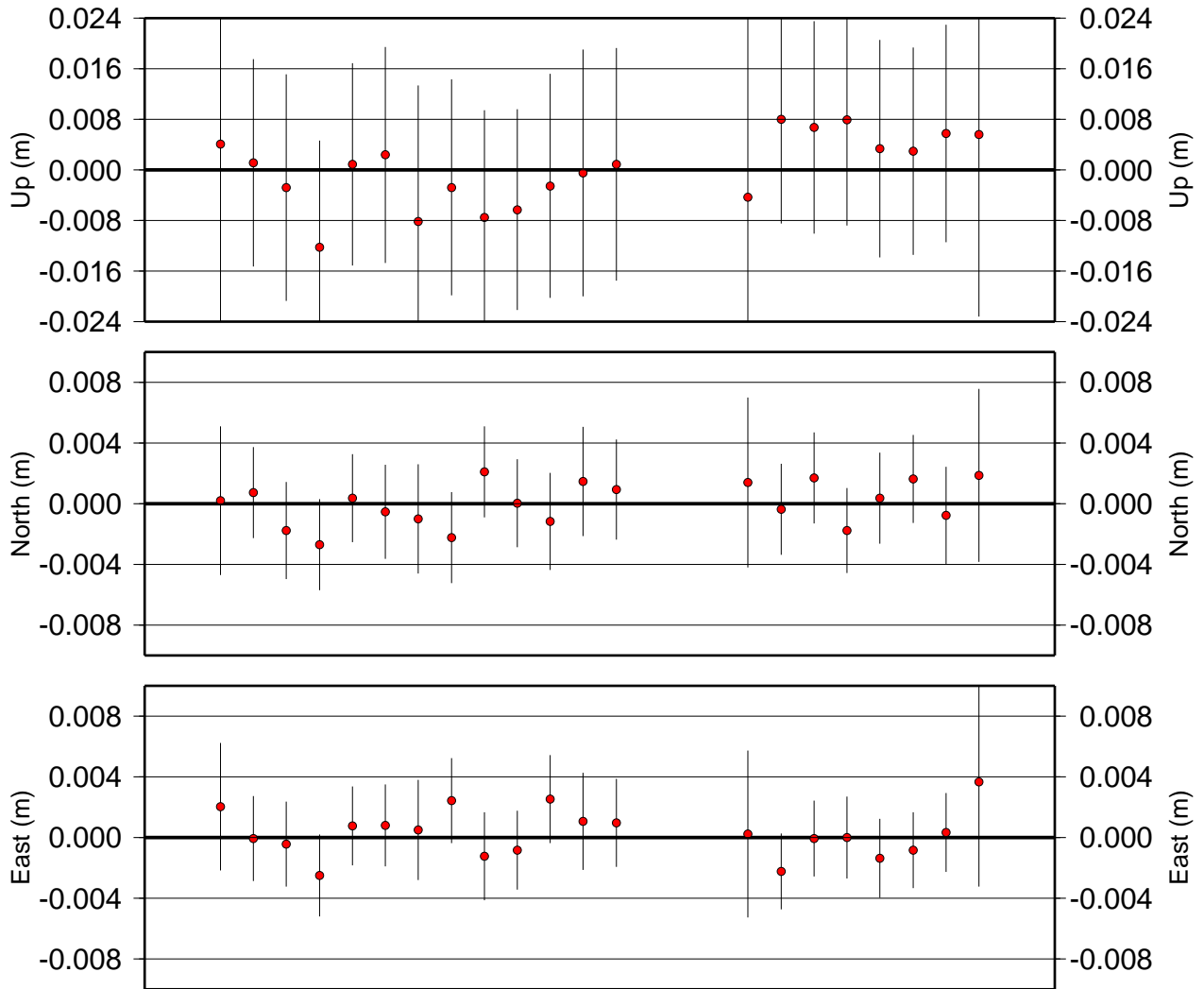
#SOLUTIONS=11 YAR1_50107M004 AT 2002:05:15

POS	XYZ	-2389025.7912	5043316.9243	-3078530.4784	M
+/-	ENU	0.0012	0.0012	0.0087	M
RMS	ENU	0.0017	0.0014	0.0062	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR

9.7 YAR2

YAR2_50107M004 AT 2002:05:15

Year



Year

#SOLUTIONS=21 YAR2_50107M004 AT 2002:05:15

POS	XYZ	-2389025.7901	5043316.9211	-3078530.4760	M
+/-	ENU	0.0006	0.0007	0.0039	M
RMS	ENU	0.0015	0.0014	0.0055	M
VEL	XYZ	0.0000	0.0000	0.0000	M/YR
VEL	ENU	0.0000	0.0000	0.0000	M/YR
+/-	ENU	0.0000	0.0000	0.0000	M/YR