The CVN Geodetic Observations and Results

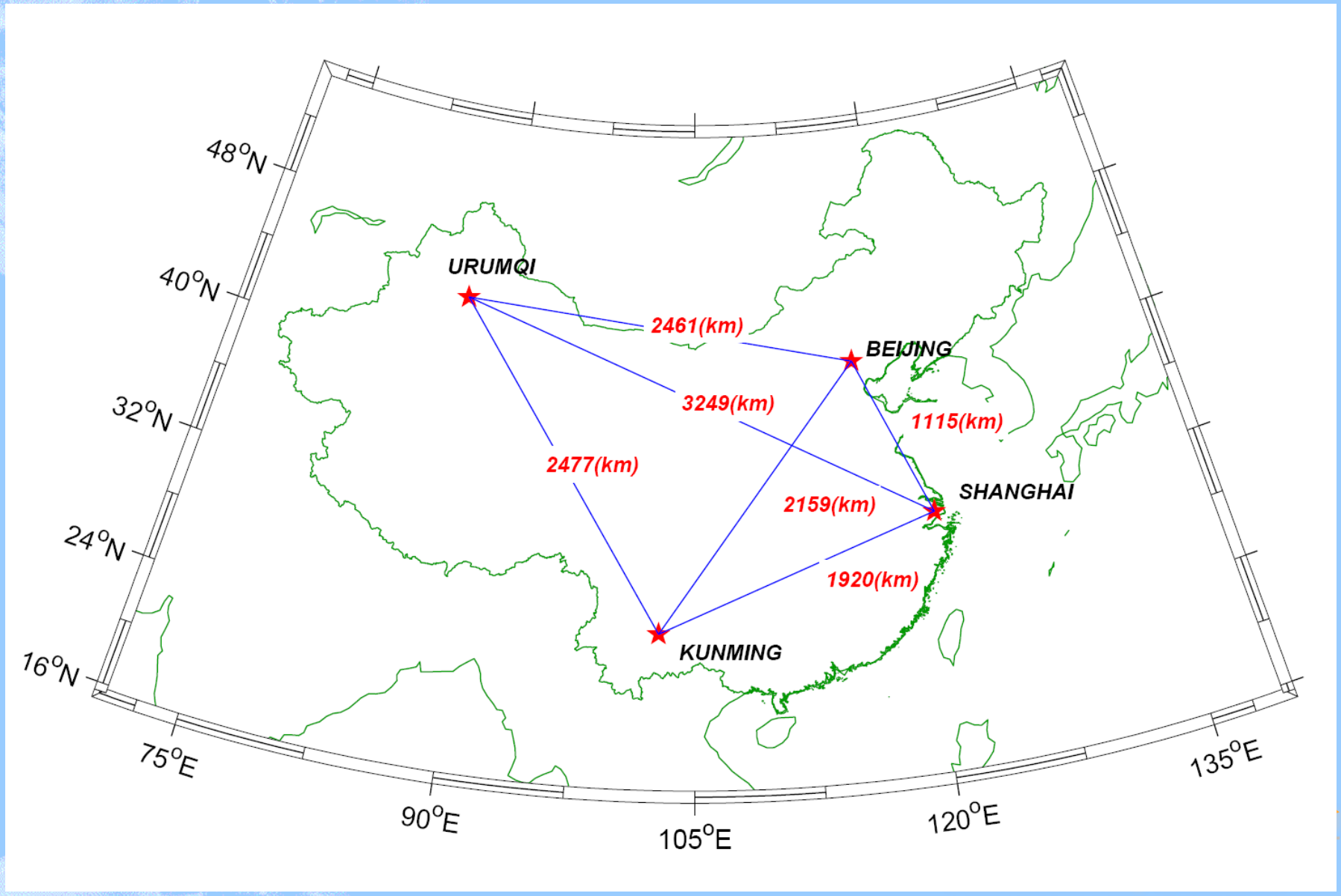
Guangli Wang, Minghui Xu,
Zhibin Zhang, Shuangjing Xu, Fengchun Shu

Shanghai Astronomical Observatory

中国科学院上海天文台
Shanghai Astronomical Observatory
Chinese Academy of Sciences

1. The Geodetic Experiments of CVN
2. Data Reduction
3. Results

1. The Geodetic Experiments of CVN



The CVN experiments started since 2006, supporting by a project of crustal motion Observation network and by lunar mission. There were about 25 experiments scheduled, 19 of them obtained results.

The statistics of CVN experiments

Exp.code	Date	stations	wrms D.res.(ps)	Nobs
s6602	2006.06.01	ShBjKmUr	30.27	187
r7404a	2007.04.04	ShBjKmUr	57.31	1561
r7620a	2007.06.20	ShBjKmUr	32.66	479
r8919a	2008.09.19	ShBjKmUr	36.11	282
g1003d	2010.06.22	ShKmUr	65.84	545
g1004a	2010.07.27	ShKmUr	48.49	368
g1005a	2010.08.10	ShKmUr	64.49	414

Exp.code	Date	stations	wrms D.res.(ps)	Nobs
r0902a	2010.09.02	ShBjKmUr	45.97	1509
r1117a	2011.01.17	ShBjKmUr	34.3	2534
r1325a	2011.03.25	ShBjKmUr	53.79	1598
r1425a	2011.04.25	ShBjKmUr	55.67	902
r1524a	2011.05.24	ShKmUr	44.44	1136
r1720a	2011.07.20	ShKmUr	44.04	2248
r1a11a	2011.10.11	ShKmUr	112	641
r1b14a	2011.11.14	ShKmUr	100.1	1302
cn1304	2013.09.11	ShKm-Ur	46	446
cn1305	2013.11.21	ShKmUrTm	16.5	1323
cn1401	2014.09.28	ShBjKmUr	57.8	1097
cn1402	2014.10.18	ShKmUrTm	55.6	1082

2. Data reduction

There are two software systems used in data reduction:

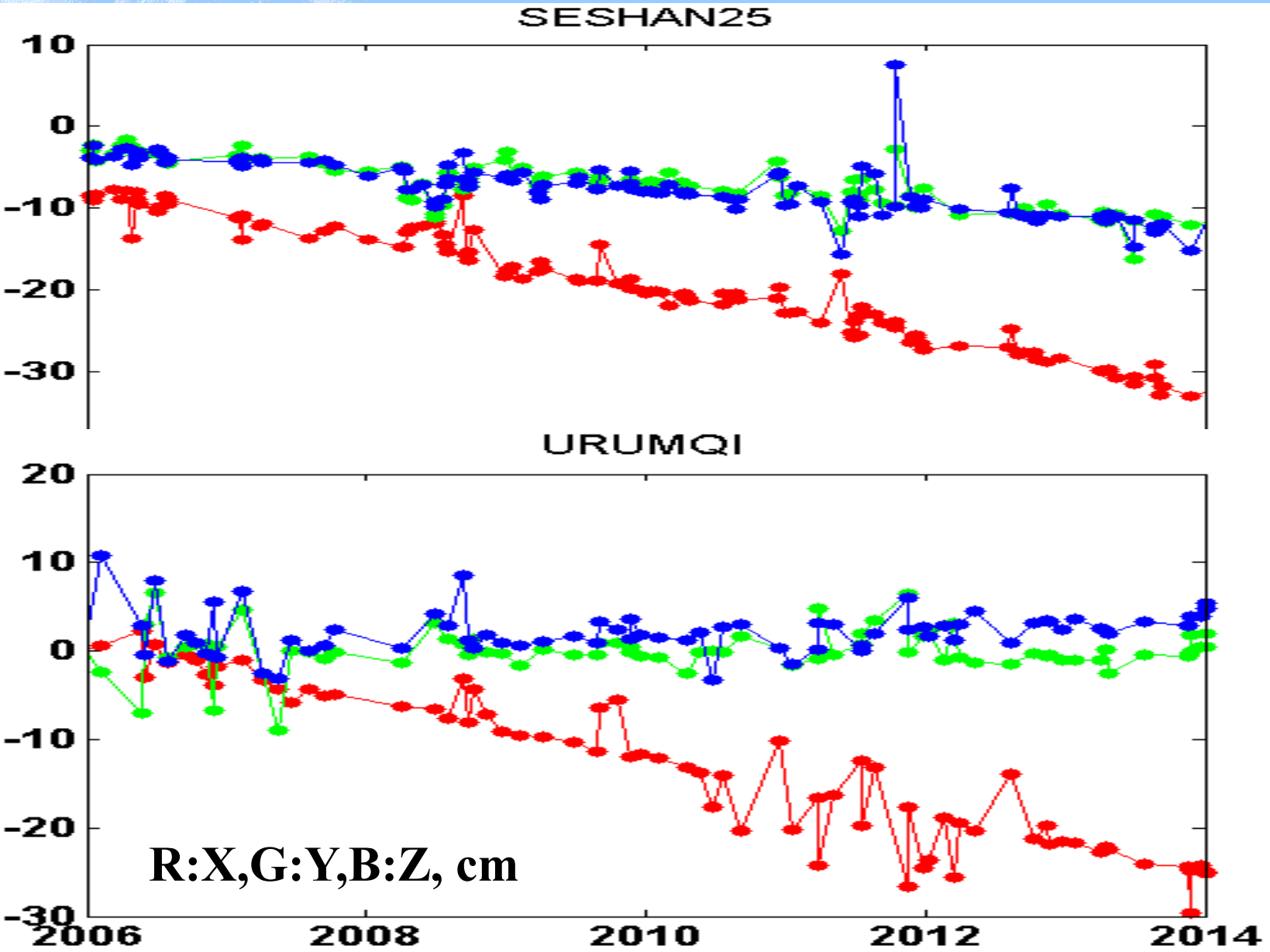
- SCORR+GAPS+OCCAM/VieVS
- DiFX+HOPS+CALC/SOLVE

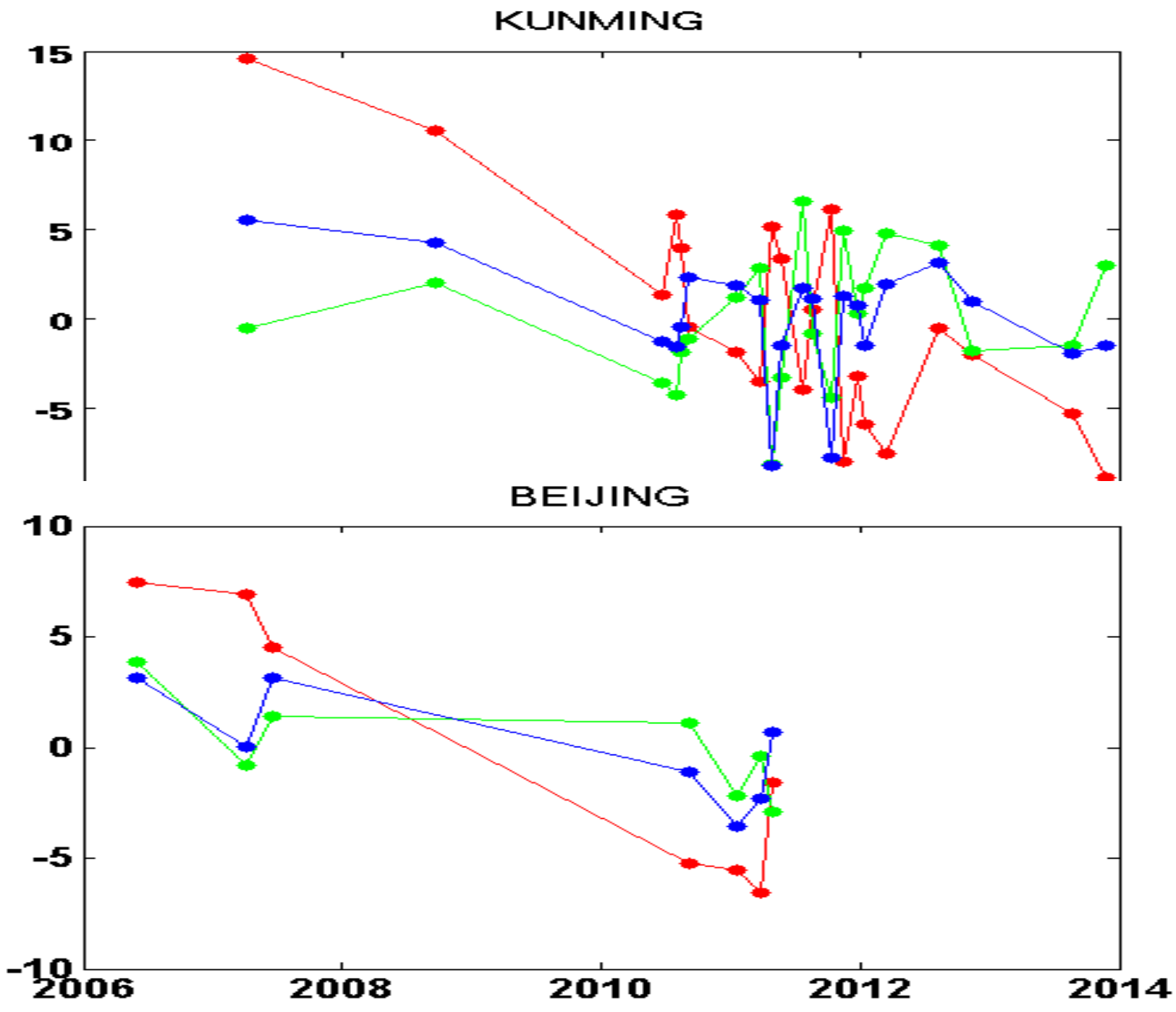
The first system can only produce NGS data file. Since last year we started work on the second system.

Solution setup

- Time series solution
- Data
  - IVS data containing CVN stations + CVN data
  - span 2006.1-2014.6
- Frames constraint to ICRF2/ITRF2008
- Parameters: stations positions; nutations; UT1 rate; piecewise clock/atm. 60/30min.

3. Results


SESHAN25
10
0
-10
-20
-30
URUMQI
20
10
0
-10
-20
-30
2006
2008
2010
2012
2014
R:X,G:Y,B:Z, cm


KUNMING
15
10
5
0
-5
BEIJING
10
5
0
-5
-10
2006
2008
2010
2012
2014

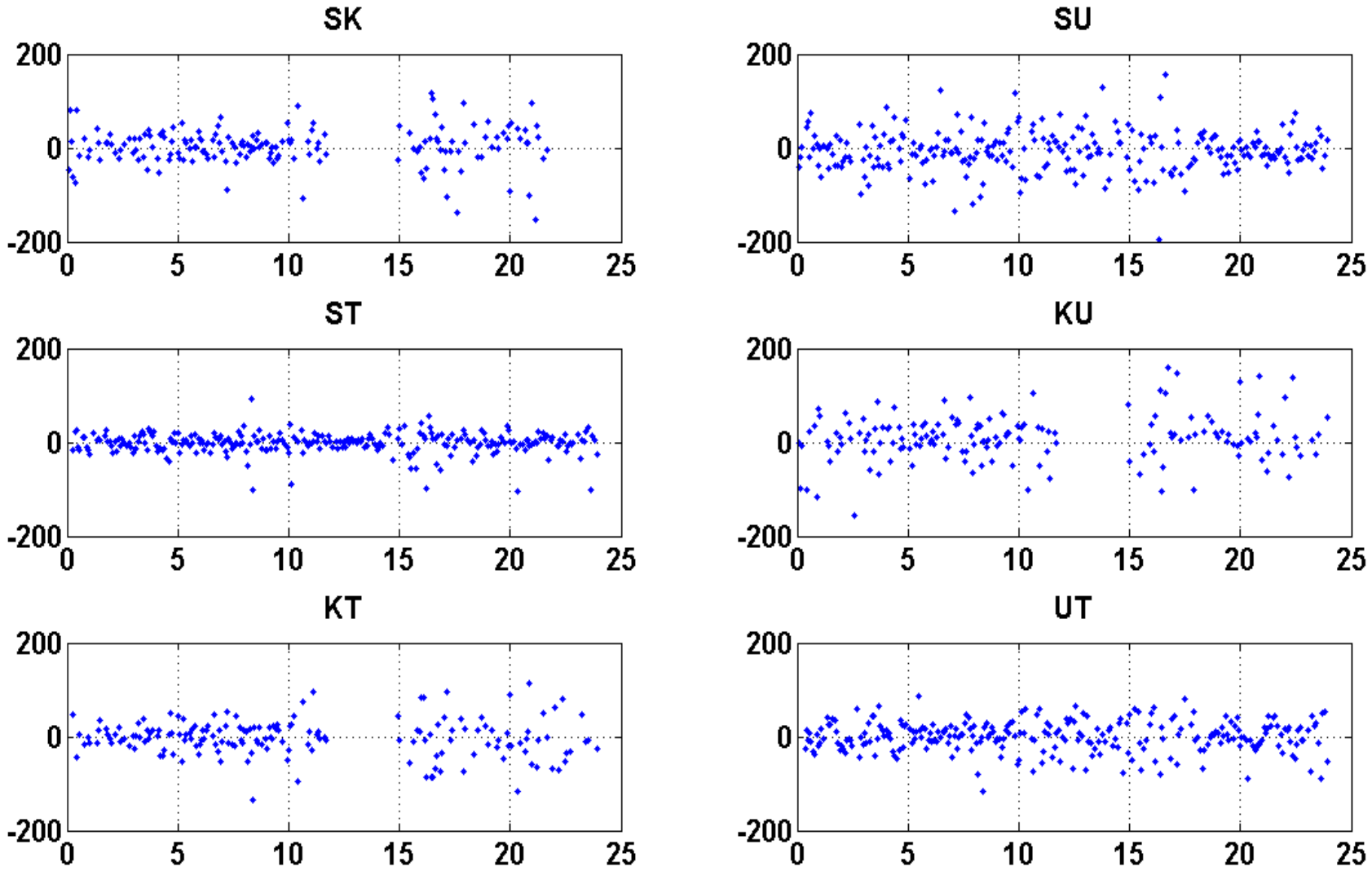
CVN stations positions(Ref.Epoch 2010)

stations	X(mm)	Y(mm)	Z(mm)	Sx	Sy	Sz
BEIJING	-2201304677.55	4324789078.87	4125367778.93	8.75	6.17	6.59
KUNMING	-1281152740.24	5640864383.96	2682653476.02	12.16	12.26	8.06
SESHAN25	-2831687299.99	4675733525.17	3275327536.25	0.73	0.66	0.67
URUMQI	228310309.47	4631922766.55	4367064047.76	1.52	1.52	1.13

CVN stations velocities

Stations	Vx(mm/yr)	Vy(mm/yr)	Vz(mm/yr)	SVx	SVy	SVz
BEIJING	-26.62	-6.32	-11.44	5.81	4.06	4.24
KUNMING	-36.33	2.74	-9.60	6.63	5.78	4.28
SESHAN25	-29.87	-11.35	-11.93	0.11	0.11	0.09
URUMQI	-32.12	-0.97	5.21	0.28	0.30	0.18

CN1305 post-fit delay wrms residuals(ps)



Tianma65's position from CVN experiments.

	Obs. date	X(mm)	Y(mm)	Z(mm)	Sx	Sy	Sz
CN1305	2013.11.21	-2826708626.59	4679237079.15	3274667538.14	2.267	3.961	3.691
CN1402	2014.10.18	-2826708609.64	4679237024.88	3274667446.25	9.124	19.370	12.286

Thank you for your attention!

中国科学院上海天文台
Shanghai Astronomical Observatory
Chinese Academy of Sciences