



*Institution of Russian Academy of Sciences
Institute of Applied Astronomy RAS*

Russian VLBI-network QUASAR – participation in Domestic and IVS observational programs

Institute of Applied Astronomy RAS

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Sergey



19th European VLBI for Geodesy and Astrometry Working Meeting

10th IVS Analysis Workshop

IVS 10th Anniversary Celebration

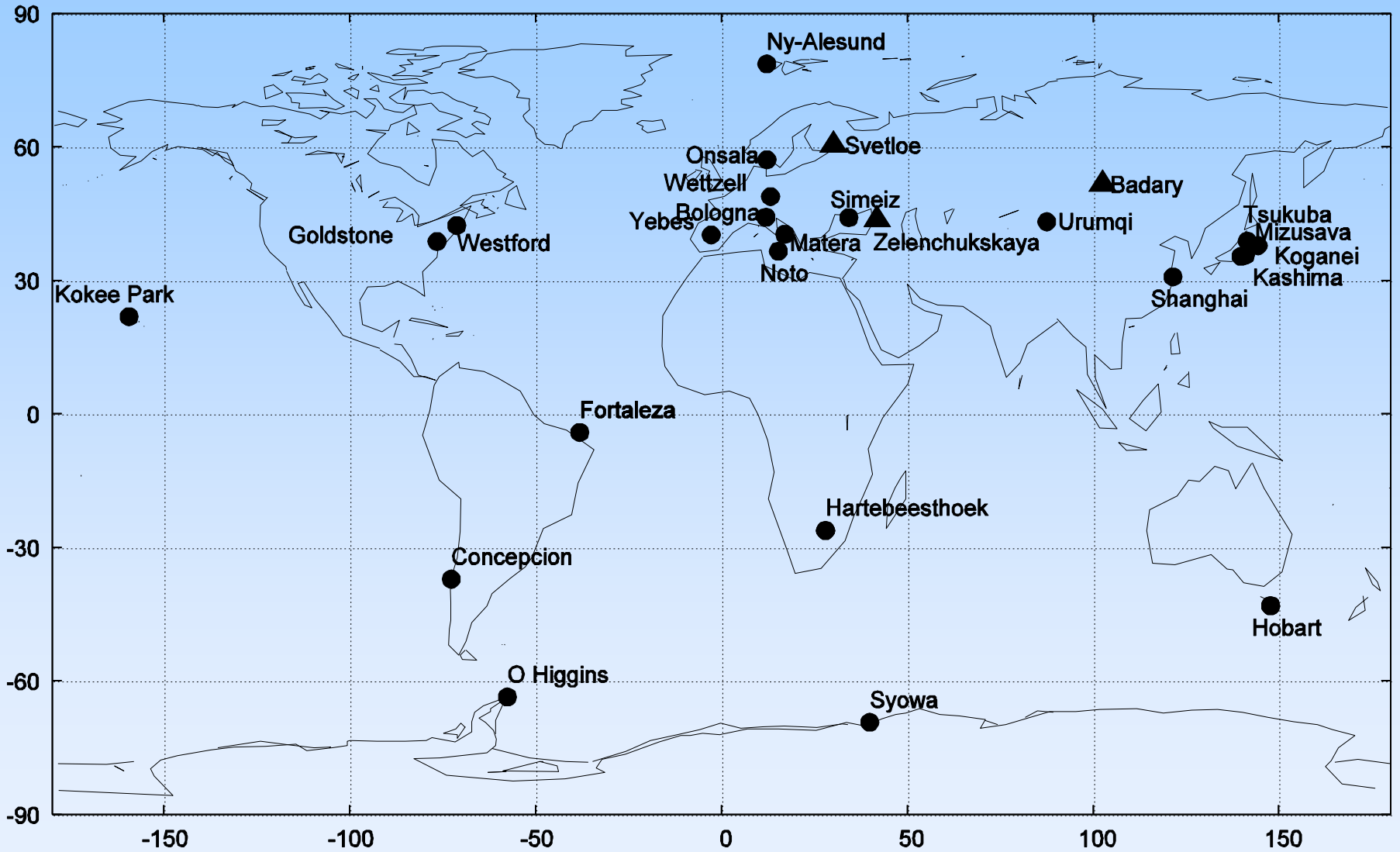
Bordeaux, France – March 23-28, 2009



QUASAR NETWORK 2015×4282×4405 км



IVS map



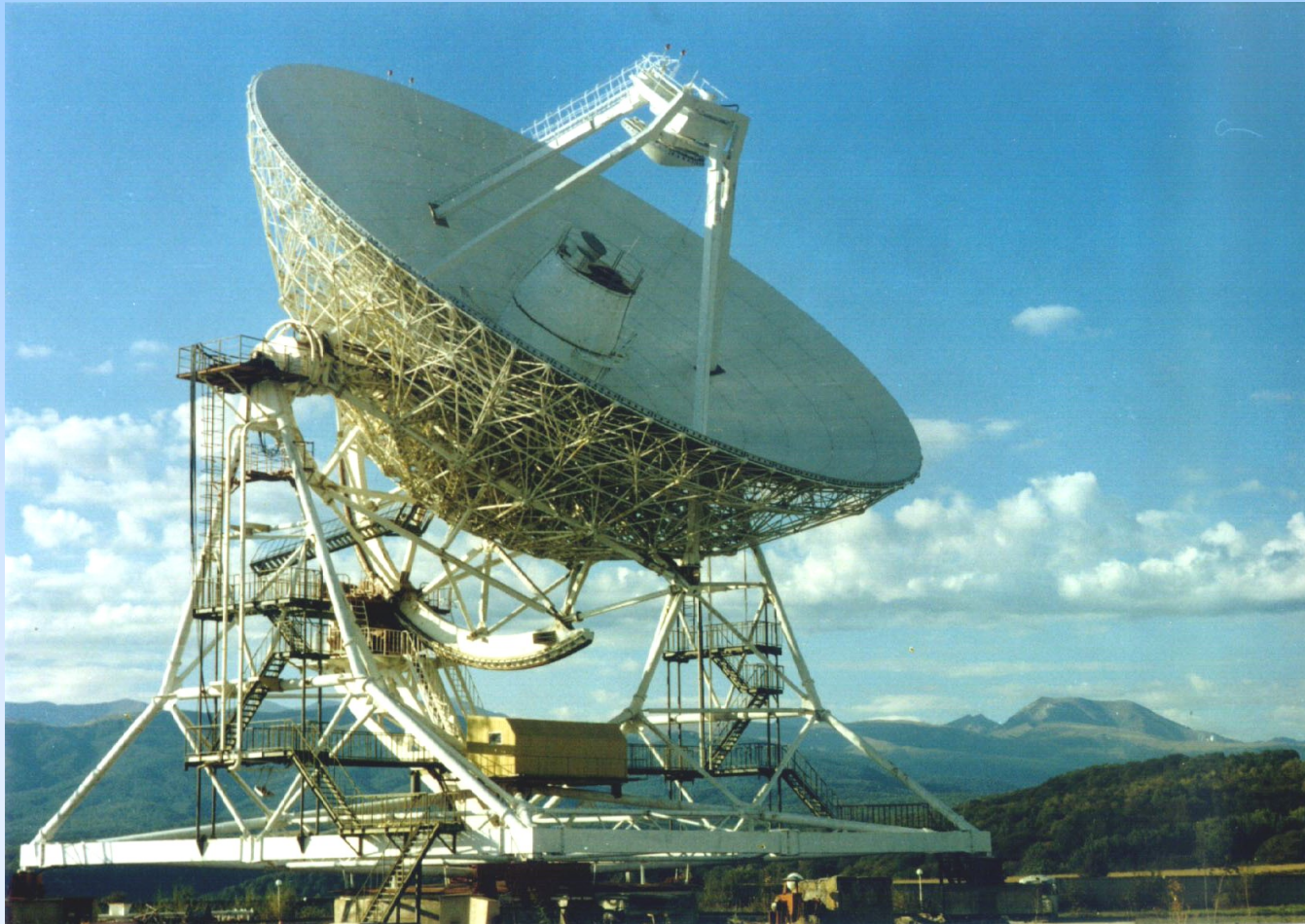
STATIONS EQUIPMENT

- 32 m radio telescope, equipped with low noise receivers,
- frequency and time keeping system with H-masers, local geodetic network,
- control computers, local computer
- network and technical service systems, P4100
- **SV**: recording terminals Mark 5A, Mark5B and S2, DAS MarkIV ,
- **ZC**: recording terminals Mark 5A, Mark5B and S2, DAS VLBA4,
- **BD**: recording terminals Mark 5B and S2, DAS P1000,

Svetloe: 1999, 2003



Zelenchukskaya: 2001, 2005

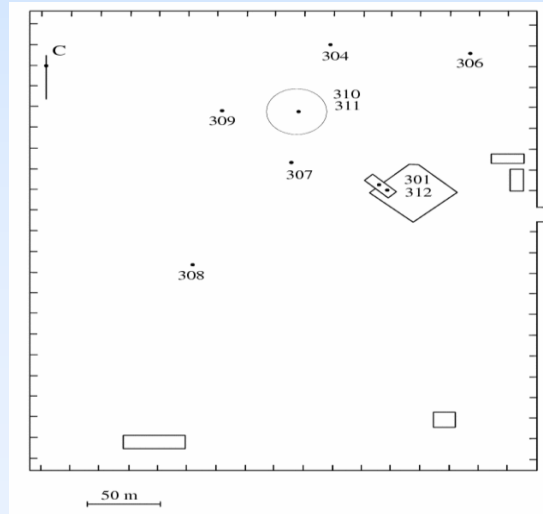
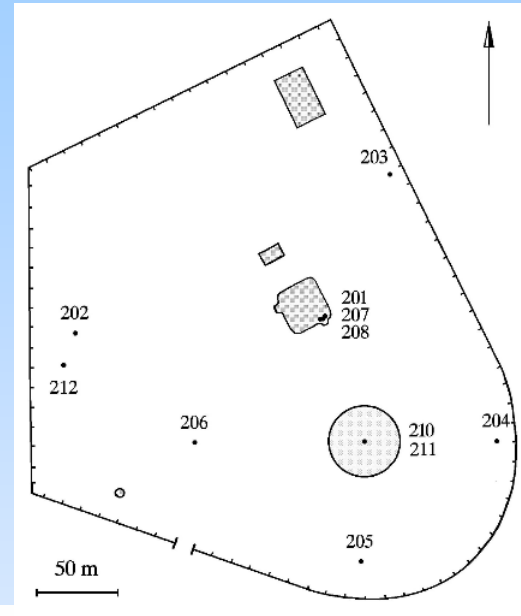
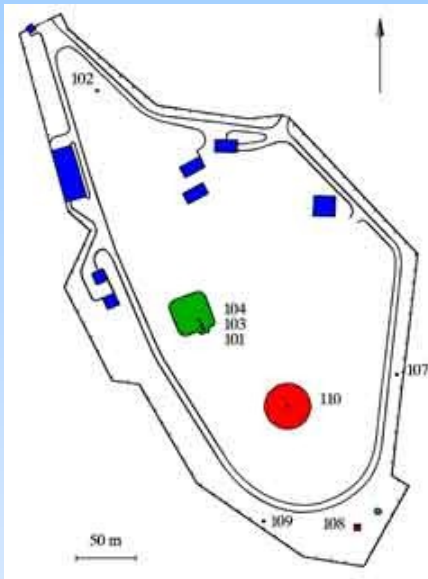


Badary: 2005, 2007





Local geodetic network



QUASAR stations: Observation activity summary 2006-2009

	2006			2007			2008			2009		
	Sv	Zc	Bd	Sv	Zc	Bd	Sv	Zc	Bd	Sv	Zc	Bd
Ruu		6	6	10	12	17	18	15	18	24	24	24
RuE	9	9	9	9	9	9	14	14	14	24	24	24
IVS	45	65		47	38	13	73	70	44	79	59	60
IVS- Int	19			18			27			24		

SVETLOE: IVS observations

	R1	R4	EUR	T2	R&D	VLBA	CONT	E3	all
2003		13	2	3					18
2004		28	4	8				8	48
2005	9	26	3	2			15	11	66
2006		33	4	3	1	1		3	45
2007		39	3	1	2	2			47
2008	2	49	1	4	3		15		74
2009	16	39	2	1					59

Zelenchukskaya: IVS sessions

	R1	R4	EUR	T2	R&D	VLBA	CONT	all
2005	1	1						2
2006	23	28	6	4		2		63
2007	5	25	2		2	2		36
2008	25	24	2			6	15	72
2009	13	38	1	2		4		59

Badary: IVS sessions

	R1	R4	EUR	T2	R&D	all
2007		10	2	1		13
2008	7	34		1		42
2009	13	39	5	2	1	60

SVETLOE 2006 reconstruction

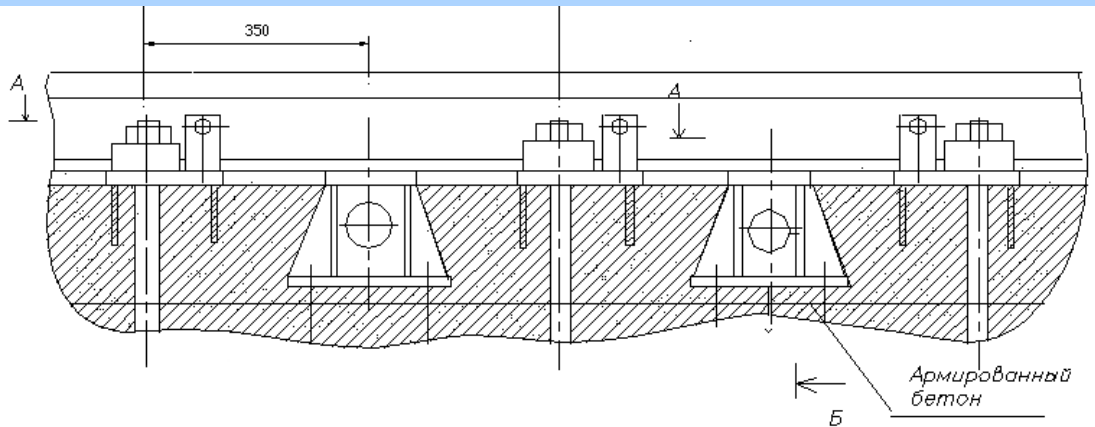
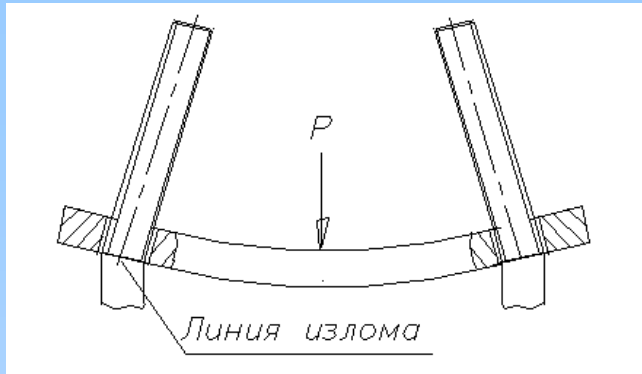
- Large equipment cabin was dismantled. Refrigerators were remounted into the new small cabin on the azimuthal antenna platform. Electric drives were removed from the cable loop cabin under the azimuthal antenna platform.
- The antenna rail was reconstructed by adding a steel supporting construction and rebuilding the concrete under it.
- Electronic part of the angle data unit was improved by using modern components.

Svetloe: 2006: reconstruction

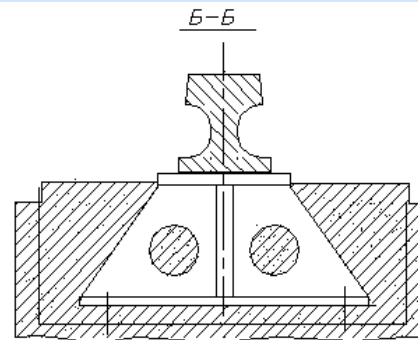
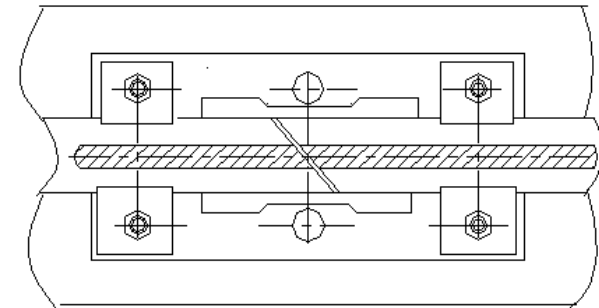


rail reconstruction

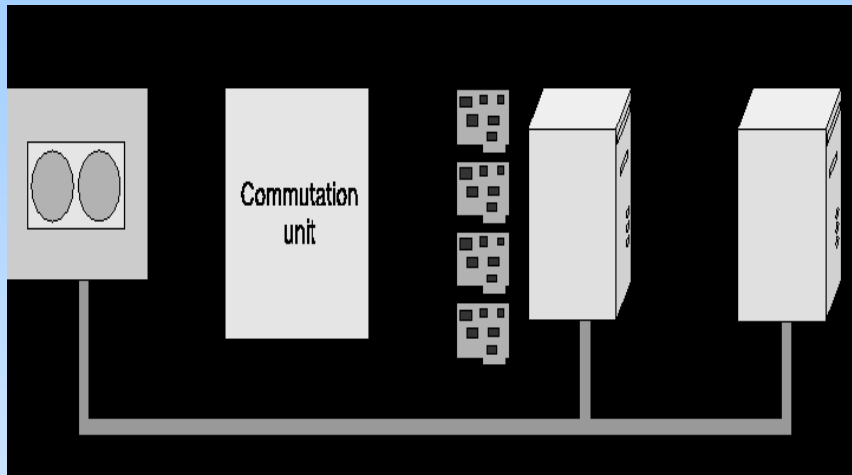
Svetloe: 2006 summer



Место стыка в плане



IAA CORELLATOR



MicroPARSEC correlator consists of 12 MicroPARSEC boards and 2 S2-PT devices – worked since the middle of 2006

UPGRATES

- RU-sessions
- 2006 – Jan 2009: S2
- Feb. 2009 - : Mark 5b
experimental Mark 5b sessions:
ru-U – august 2008 (1-2 hour)
ru-E 22 Nov. 2008

IAA corellator

- 2006-2008 3-station IAA correlator
MicroPARSEC consists of 12 MicroPARSEC boards and 2 S2-PT devices – worked since the middle of 2006
- 2009 6-station correlator IAA «ARC»

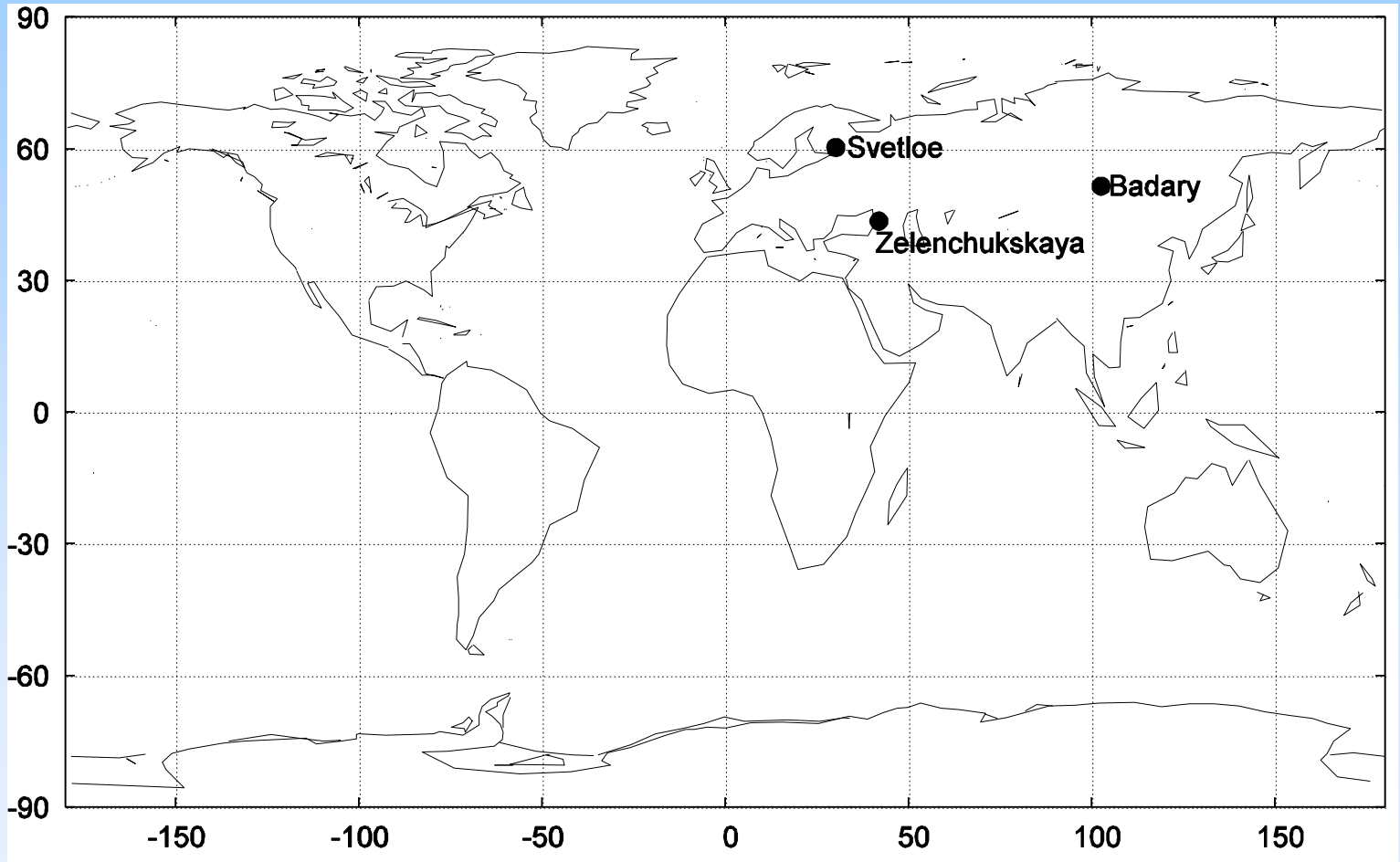
Domestic Programs

- RU-U : UT1-UTC (8 h) Bd-Zc
(twice a month)
- RU-E : EOP (24 h) Sv-Bd-Zc
(twice a month)

ru-u, ru-e: 2006-2008: S2 registration

ru-u, ru-e: 2009: Mark5b registration

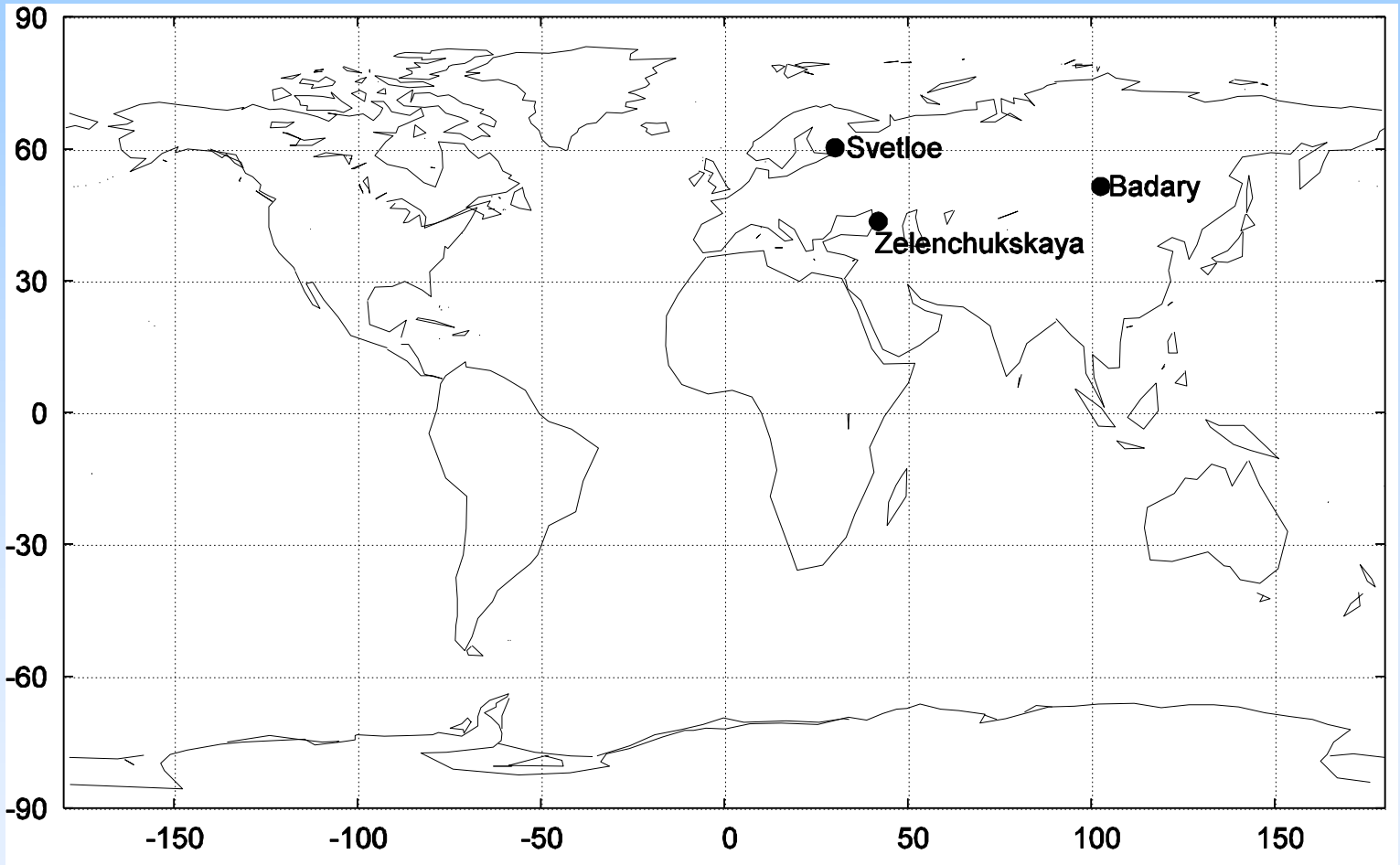
QUASAR VLBI network



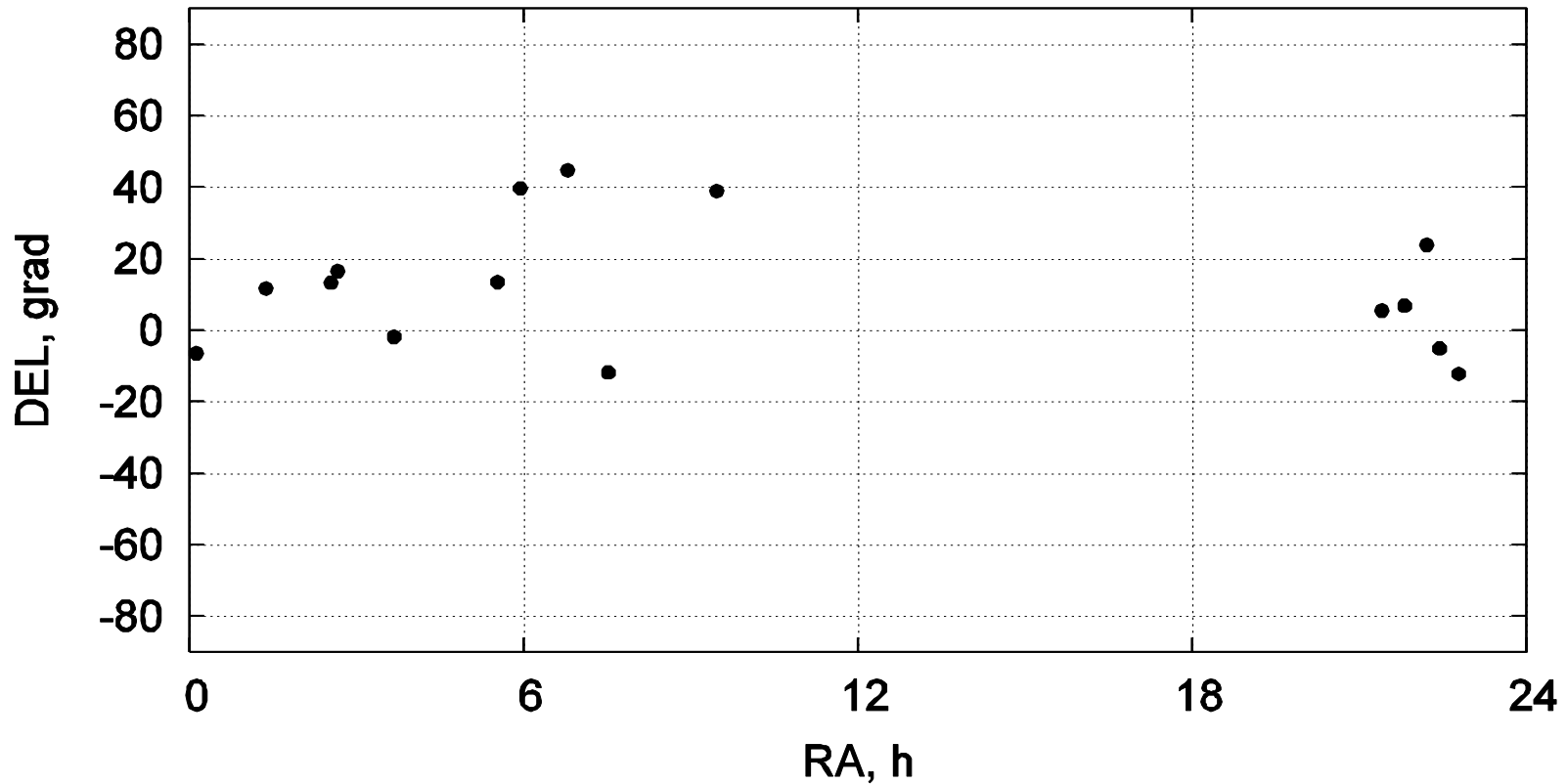
QUASAR NETWORK

2015×4282×4405 KM

Svetloe	SVETLOE	$\varphi = 60^{\circ}32'$ $\lambda = 29^{\circ}47'$ h = 86 m
Zelenchukskaya	ZELENCHK	$\varphi = 43^{\circ}47'$ $\lambda = 41^{\circ}34'$ h = 1175 m
Badary	BADARY	$\varphi = 51^{\circ}46'$ $\lambda = 102^{\circ}$ h = 813 m)

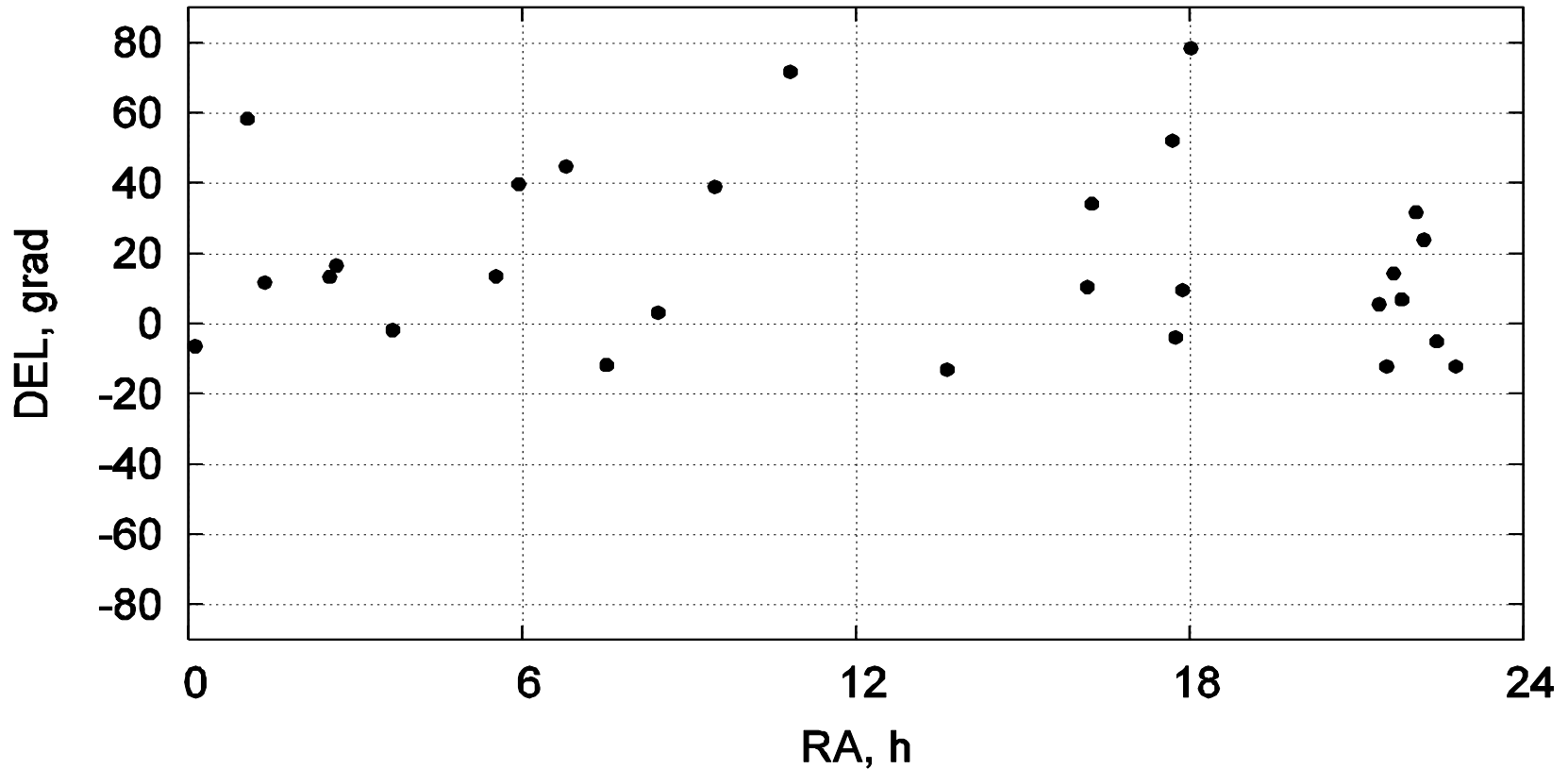


RU-U radio sources



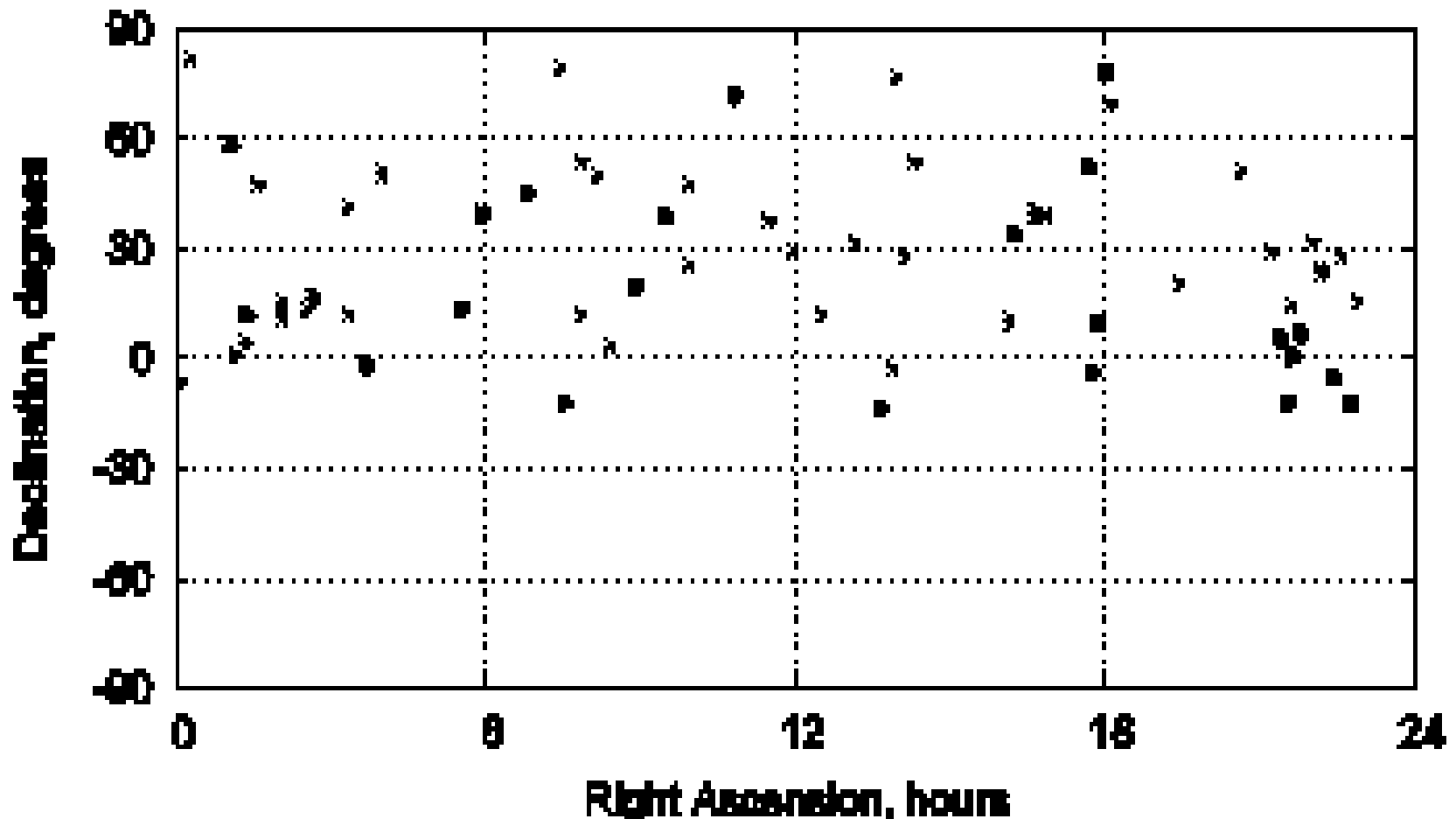
16 radiosources, $F = 0.93 - 10.73$ J, 80

RU-E radio sources

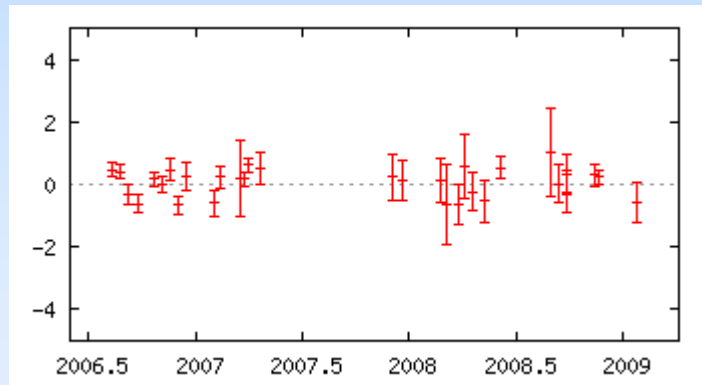
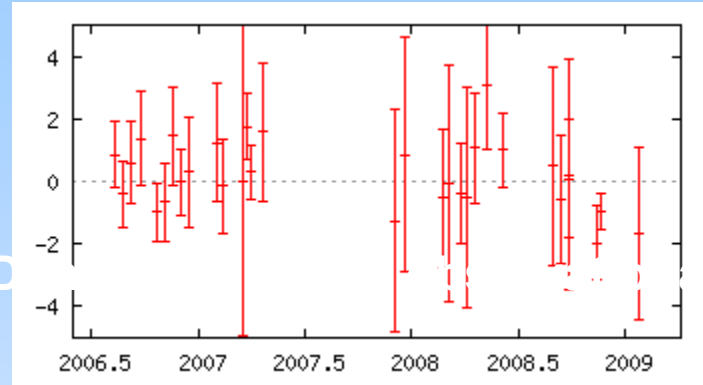
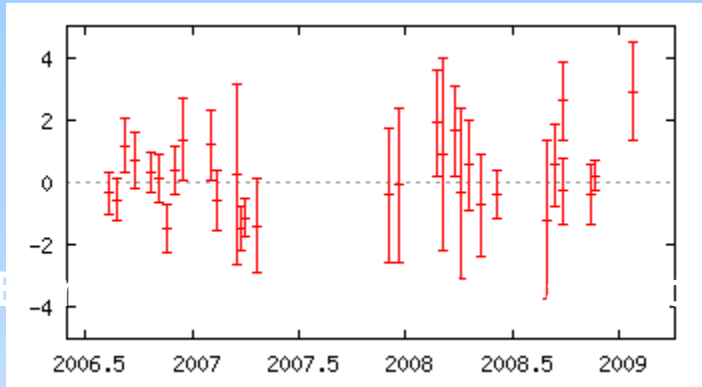


28 radiosources, $F = 0.86 - 10.73$ J, 265

new radio sources set (63 sources, < 0.5 J)



RUE-IERS C05 (C04),(31 sessions) : X_p , Y_p , UT

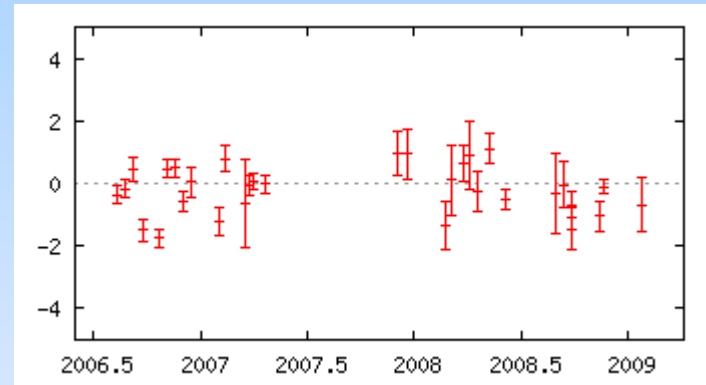
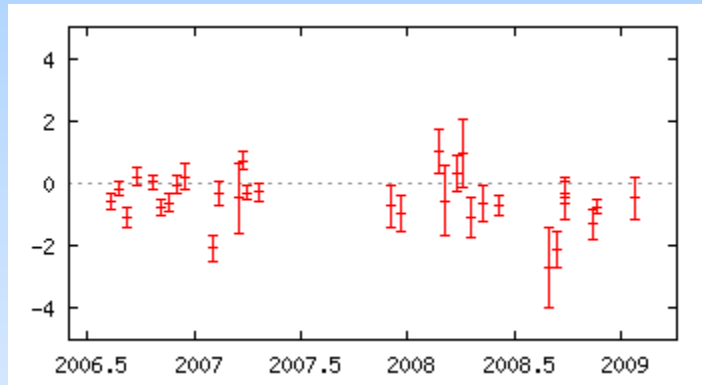


VLE

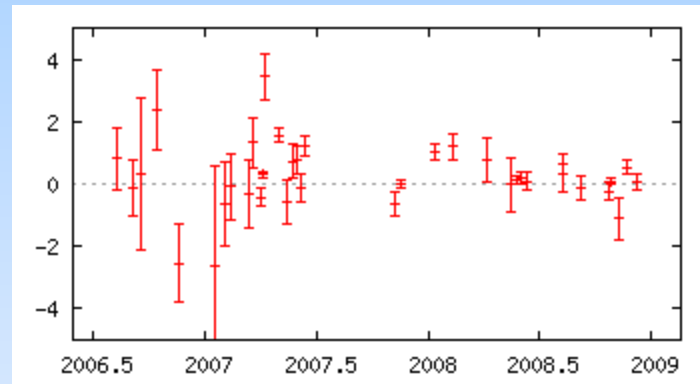
tion in D

programs

RUE-IERS C05 (C04),(31 sessions) :Xc, Yc



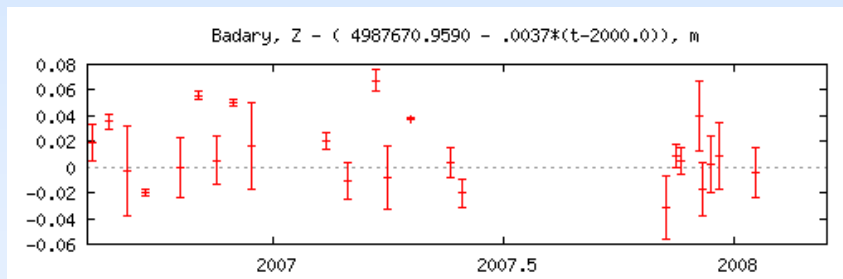
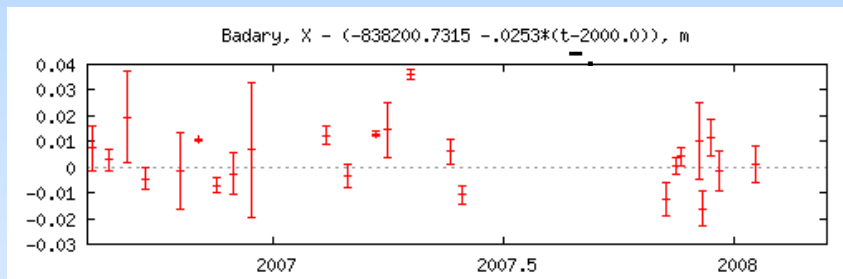
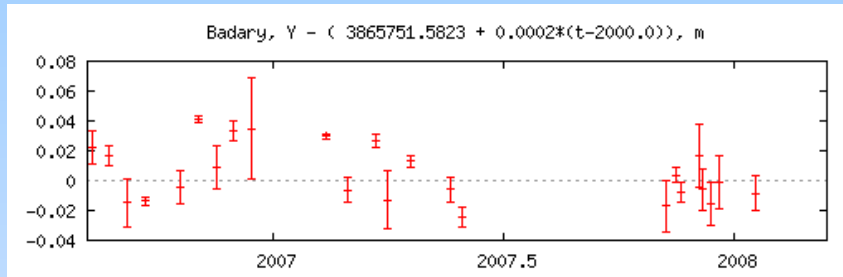
RUU-IERS 05 C04 (38),sessions



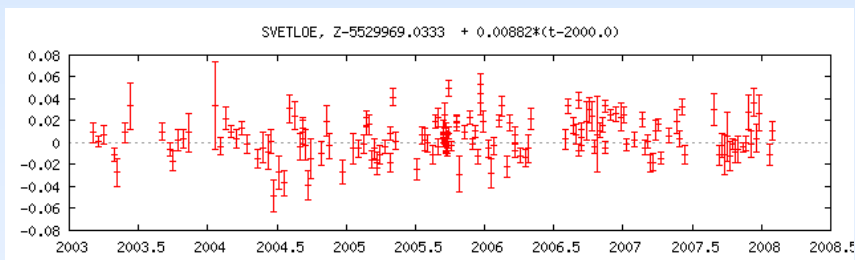
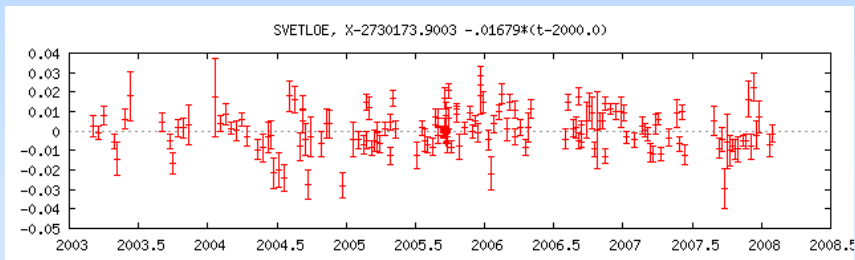
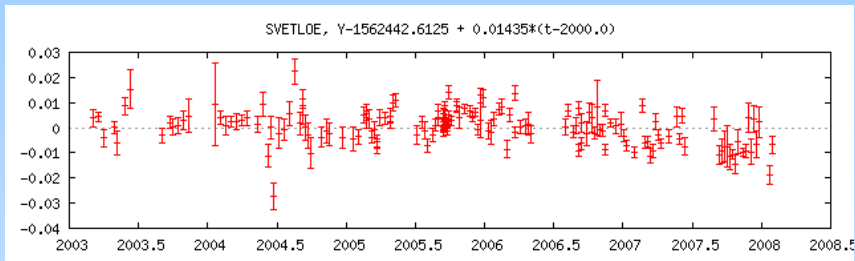
RMS (EOP(IAA) – IERS 05C04)

	N sess.	rms
UT1-UTC(Int)	36	99 μ s
Xp	31	0.94 mas
Yp	31	0.82 mas
UT1-UTC	31	43 μ s
Xc	31	0.69 mas
Yc	31	0.71 mas

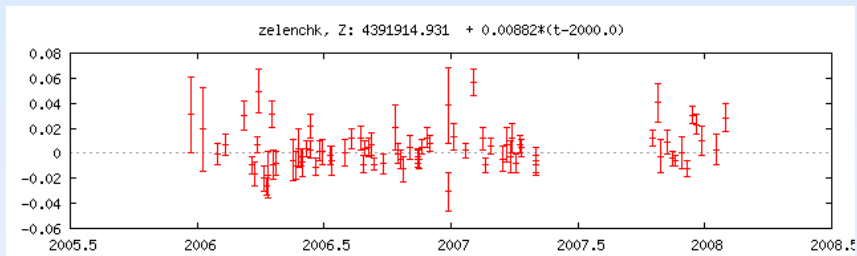
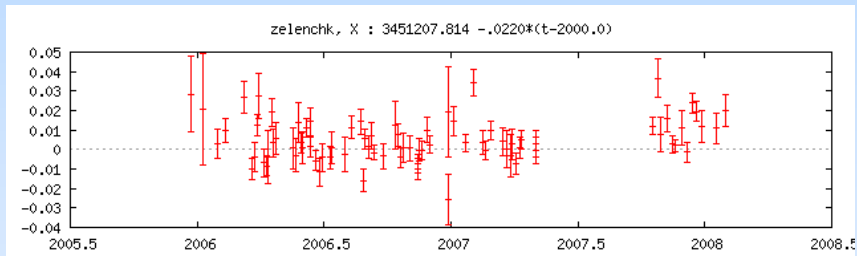
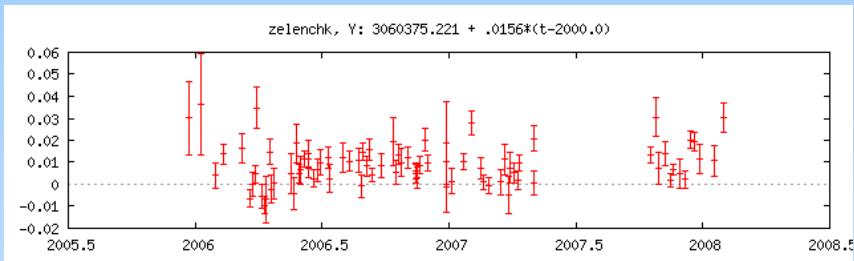
Badary



Svetloe

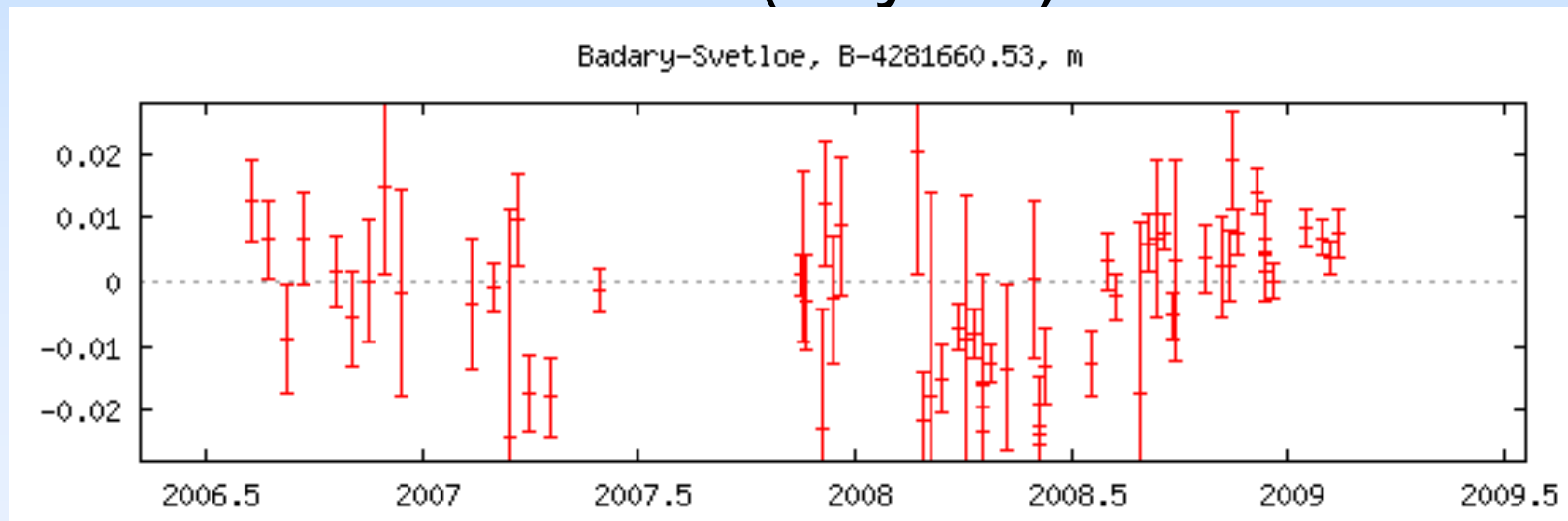


Zelenchujskaya



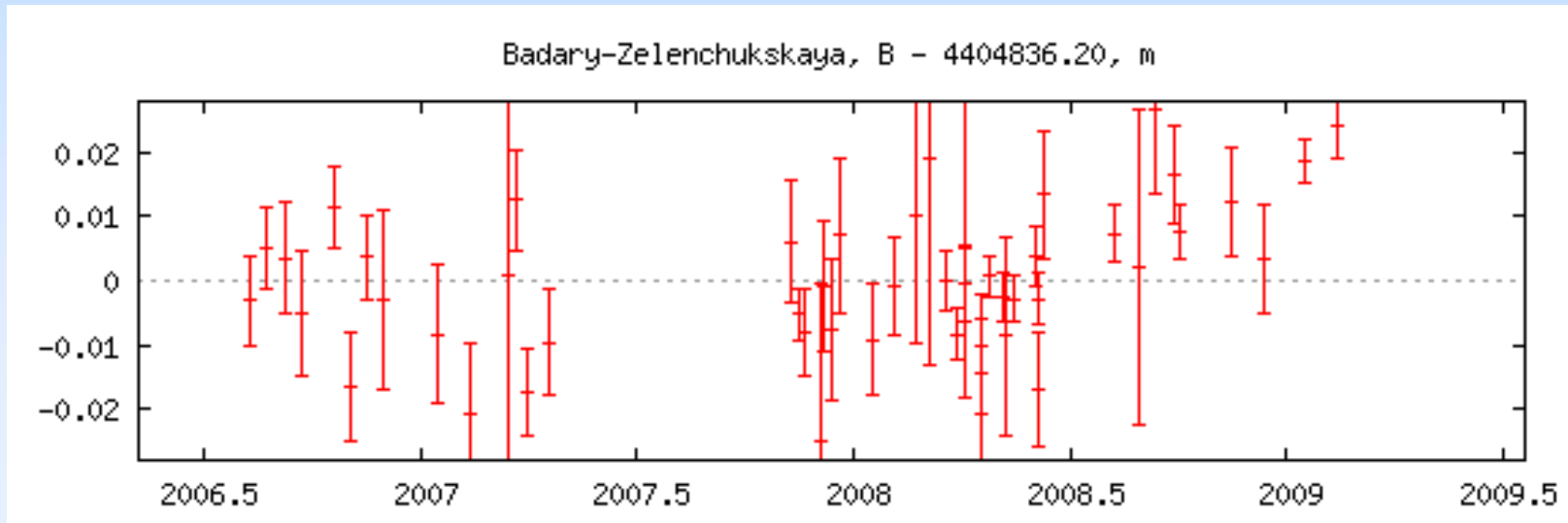
SVETLOE-BADARY

- 2007.5360
- 62 sessions
- 2006.7 - 2009.12
- 4281660.529 ± 0.002 (m)
- $V: 0.000 \pm 0.002$ (m/year)



ZELENCHUKSKAYA-BADARY

- 51 sessions, 2006.7 - 2009.12
- 2007.536
- 4404836.198 \pm 0.002 (m)
- V: 0.007 \pm 0.002 (m/year)



SVETLOE-ZELENCHUKSKAYA

- SvZc 98
- 2005.98 - 2009.12 2007.5470
2014661.044 \pm 0.001(m)
- 0.003 \pm 0.001 (m/year)

