

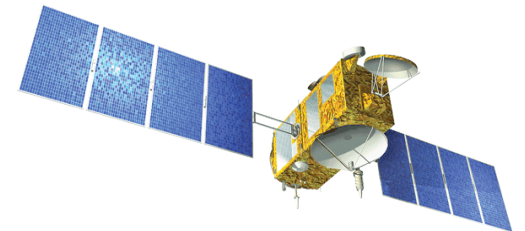
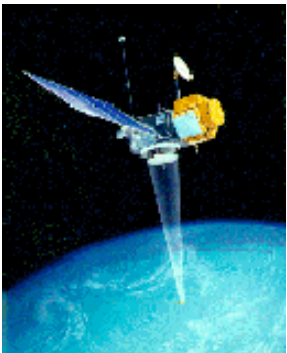


Jason-2 tuning & the DORIS antenna Z-offset puzzle



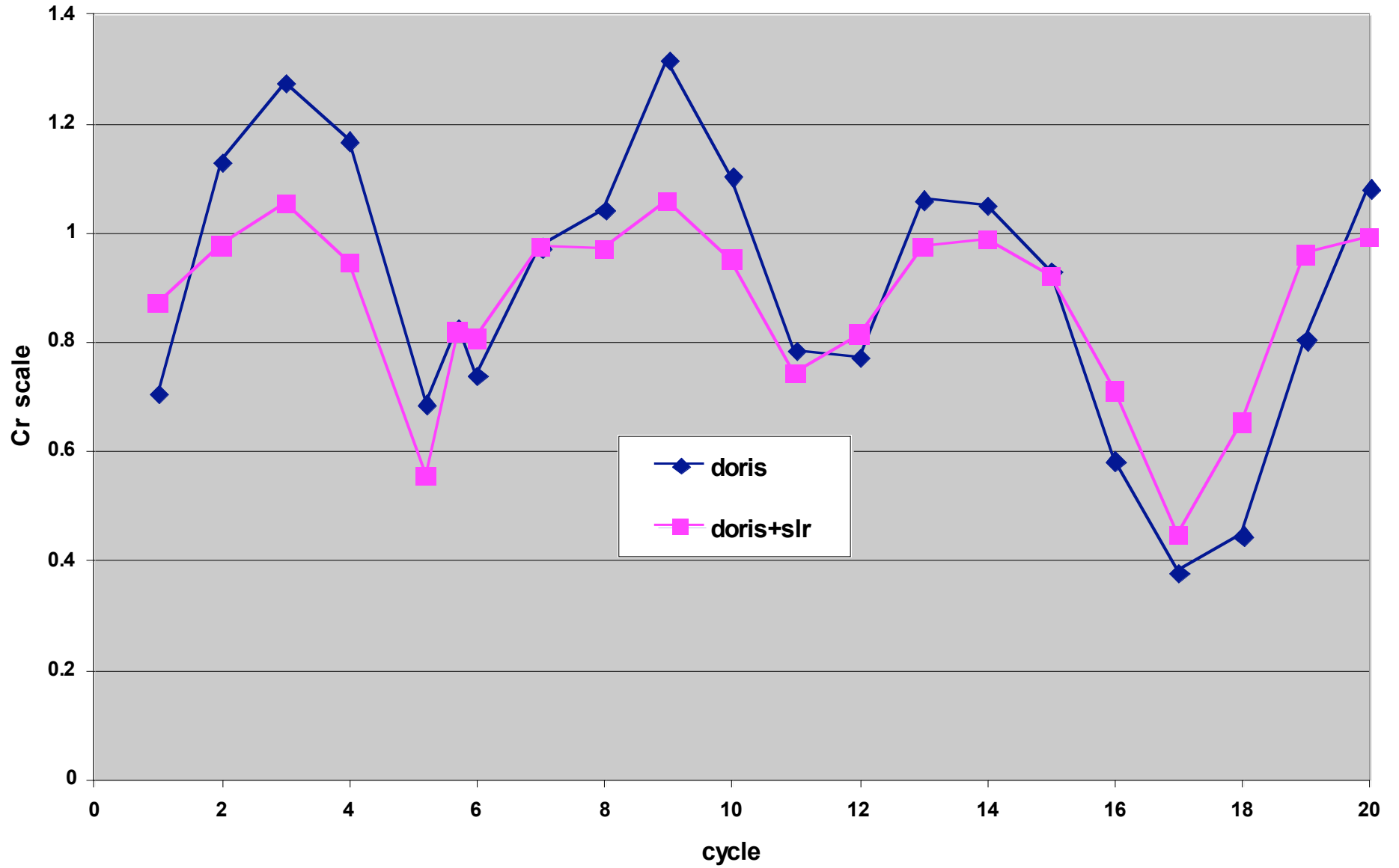
N.P. Zelensky, F.G. Lemoine, D. S. Chinn

**DORIS Analysis Working Group
Paris, France
March 23-24, 2009**



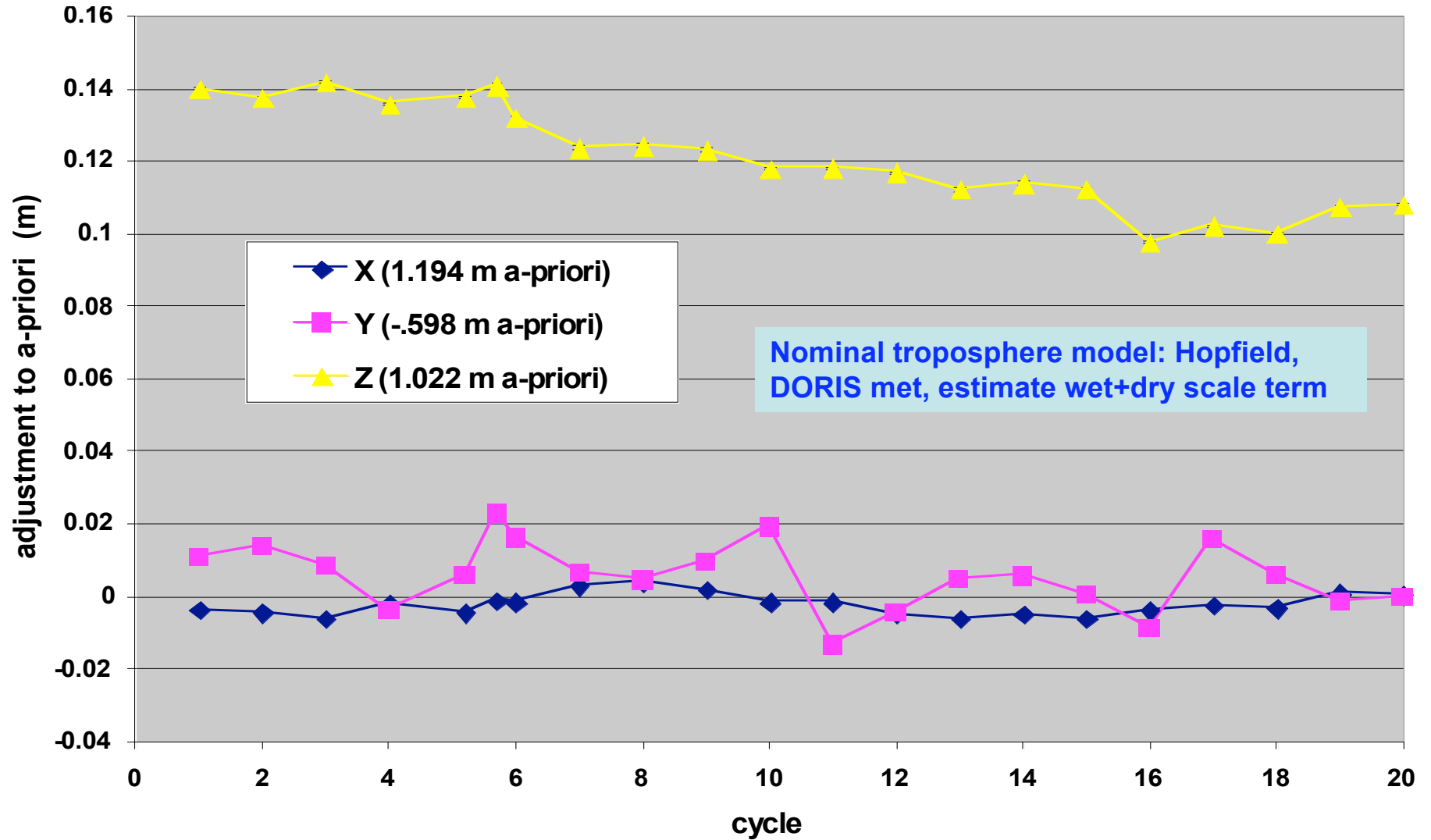


Jason-2 estimated SRP Cr (J1 panel model)



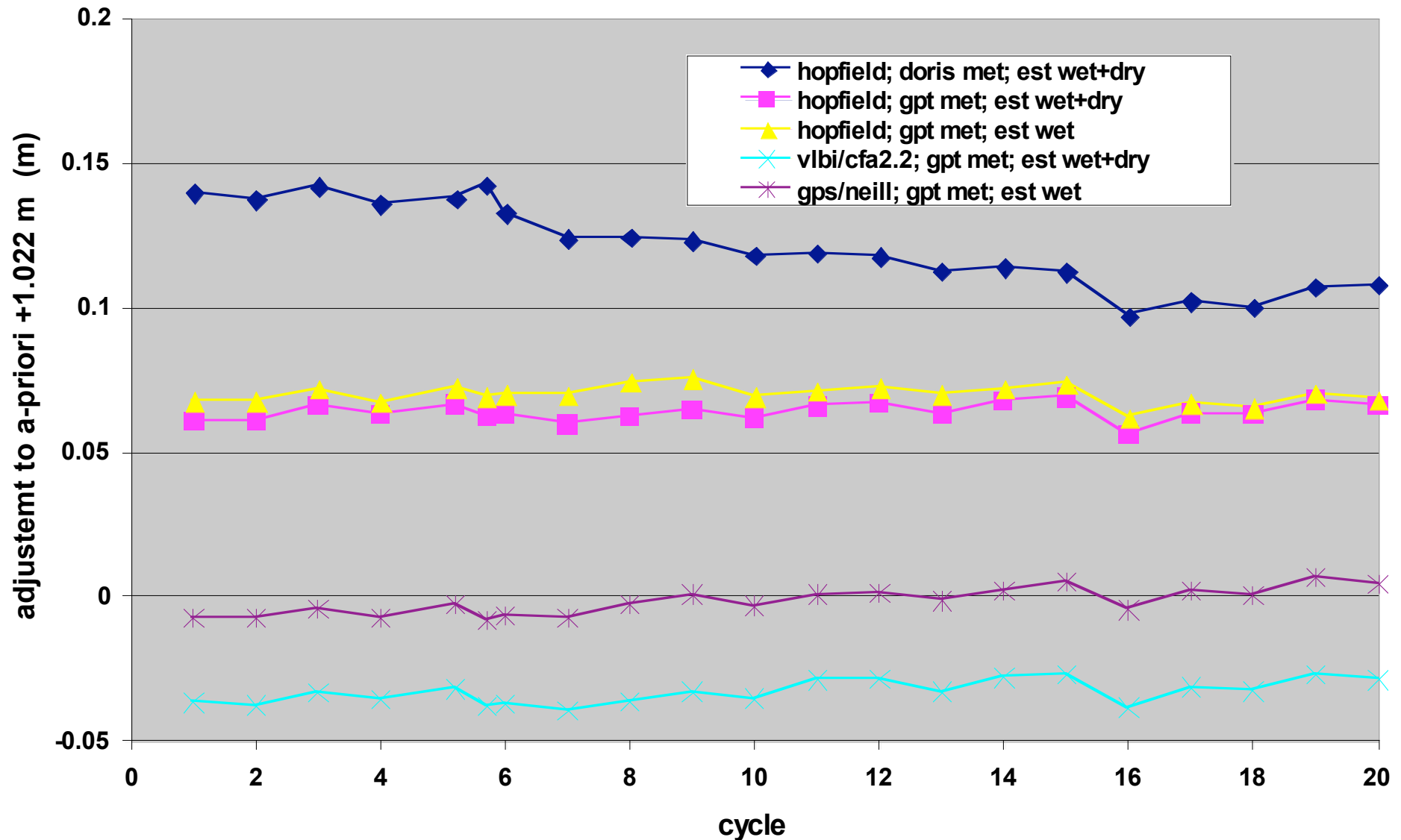


Jason-2 estimated DORIS antenna offsets



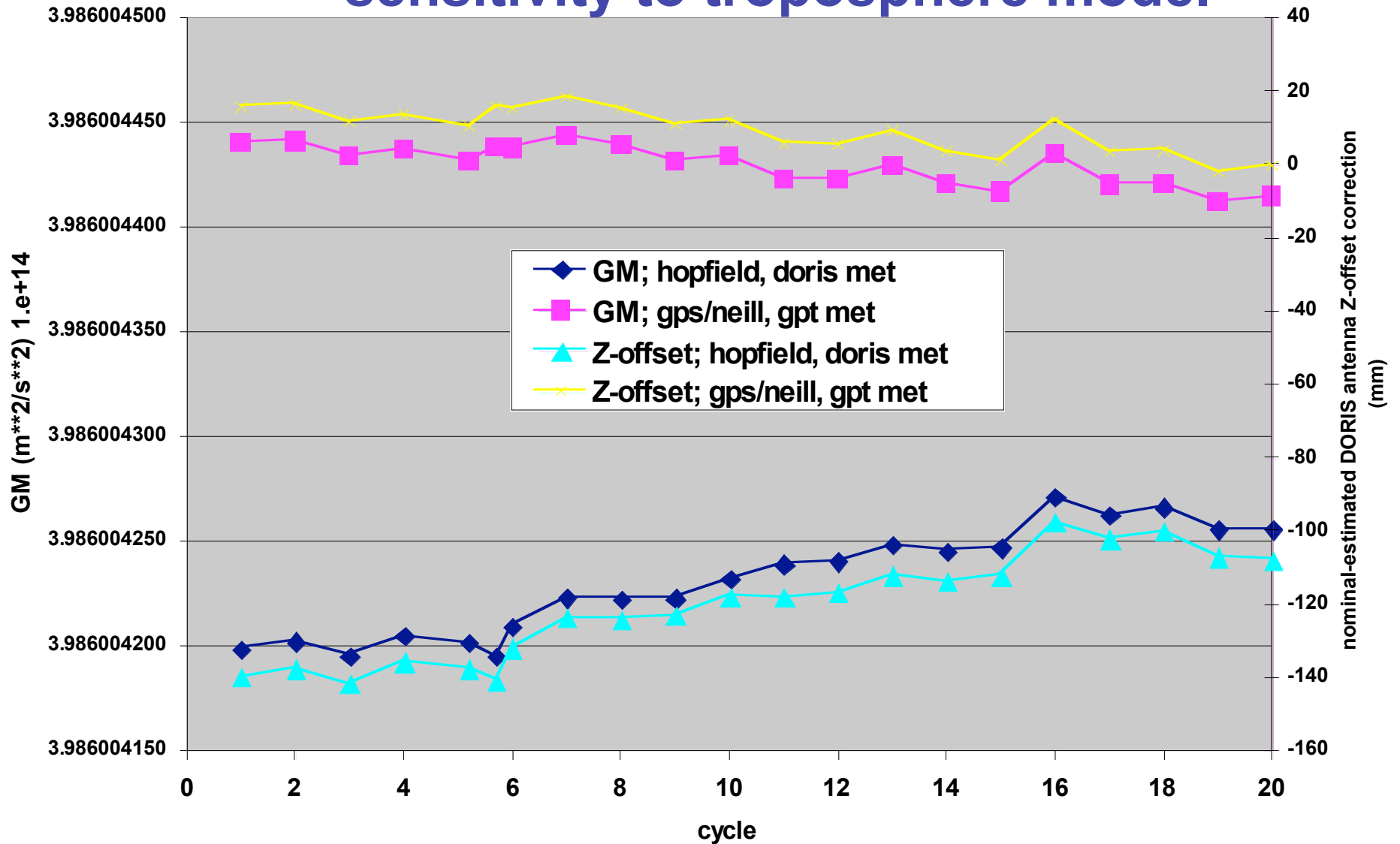


Jason-2 DORIS antenna Z-offset estimate sensitivity to troposphere modeling





Jason-2 estimated GM & Z-offset with DORIS- sensitivity to troposphere model





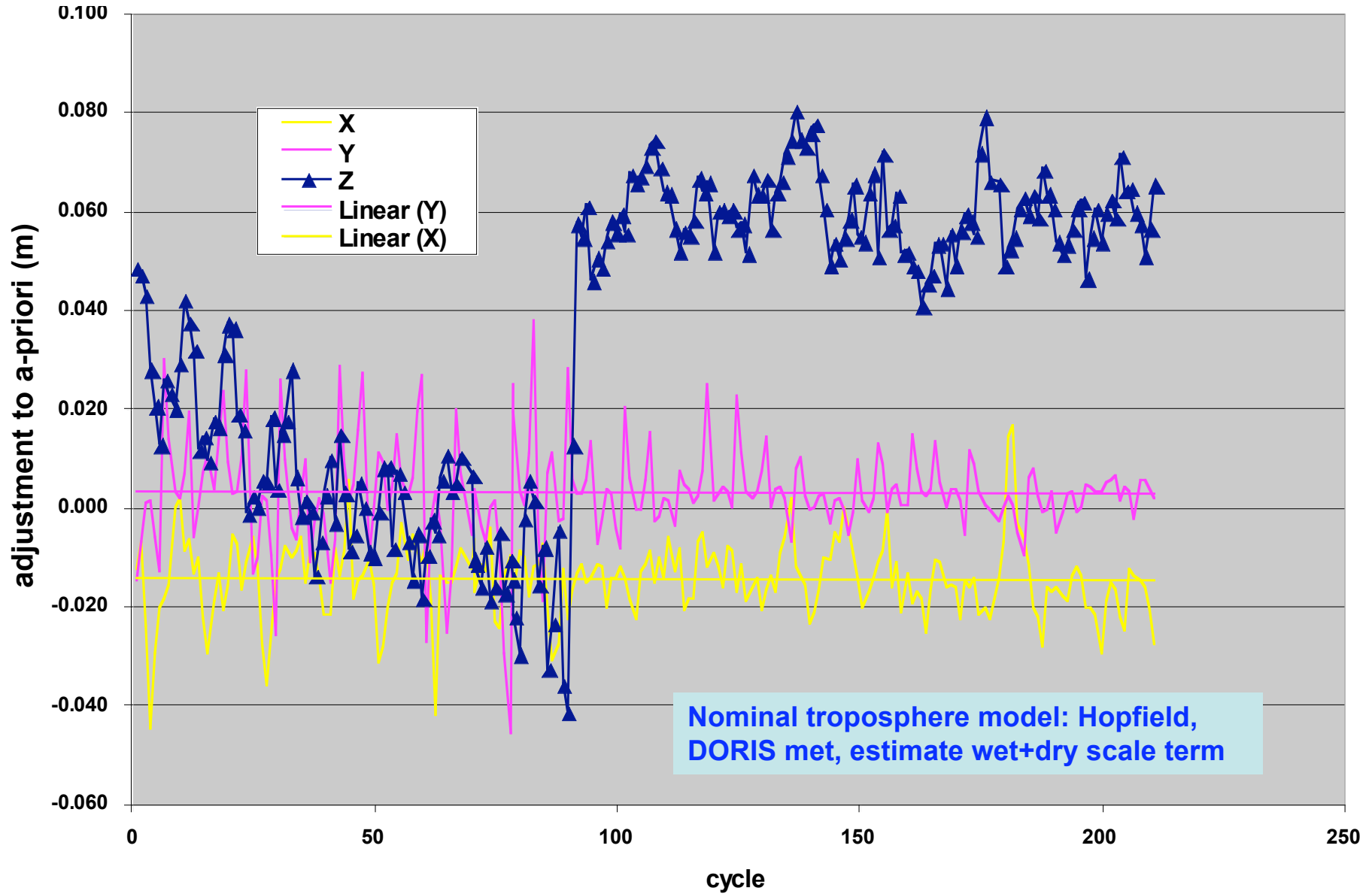
Jason-2 DORIS troposphere model tests

Jason-2 cycles 1 -20 summary doris -only	doris (mm/s)	residuals		xover (cm)	orbit difference		
		slr (cm) mean	rms		h (cm)	c (cm)	l (cm)
nominal: hopfield, doris met, est. wet+dry	0.3726	-0.408	3.235	5.592	---	---	---
gpt02: hopfield, gpt met, est. wet+dry	0.3656	-0.224	2.645	5.593	0.06	1.58	0.27
gpt04: vlbi/cfa2.2, gpt met, est. wet+dry	0.3666	0.018	2.247	5.597	0.15	4.25	0.74
gpt05: gps/neill, gpt met, est. wet+dry	0.3653	-0.157	2.433	5.592	0.13	2.68	0.59
gpt02a: : hopfield, gpt met, est. wet	0.3668	-0.100	2.465	5.598	0.11	2.49	0.33
gpt05a: gps/neill, gpt met, est. wet	0.3652	-0.071	2.339	5.595	0.13	3.22	0.56
nominal est. z -offset	0.3677	-0.081	2.603	5.600	0.11	2.38	0.56

Note. SLR and Crossover residuals over cycles 1-7

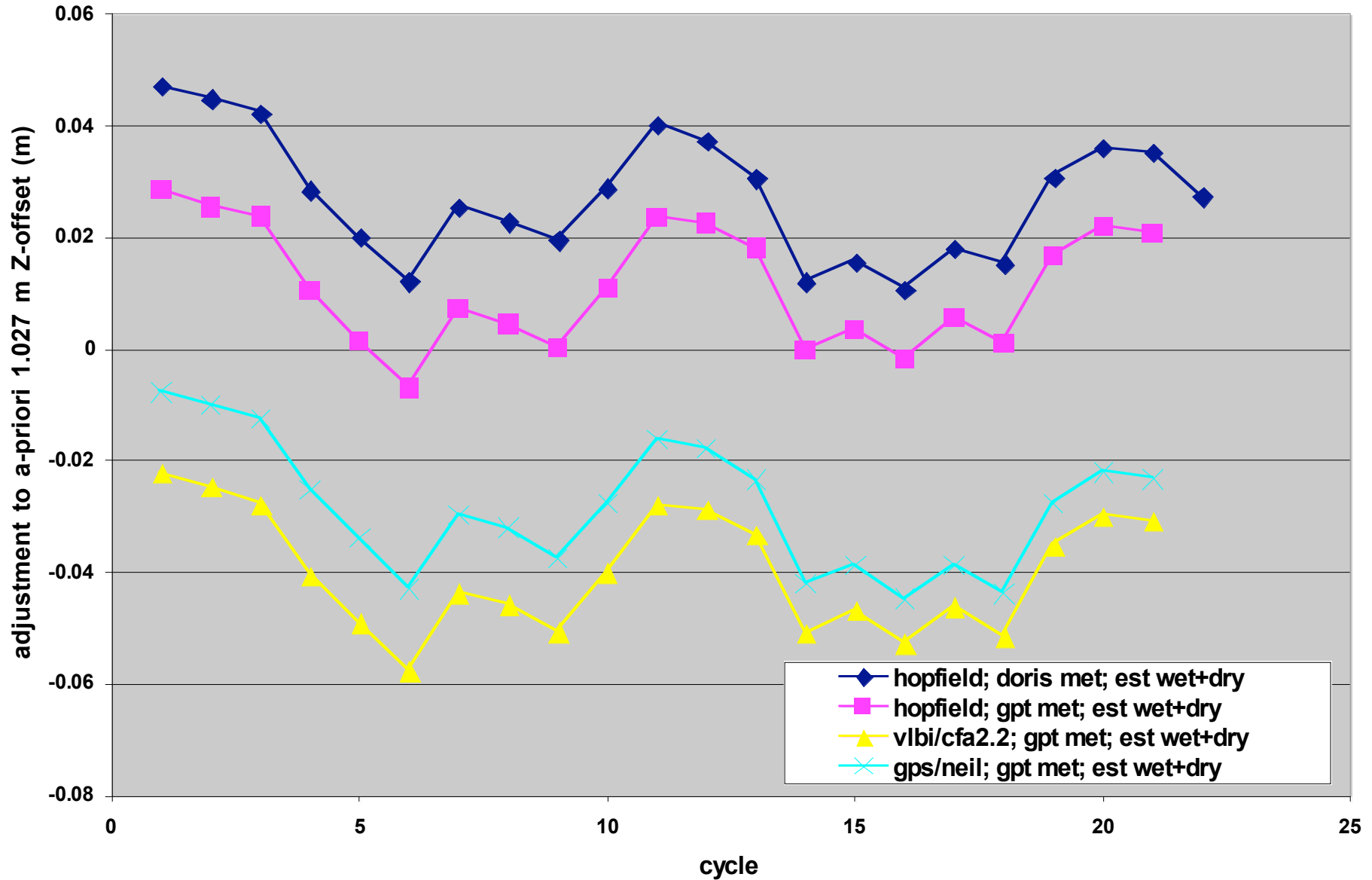


Jason-1 estimated DORIS antenna offset



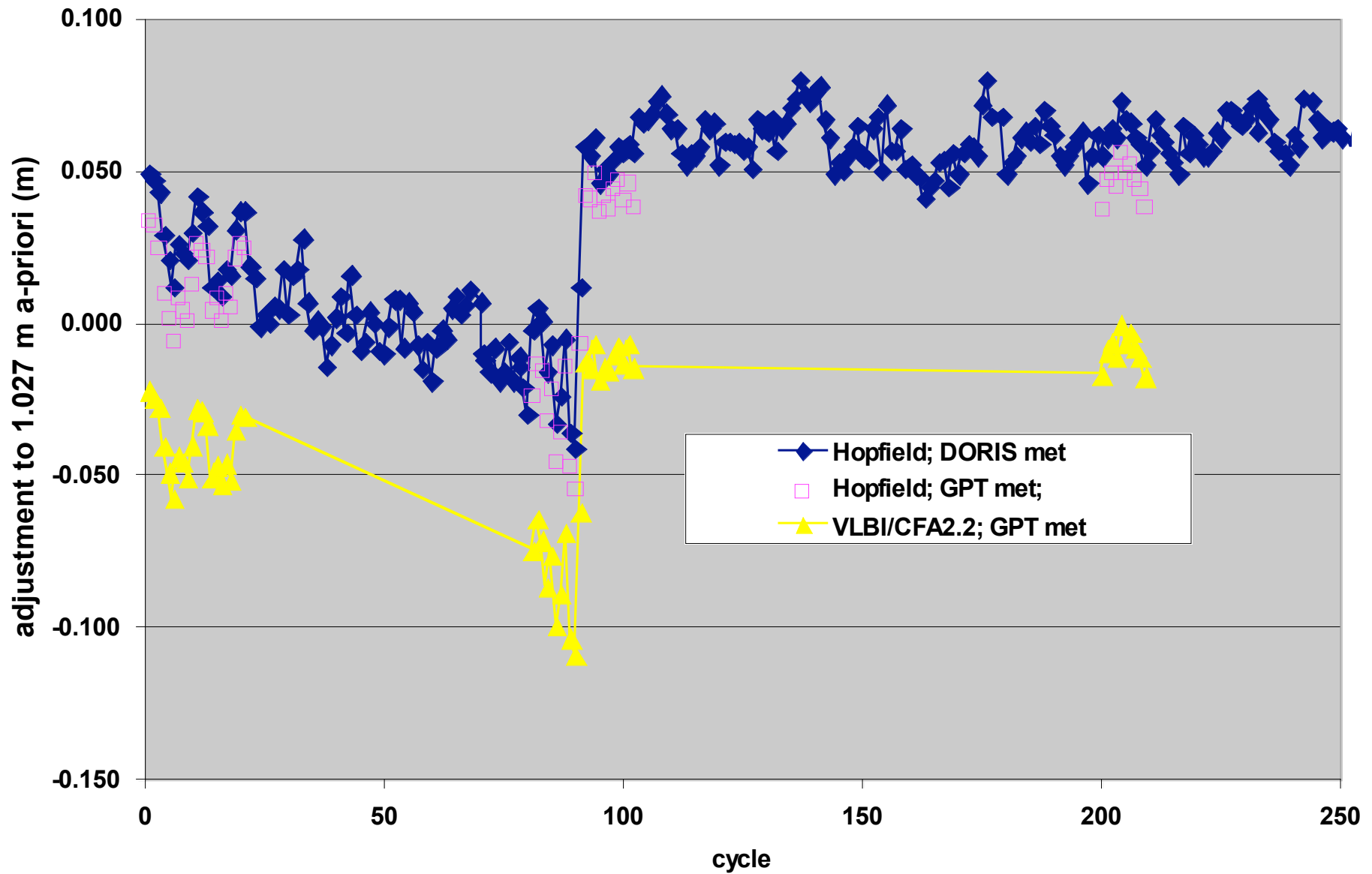


Jason-1 DORIS antenna Z-offset estimate sensitivity to troposphere modeling (1 of 2)





Jason-1 DORIS antenna Z-offset estimate sensitivity to troposphere modeling (2 of 2)





Jason-1 DORIS troposphere model tests

Jason-1 cycles 1-21 summary doris-only	doris (mm/s)	residuals slr (cm)		xover (cm)	orbit difference		
		mean	rms		h (cm)	c (cm)	l (cm)
nominal: hopfield, doris met, est. wet+dry	0.3997	-0.135	2.621	5.761	---	---	---
gpt02: hopfield, gpt met, est. wet+dry	0.3991	-0.101	2.604	5.760	0.08	0.60	0.26
gpt02a: : hopfield, gpt met, est. wet	0.3998	-0.078	2.581	5.759	0.13	0.87	0.33

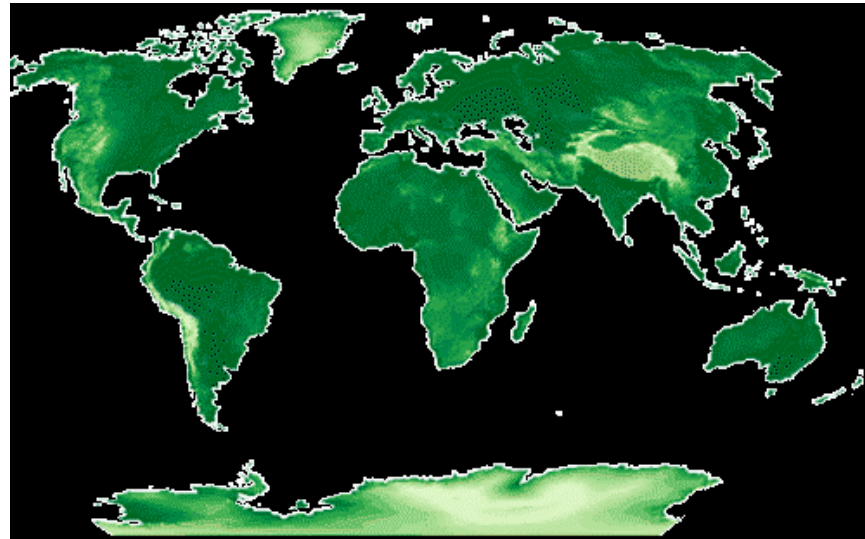


Conclusions

- J2 panel model should be tuned
- J2 DORIS antenna Z-offset estimate can be explained by troposphere model error
- GPT model offers improved pressure/temperature over DORIS J1/J2 meteo data
- J2 DORIS antenna Z-offset estimate more sensitive to troposphere than for J1
- DORIS antenna Z-offset estimate can diagnose problems with on-board oscillator
- DORIS antenna Z-offset / GM estimates may referee improvements to troposphere modeling



BACKUP





Jason-2 estimated DORIS antenna offsets

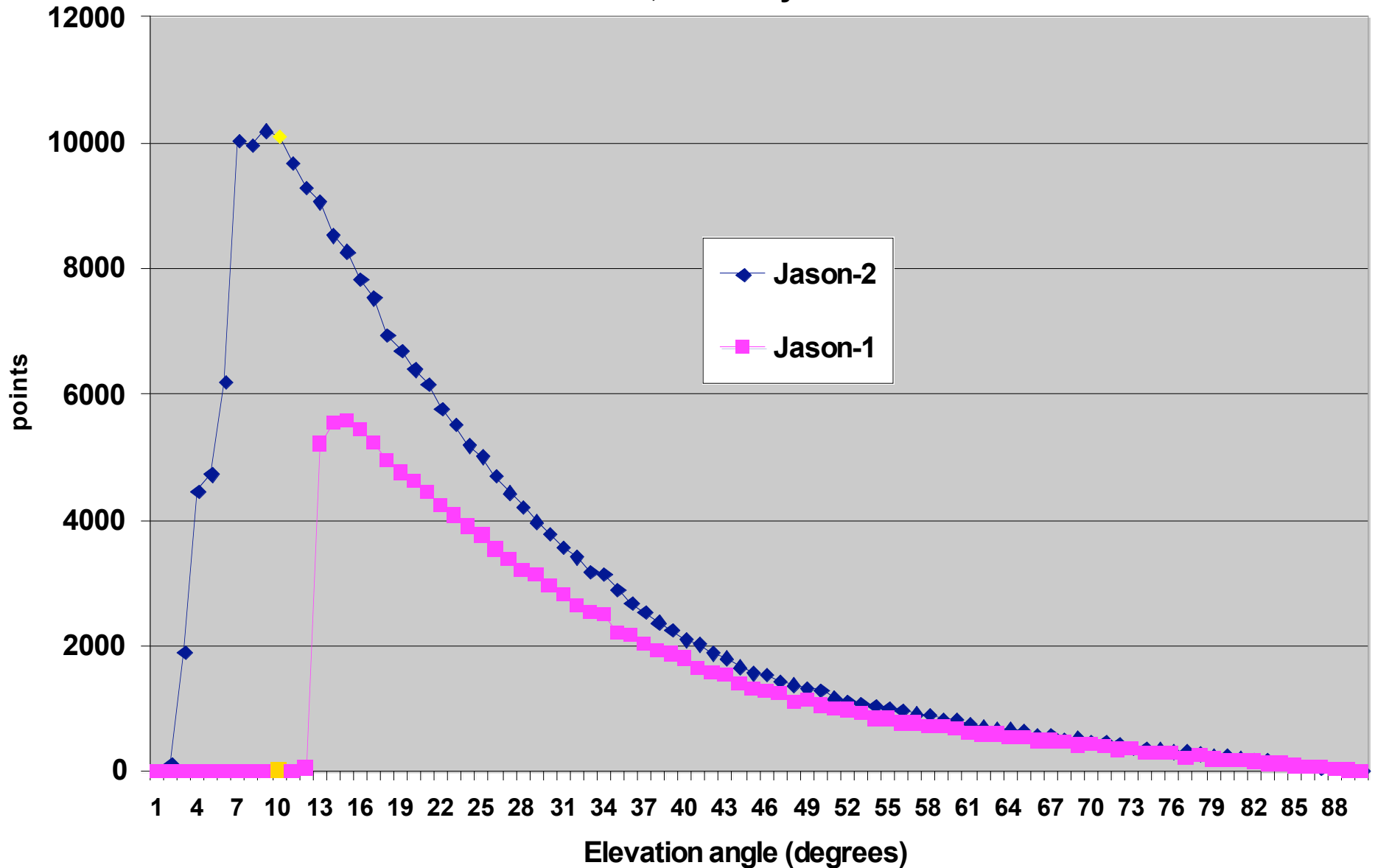
Jason-2 DORIS antenna offset estimates cycles 1 -20 ; 10° elevation cutoff ; old DORIS format

Satellite Body Fixed coordinates	SBF value (m)			standard deviation (m)		
	X	Y	Z	X	Y	Z
Center of Mass	0.9772	0.0001	0.0011	----	----	----
<i>a-priori</i> DORIS antenna offset	1.194	-0.598	1.022	----	----	----
estimated DORIS antenna offset adjustment to <i>a-priori</i> :						
Hopfield; DORIS met; est wet+dry	0.000	0.000	0.117	0.003	0.009	0.016
Hopfield; GPT met; est wet+dry	-0.001	0.001	0.061	0.004	0.009	0.003
VLBI/CFA2.2 ; GPT met; est wet+dry	-0.001	0.001	-0.033	0.005	0.010	0.004
GPS/Neill; GPT met; est wet+dry	-0.001	0.001	-0.009	0.004	0.010	0.006
GPS/Neill; GPT met; est wet	-0.001	0.001	-0.002	0.004	0.010	0.005



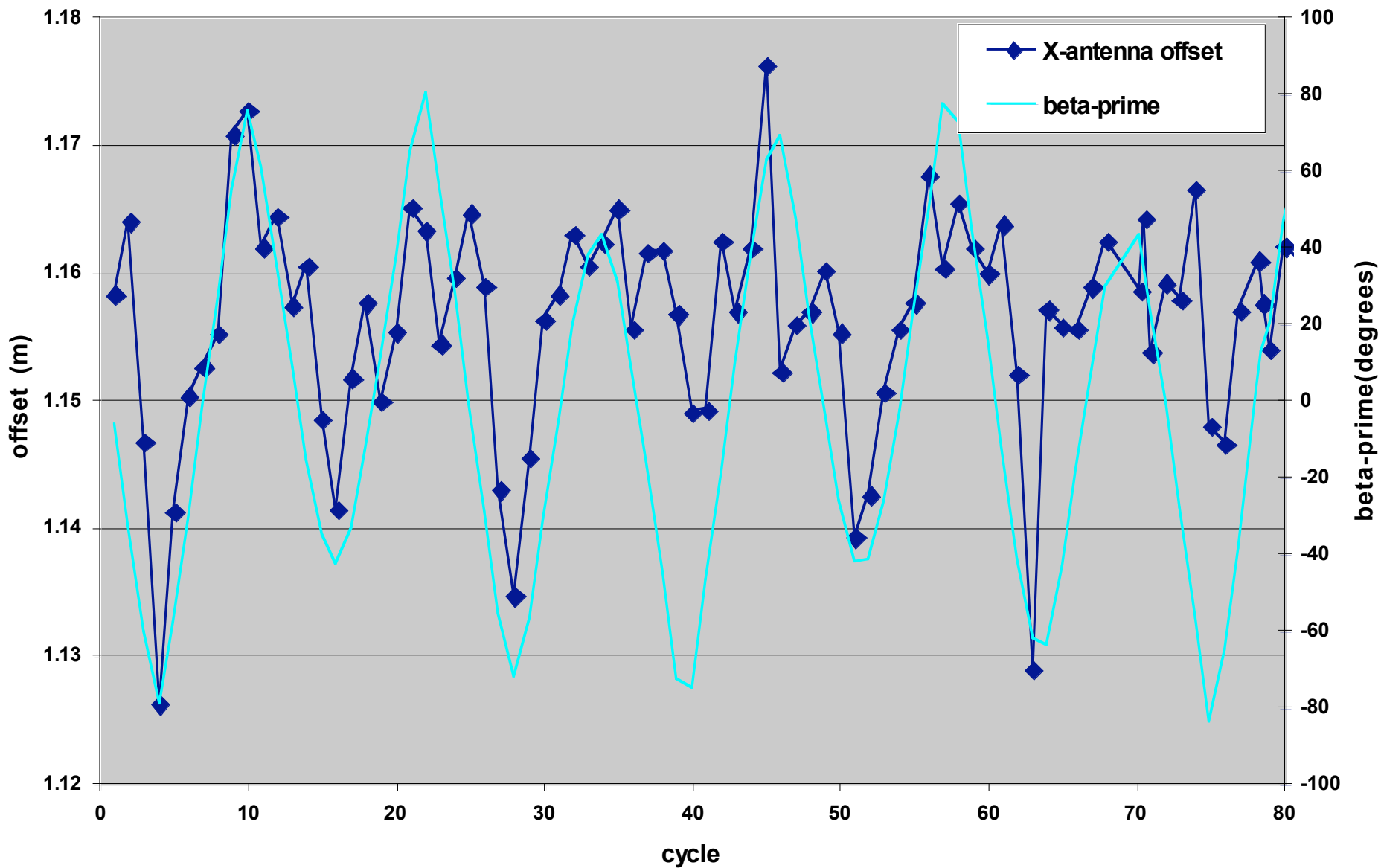
Jason-2 DORIS new receiver: tracking

DORIS from CDDIS, J1/J2 Cycles 241/002





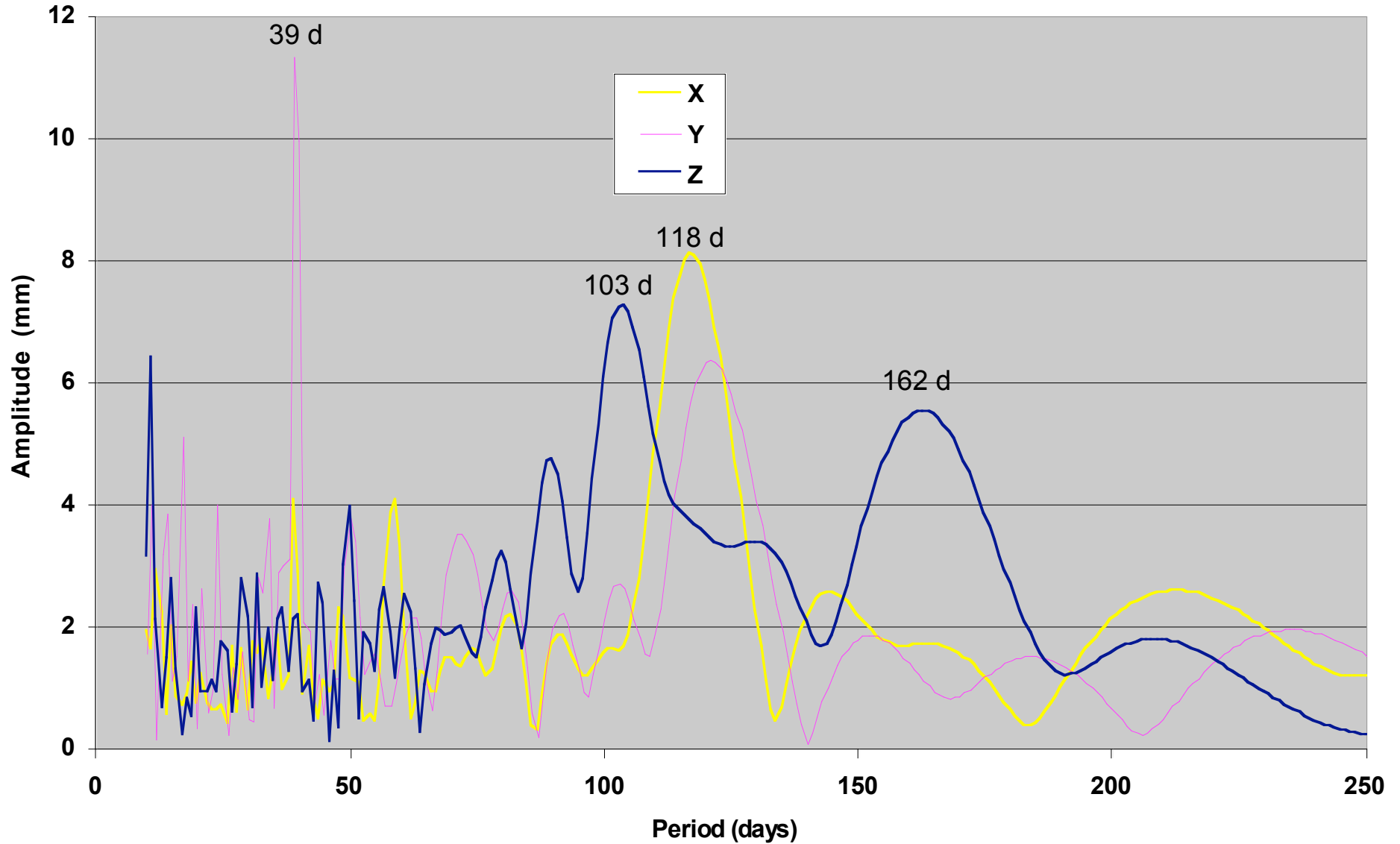
Jason-1 estimated DORIS antenna offset and Beta-Prime





Jason-1 estimated DORIS offset periodogram

Figure 4. Periodogram estimated Jason-1 DORIS antenna offsets; cycles 1-90





TP DORIS antenna Z-offset estimate

Estimated TOPEX/Poseidon DORIS antenna Z-offset / cycle

