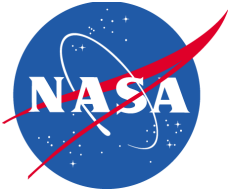


Cryosat2 OPR Empirical Acceleration Amplitudes (2010 only)

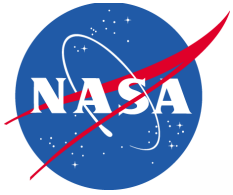


Doris Center	No. of accels	Alg (avg/median) x 1e09	Crs (avg/median) x 1e09	Adjust period (days)
GSC	208	3.61 / 3.54	2.57 / 2.48	1
ESA	217	2.79 / 2.68	2.92 / 2.77	1
GAU	193	3.51 / 3.43	2.97 / 2.81	1
IGN	214	12.94 / 14.03	7.00 / 5.75	1
INA	214	13.92 / 13.86	6.93 / 4.86	1
LCA	58	9.42 / 7.61	3.41 / 2.76	3.5
CNES POD	247	4.81 / 4.83	3.01 / 2.74	1

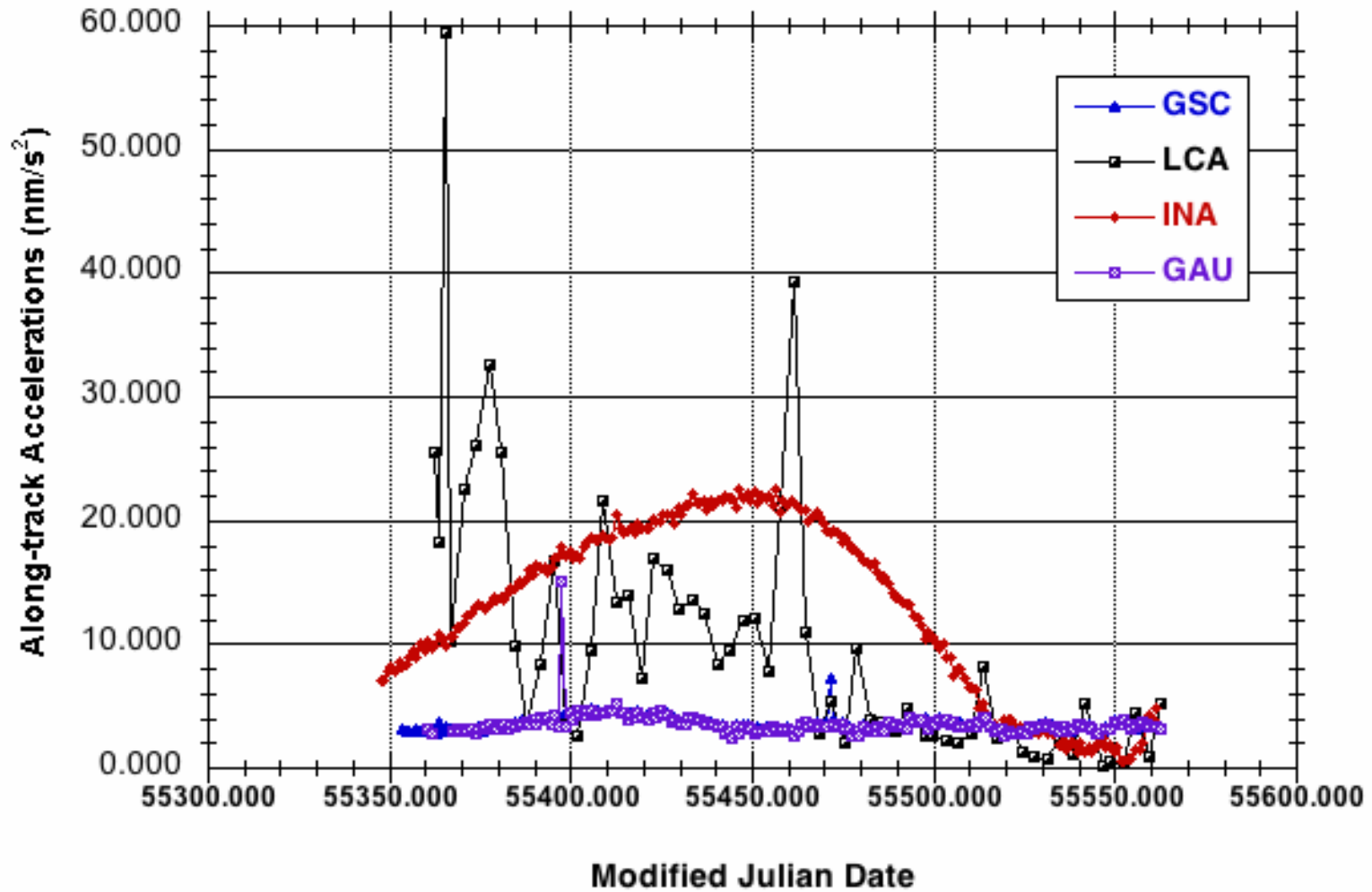


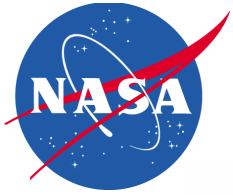
Results of the IDS 2010 OPR Comparisons

*F. Lemoine, D. Chinn, NASA GSFC
IDS Analysis Working Group Meeting
Prague, Czech Republic
May 31, 2012*

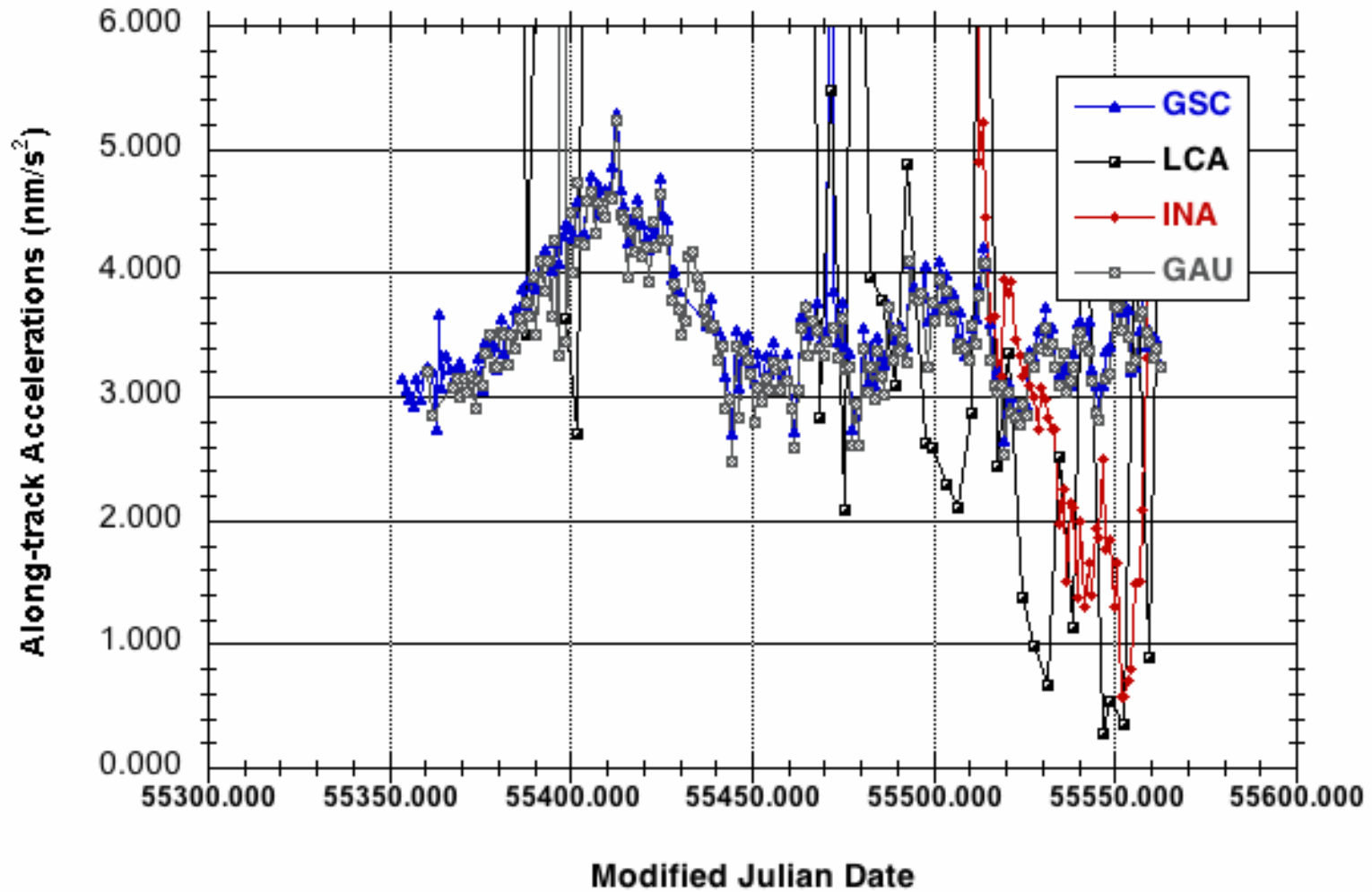


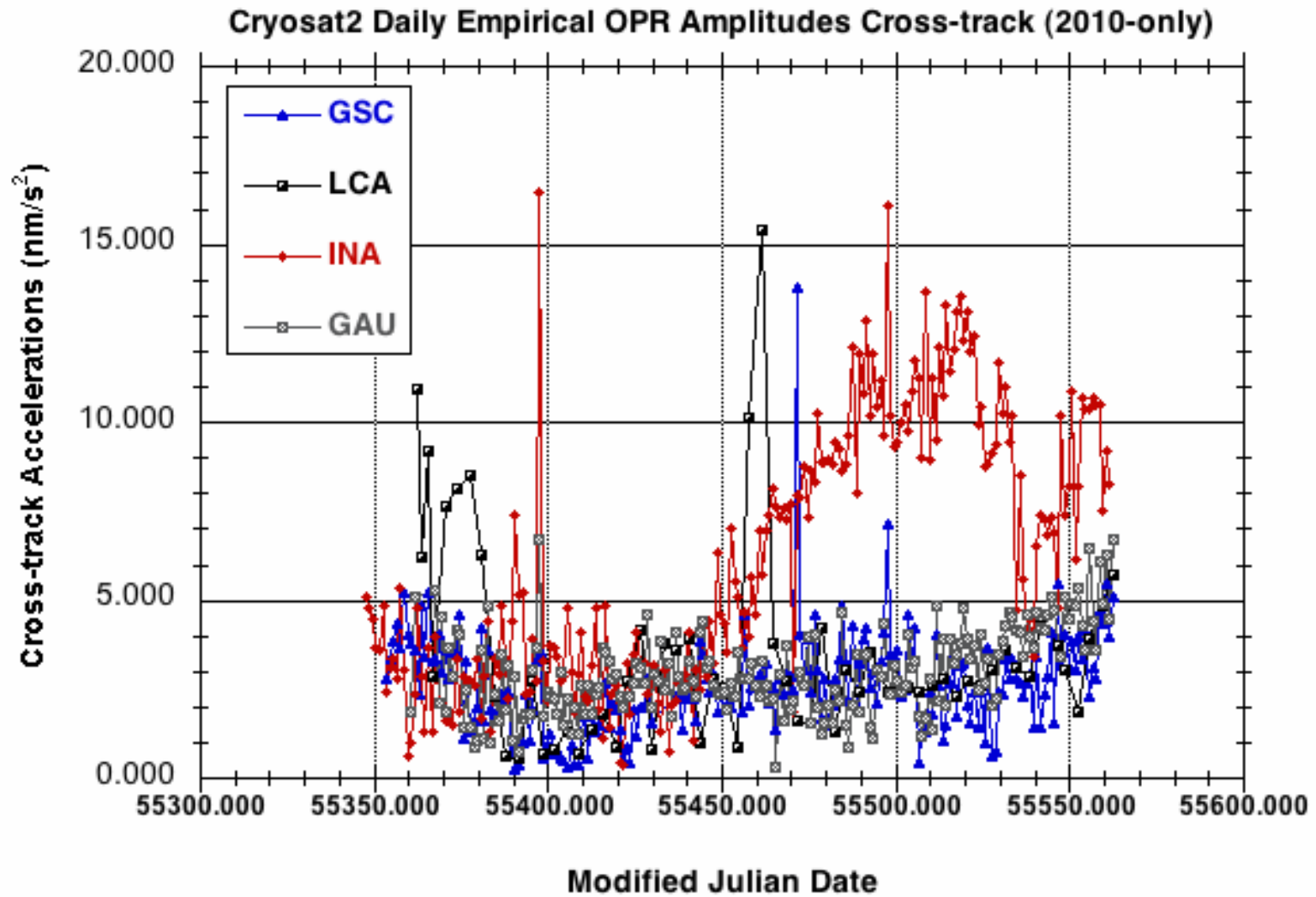
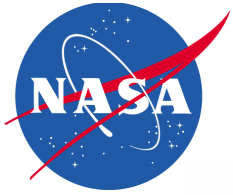
Cryosat2 Daily Empirical OPR Amplitudes Along-track (2010-only)

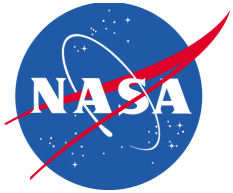




Cryosat2 Daily Empirical OPR Amplitudes Along-track (2010-only)







LCA Cryosat-2 Empirical OPR Amplitudes: (standard and new processing)

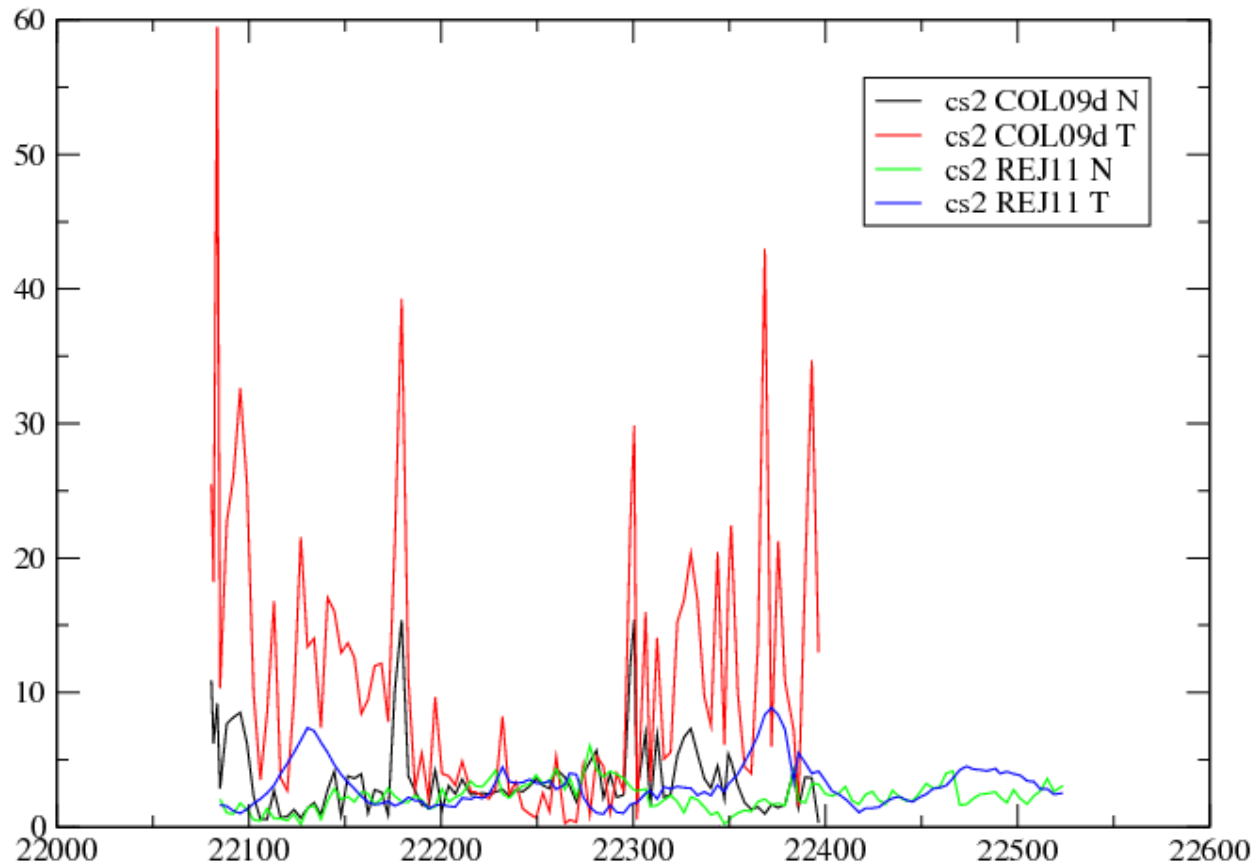
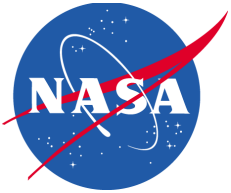


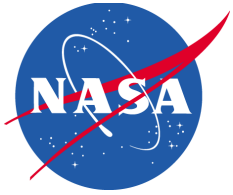
Figure from Laurent.



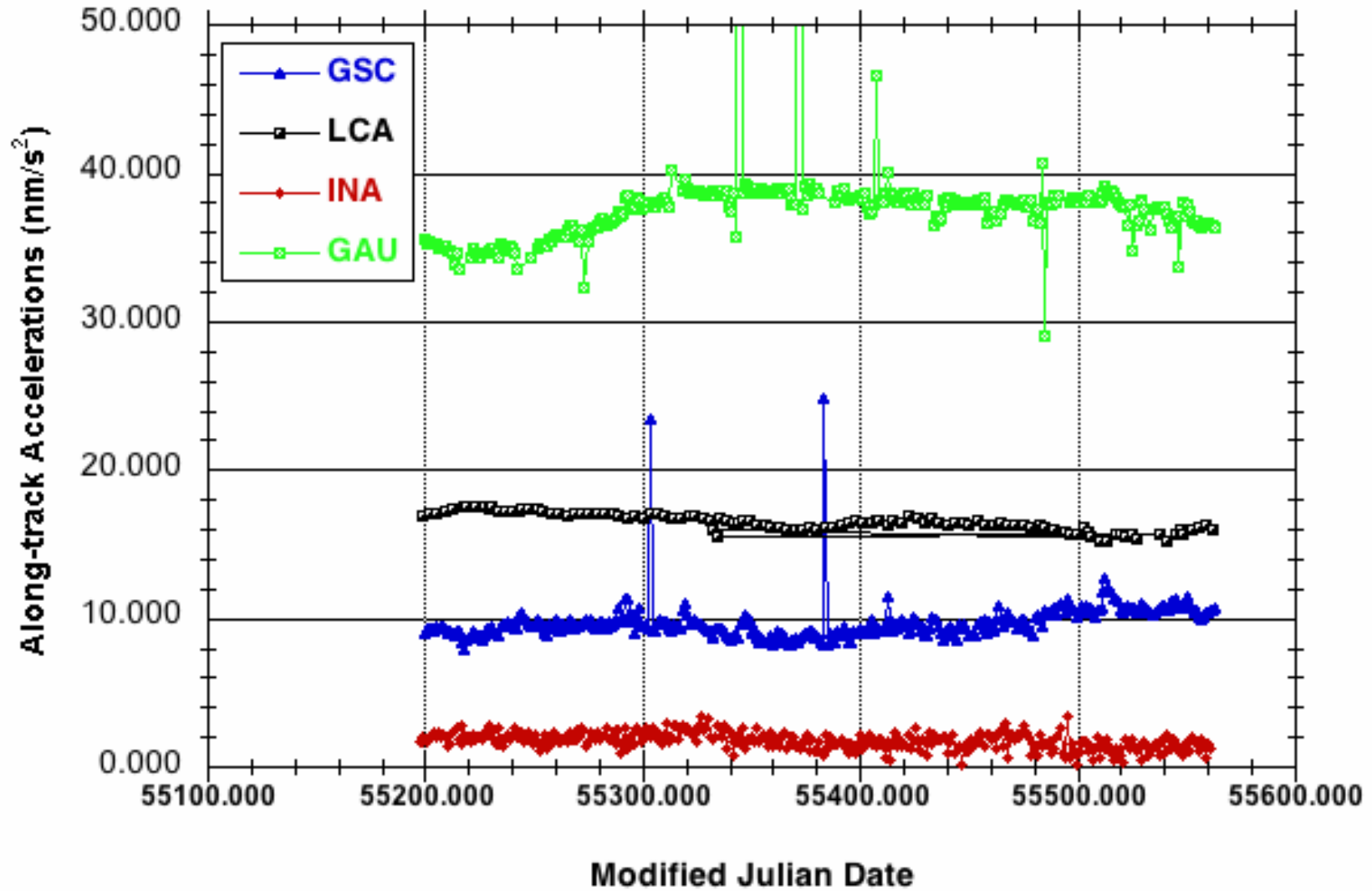
Envisat OPR Empirical Acceleration Amplitudes (2010 only)

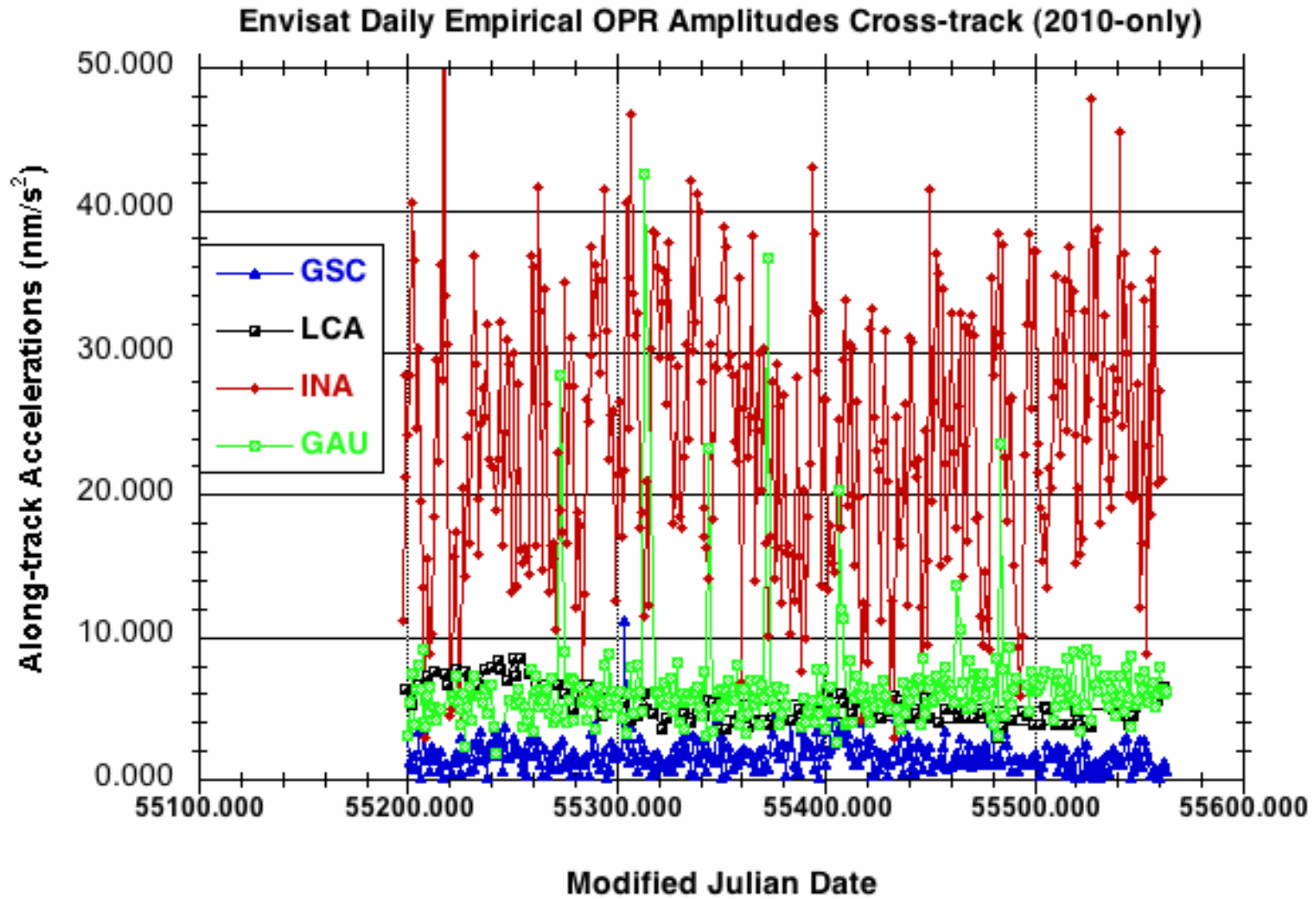
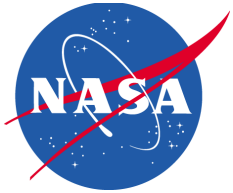


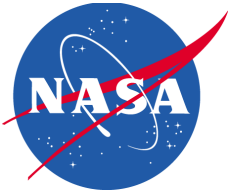
Doris Center	No. of accels	Alg (avg/median) x 1e09	Crs (avg/median) x 1e09	Adjust period (days)
GSC	355	9.54 / 9.42	2.27 / 2.24	1
ESA	359	1.64 / 1.52	1.89 / 1.71	1
GAU	316	37.39 / 37.88	6.11 / 5.85	1
IGN	365	1.86 / 1.84	2.81 / 2.58	1
INA	364	1.79 / 1.81	23.84 / 23.95	1
LCA	117	16.52 / 16.46	5.33 / 4.98	3.5
CNES POD	416	1.54 / 1.56	1.80 / 1.71	1



Envisat Daily Empirical OPR Amplitudes Along-track (2010-only)



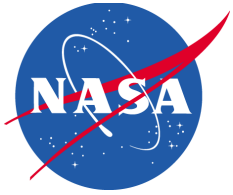




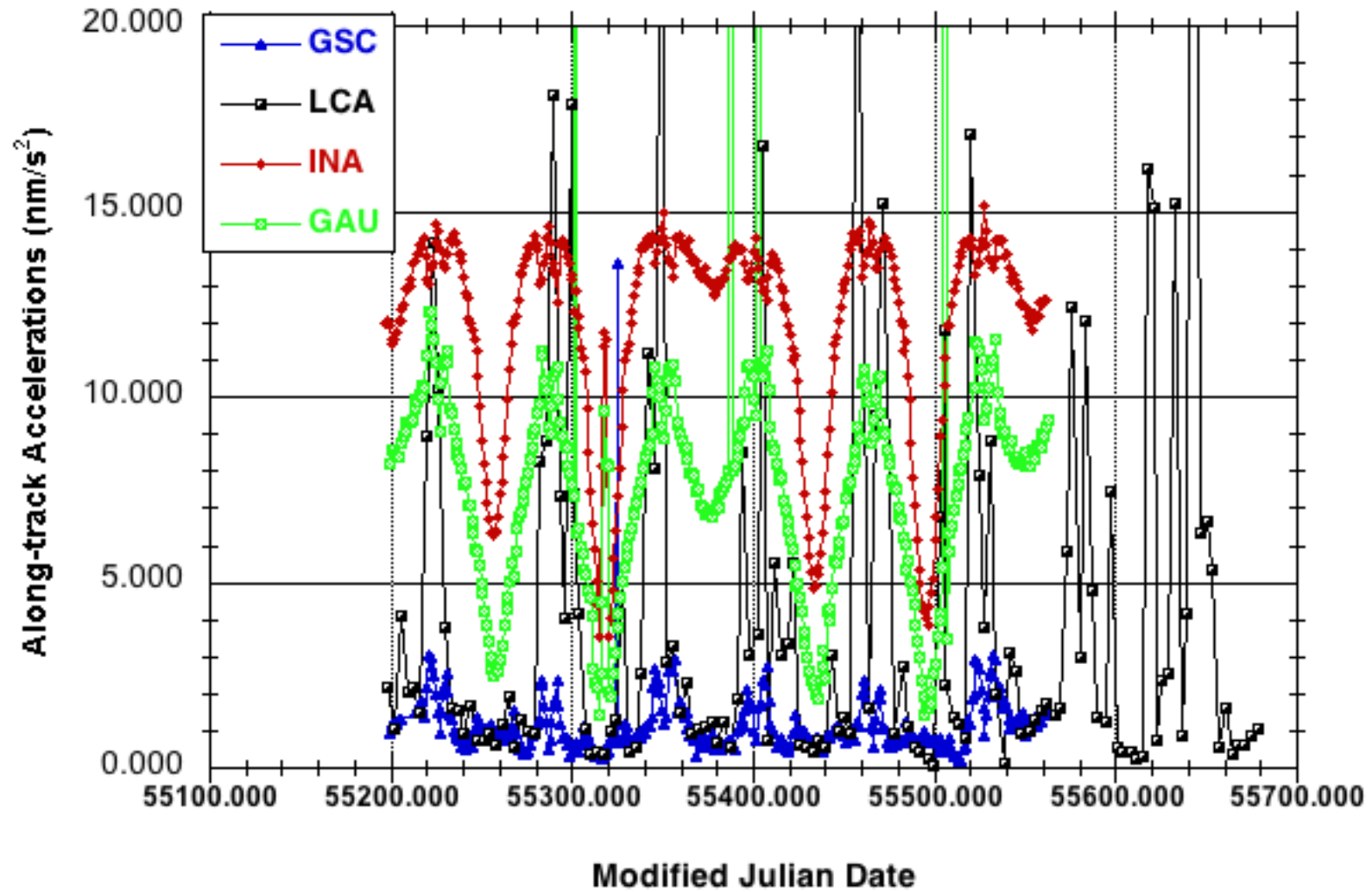
Jason2 OPR Empirical Acceleration Amplitudes (2010 only)

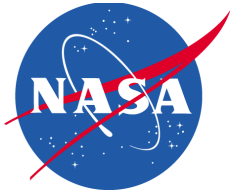


Doris Center	No. of accels	Alg (avg/median) x 1e09	Crs (avg/median) x 1e09	Adjust period (days)
GSC	359	1.14 / 0.96	4.16 / 4.13	1
ESA	366	3.12 / 3.51	3.65 / 3.51	1
GAU	353	7.43 / 8.10	5.76 / 5.80	1
IGN	361	11.88 / 13.06	5.14 / 4.85	1
INA	365	11.96 / 13.15	29.40 / 28.81	1
LCA	106	4.01 / 1.62	3.20 / 3.21	3.5
CNES POD	765	1.55 / 1.48	4.12 / 4.14	0.5

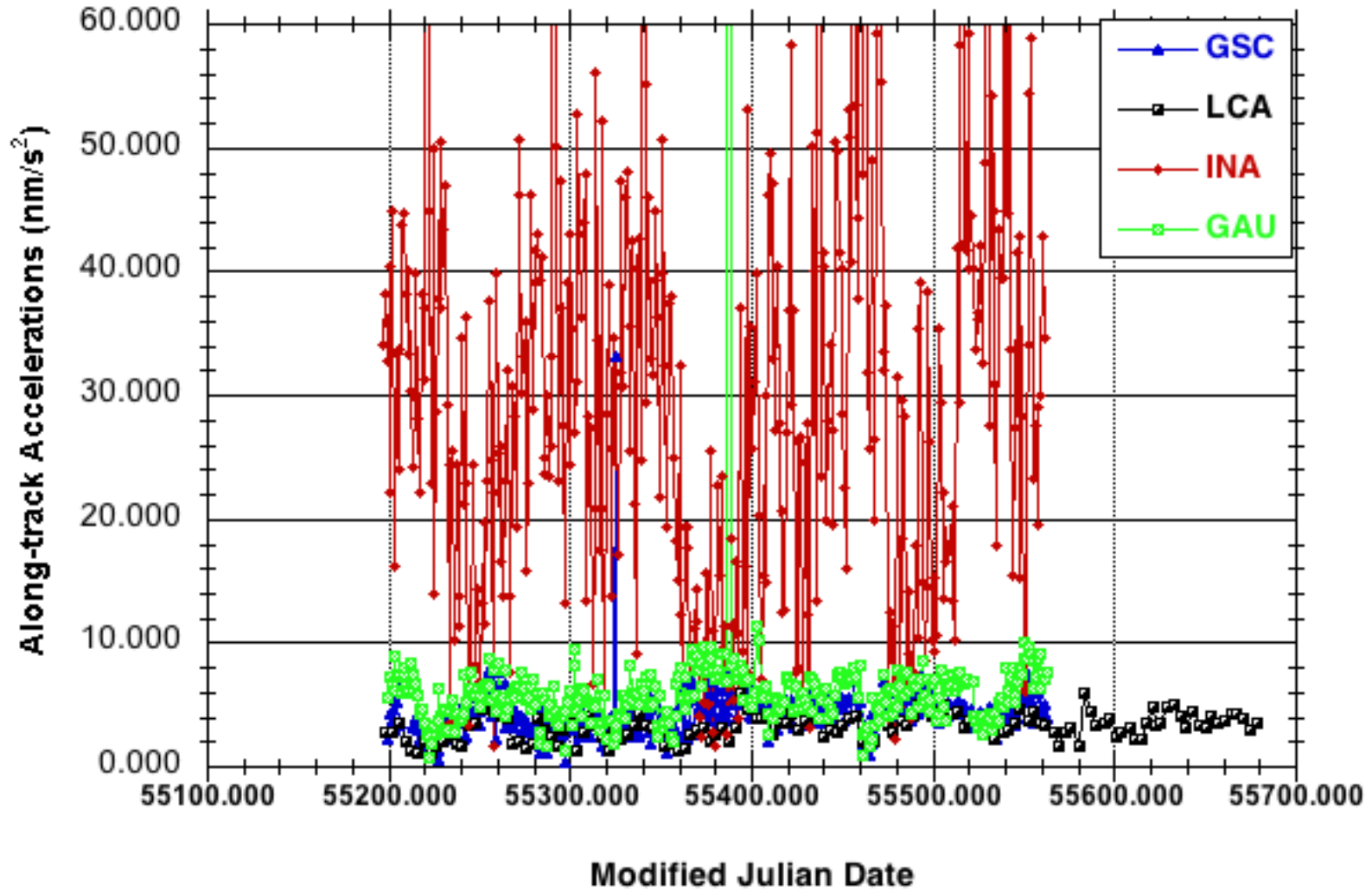


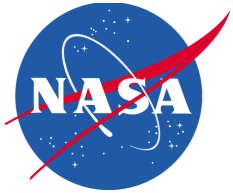
Jason-2 Daily Empirical OPR Amplitudes Along-track (2010-only)



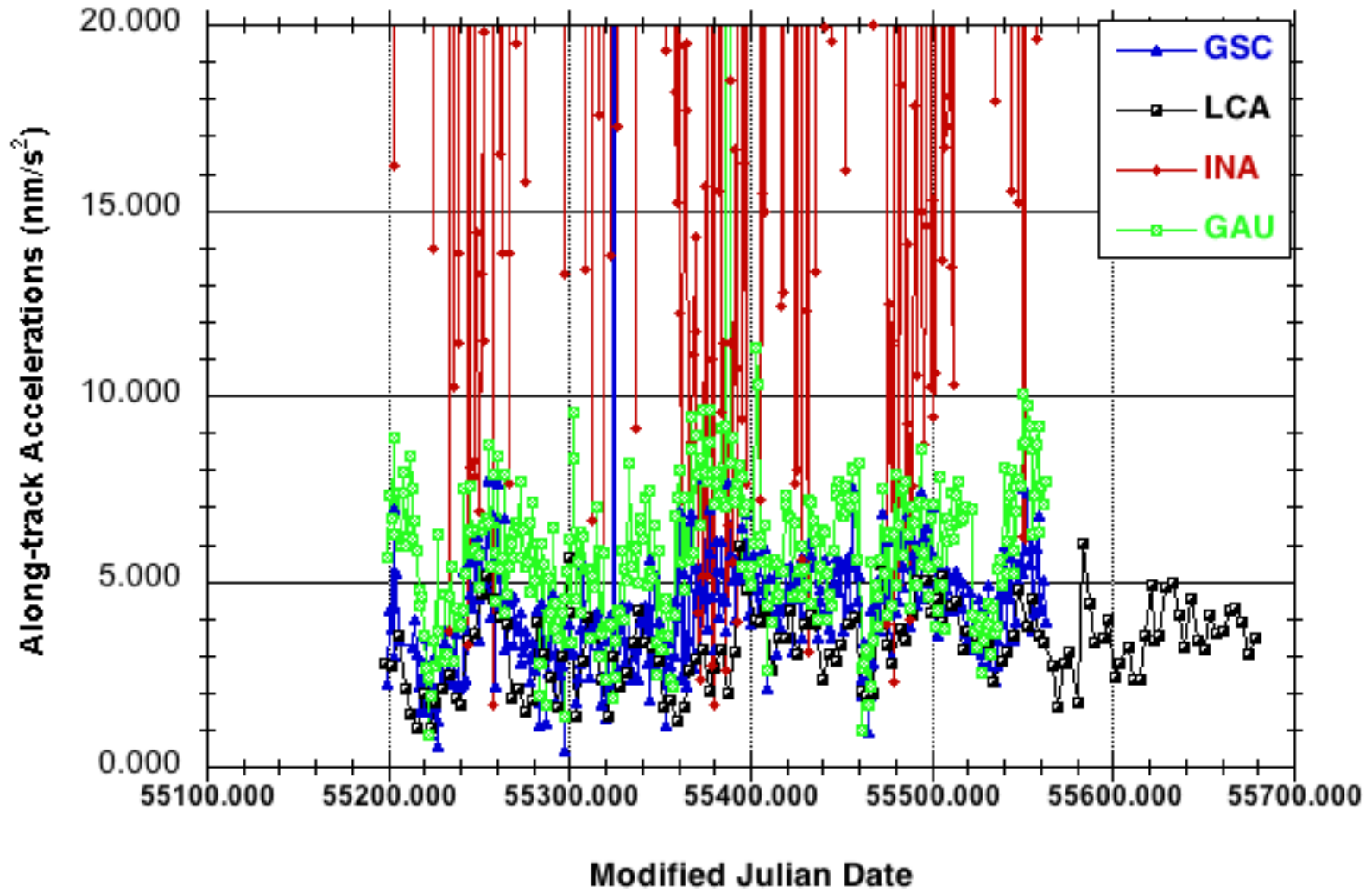


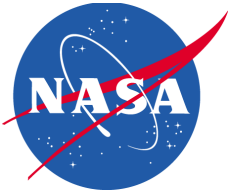
Jason-2 Daily Empirical OPR Amplitudes Cross-track (2010-only)





Jason-2 Daily Empirical OPR Amplitudes Cross-track (2010-only)

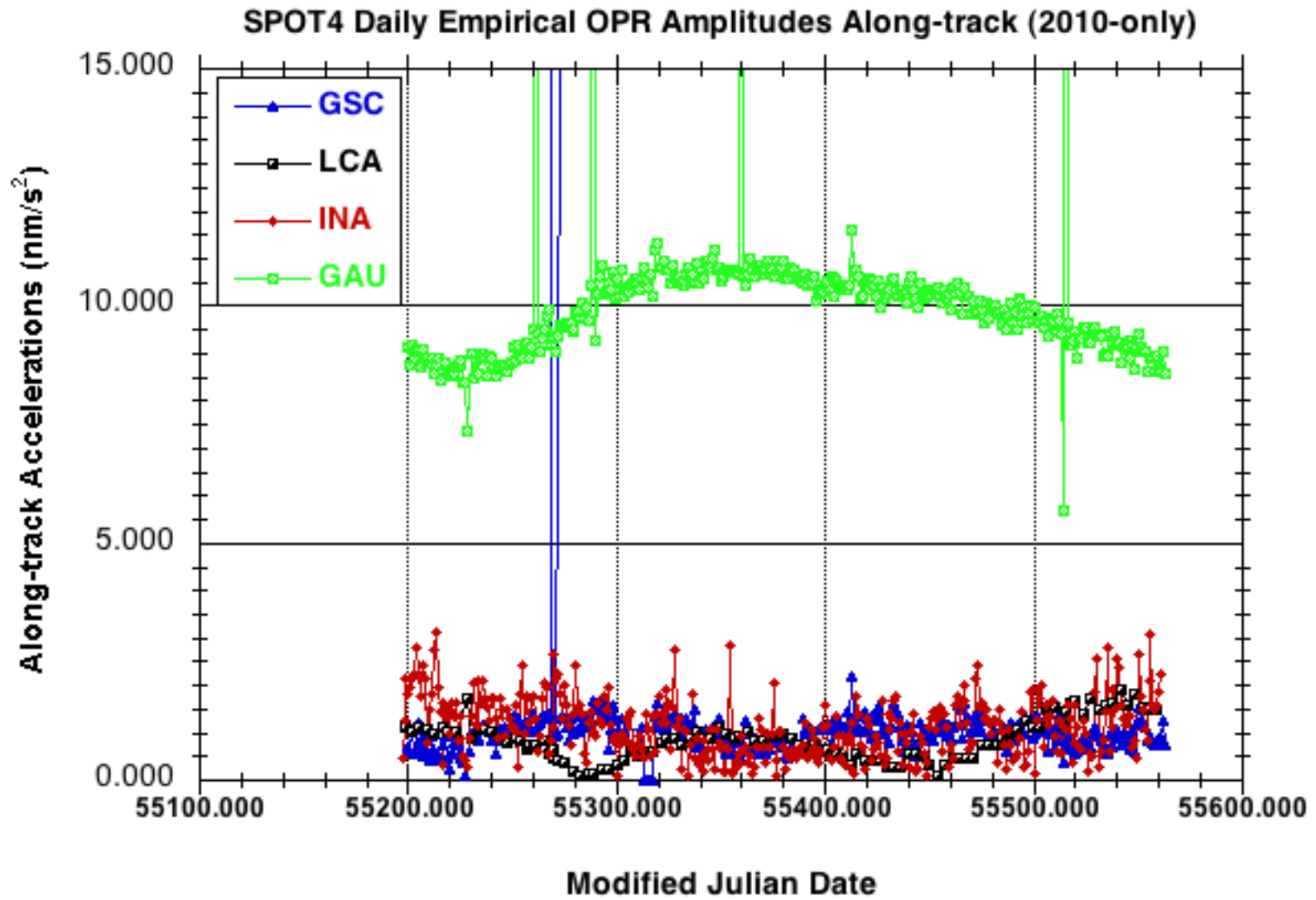
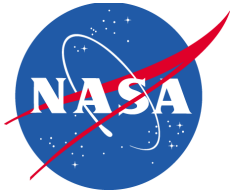


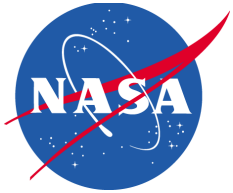


SPOT4 OPR Empirical Acceleration Amplitudes (2010 only)

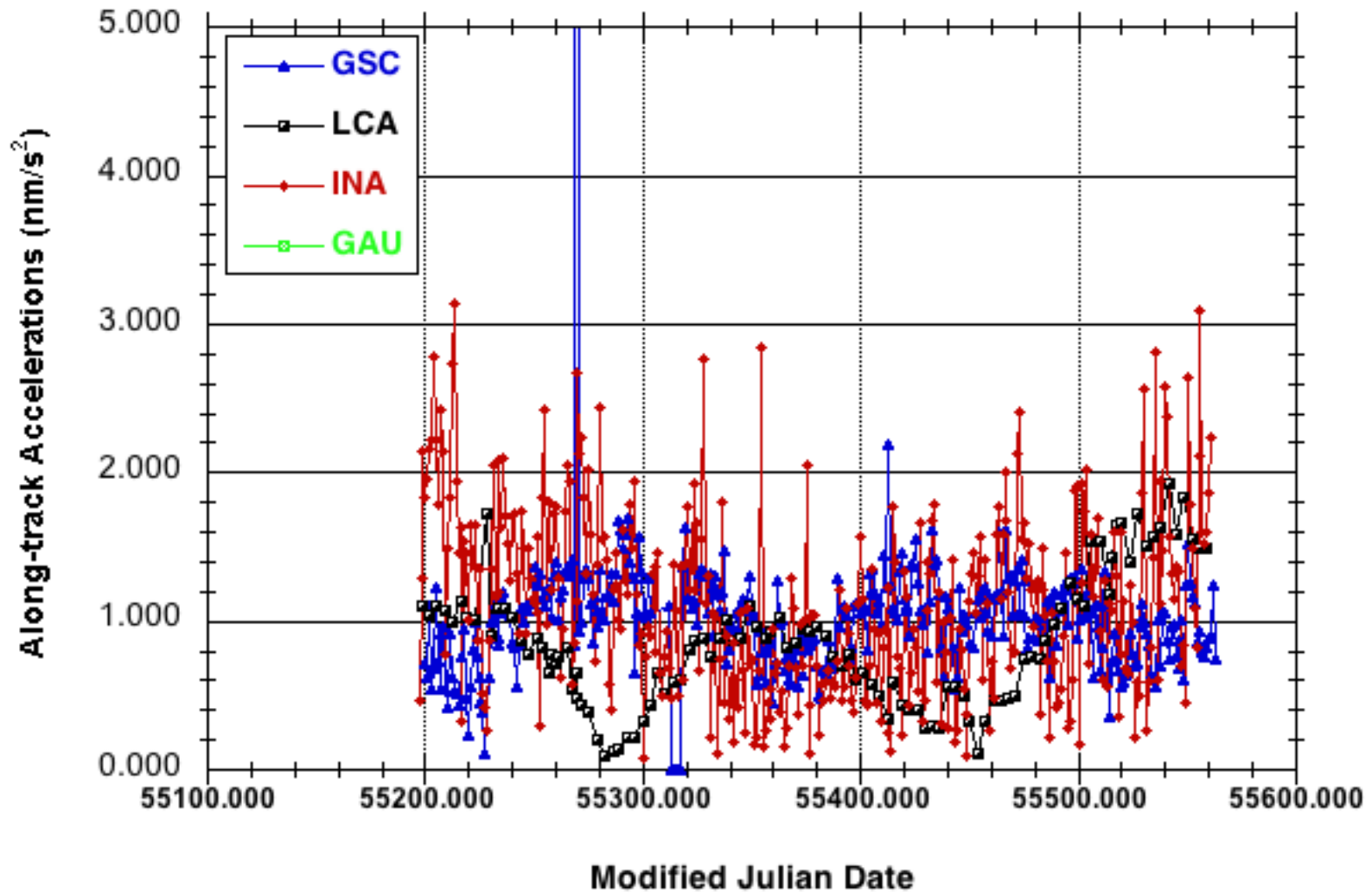


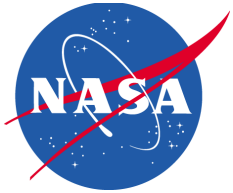
Doris Center	No. of accels	Alg (avg/median) x 1e09	Crs (avg/median) x 1e09	Adjust period (days)
GSC	358	0.99 / 1.02	3.84 / 3.86	1
ESA	366	9.38 / 9.18	3.51 / 3.46	1
GAU	356	9.90 / 10.07	3.03 / 2.93	1
IGN	365	1.29 / 1.22	2.59 / 2.33	1
INA	365	1.14 / 1.09	12.52 / 10.00	1
LCA	109	0.85 / 0.83	1.57 / 1.55	3.5
CNES POD	367	5.15 / 5.11	3.03 / 2.86	1



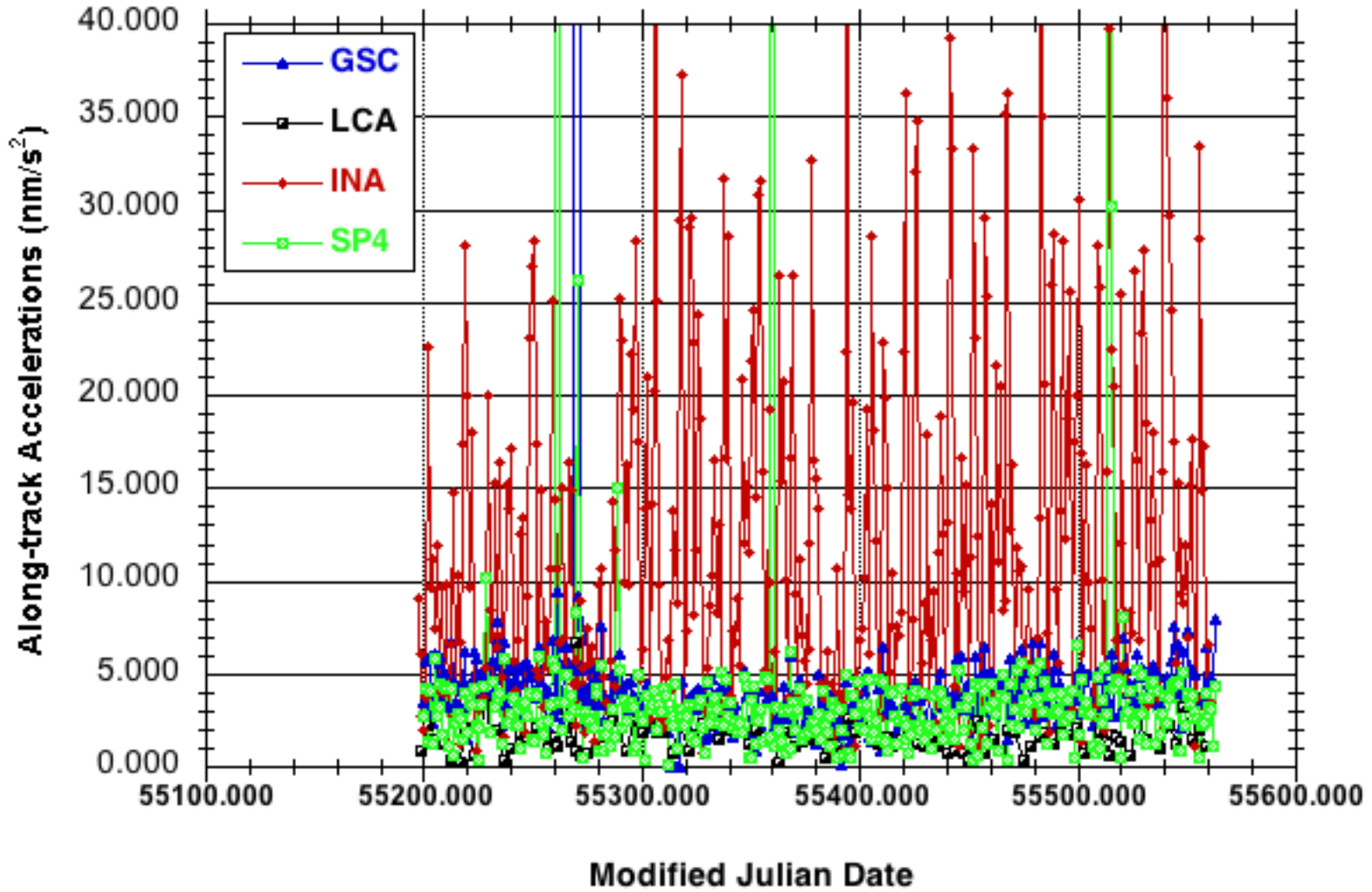


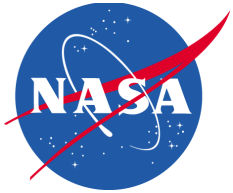
SPOT4 Daily Empirical OPR Amplitudes Along-track (2010-only)



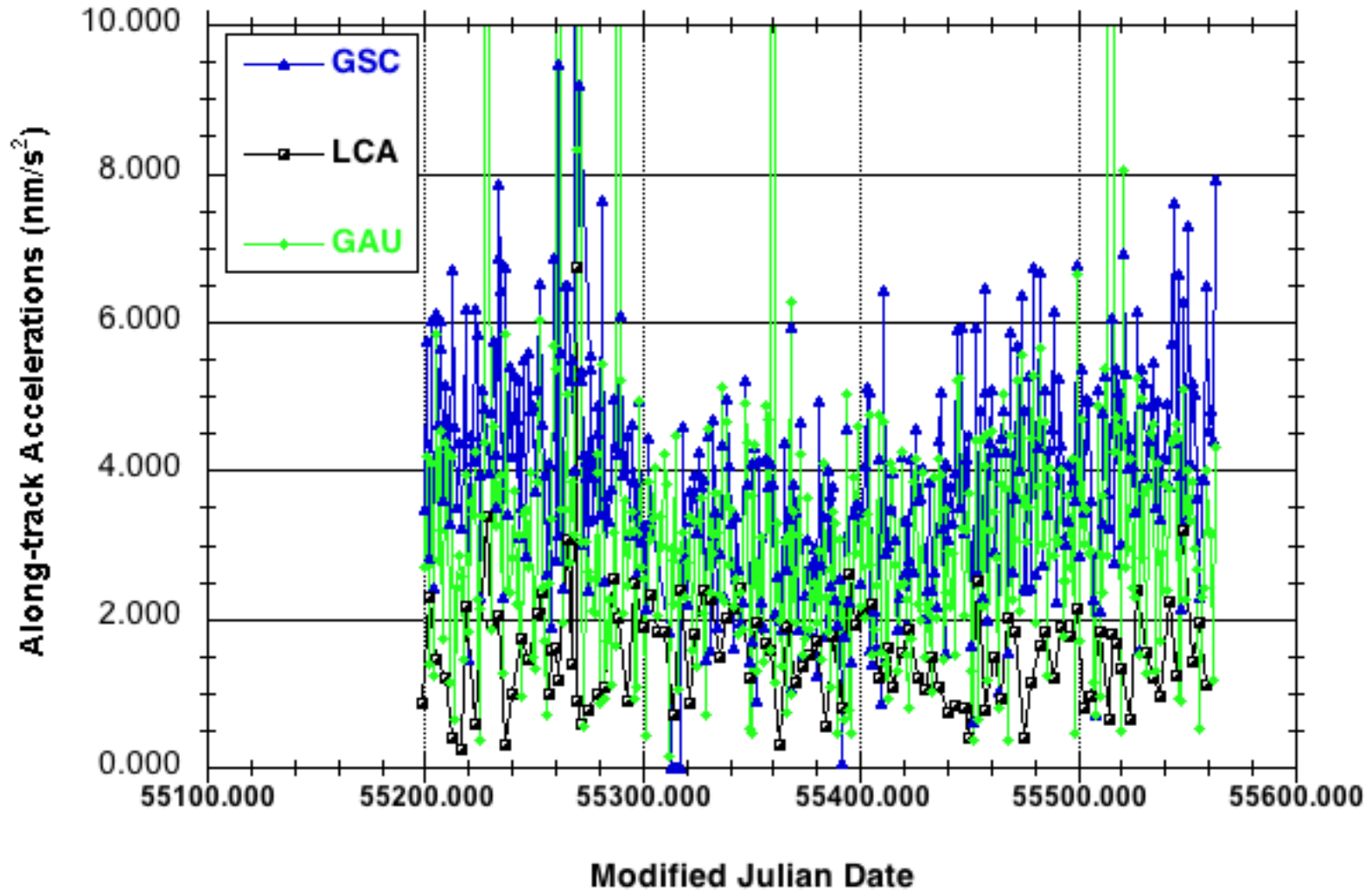


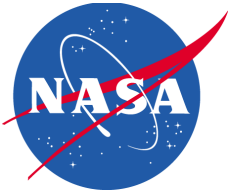
SPOT4 Daily Empirical OPR Amplitudes Cross-track (2010-only)





SPOT4 Daily Empirical OPR Amplitudes Cross-track (2010-only)

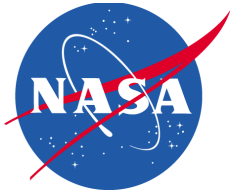




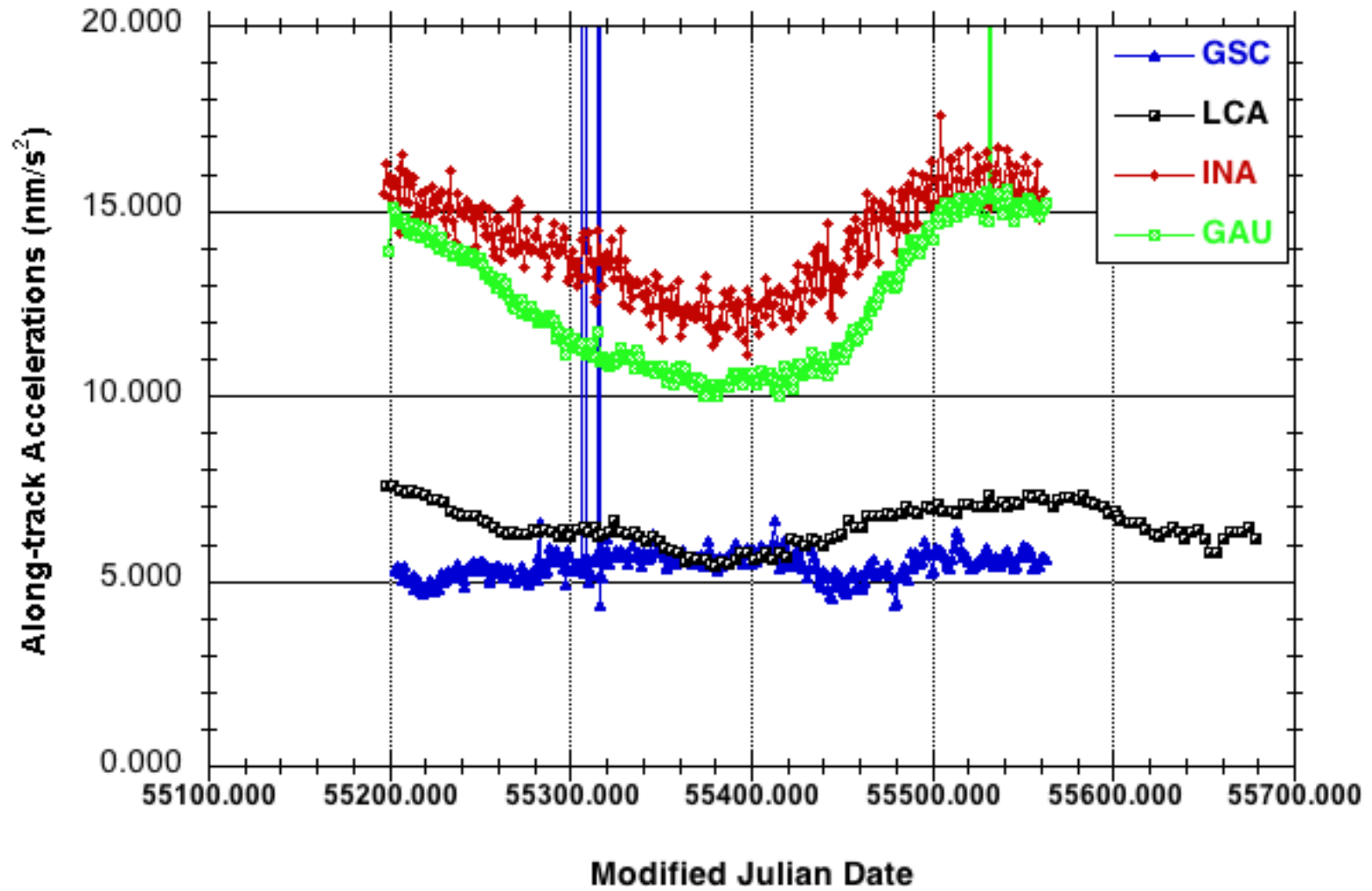
SPOT5 OPR Empirical Acceleration Amplitudes (2010 only)

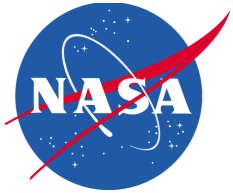


Doris Center	No. of accels	Alg (avg/median) x 1e09	Crs (avg/median) x 1e09	Adjust period (days)
GSC	372	5.45 / 5.47	1.72 / 1.53	1
ESA	365	1.40 / 1.37	2.66 / 2.38	1
GAU	356	12.50 / 12.16	2.06 / 1.97	1
IGN	365	7.26 / 7.23	2.35 / 2.13	1
INA	365	14.11 / 14.20	12.02 / 10.29	1
LCA	107	6.50 / 6.43	2.42 / 2.44	3.5
CNES POD	365	2.09 / 2.06	2.66 / 2.39	1

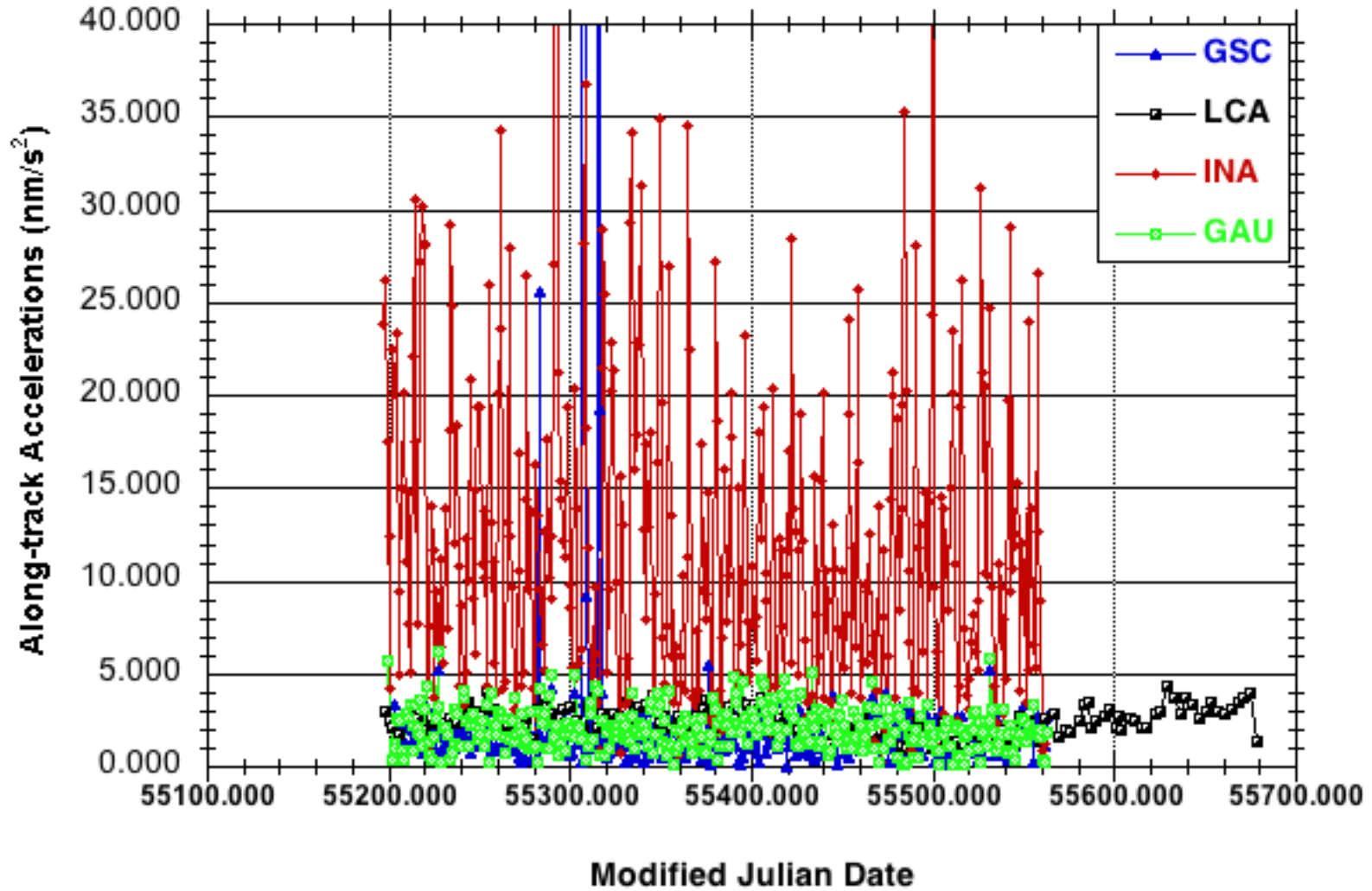


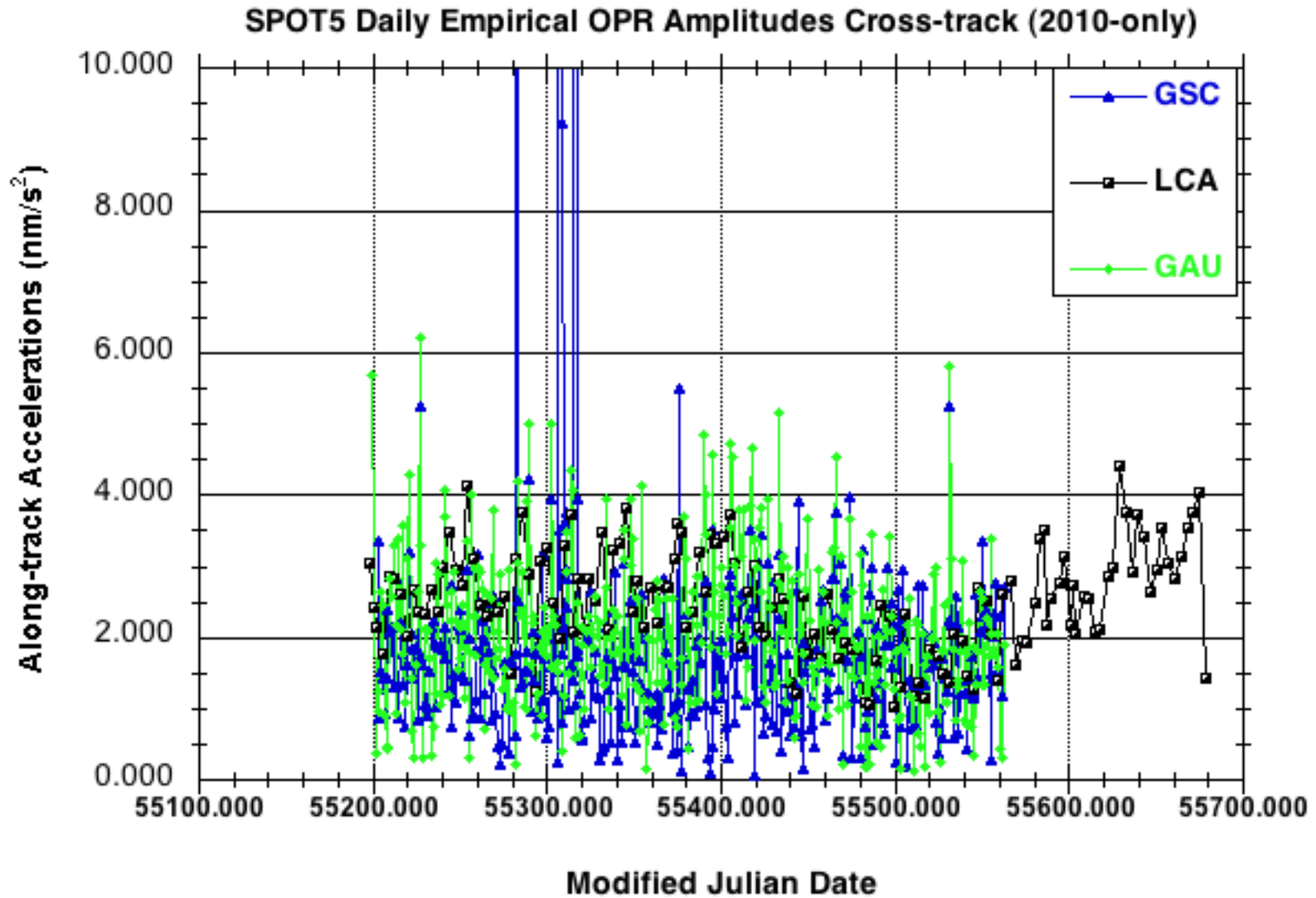
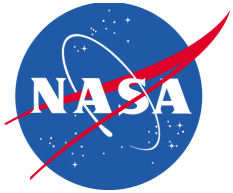
SPOT5 Daily Empirical OPR Amplitudes Along-track (2010-only)

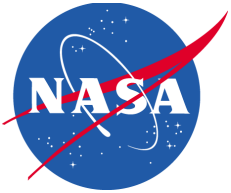




SPOT5 Daily Empirical OPR Amplitudes Cross-track (2010-only)







Recommendations

- OPR amplitudes higher than average imply non-conservative force mismodelling – either due to macromodel parameters, or maybe an erroneous attitude law in the software. First try a new set of parameters or verify values used; Second, consider if attitude correctly modelled.
- Attitude regimes for Jason2 are complicated; Maybe use quaternions? Correct attitude still required for force model even if DORIS-supplied CoM corrections used. For Cryosat2, quaternions also available (*Ernst Schrama, TU Delft*).
- For SPOT5 – don't forget solar array pitch bias ~40 deg since January 200X. If the pitch bias is modelled, Cr does not need to be retuned from pre-Jan. 200X values.