

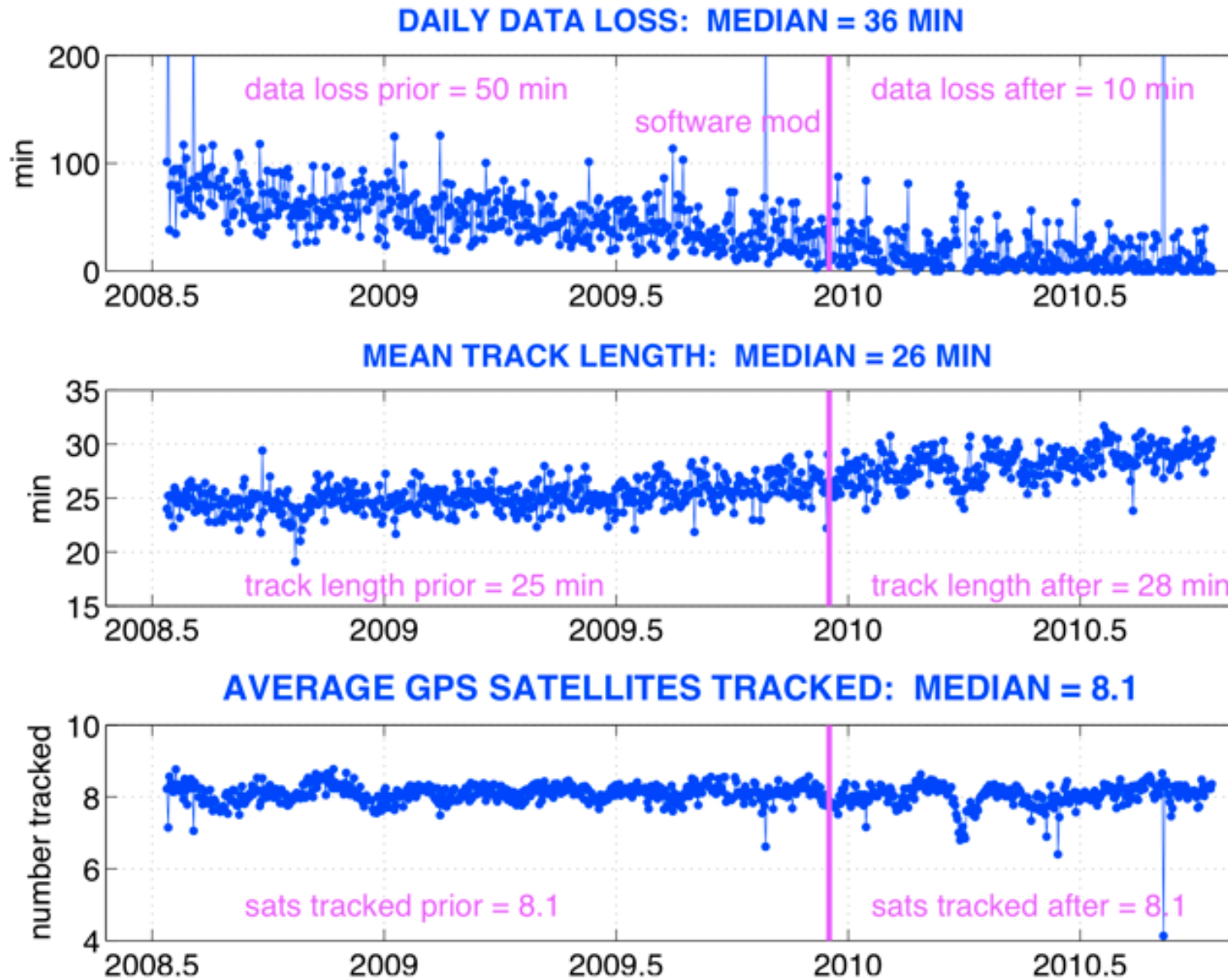


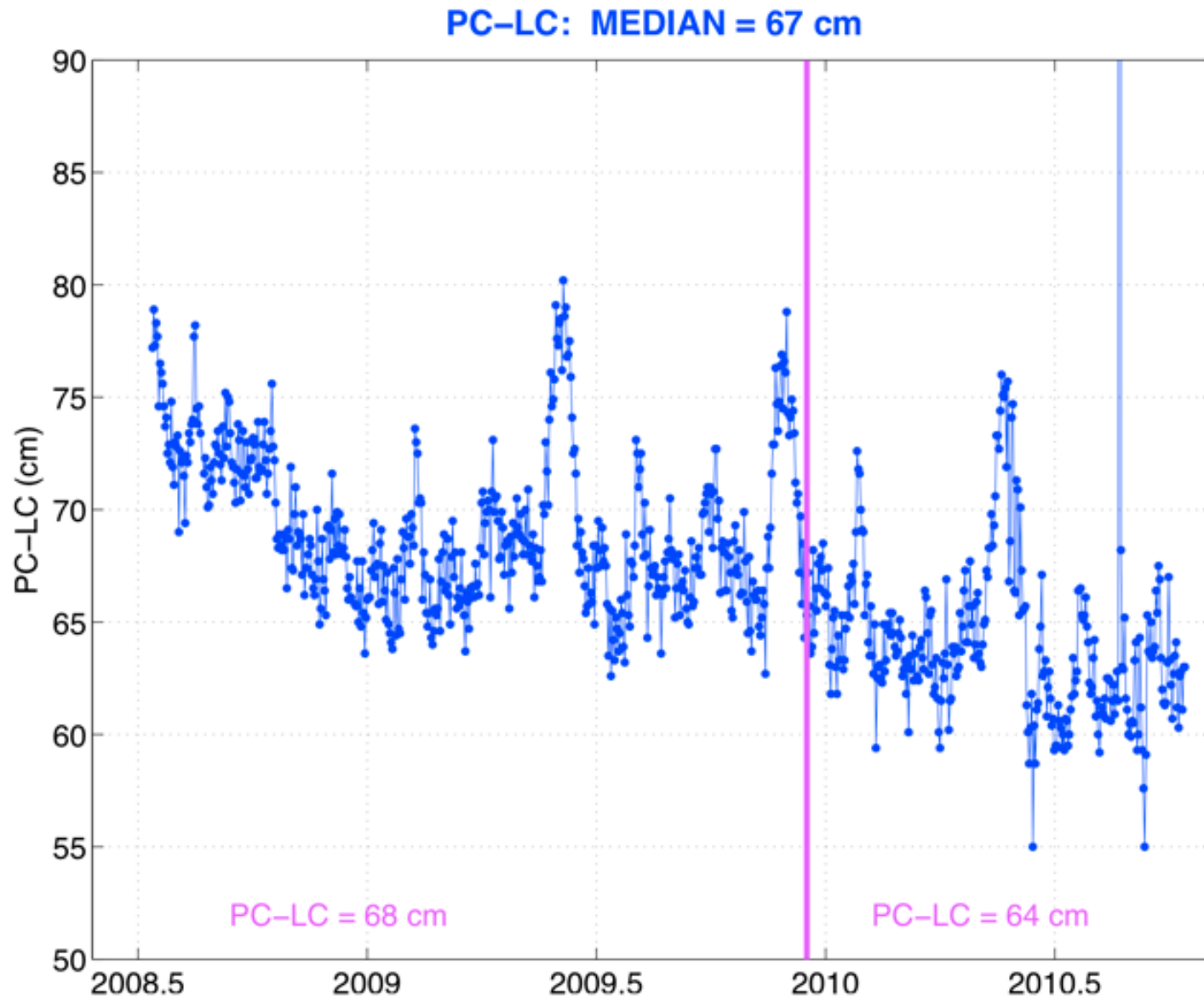
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# **Jason-2/OSTM Precision Orbit Determination with GPS**

**Willy Bertiger, Shailen Desai, Bruce Haines, Robert  
Decarvalho, and Angie Dorsey**

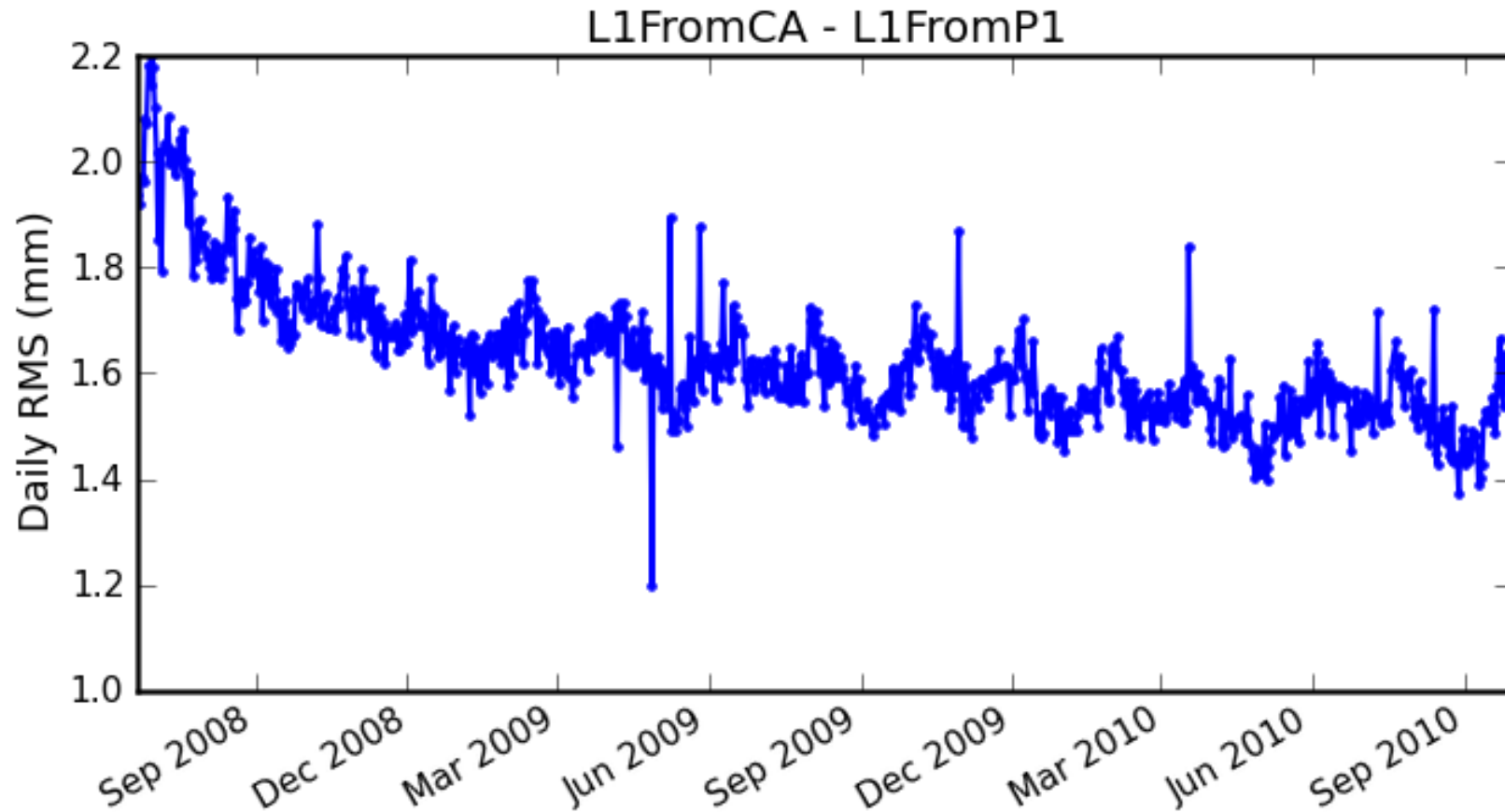
***Jet Propulsion Laboratory, Calif. Inst. of Tech.,  
Pasadena CA USA***







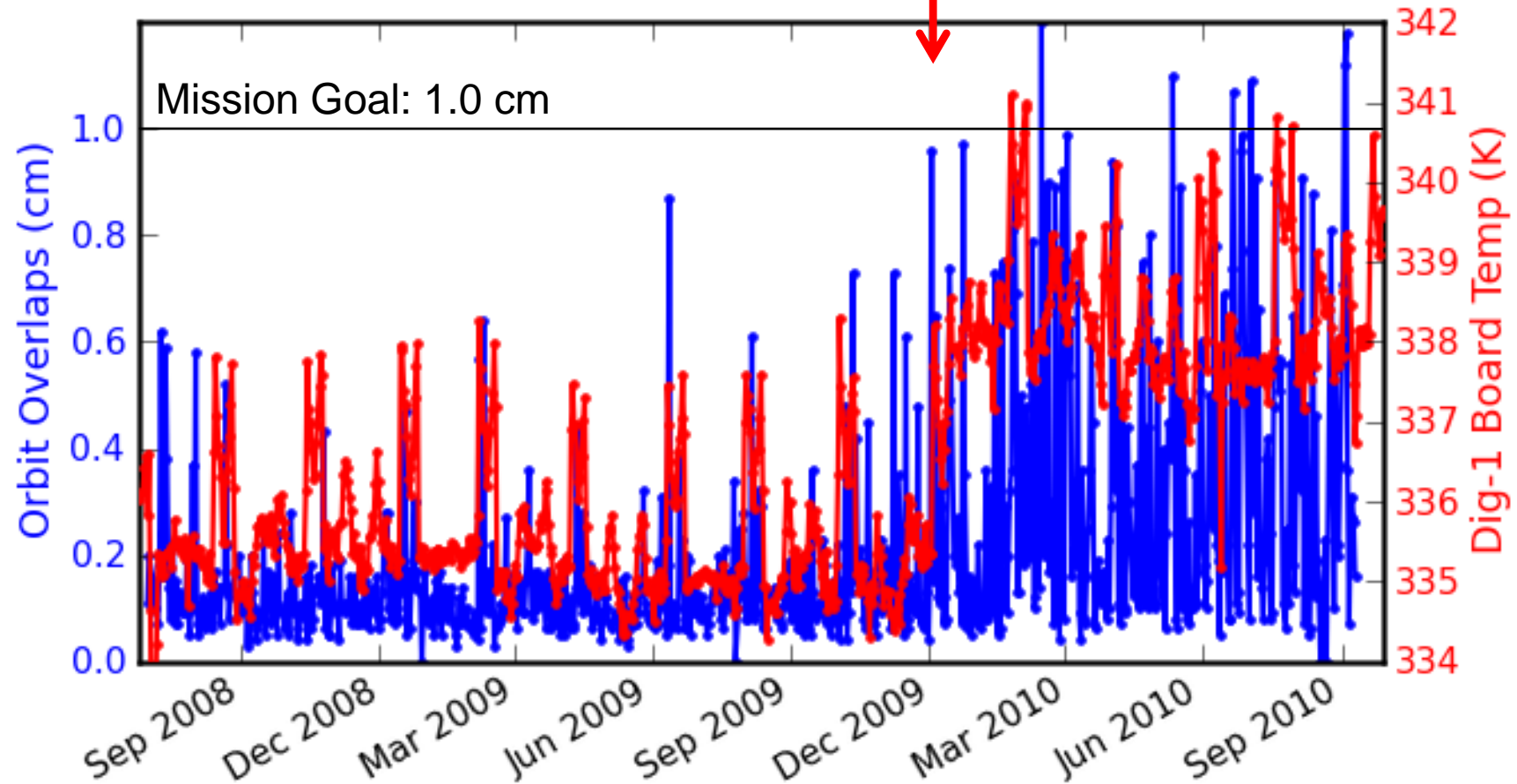
# Phase Data Quality

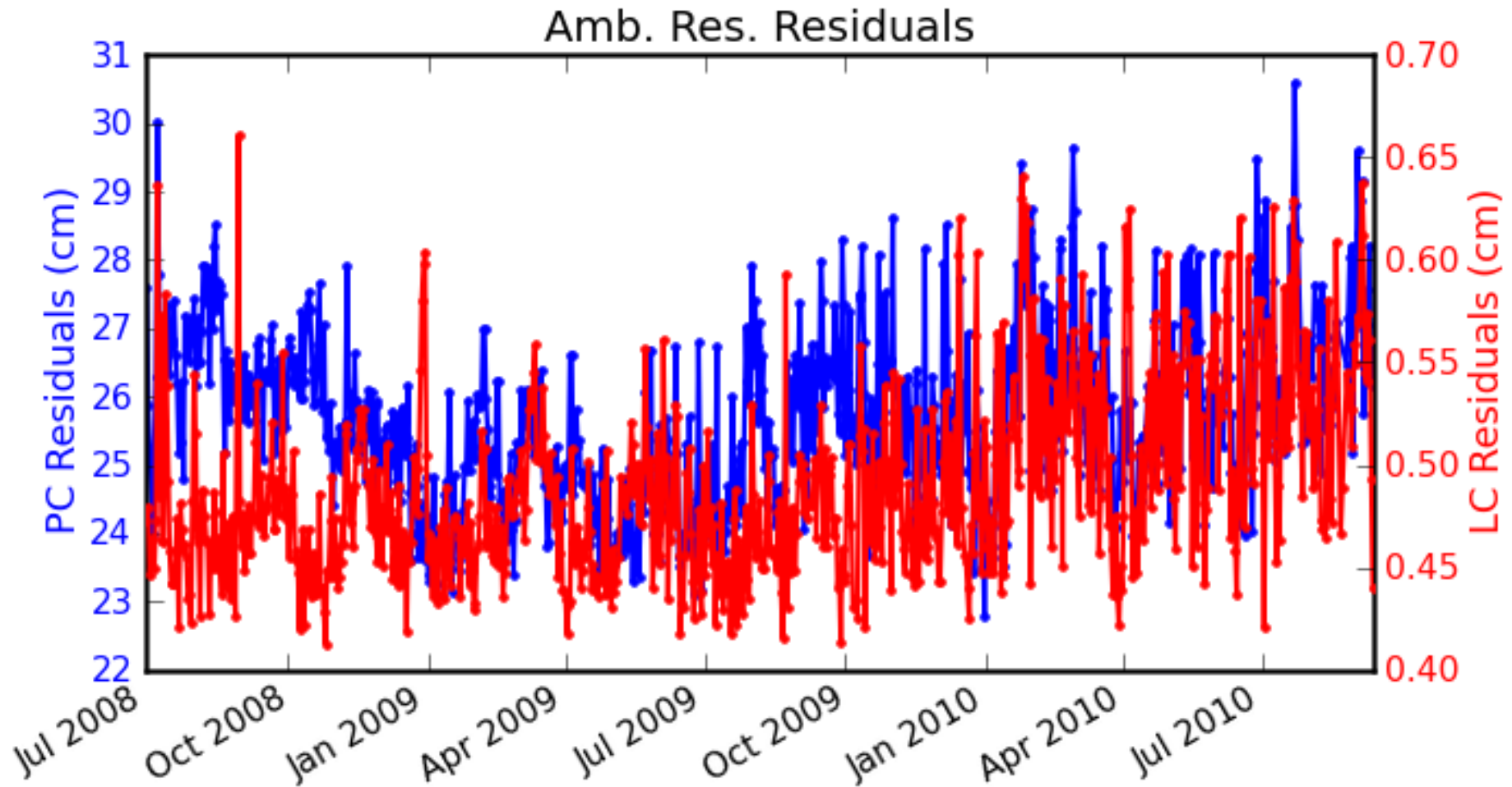


# RMS Radial Overlaps

↑  
Mission Req.: 2.5 cm

↓  
Receiver software change: Dec. 16 2009



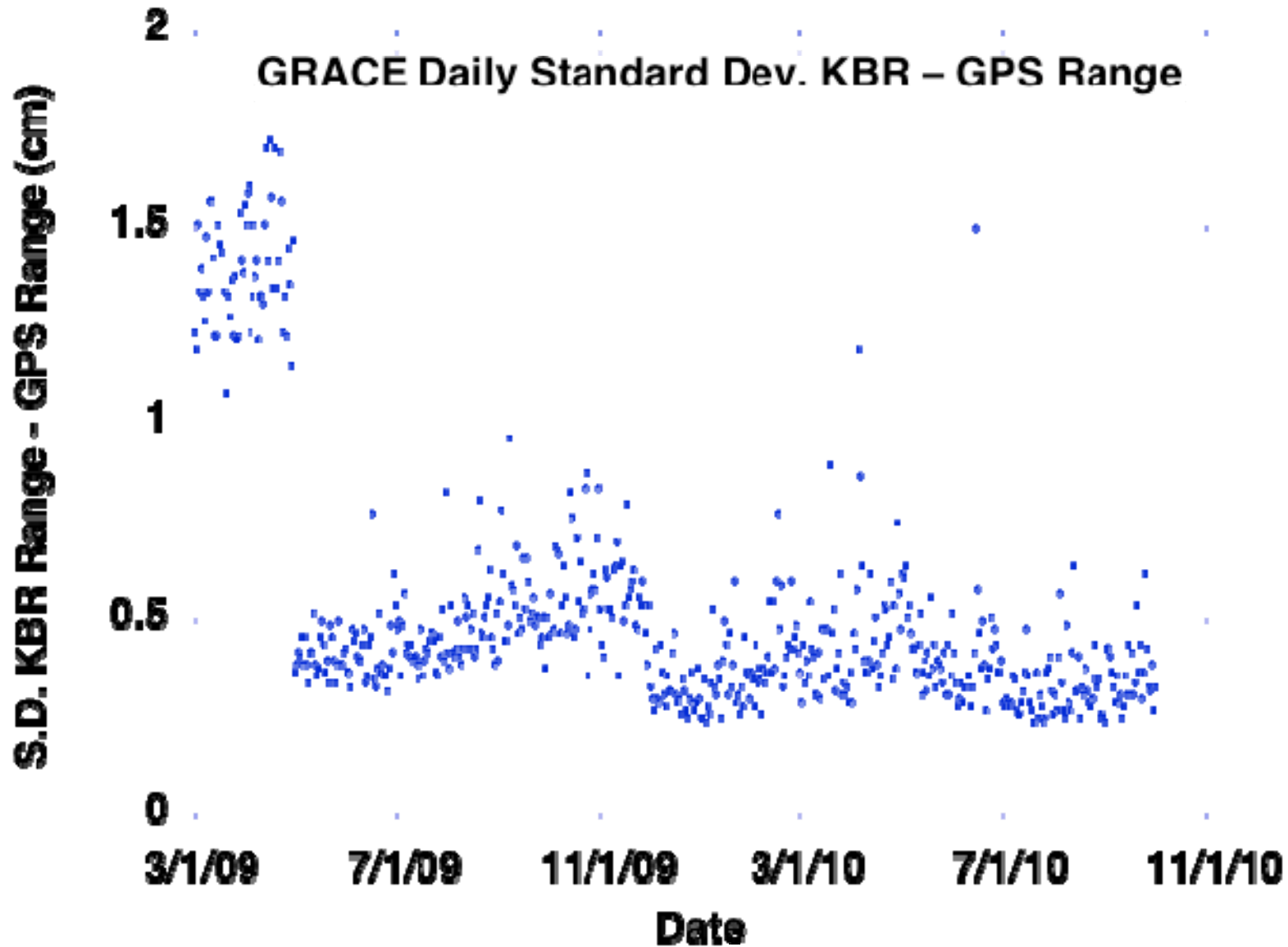




## Possible Changes

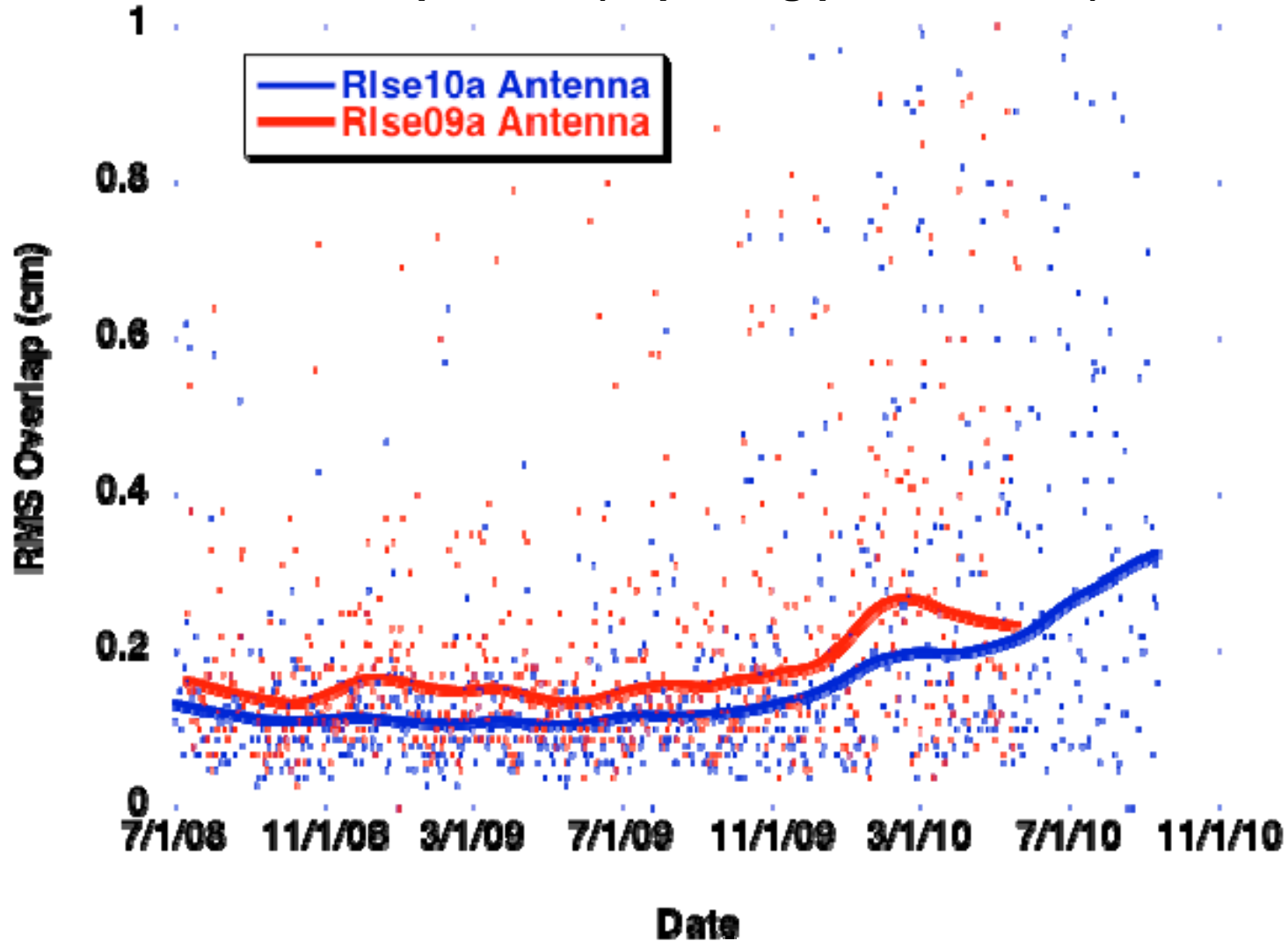


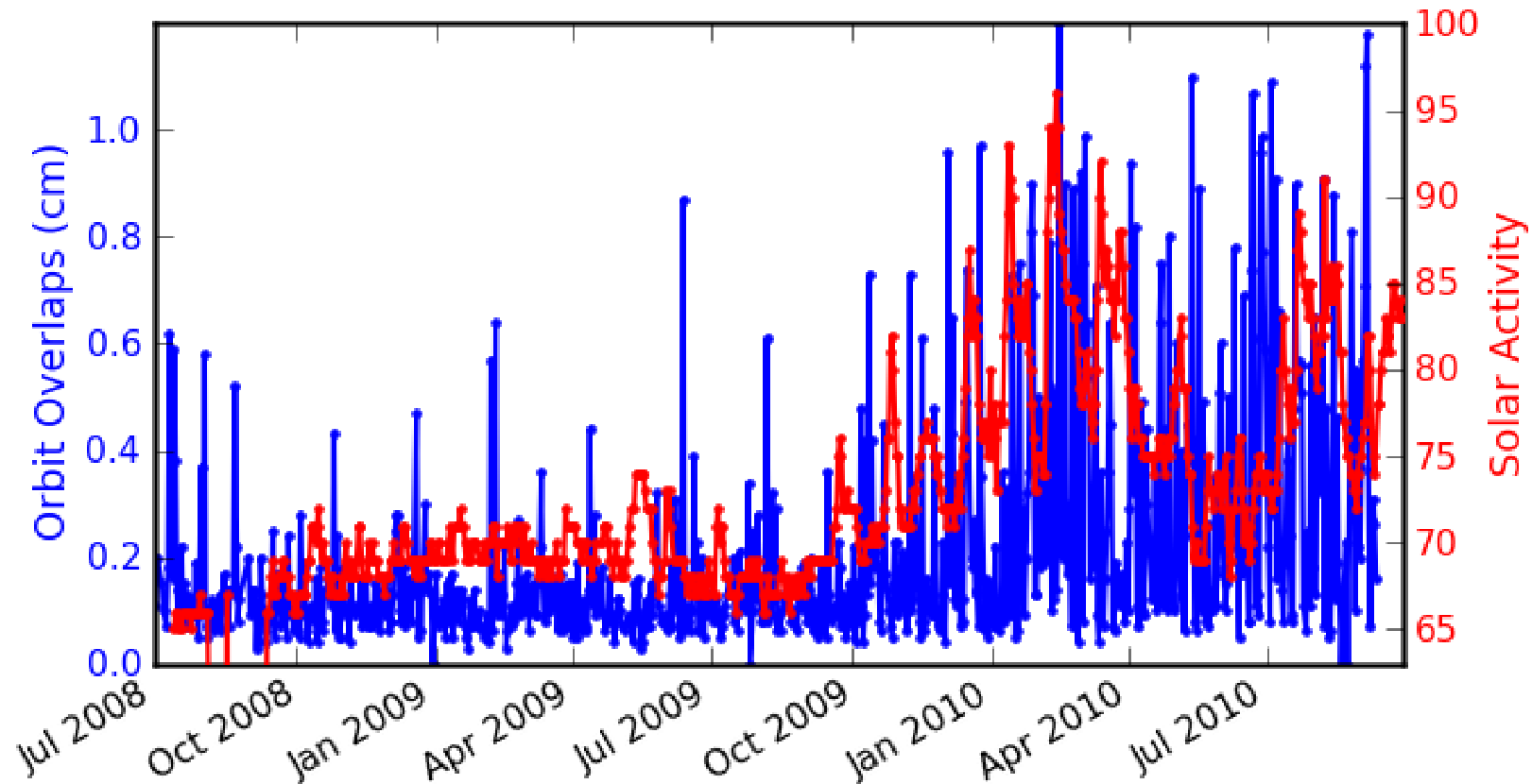
- **Antenna Cals**
  - **IIRB map to 16 degrees**
  - **OSTM/JASON-2 tuning**
- **Force Models**
  - **Coming off Solar Min**
- **Data**
  - **Quaternions, GPS Data**
    - **Model Attitude --- same story**
  - **Bias Resolution**
    - **Reduced Dynamic --- same story**
- **GPS Orbits/Clocks**





- Re-tune
- GPS linear extrapolation ( replacing phase center )

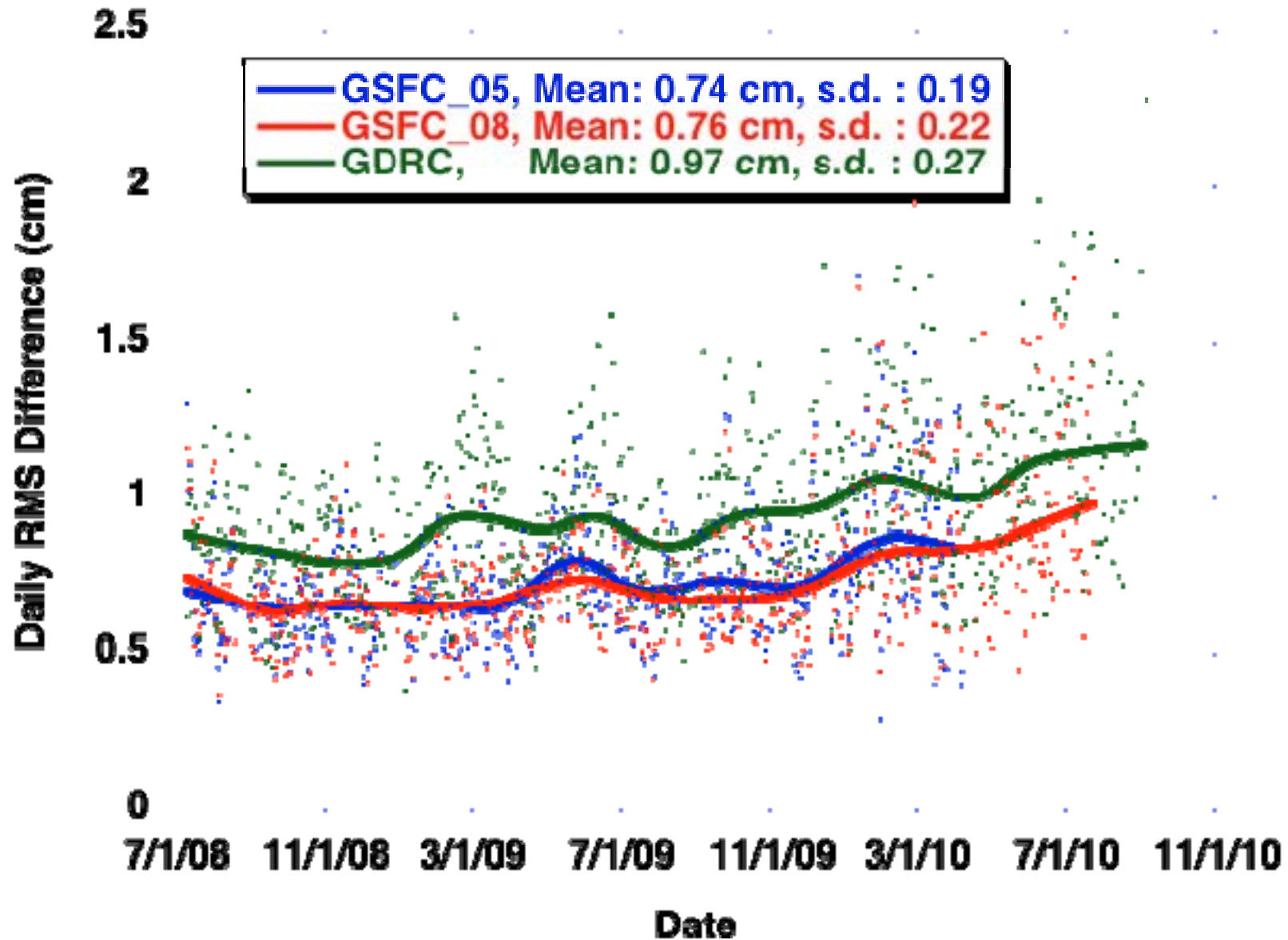


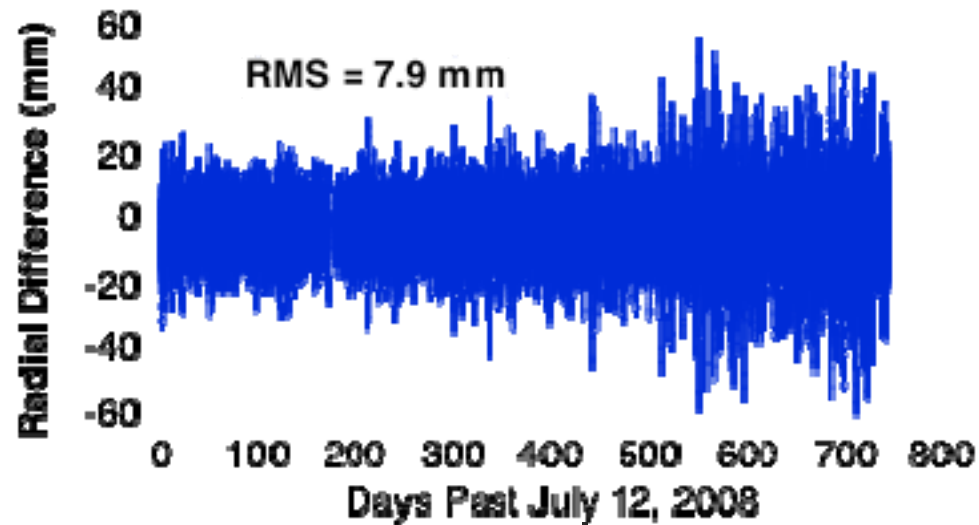


- OSTM overlaps using new antenna maps
- Solar Activity is F10.7 Daily Mean in solar flux units

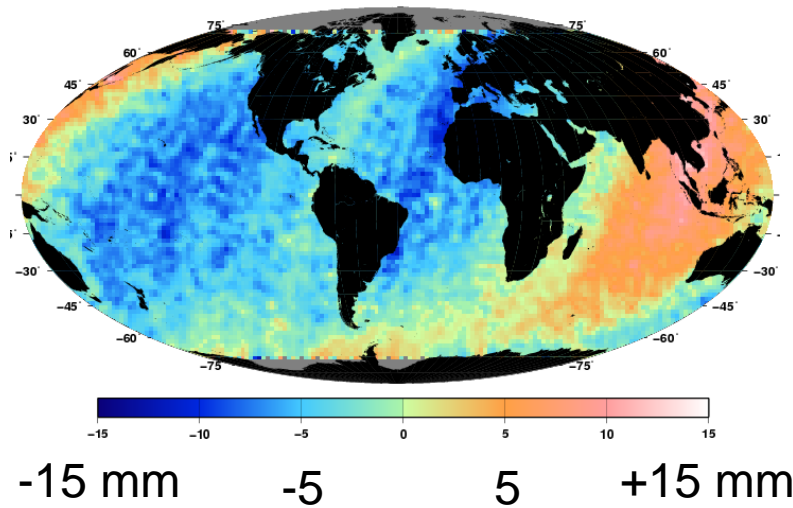


# Daily RMS Orbit Differences With JPL RSLE10a (ITRF05)

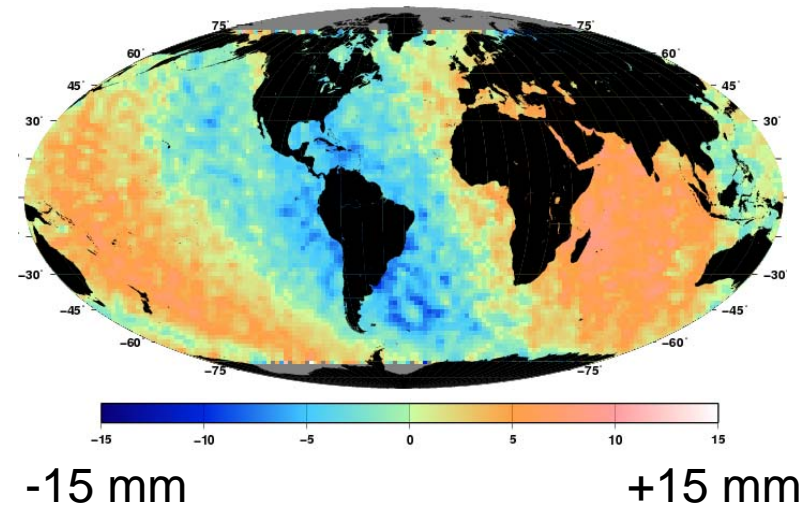




522 = Dec. 16, 2009



Ascending



Descending



# JPL RLSE10a SLR Residual Tests

## Pass Mean Statistics, 60 deg. Elev. Cut

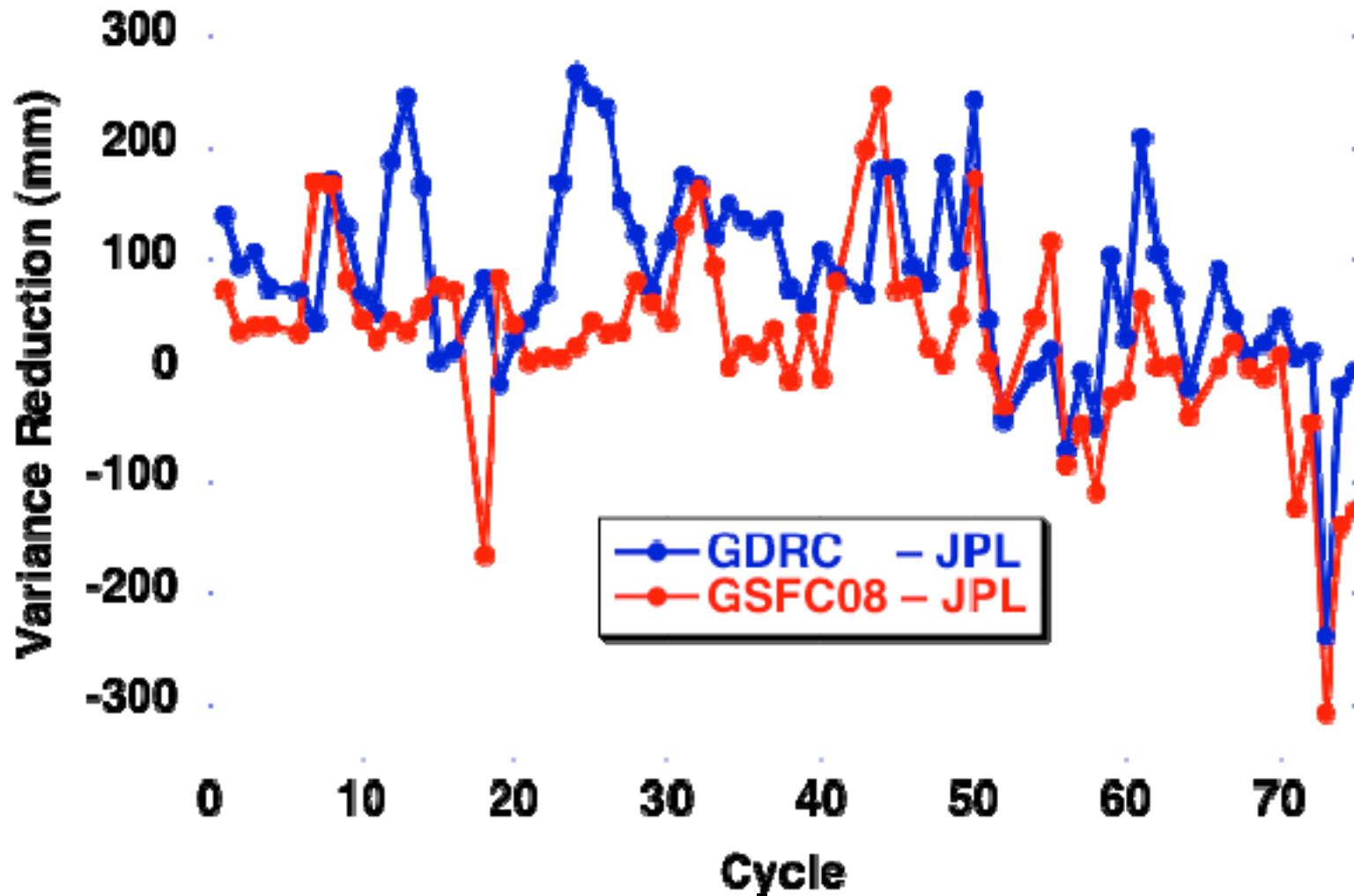


Station	Before Dec '09 Mean(cm)	After Mean(cm)	Cycles 1-79 Mean(cm)	Before Dec '09 Sigma(cm)	After Sigma(cm)	Cycles 1-79 Sigma(cm)
Monument	0.37	1.91	0.81	1.17	0.90	0.90
Yaragadee	1.03	1.00	0.75	0.66	1.15	0.77
Graz	-1.33	-1.12	-1.06	0.76	1.07	0.81
McDonald	0.49	-0.15	0.37	0.77	1.15	1.12
ALL WEIGHTED	0.38	0.51	0.31	<b>0.72</b>	<b>1.16</b>	<b>0.83</b>

**ALL GDRC, includes SLR:      0.68      0.75      0.74**

SLR Data is not used in POD for JPL RLSE10a

# Cross-Over Variance



> Dec. 16, 2009 is >Cycle 51



## Summary/Conclusions

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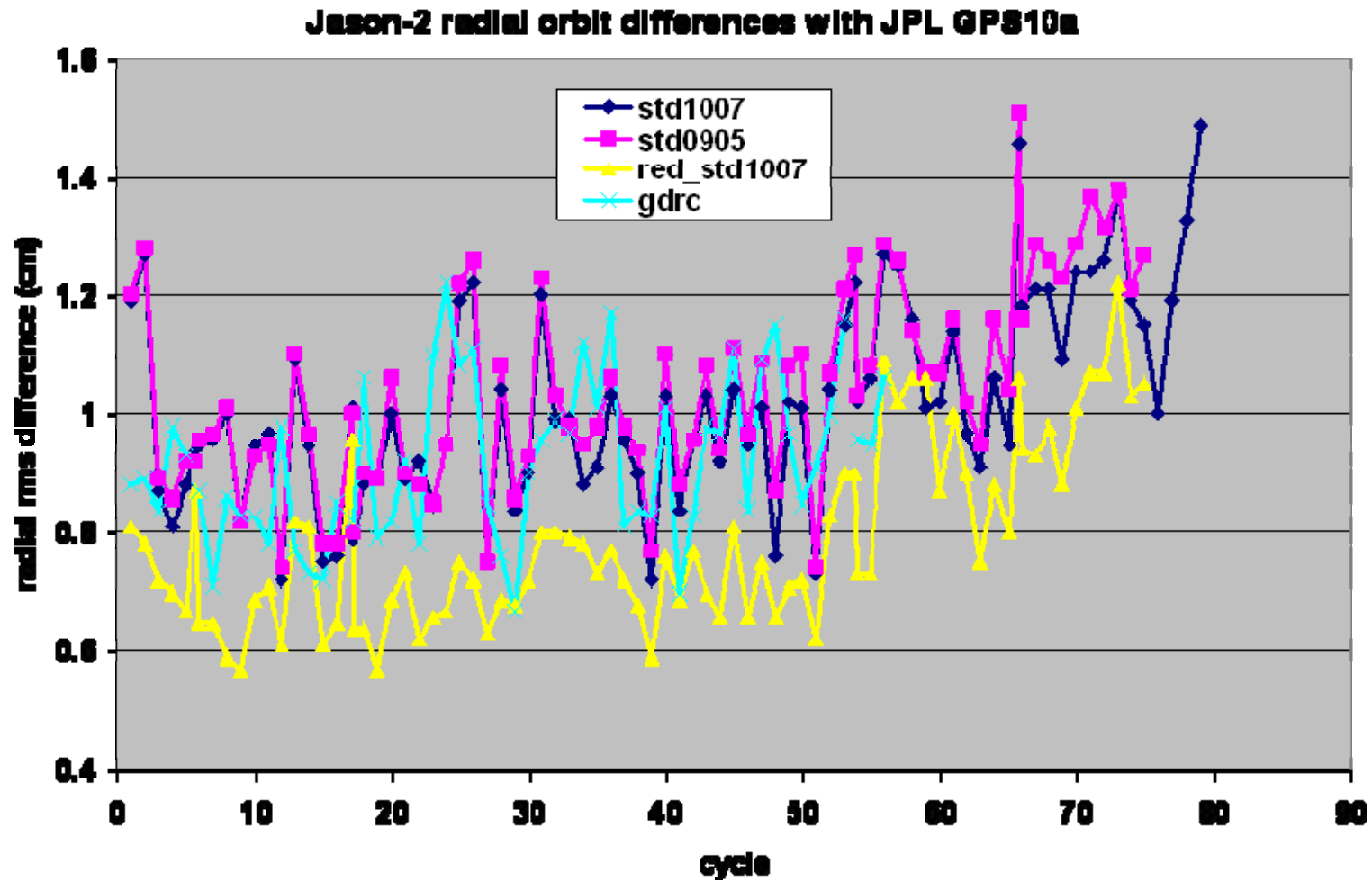
- **RLSE10a – slight degradation after Dec. '09**
  - **< 1 cm to around 1 cm**
    - **SLR residuals**
  - **Causes under investigation**
    - **Receiver Software**
    - **Force Model Tuning**
- **GDRC compares at the cm level**
- **Closer to GSFC Laser/Doris reduced dynamic**

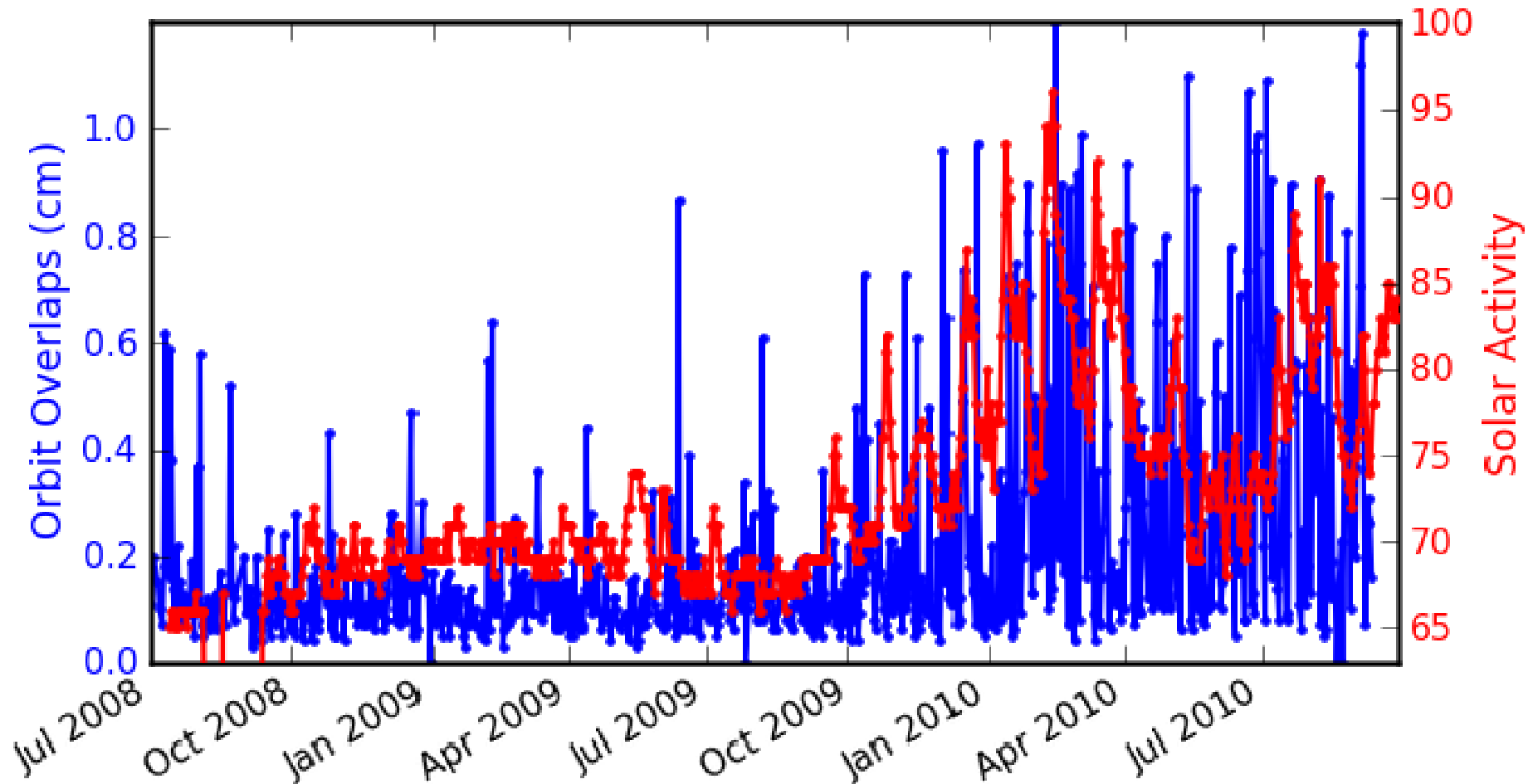


# Backups









- Solar Activity is F10.7 Daily Mean in solar flux units