

The site range biases of the worldwide SLR network

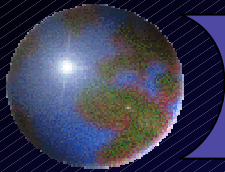
e-GEOS

V. Luceri
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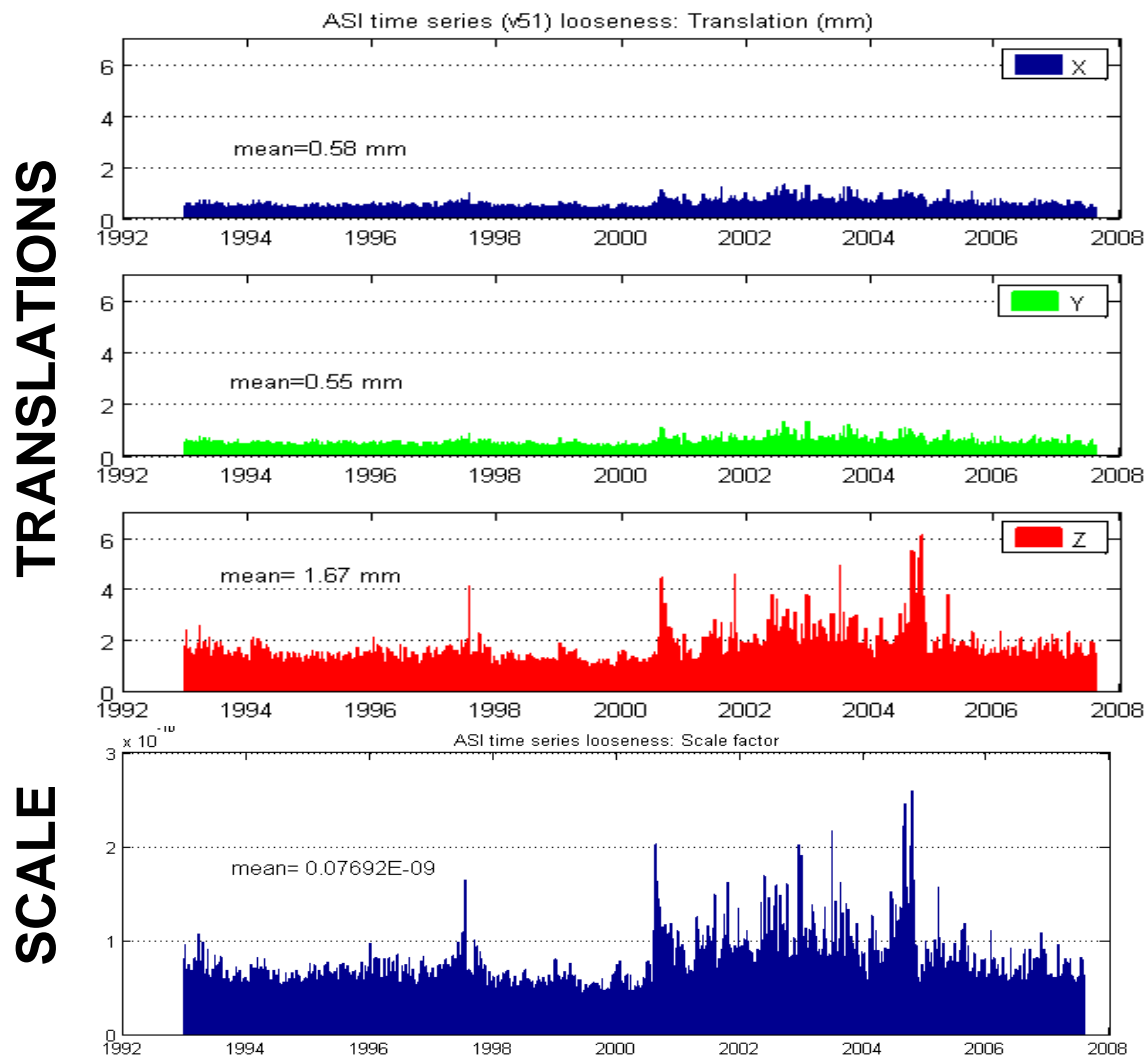


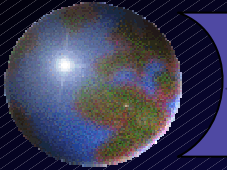
G. Bianco
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ILRS Fall Meeting, 24-28 September 2007, Grasse



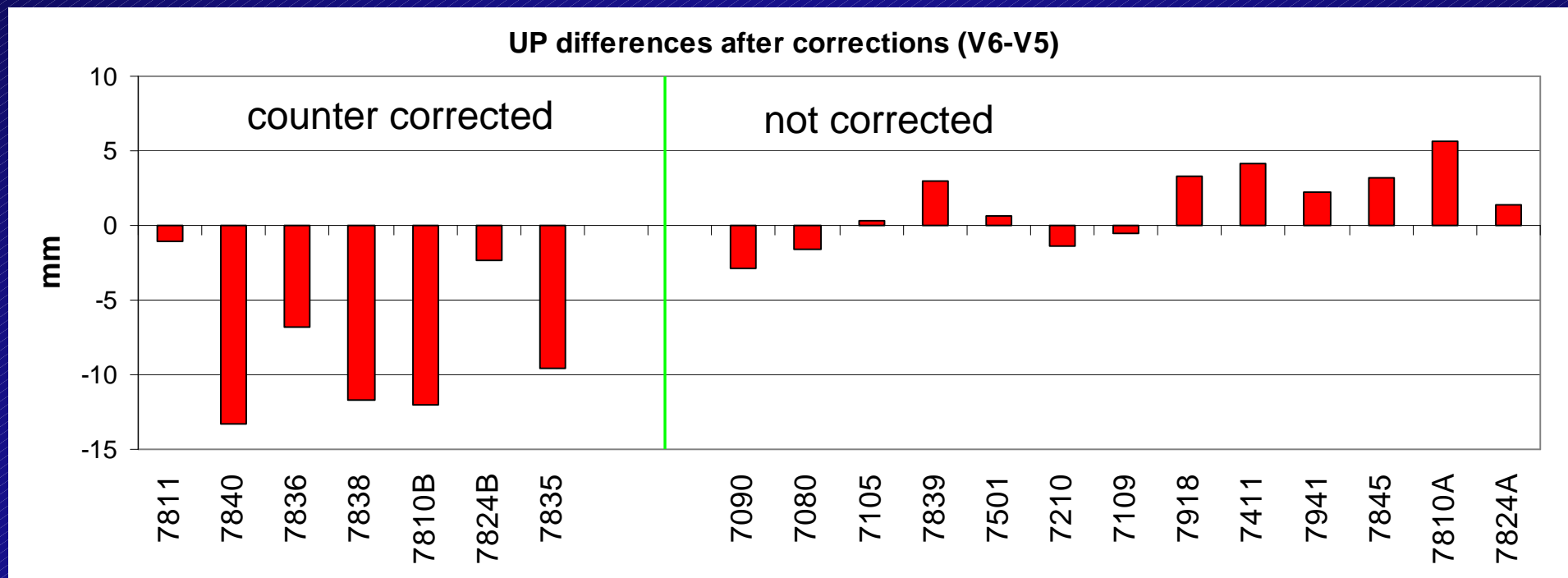
SLR sensitivity to the TRF datum

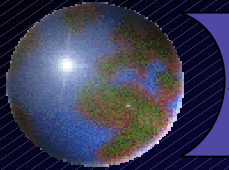




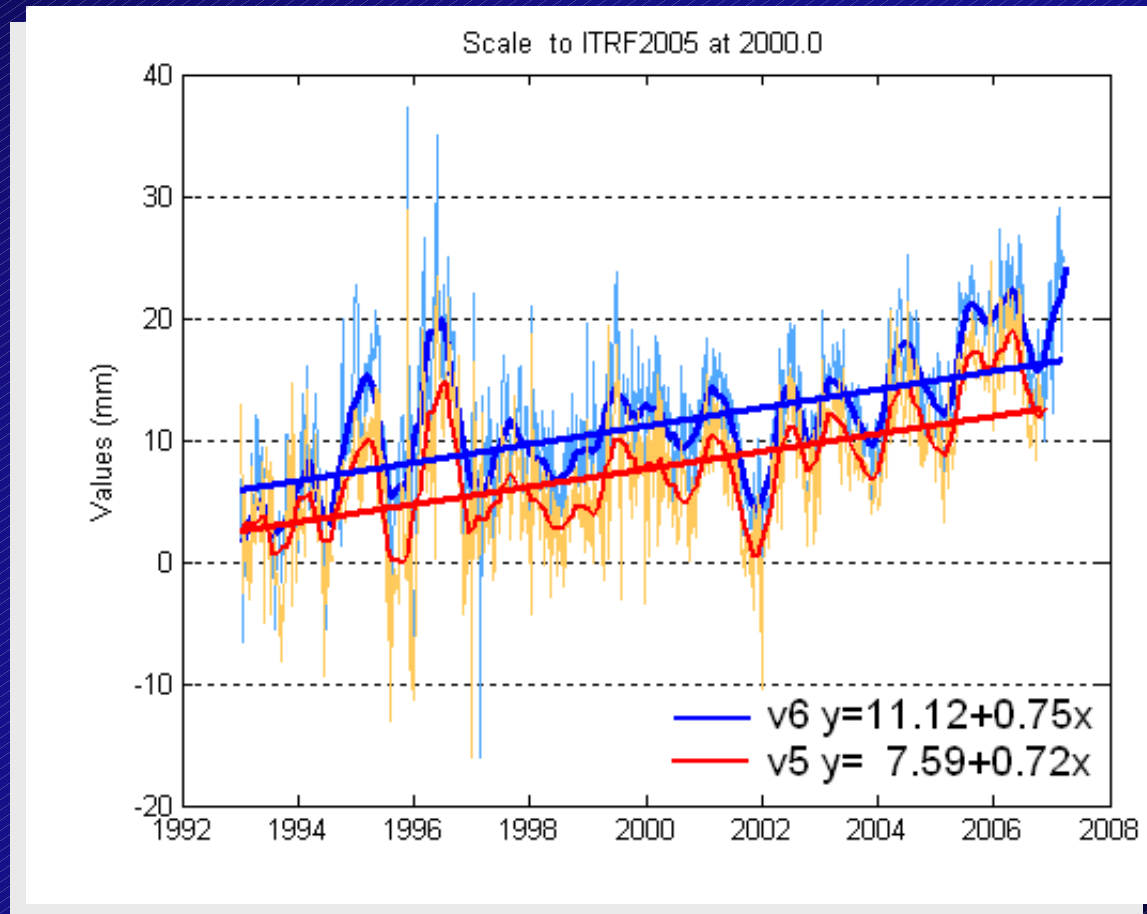
Importance of system calibration

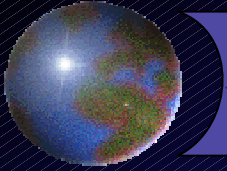
- V5 - time series without Stanford counter corrections
- V6 - time series with Stanford counter corrections





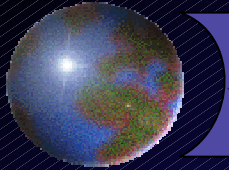
Stanford correction effect on the scale





Long term range bias monitoring (1)

- AC bias reports are generally not homogeneous over years and have a partial temporal coverage
- Range biases are highly correlated with height over short arc, their estimation in the weekly product weakens the solution
- Intermittent bias estimation can introduce jumps in the coordinate time series
- Most of the biases are not known and reported by the stations



Long term range bias monitoring (2)

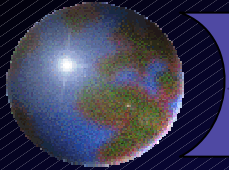
Long arc solution
with LAGEOS

- CDDIS Bulletin
- SLRMail

- Site Log
- Info from the stations

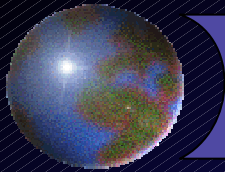
Definition of:

- unrecoverable data to be edited
- sites requiring bias estimation
- bias to be applied

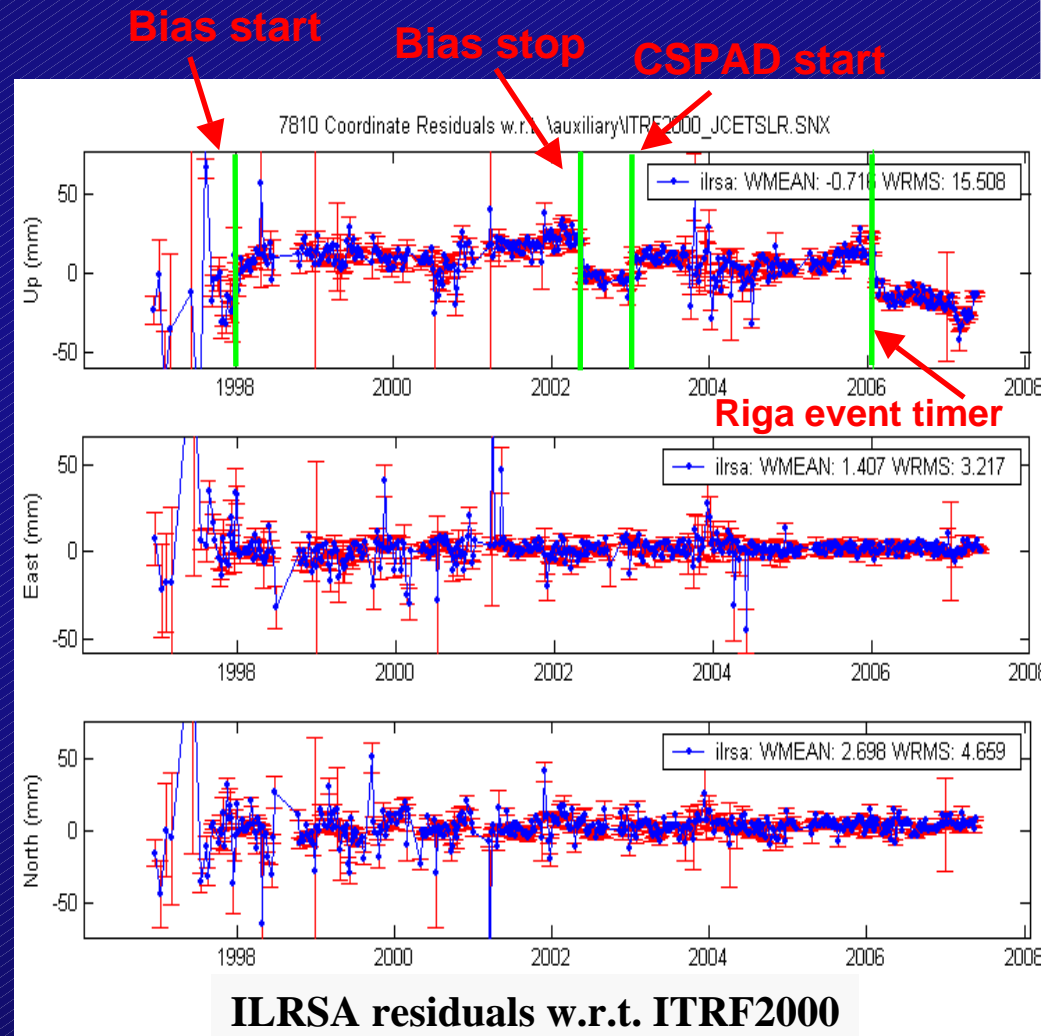
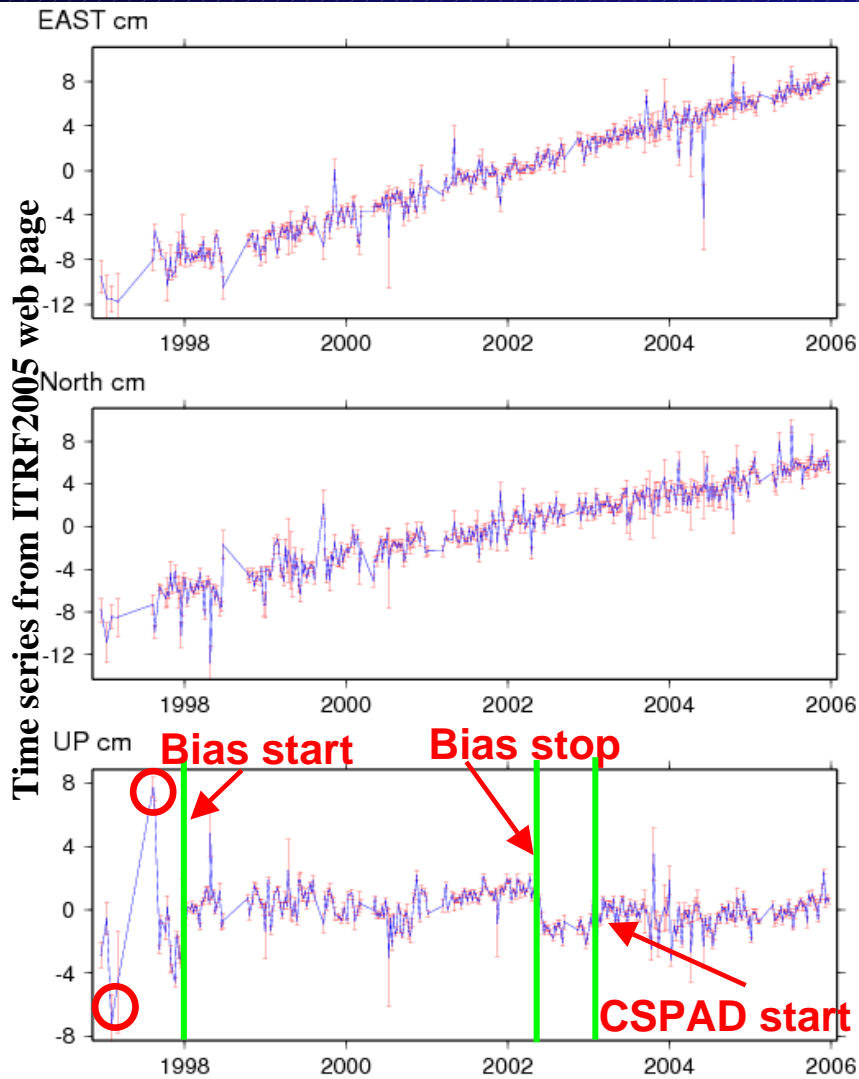


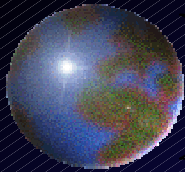
Range bias estimation from ASI06 solution

- The biases are estimated with a long arc solution from jan 1983 to jul 2007 (CGS2006_new)
- The solution is loose and SSC/SSV are estimated over the entire time span
- The biases before 1992, distributed by Pavlis, have been applied
- One bias estimate every 15 days after the SSC/SSV/EOP adjustment
- The biases are one-way and should be subtracted by the observations
- The pressure values from McDonald in 1995 and 1996 are corrected
- Monument Peak bias of 16.36 cm from august 27, 1996 to oct 2 is corrected

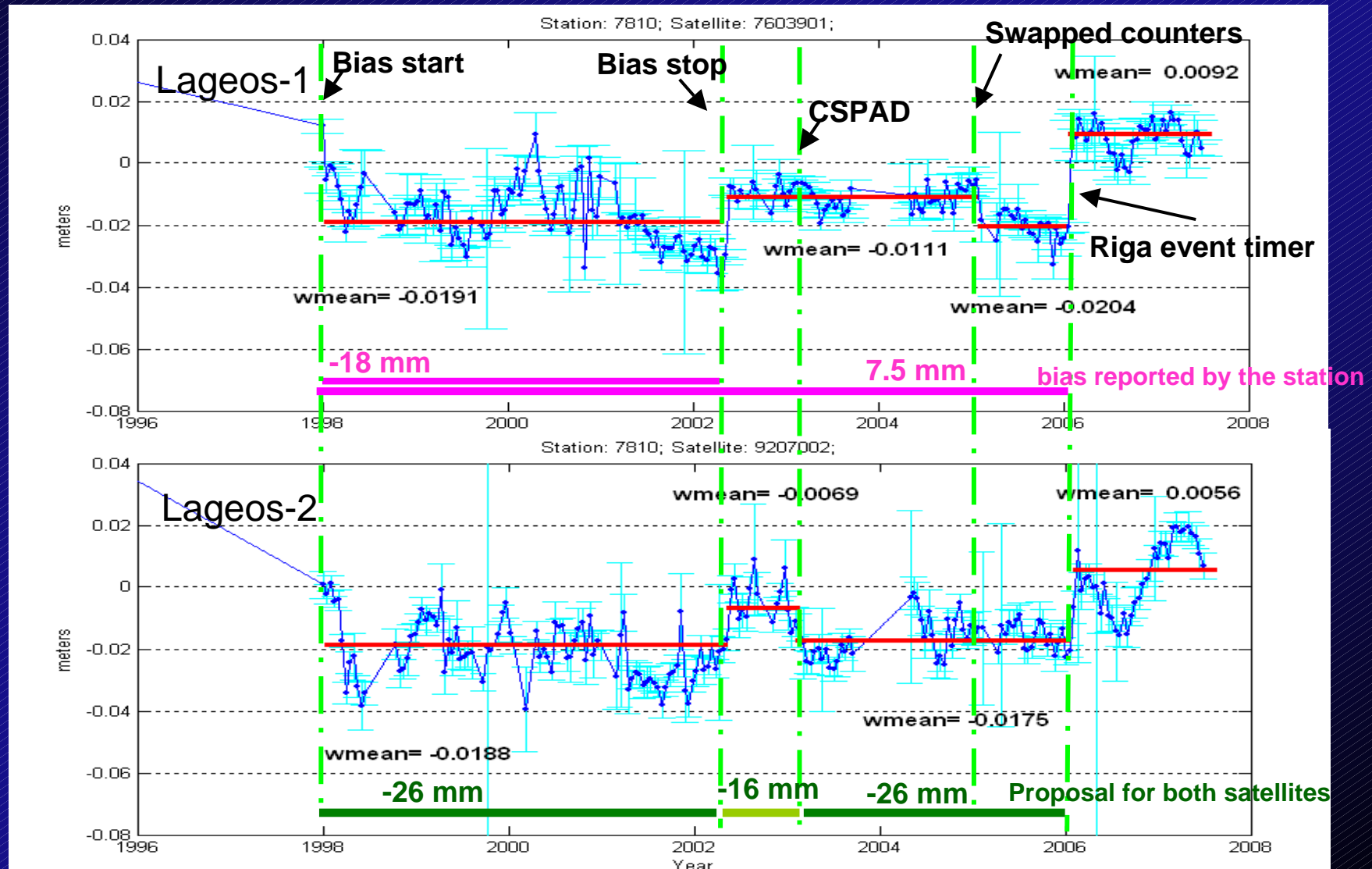


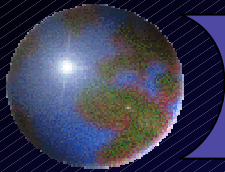
Zimmerwald coordinate time series



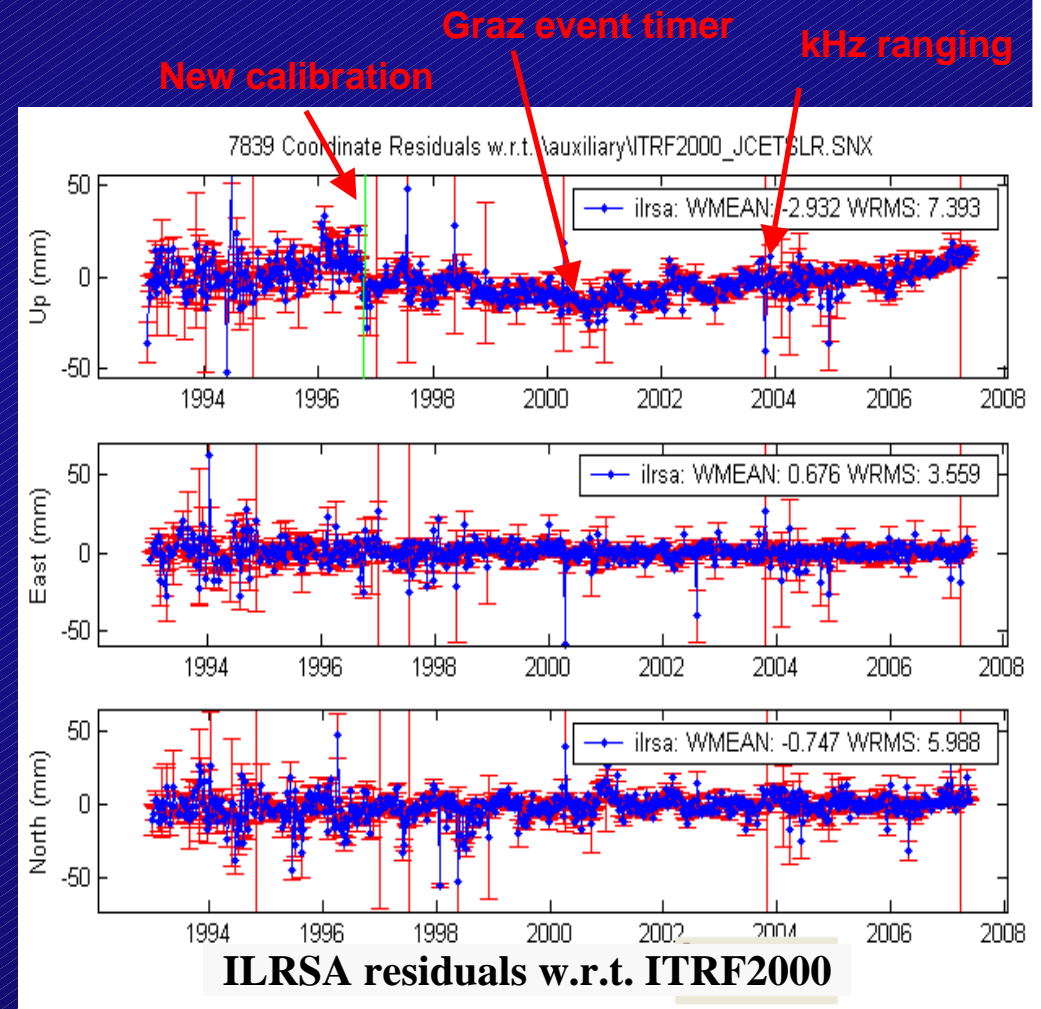
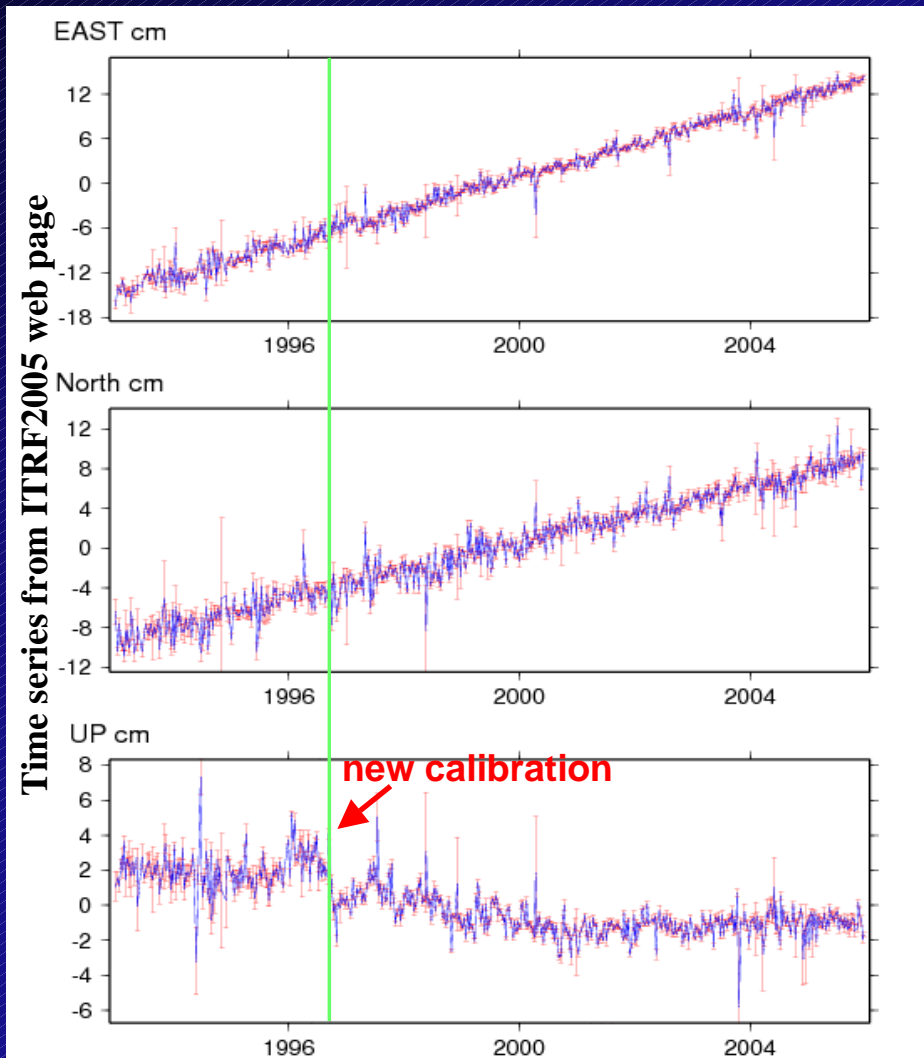


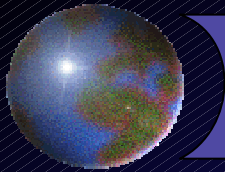
Zimmerwald range bias (blue) from ASI06 solution



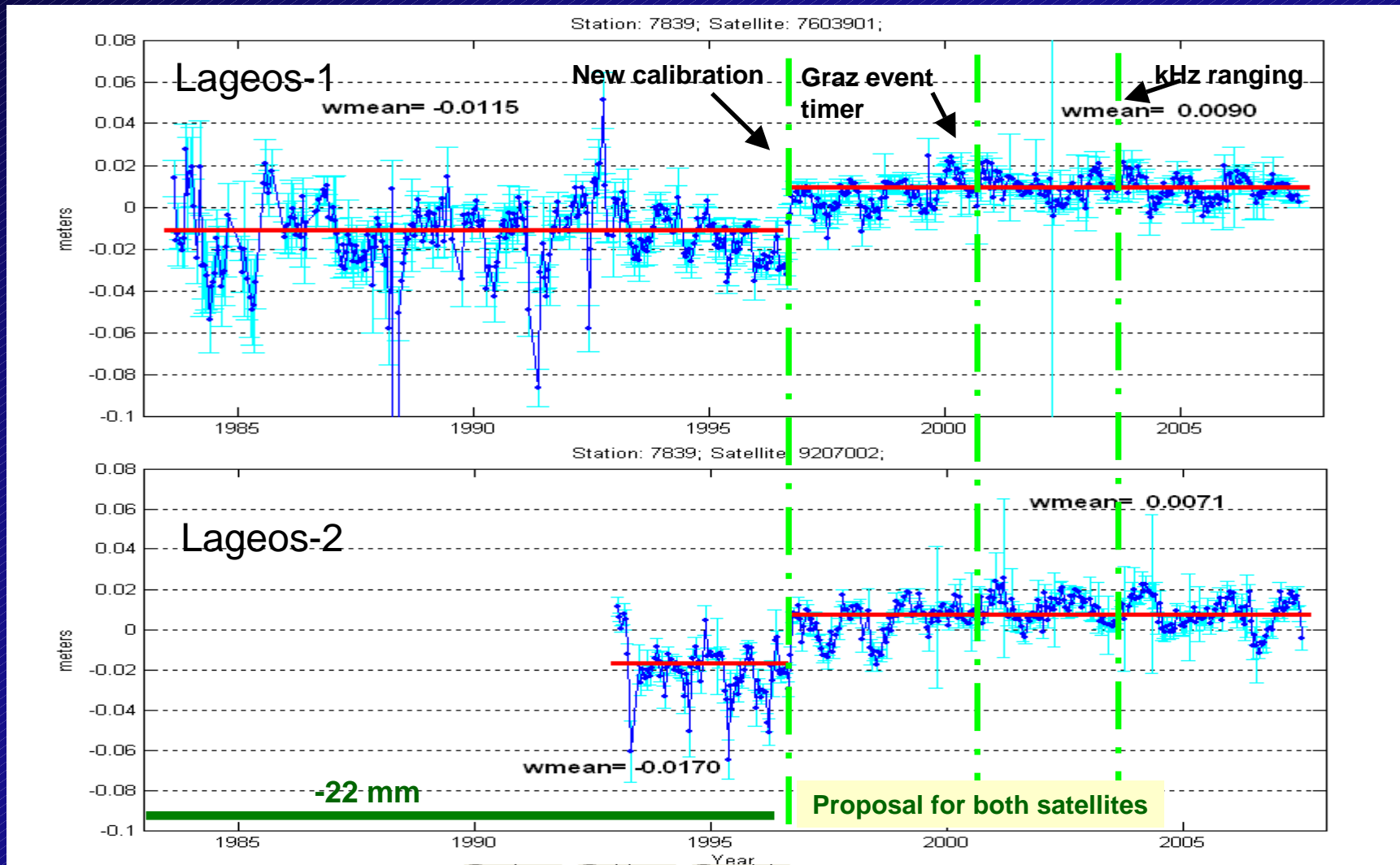


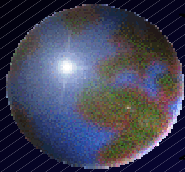
Graz coordinate time series





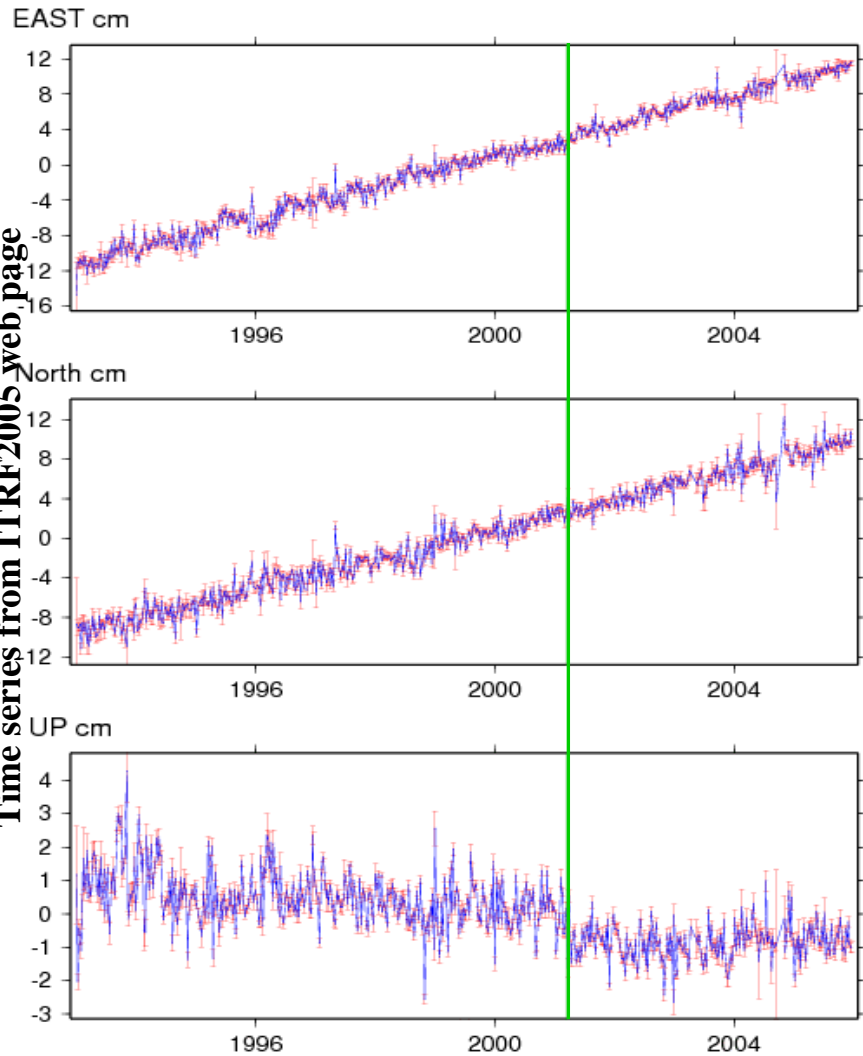
Graz range bias from ASI06 solution



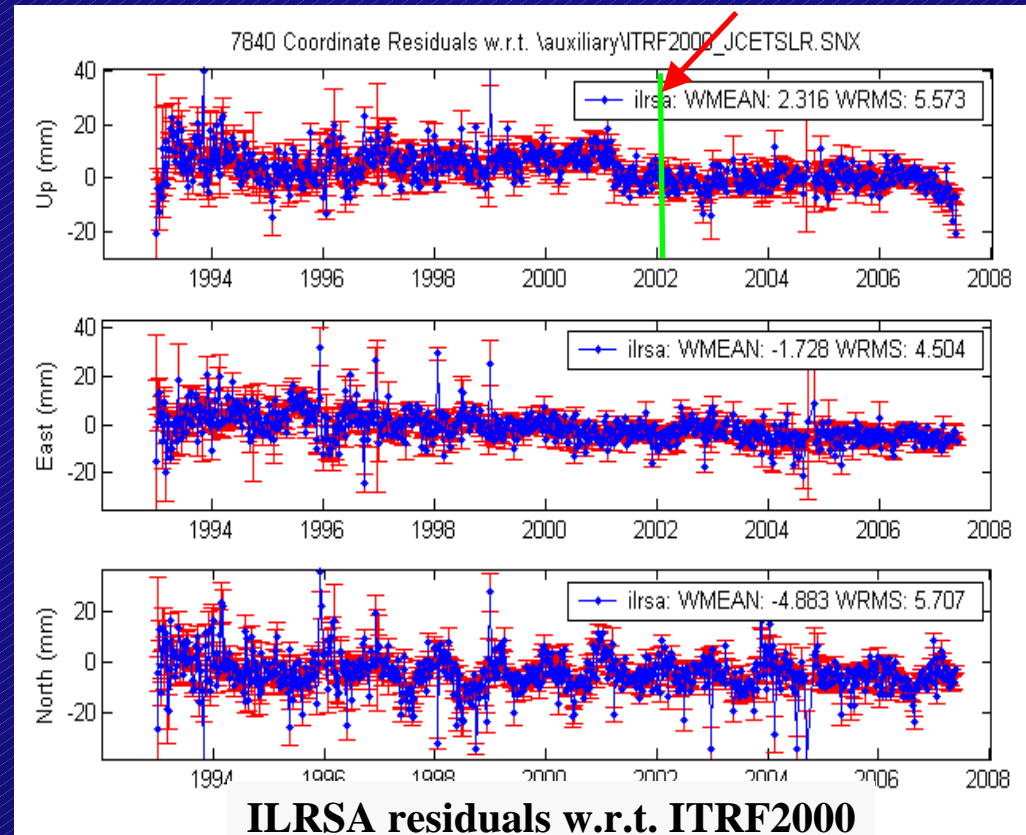


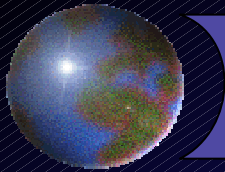
Herstmonceux coordinate time series

Time series from ITRF2005 web page

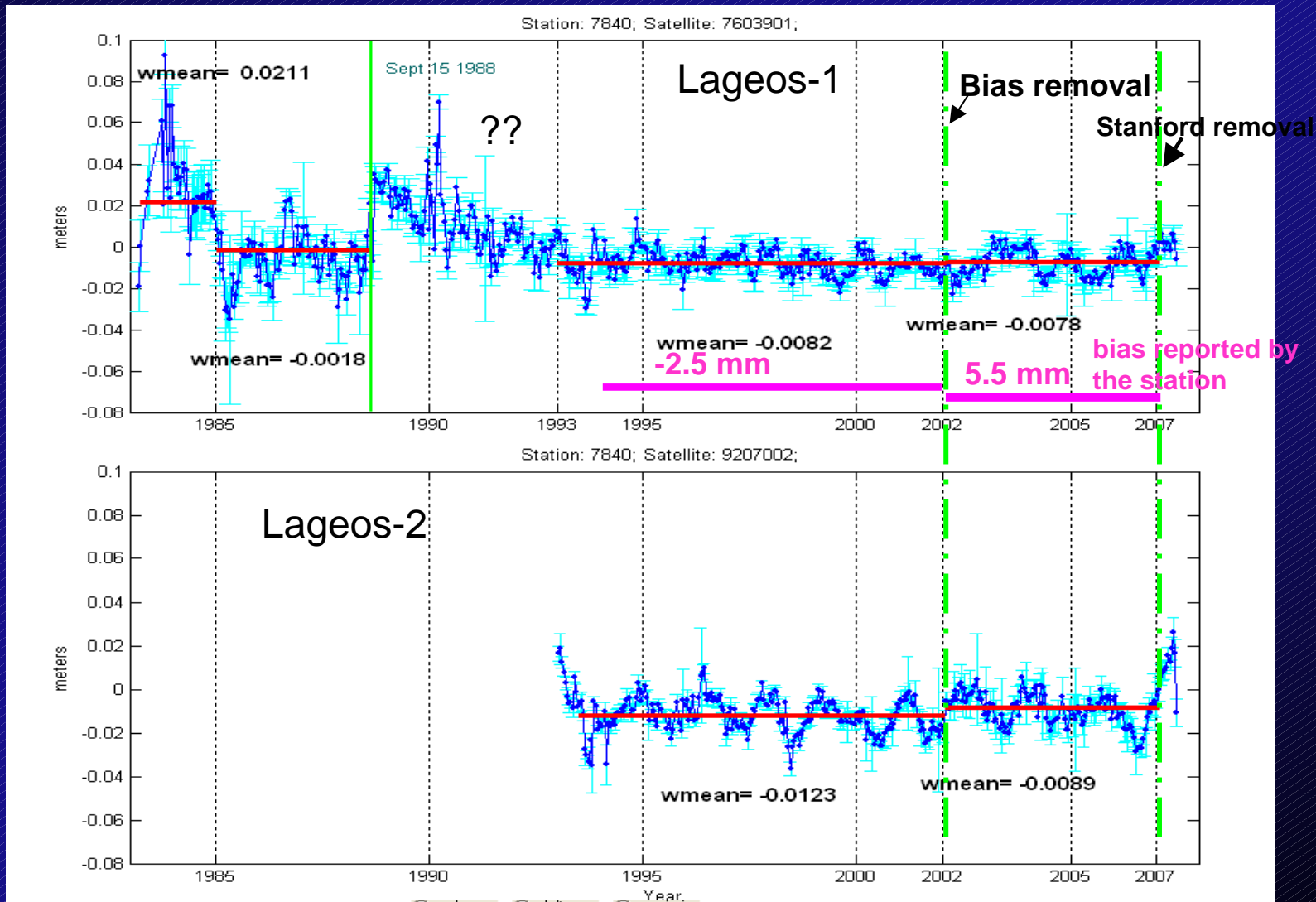


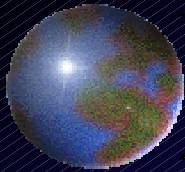
Bias removal



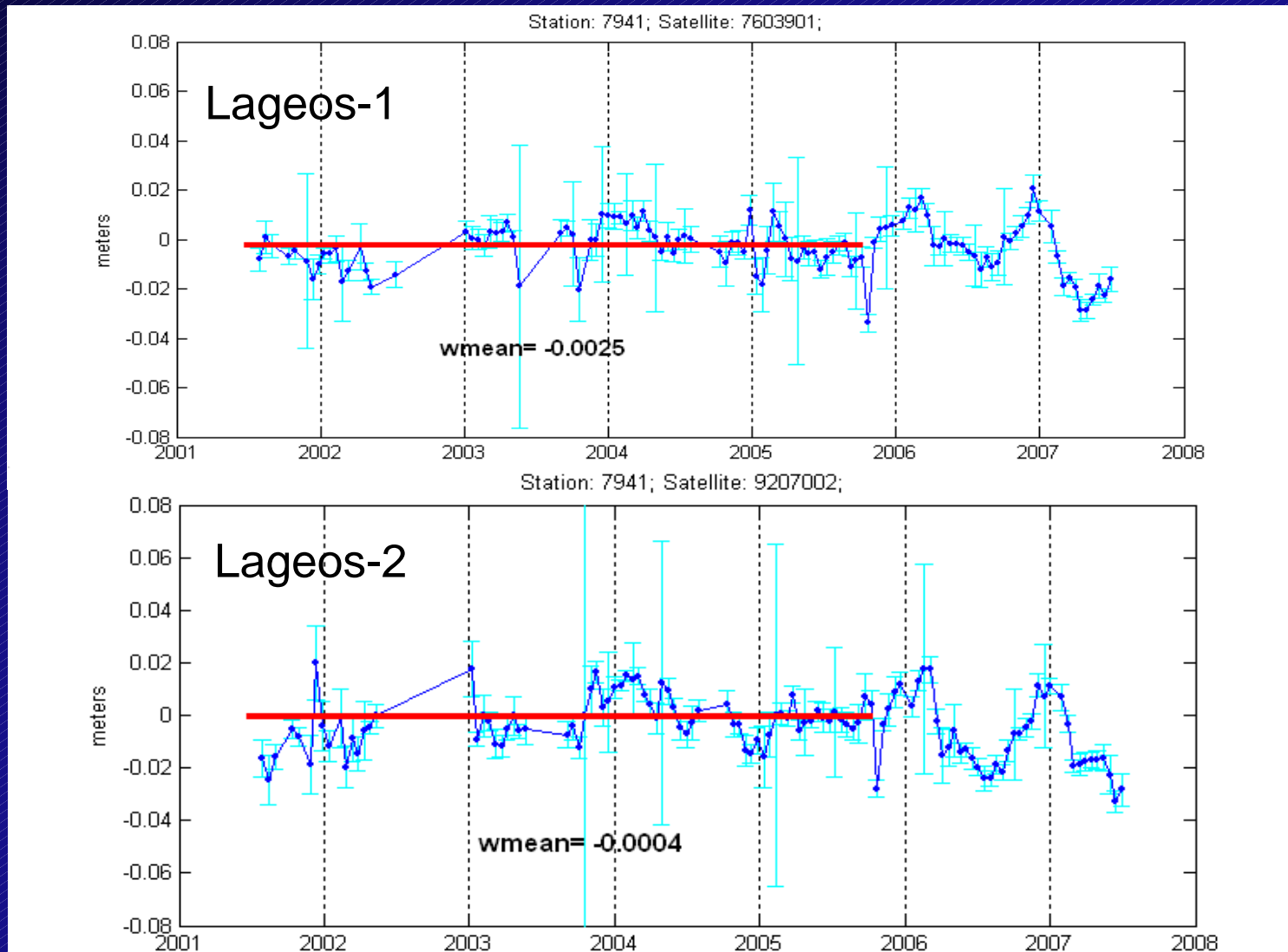


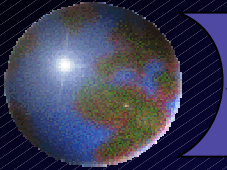
Herstmonceux range bias from ASI06 solution





Matera (7941) range bias from ASI06 solution





Conclusions

- The re-analysis of the entire data span for the ILRS official product requires the adoption of the site range bias to avoid artificial jumps in the coordinate time series
- Long arc analysis is necessary to define:
 - Bad data
 - Sites requiring bias estimation
 - Bias to be applied
- The biases of some stations are not completely clear
- Historic data are obviously more problematic