ESOC
IGS, IDS, ILRS
(Re-) processing

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IGS processing at ESOC

- ESOC is a full IGS analysis centre:
  - New GNSS software, NAPEOS, since January 2008.
  - Key features:
    - » Very fast!
      - 30 minutes for a full final solution from scratch using 100 stations
      - 60 minutes when using 150 stations
    - » Excellent product quality
    - » Ideally suited for IGS reprocessing, but also for IGS real time!
- Reprocessing is the ideal tool for testing new models
  - Future improvements will come from small model changes which need significant amounts of days (if not months) to be reanalysed.
    - » Being able to do that ***fast*** and ***efficient*** is key for all future progress!

ESOC wants to play a significant role in the IGS reprocessing

IDS and ILRS processing at ESOC

- Besides and IGS AC ESOC is
  - IDS associate analysis centre with as key activities:
    - » ENVISAT processing
    - » IDS reprocessing
  - ILRS associate analysis centre with as key activites:
    - » Prediction centre for several satellites, e.g., Giove-A
    - » Analysis of ENVISAT, ERS-1 and ERS-2
    - » Analysis of the SLR data from the GNSS targets
    - » Planning ILRS reprocessing
  - Becoming a full AC in the IDS and ILRS is under consideration. Will depend on the experiences gathered with the reprocessing.

ESOC wants to play a significant role in the IDS and ILRS reprocessing

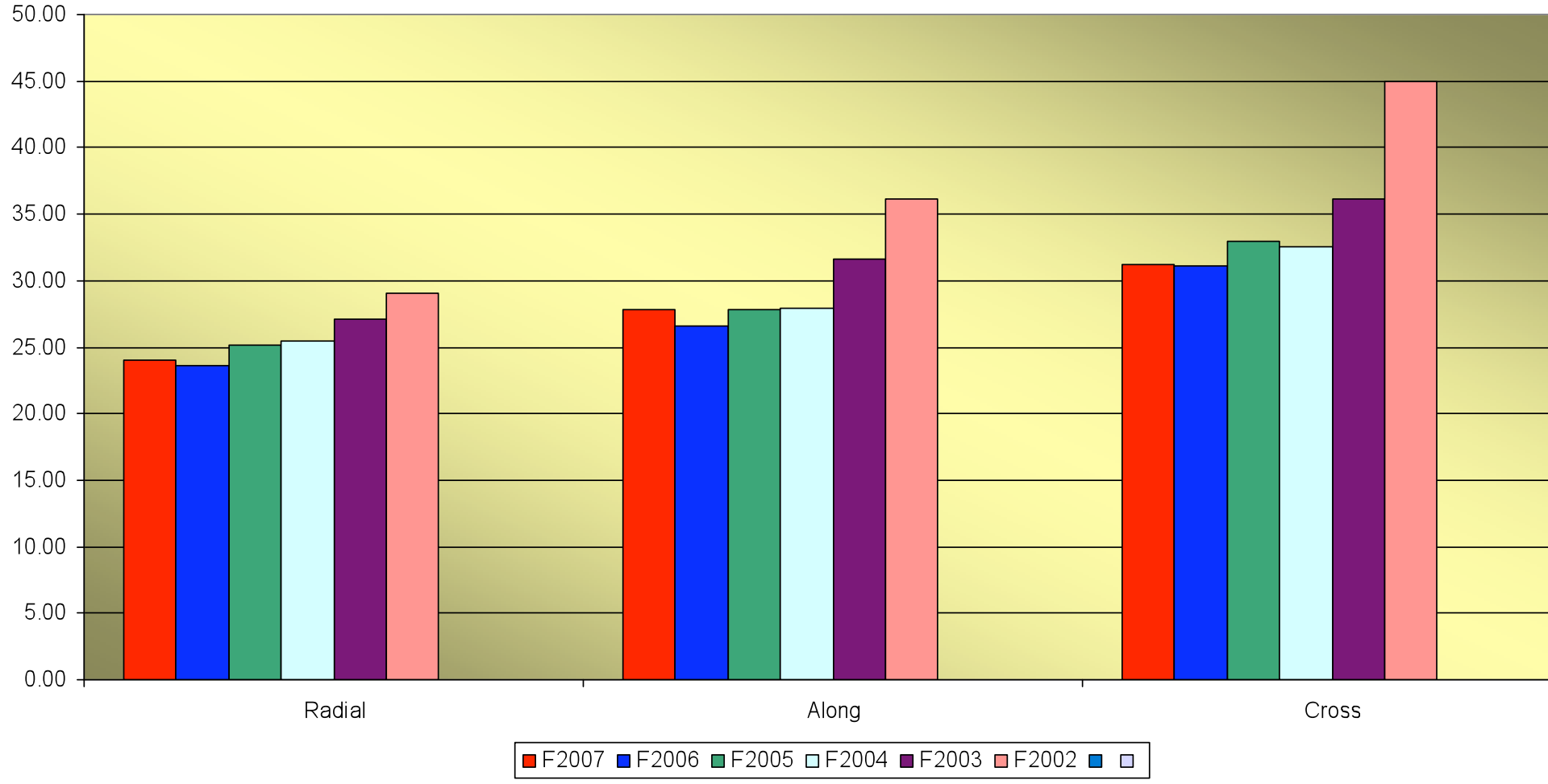
Current Status of ESOC Reprocessing

- IGS reprocessing
  - 2002 to 2008 finished and submitted.
  - 2000 and 2001 “quick run” done. Full run is running.
  - 1994 to 2000 will follow before the end of this year.
- IDR reprocessing
  - 2005 to 2008 finished and submitted.
  - 199x to 2005 will follow before the end of this year.
- ILRS reprocessing
  - Just starting….
  - “old” Benchmark run but with IERS2003 standards.
    - » Results seem to be OK with <10 mm RMS of fit.

IGS and IDS reprocessing well underway.
ILRS reprocessing starting

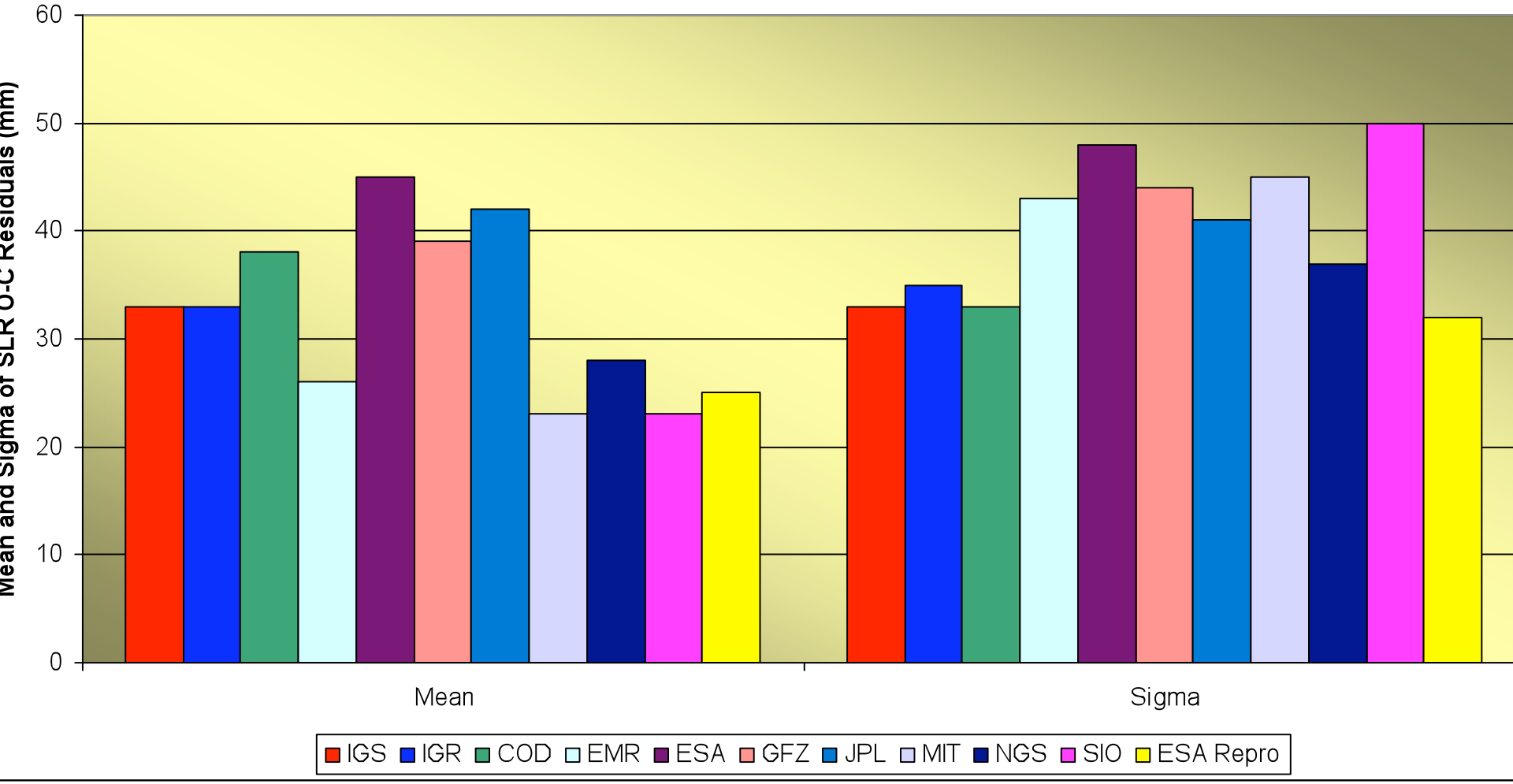
Day Boundary Orbit Differences

(RMS per full year)



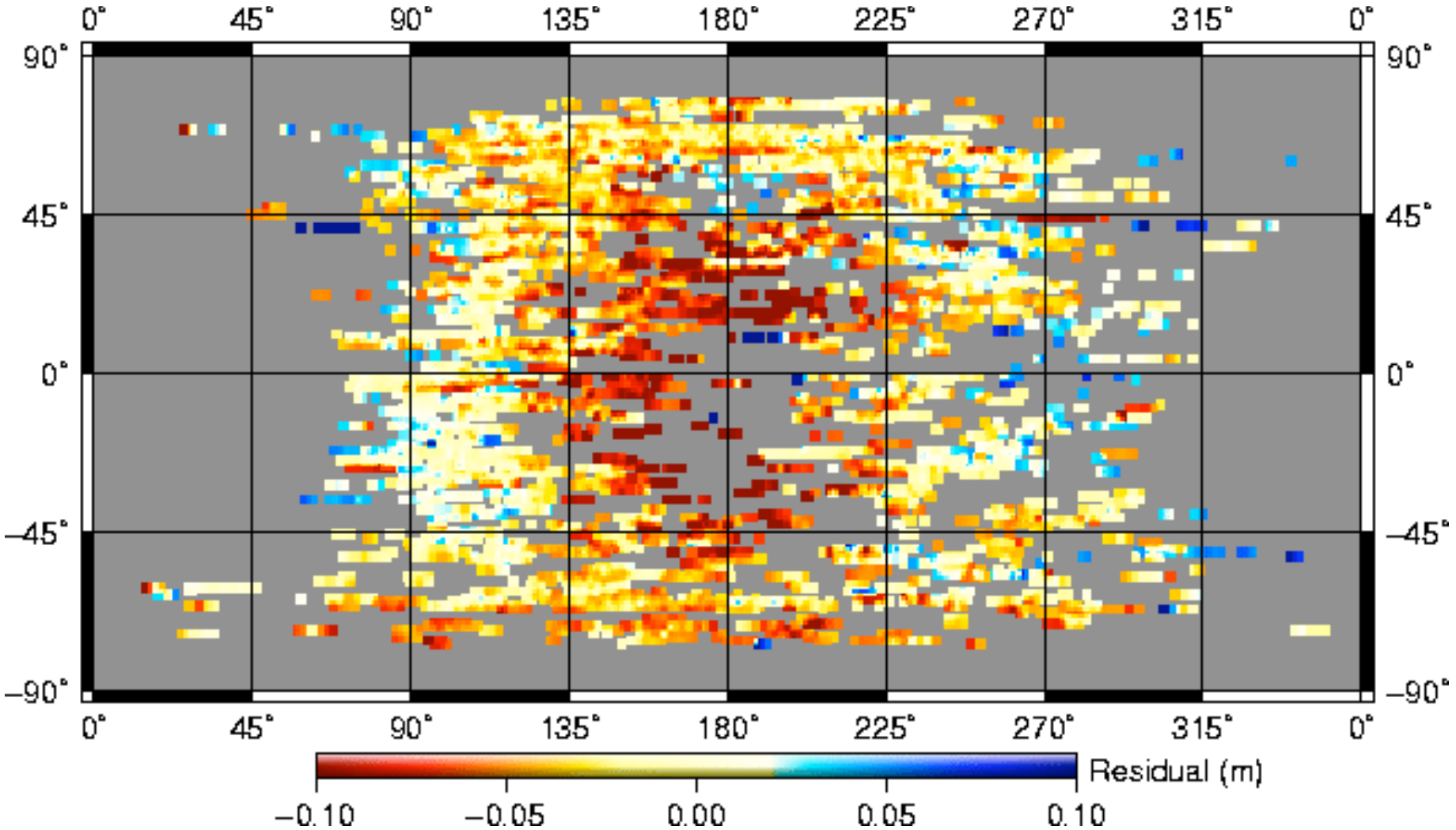
SLR Validation of GNSS Orbits

(SLR Two-Way-Range O-C statistics for different IGS ACs)



SLR Residuals

(As function of Satellite Latitude and Elevation of the Sun above the orbital plane)



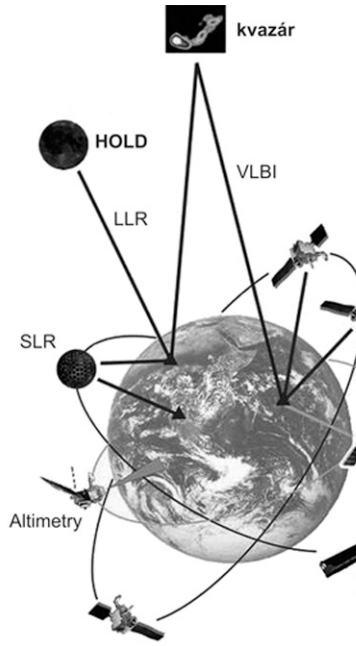
Future Outlook

- Current Reprocessing Focus:
  - Reprocessing the individual techniques and get a proper ITRF2008
- Future Enhancements
  - 2009
    - » Combine GNSS, SLR, and DORIS on the observation level
      - Add SLR measurements from GPS and GLONASS
    - » Use local site-ties (with full covariance information) where possible
    - » Derive the GNSS phase centre maps “directly”
    - » Add VLBI capabilities and enhance GPS LEO activities
  - 2010
    - » Add VLBI and GPS LEO’s to the reprocessing
      - Will make the link between the techniques much stronger!

Combination of the techniques will be key for future progress and is important in framework of GGOS and GMES!

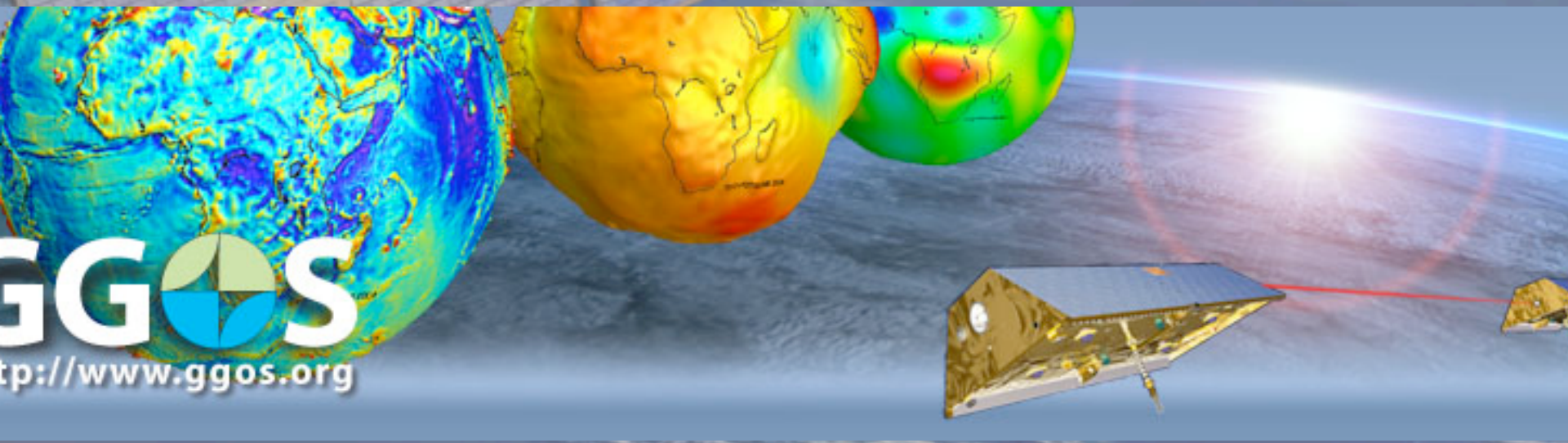
Conclusions

- ESOC Performance
  - ESOC IGS solutions have very high quality!
    - » Completely independent 24 hour solutions
    - » SLR validation of the orbits confirms the high quality
      - Difference between SLR observations and GPS orbits remains
  - ESOC IDS solutions perform very well
    - » ESOC solution is combination of DORIS and SLR data!
  - ESOC ILRS solutions to be generated
  - GNSS LEO and VLBI processing to follow…
- Reprocessing
  - **NOT a one time effort!**
  - ESOC deeply involved in IGS and IDS reprocessing
  - ILRS reprocessing activities starting



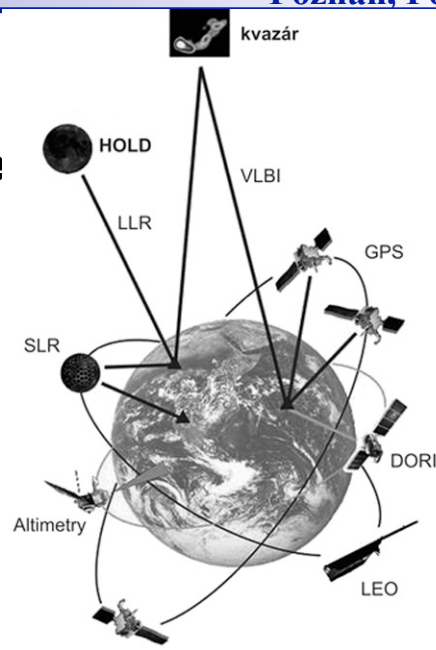
ESOC fully committed to combined (re-)processing
Fits EU/ESA GMES and GGOS activities

Thank You!



SLR Residuals

(As function of Satellite Latitude and Elevation of the Sun above



GMES
Monitoring for Environment and Security

Global Monitoring
for Environment and Security