Graz Experience with HEO SLR

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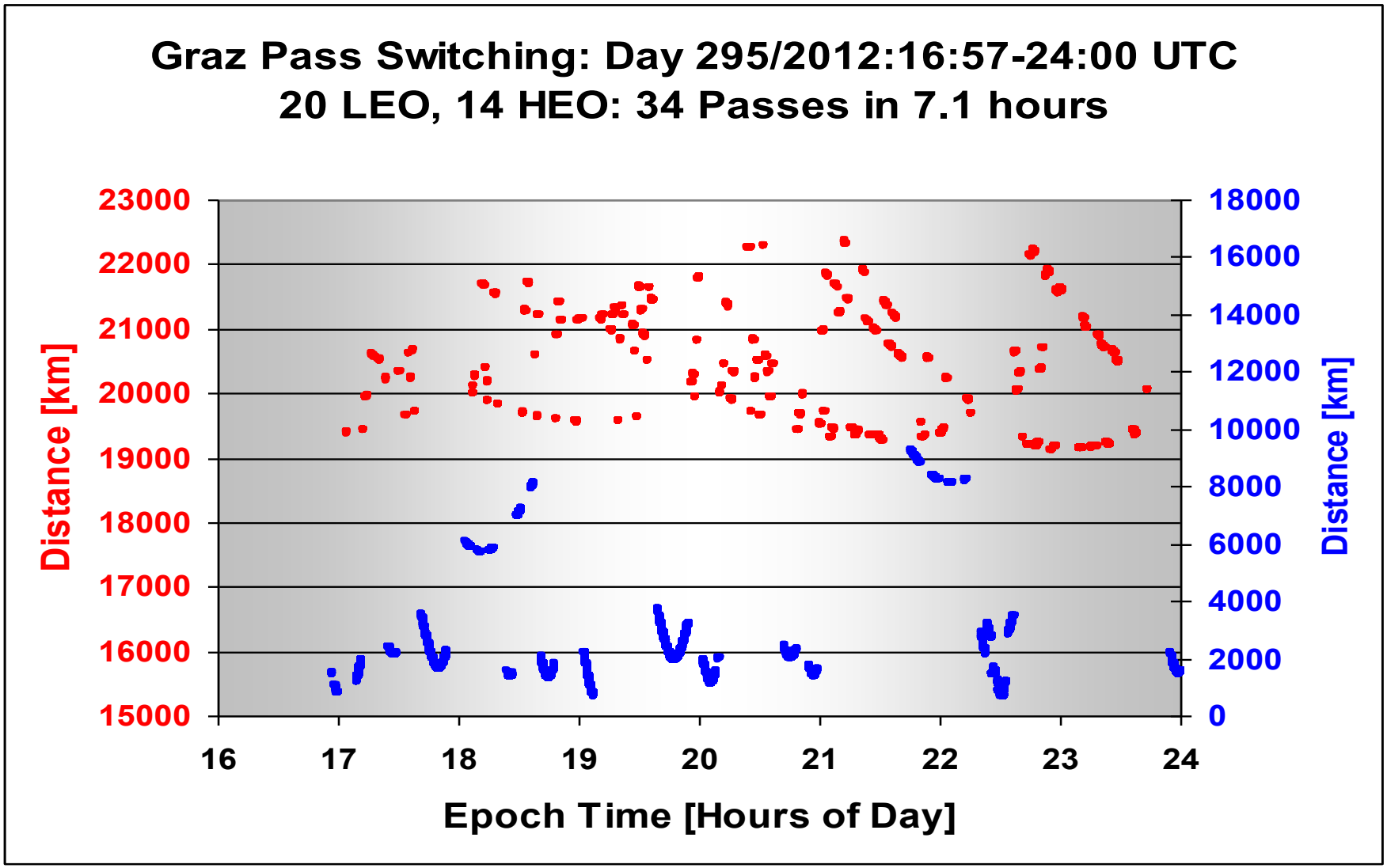
Graz HEO Tracking

Questions / Suggestions by Mike Perlman:

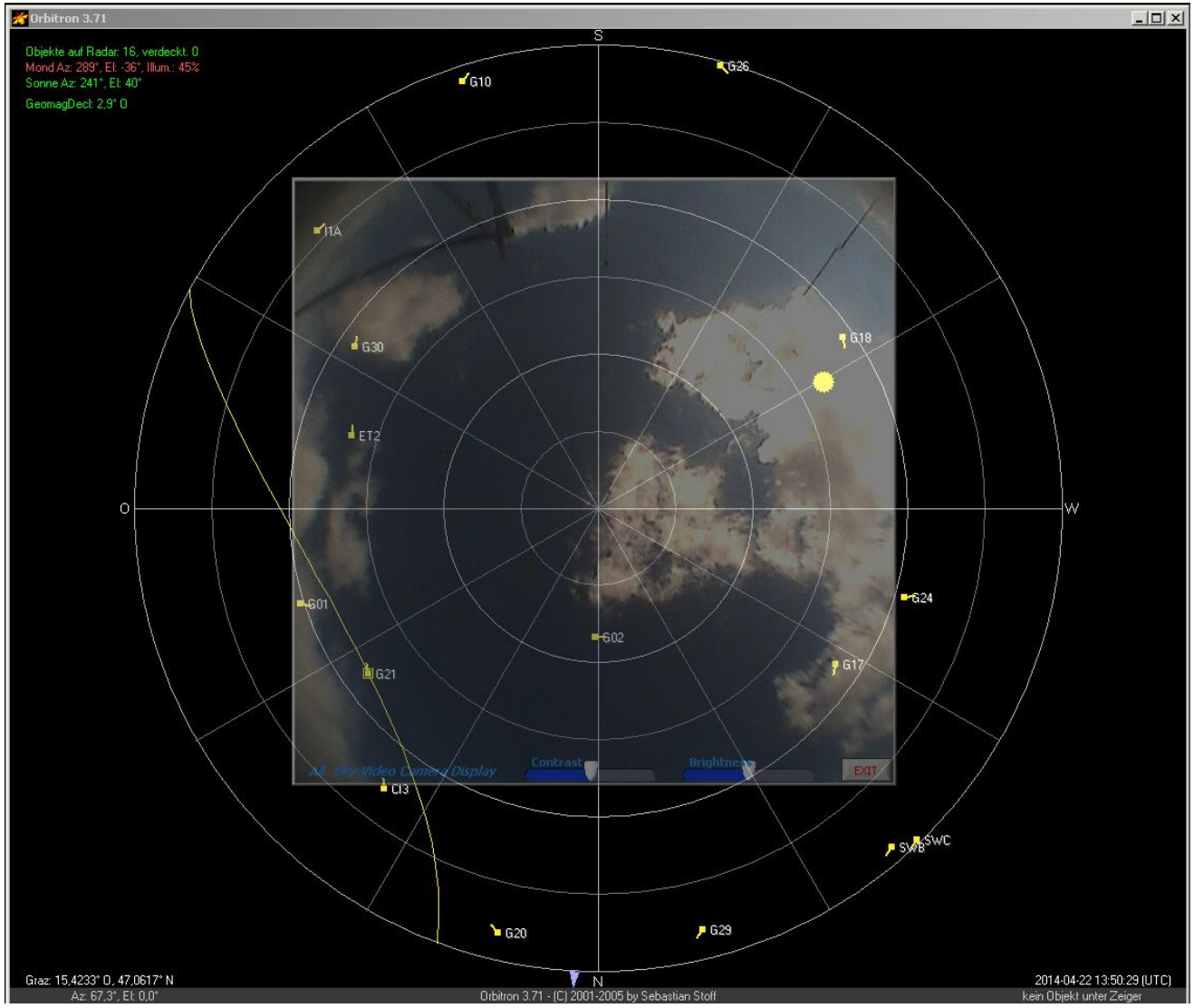
Graz experience to date:

- What does a set of pass residuals look like?
- What strategy do you use to decide which GNSS satellites to track?
- When are you successful, When are you not successful?
- Has expanded tracking on GNSS reduced your ability to track other satellites?
- Which ones are suffering?
- Any advices to other stations

Graz: Extensive Pass Switching



Graz strategy for tracking of HEOs / LEOs ☺



Typical / daylight

Actual: Glonass 121

Next: Glonass 102

Next: Glonass 130

Next: Etalon-2

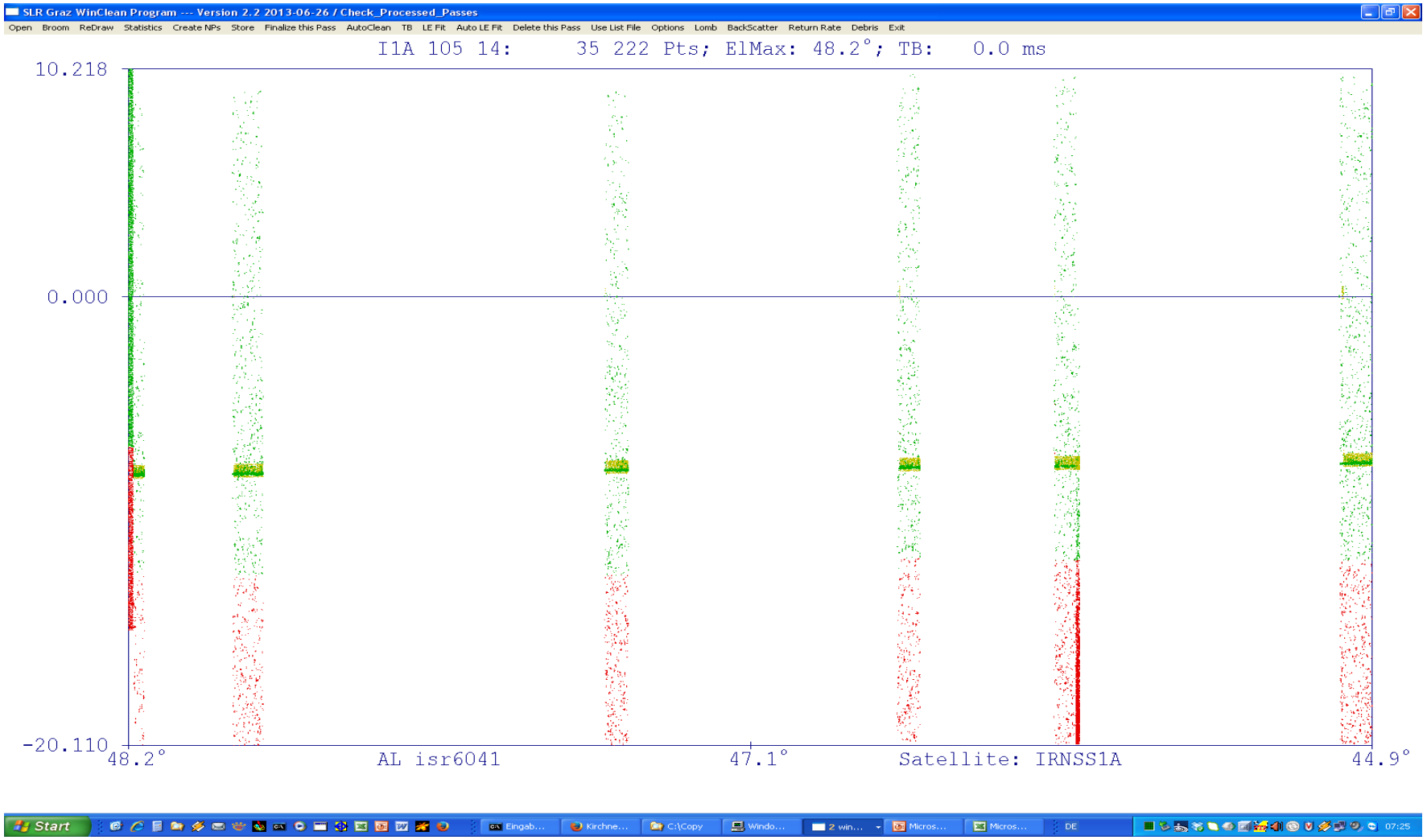
Next: Repeat sequence

Continue until next LEO

No LEO available now

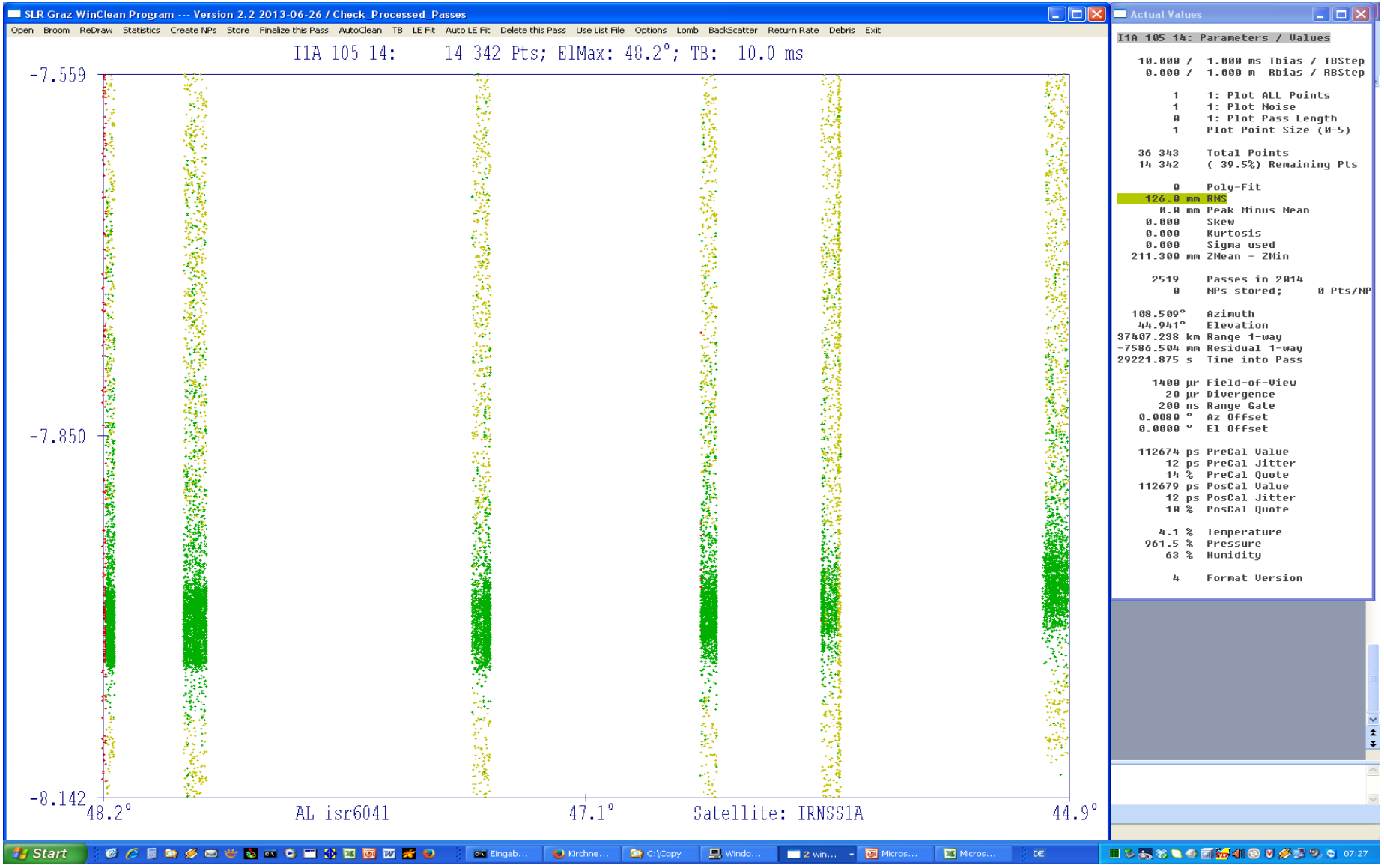
(SwarmB/C are too low)

Geostationary: About 2 hours of tracking; night

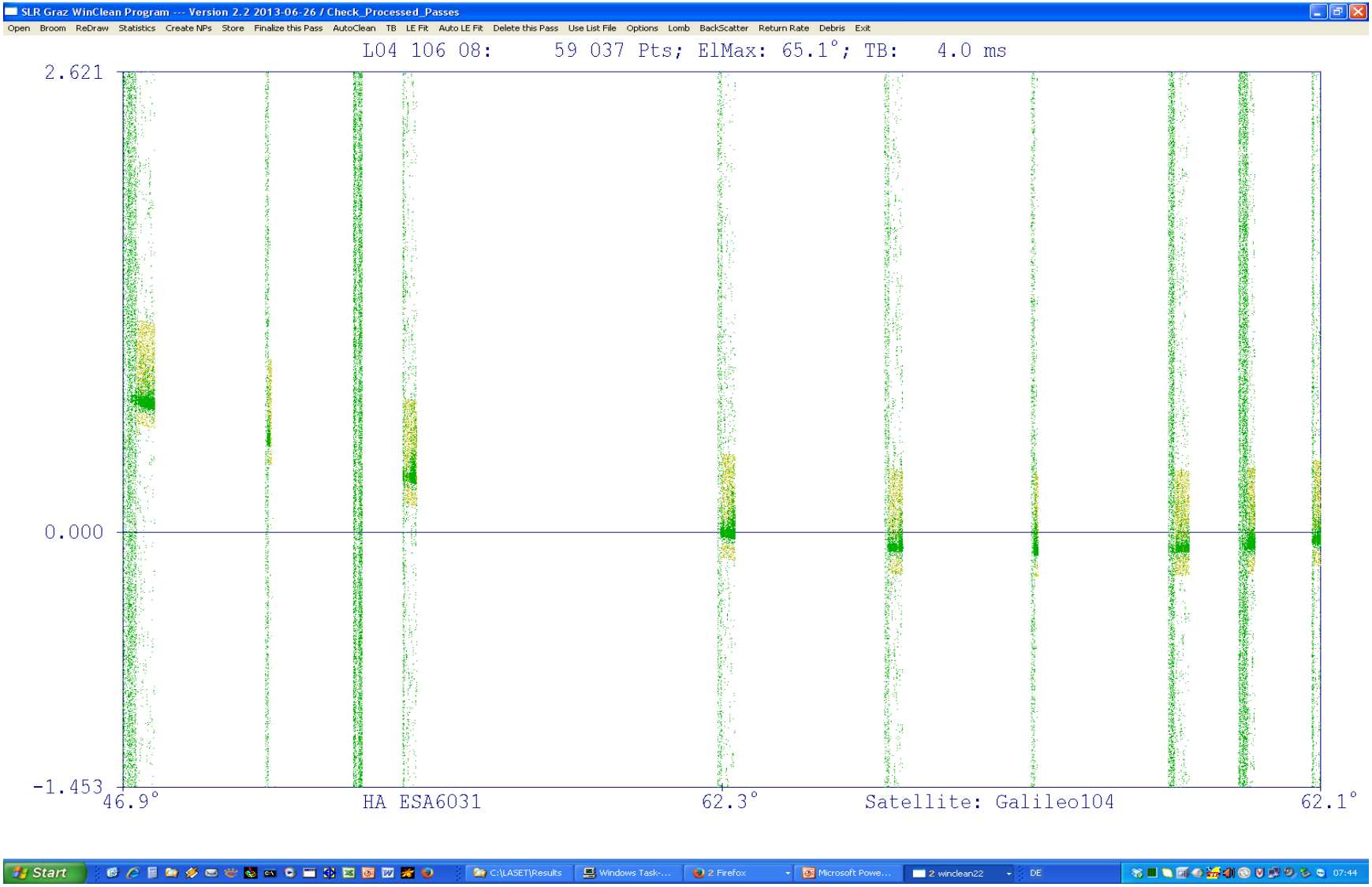


IRNSS1A: Indian GNSS: Geostationary orbit; each slot: ≈ 2 minutes, ≈ 1 k valid returns

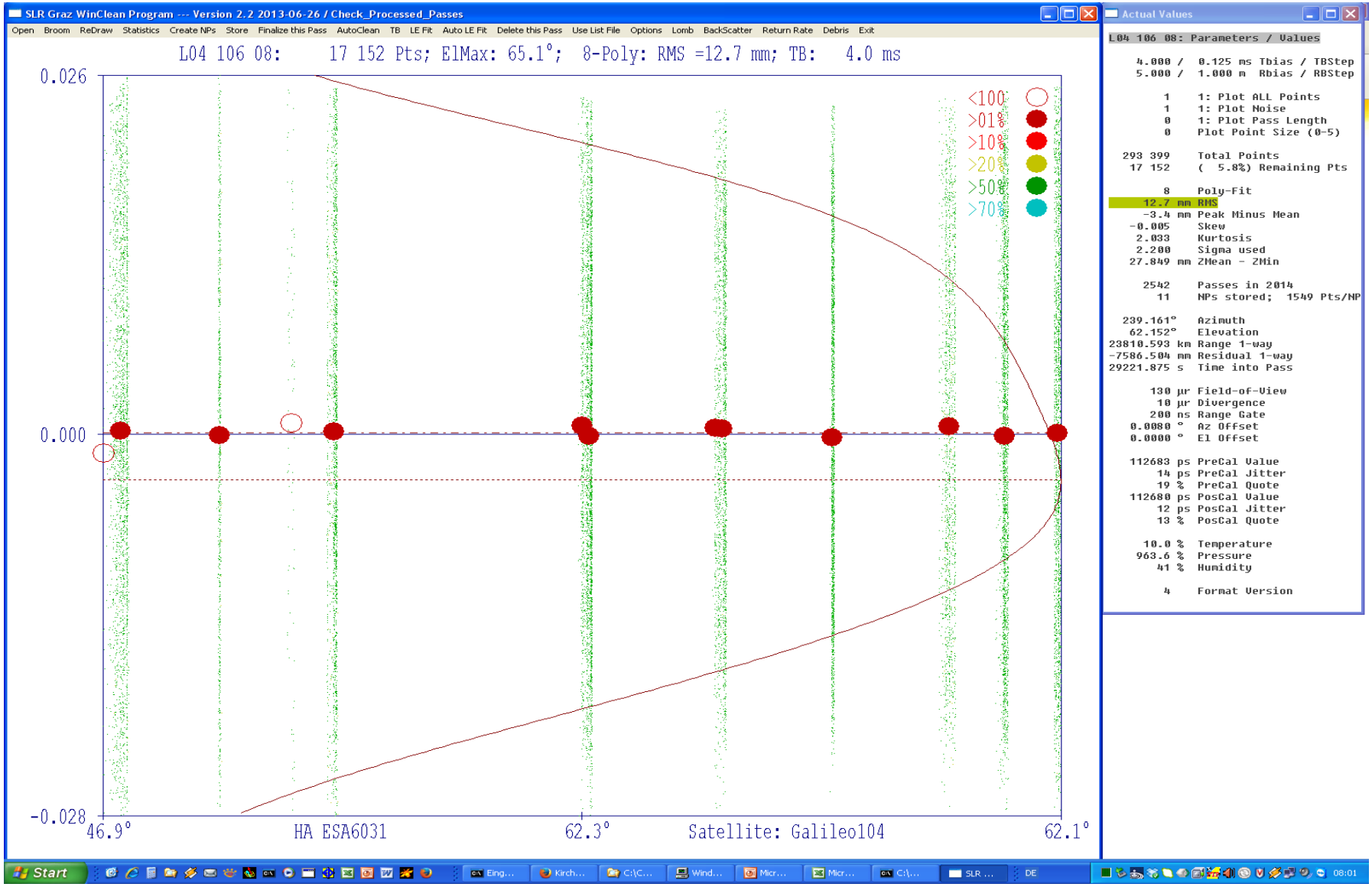
A closer look to the same pass ….



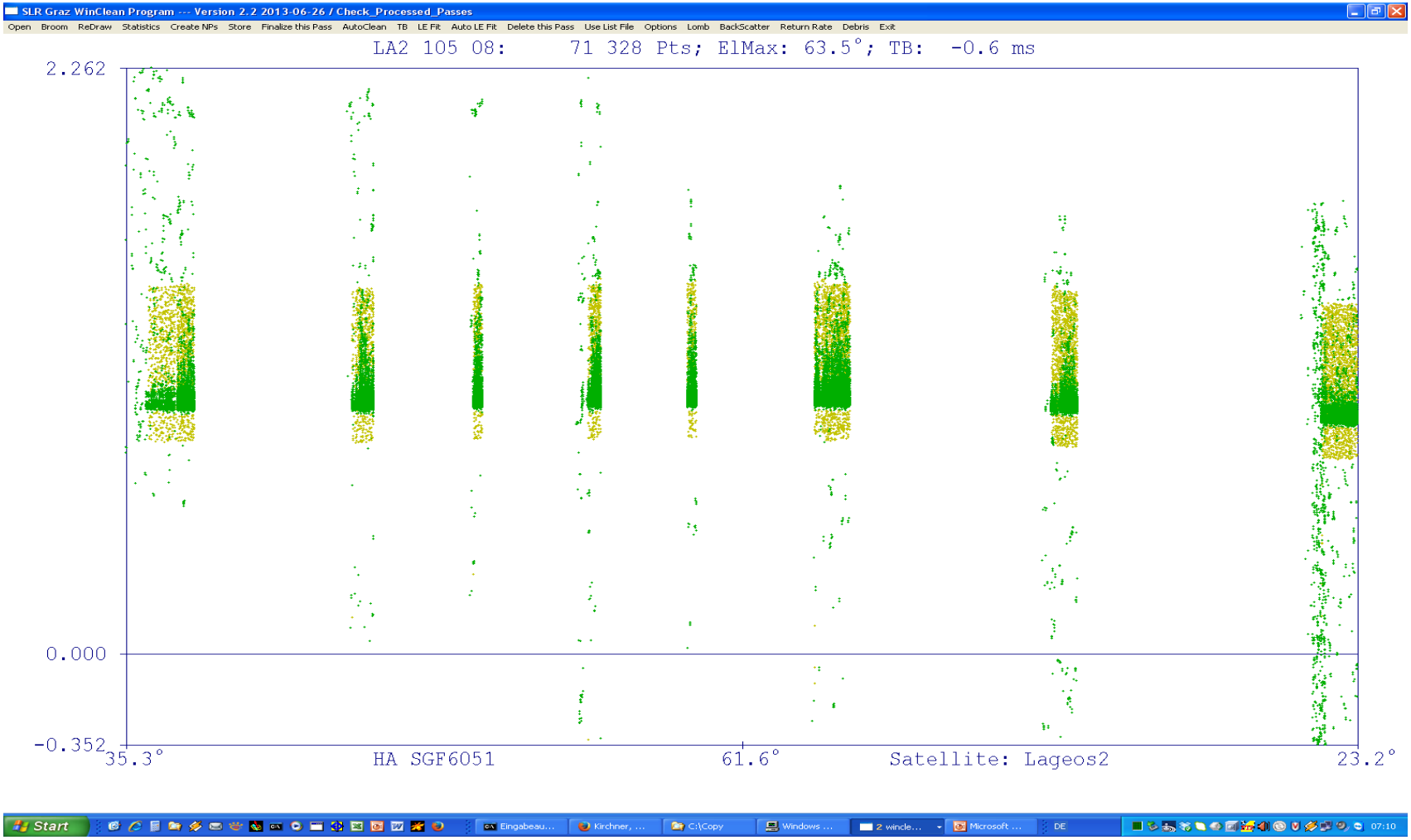
Galileo 104: About 2.8 hours of tracking



Galileo 104: About 2 hours of tracking;

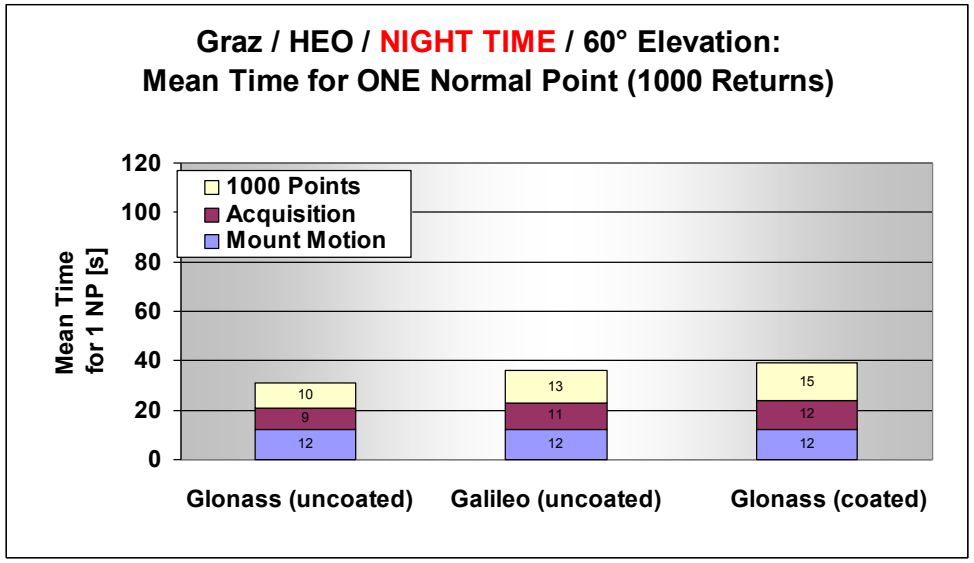


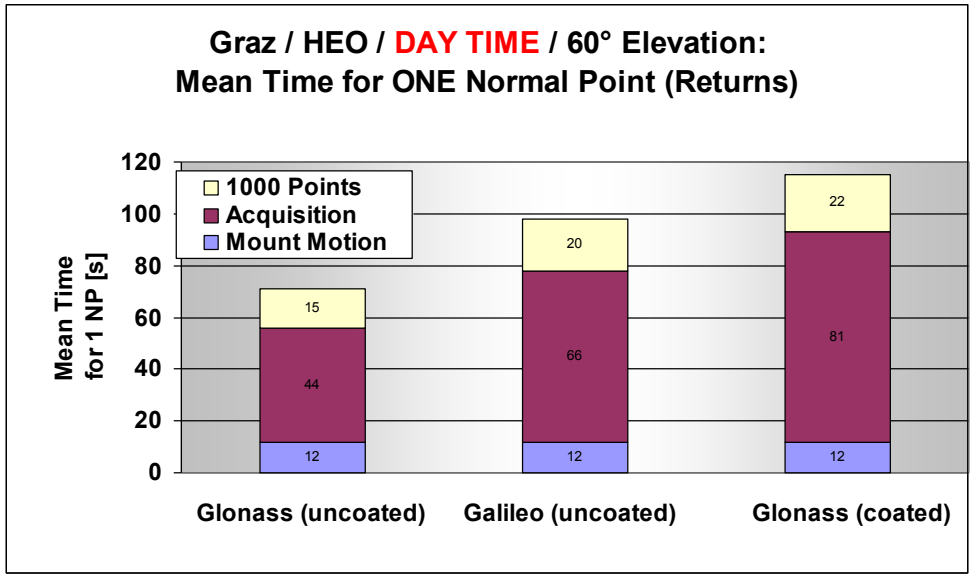
Effect for LEOs when tracking all HEOs: Negligible…



LAGEOS-2: Daylight pass; 8 slots; Shortest: 18 s / 2200 Pts; Longest: 71 s / 9000 Pts
Total: 18 NPs / 30 k points; 5.0 mm RMS (Leading Edge Post Processing)

Graz: Mean Time for 1 HEO NP (≈1000 valid returns)





- Night: < 1 minute for 1 NP (1000 pts)
- Day: Longer acquisition times;
  sometimes no results at all ☹
- In any case: << 5 minutes; thus we can get several NPs (of different HEOs) in ONE 5 ‘ slot (up to 4 or 5 NPs)
- Mount: Needs ≈ 12 seconds
- Graz is tracking ALL HEOs:
  - Glonass, Galileo, Compass, Indian)
  - **Negligible effect on LEO tracking** (HEOS are available for hours …)

SLR Graz: High Accuracy Data …