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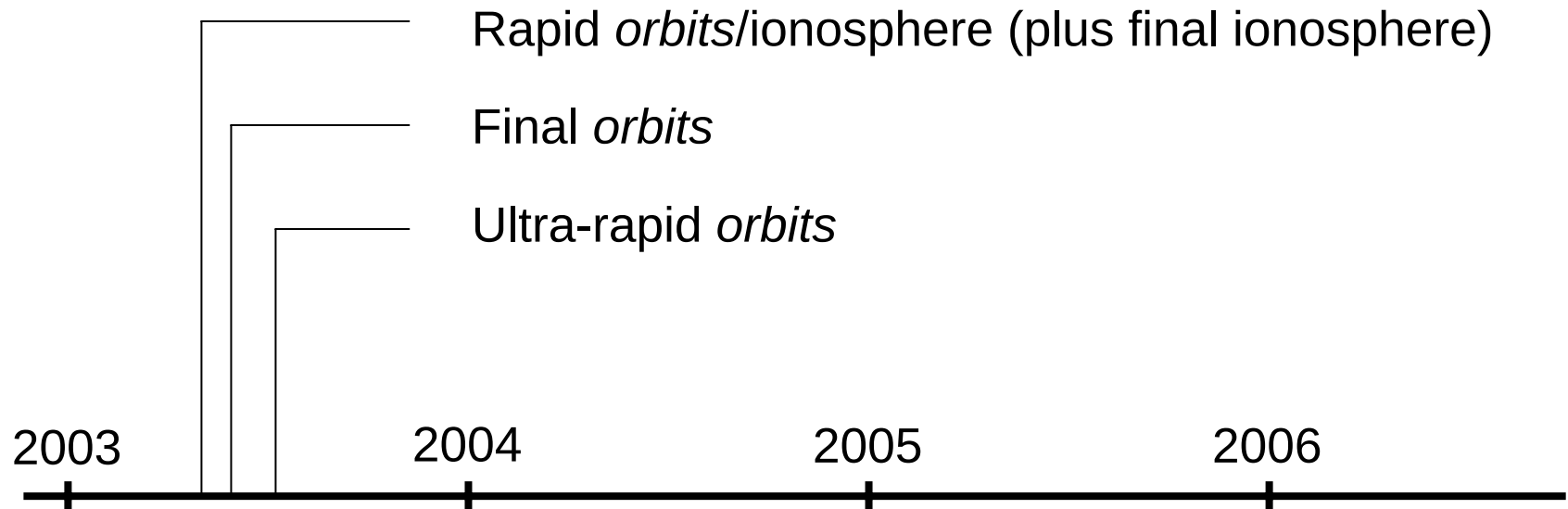
GPS/GLONASS-Combined IGS Analysis at the Center for Orbit Determination (CODE) Using the Bernese Software

Stefan Schaer



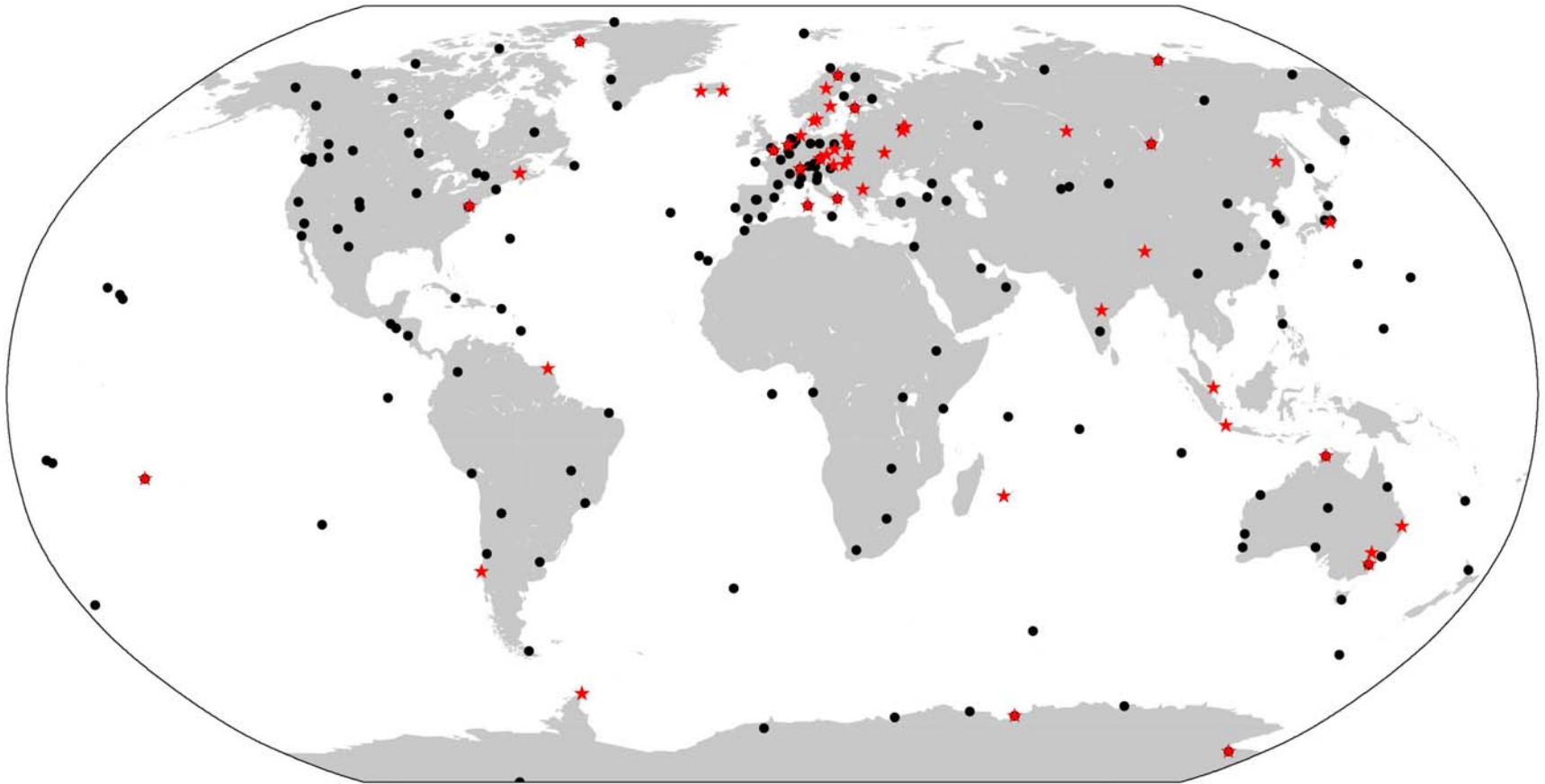
CODE's GNSS Orbit Product Lines

Combination on the observation level: GPS and GLONASS orbits are generated simultaneously in a rigorous GNSS analysis, ensuring best possible consistency between GPS and GLONASS orbits.





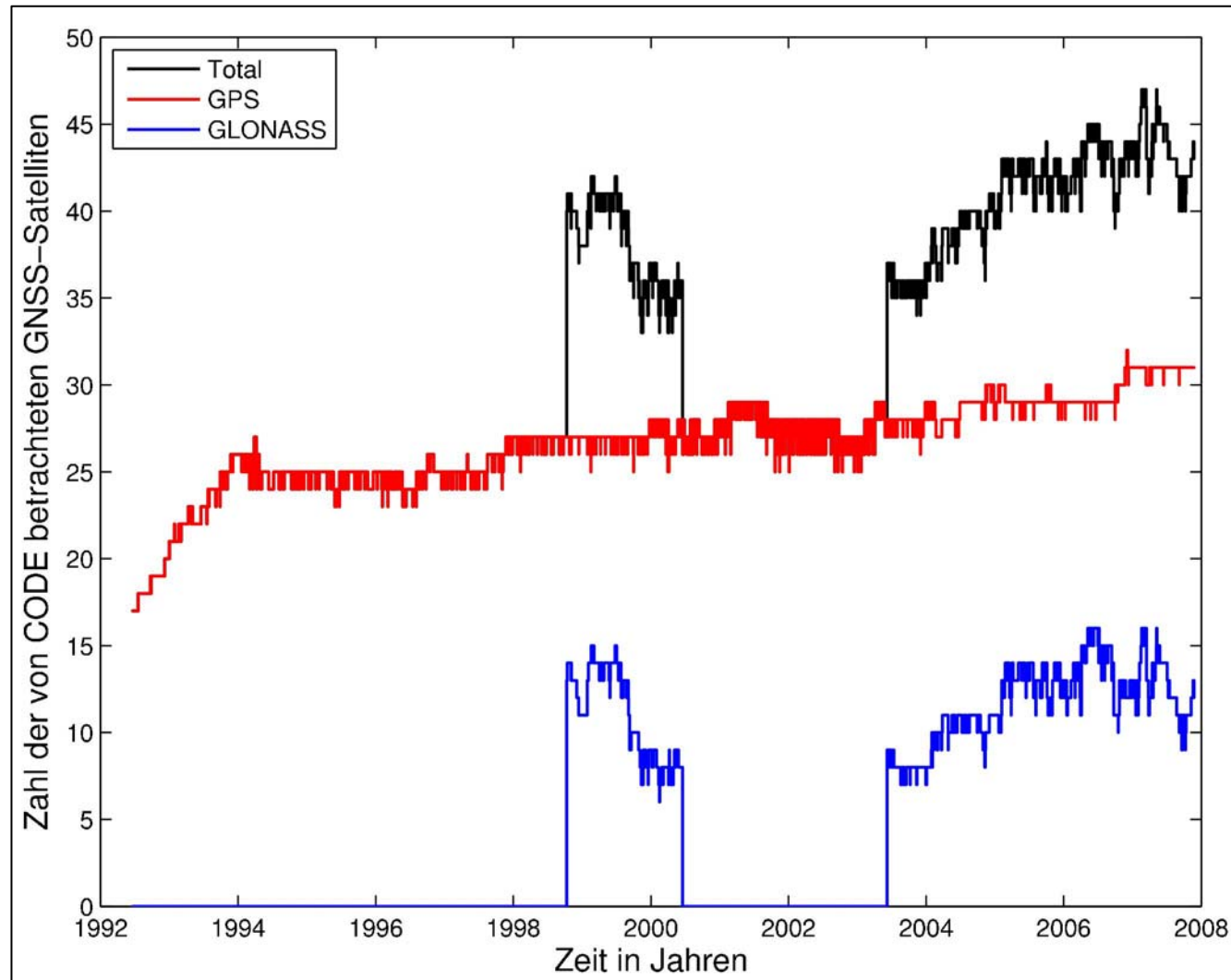
IGS/IGLOS Tracking Network



Legend: GPS-only – GPS/GLONASS

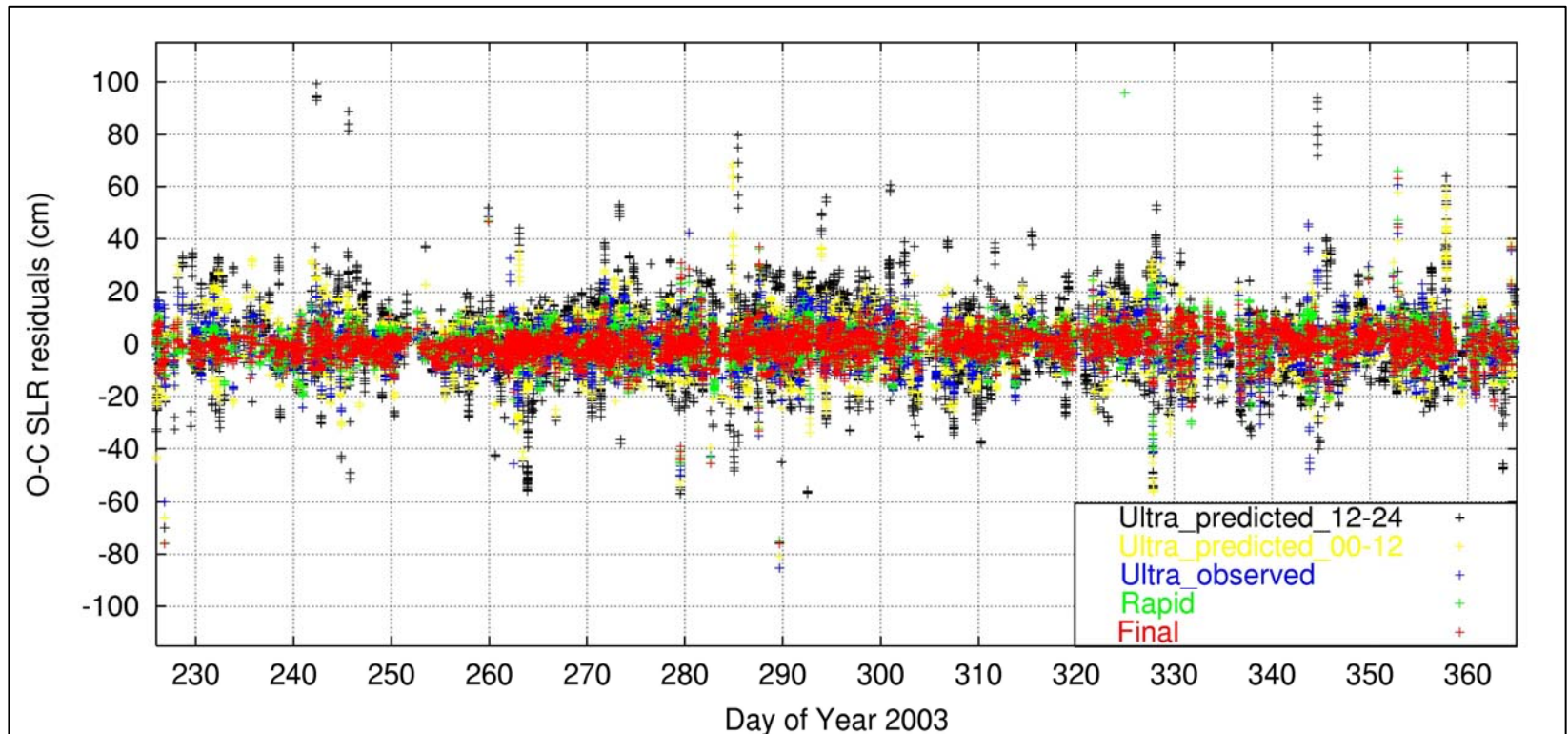


Number of Active GPS and GLONASS Satellites





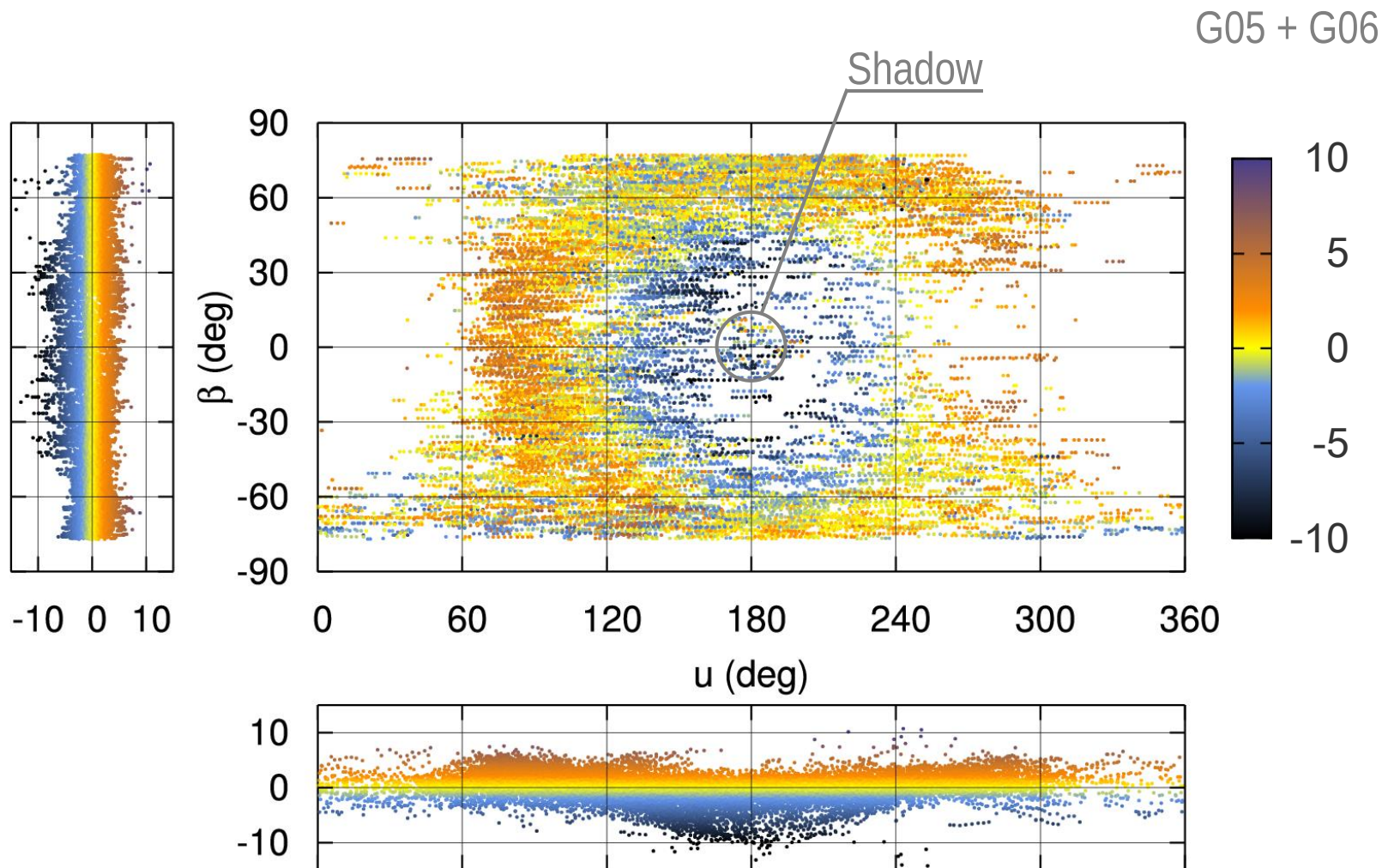
CODE GLONASS Orbit Validation Using SLR Data



Standard deviation: 13 – 9 – 7 – 6 – 5 cm



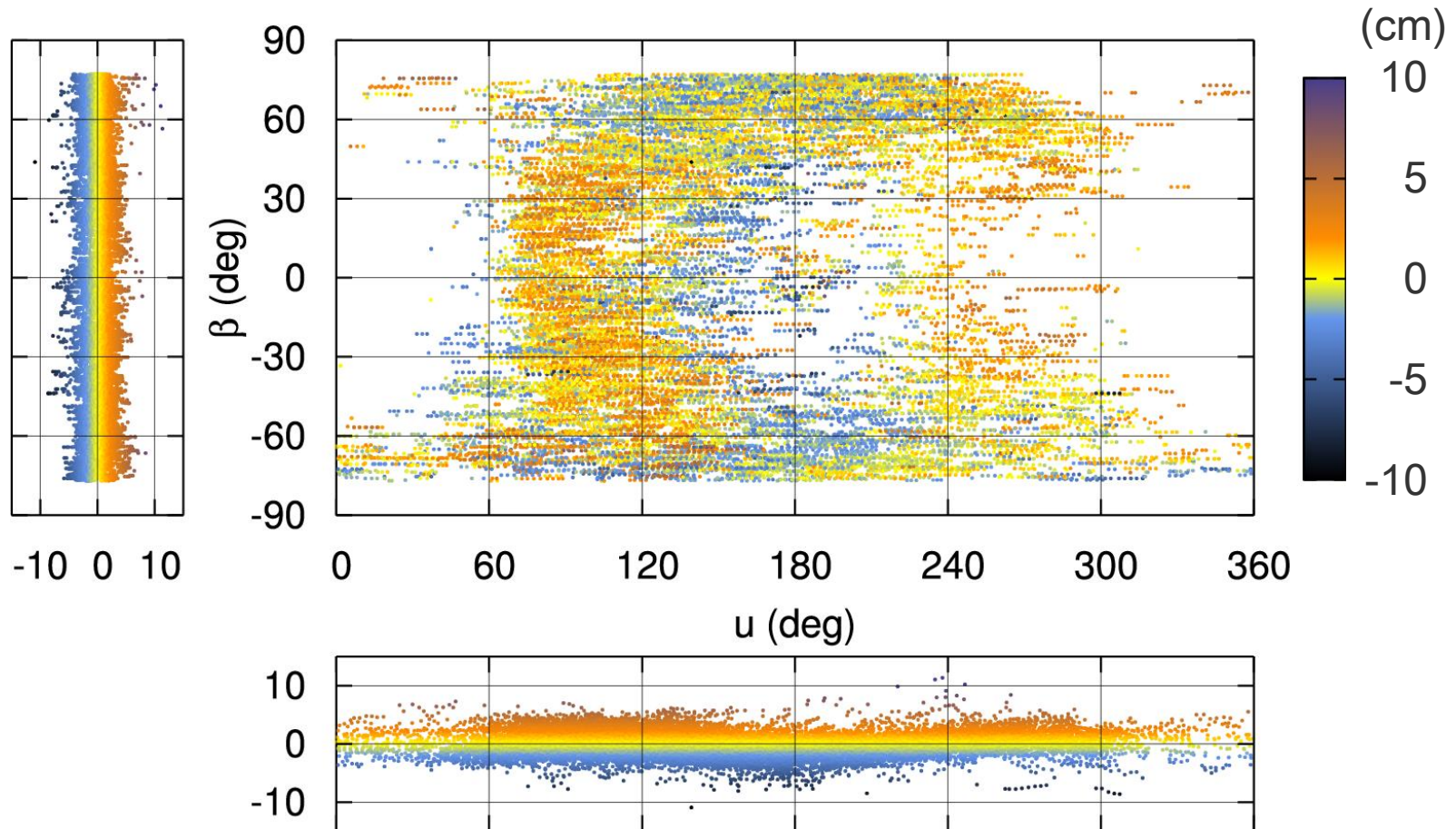
SLR O-C Residuals for CODE Orbits Using the ROCK Model





SLR O-C Residuals for CODE Orbits Using the CODE'07 Model

G05 + G06





Summary and Explanatory Notes

- IGS analysis products generated at CODE are generally **GPS/GLONASS** products (with the exception of the clock product line):
 - *orbits*, ERPs,
 - station coordinates, geocenter coordinates (SINEX),
 - troposphere estimates, and global ionosphere map (GIM) products (IONEX).
- Routine analysis of tracking data originating from two GNSS systems may be considered as an essential step towards analysis of multi navigation satellite systems, specifically in view of **Galileo**.
- Piece-wise, linear parameter representation (for EOPs, troposphere, etc.).
- EOPs (ERPs plus nutation parameters) are set up (internally) with a time resolution of 2 hours.
- Importance of independent validation using **SLR data** (to GNSS constellations).
- Implementation of **Galileo** into the Bernese Software is in progress.
- AIUB has accepted an order (from BKG) to prepare the Bernese Software for the **ILRS benchmark test**.
- A **VLBI-capable version** of the Bernese Software exists (developed at TUM).
- Unified parameterization and models (when using “multi-technique” software package)!