Pilot Project Positioning + Earth Orientation: GFZ Contributions

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Pilot Project Positioning + Earth Orientation: GFZ Contributions

Status

- Data acquisition, POD, parameter estimation, and SINEX generation fully automatic
- QC:
  - Handed to operator before delivery of product
  - Thresholds for automated EOP QC available
  - QC for coordinates to come
- Since beginning of PP all products delivered in time except 1 due to power outage

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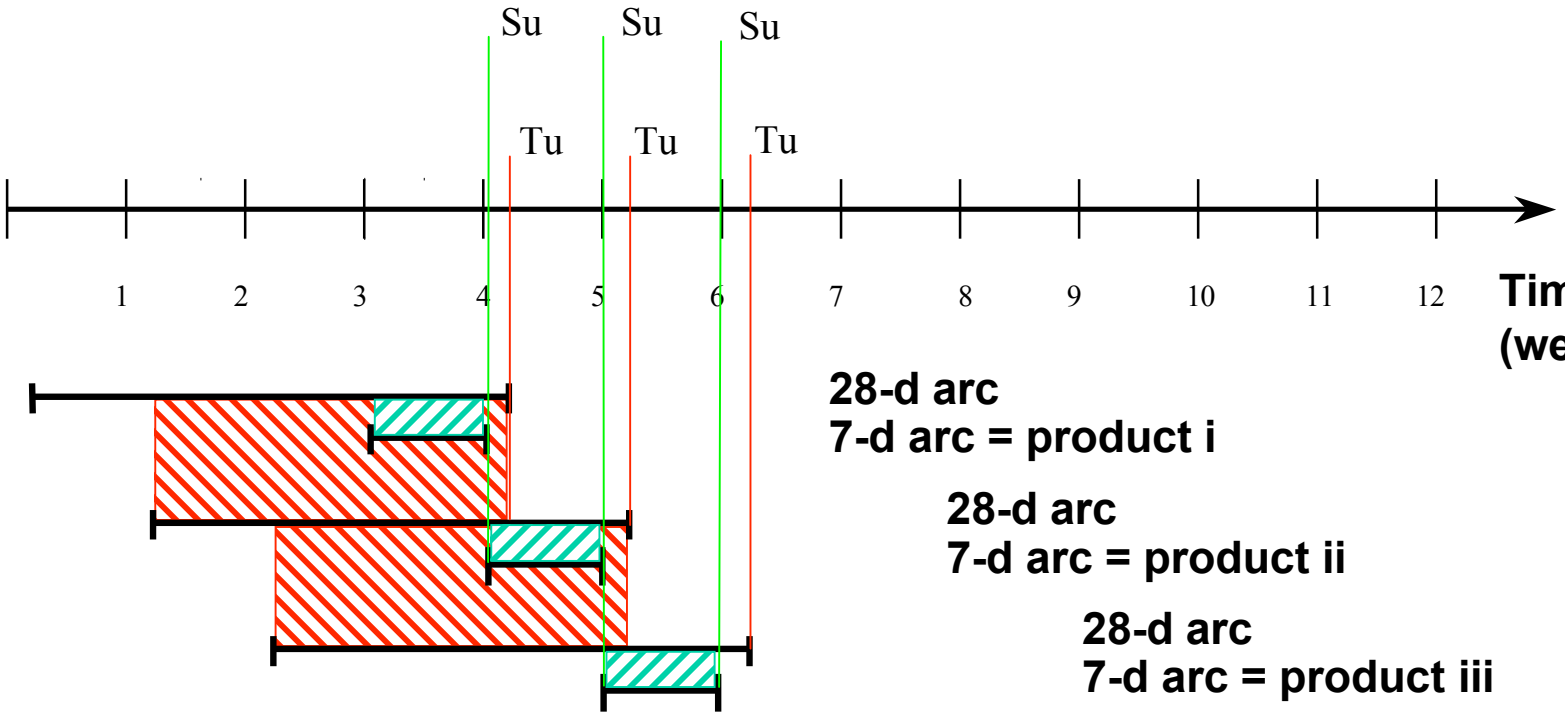
Quality Control Sequence



28-d arc
7-d arc = product i

28-d arc
7-d arc = product ii

28-d arc
7-d arc = product iii

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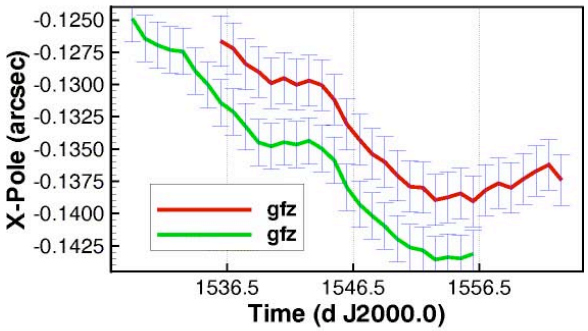
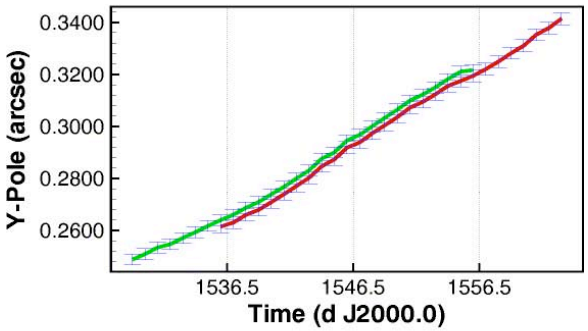
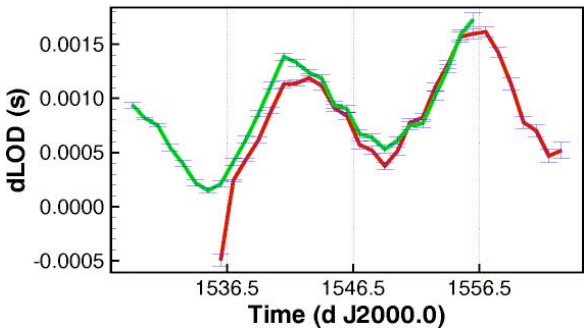


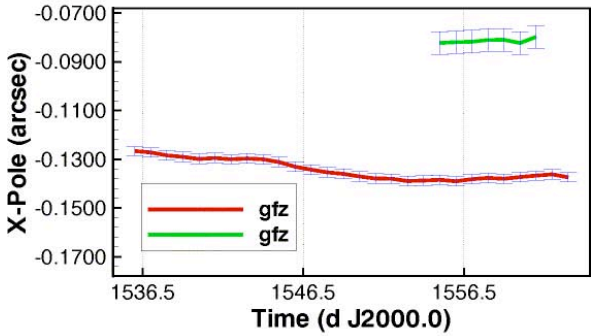


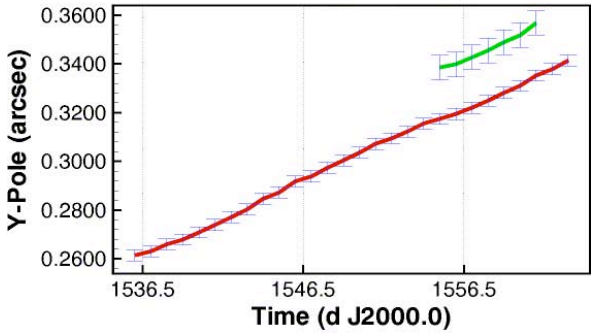


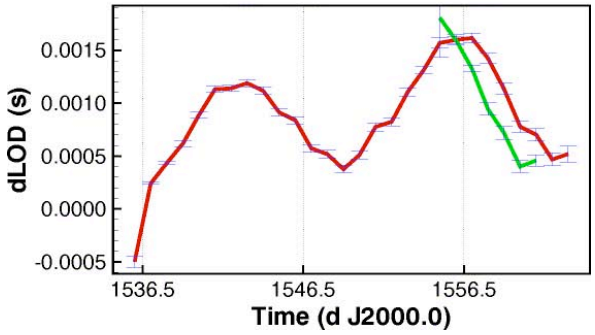
Quality Control

1.
Subsequent 28-d arcs
⇦

2.
28-d arc vs. 7-d arc
⇨







Precision of EOP Estimates

Global Mean Standard Deviations

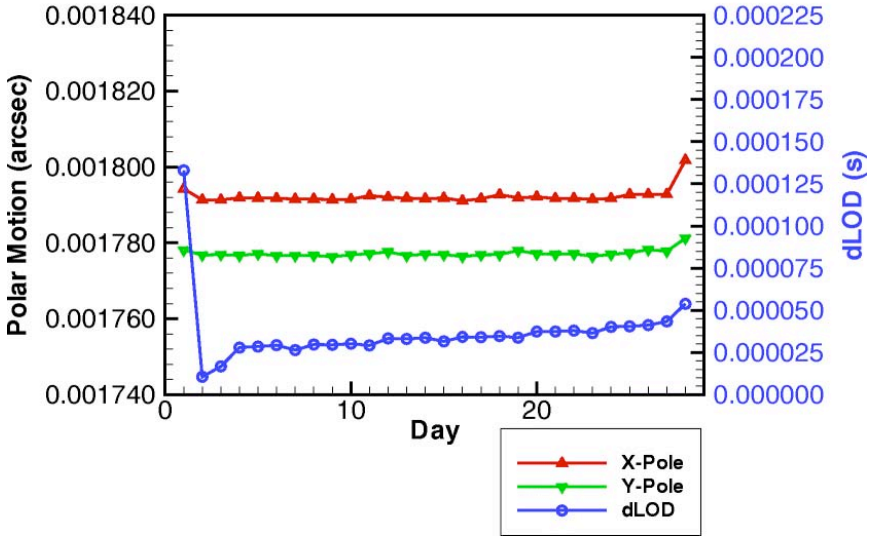
28-d Arcs:

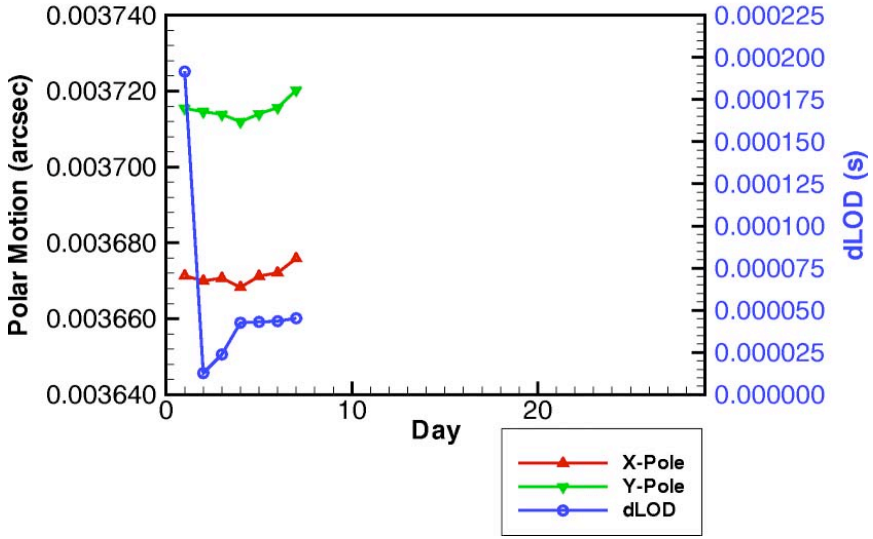
s X_Pole = 1.79 mas
s Y_Pole = 1.78 mas
s dLOD = 0.037 ms

7-d Arcs:

s X_Pole = 3.67 mas
s Y_Pole = 3.72 mas
s dLOD = 0.058 ms

Mean Standard Deviations per Day in Arc



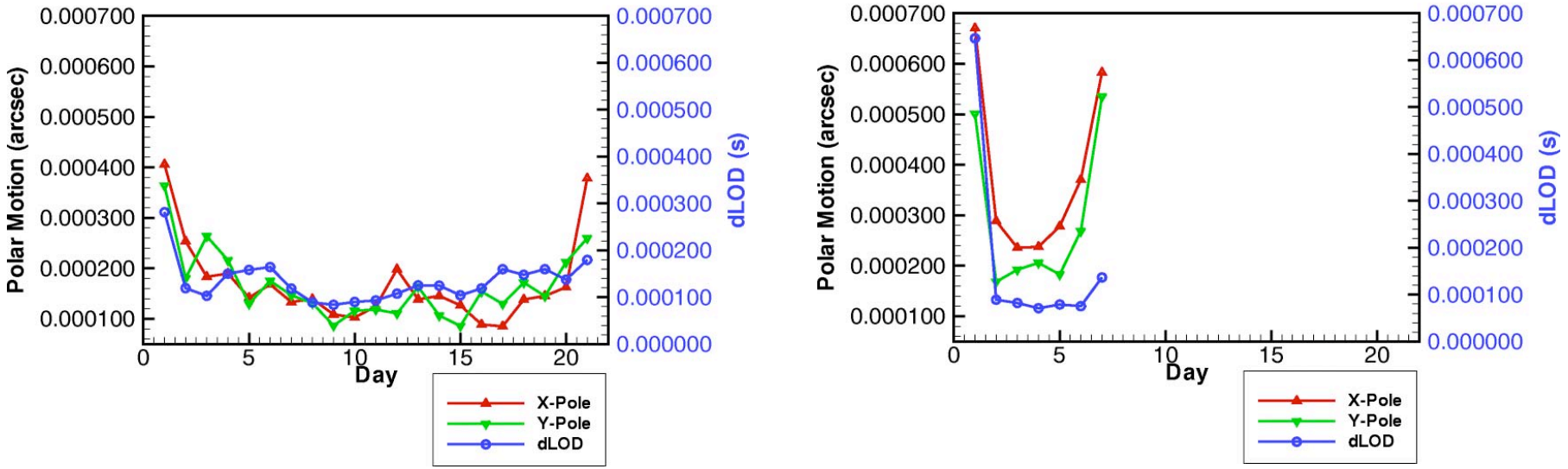


Accuracy of EOP Estimates

Global Standard Deviations of Overlap Comparisons after Bias Removal

28-d Arcs vs. 28-d Arcs:	IGS Rapid:	28-d Arcs vs. 7-d Arcs:
s X_Pole = 0.19 mas	0.1 mas	s X_Pole = 0.42 mas
s Y_Pole = 0.18 mas	0.1 mas	s Y_Pole = 0.33 mas
s dLOD = 0.14 ms	0.03 ms	s dLOD = 0.25 ms

Standard Deviations per Day in Arc



Summary

- Stable and reliable system in place, can be operated fully unattended
- Intensive QC applied, auto mode needs further development
- EOP results:
  - 28-d arc solutions more accurate
  - polar motion estimates for first and last days slightly degraded
  - LOD estimates for first days largely uncertain
- 28-d orbital fits vs. 7-d orbital fits indicate nearly identical orbit accuracies:
  - 1.28 cm from 454509 NPs vs. 1.27 cm from 53696 NPs