The Re-Analysis of the IGS Tropospheric Product

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Point Positioning Approach for Re-Analyzed Trop Product

• Fixed orbits and clocks: IGS Final Re-Analyzed Combined
• Earth orientation: IGS Final Re-Analyzed Combined
• Transmit antenna phase center map: IGS Standards
• Receiver antenna phase center map: IGS Standards
• Elevation angle cutoff: 7 degrees
• Mapping function (hydrostatic and wet): Niell GMF
• A priori delay (m): \[ \text{hyd} = 1.013 \times 2.27 \times e^{-0.116 \times h} \] \[ \text{wet} = 0.1 \]
• Data arc: 24 hours
• Data rate: 5 minutes
• Estimated parameters: clock (white noise), site position, wet zenith delay (3 cm/hour random walk), delay gradients (0.3 cm/hour random walk), phase biases (white noise)

Number of Site Available

Number of ZPD Product per day

Time

number of ZPD files

Site Distribution

Availability of IGS ZPD Product wrt Time and Latitude

Station Latitude (deg)

Time

Key Benefits: Temporal Consistency and Improved Quality
Re-Analysis Quality Improvement Metrics
(eg, for 2007)

Histogram of Postfit Residual Differences For 2007

Histogram of ZPD Overlap Differences For 2007
Quality Metrics

RMS of Station Repeatability: 3D

Time

(μm)

RMS of ZPD Overlaps

Time

(μm)
ISSUES

• Solution will be posted to CDDIS shortly
  – Should they replace old solutions?
• AC inter-comparison not carried out due to lack of contributions