



USNO Analysis Center Update



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Current Software & Processing Setup

- Generated Using Modified *Bernese GNSS v5.2* Software and USNO Developed Custom Scripts

- ITRF2014

ULTRA RAPIDS

- 40-hour Observation Window
- Hourly RINEX Data Files Downloaded
- ~30 Stations Processed

RAPIDS

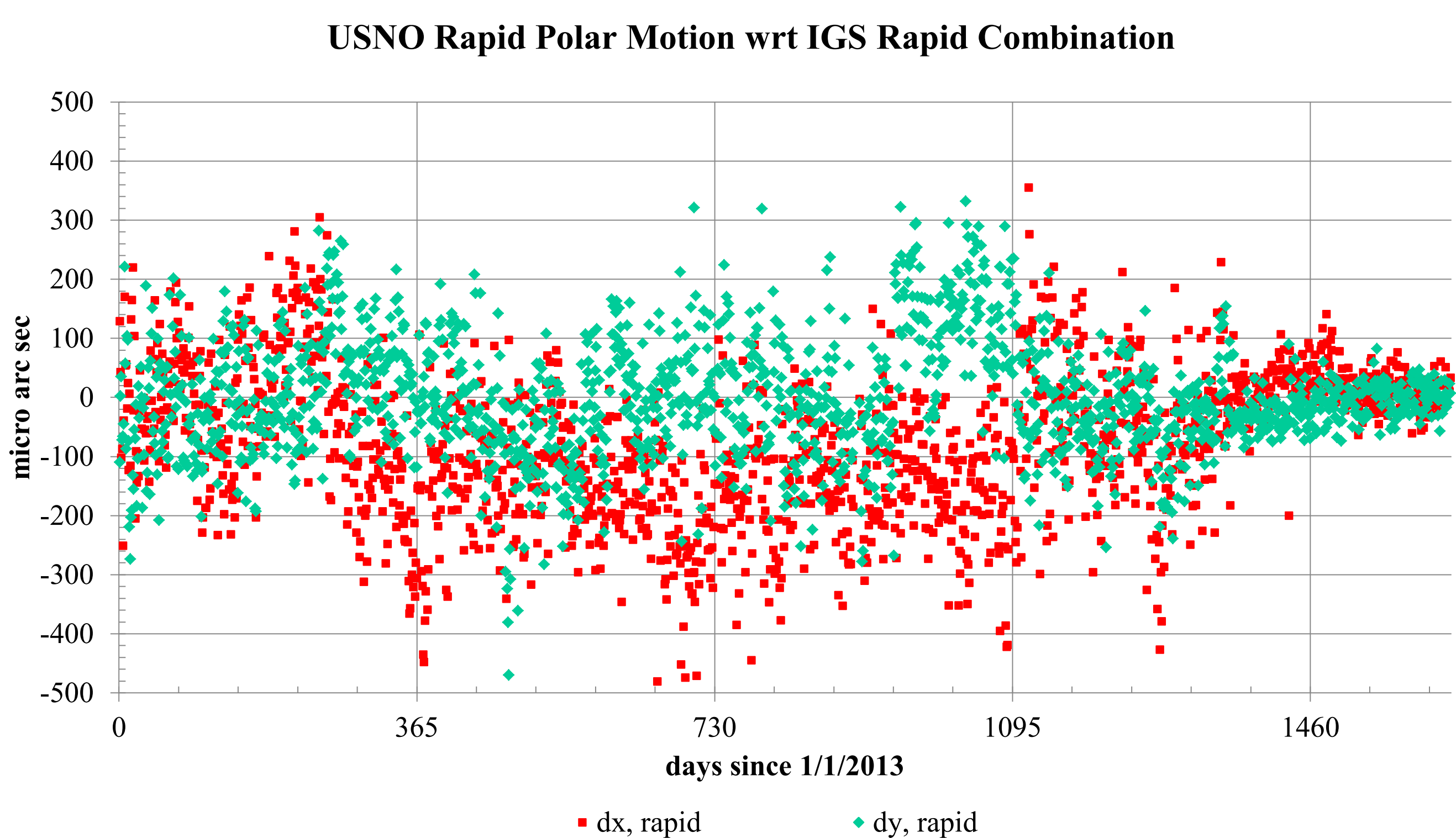
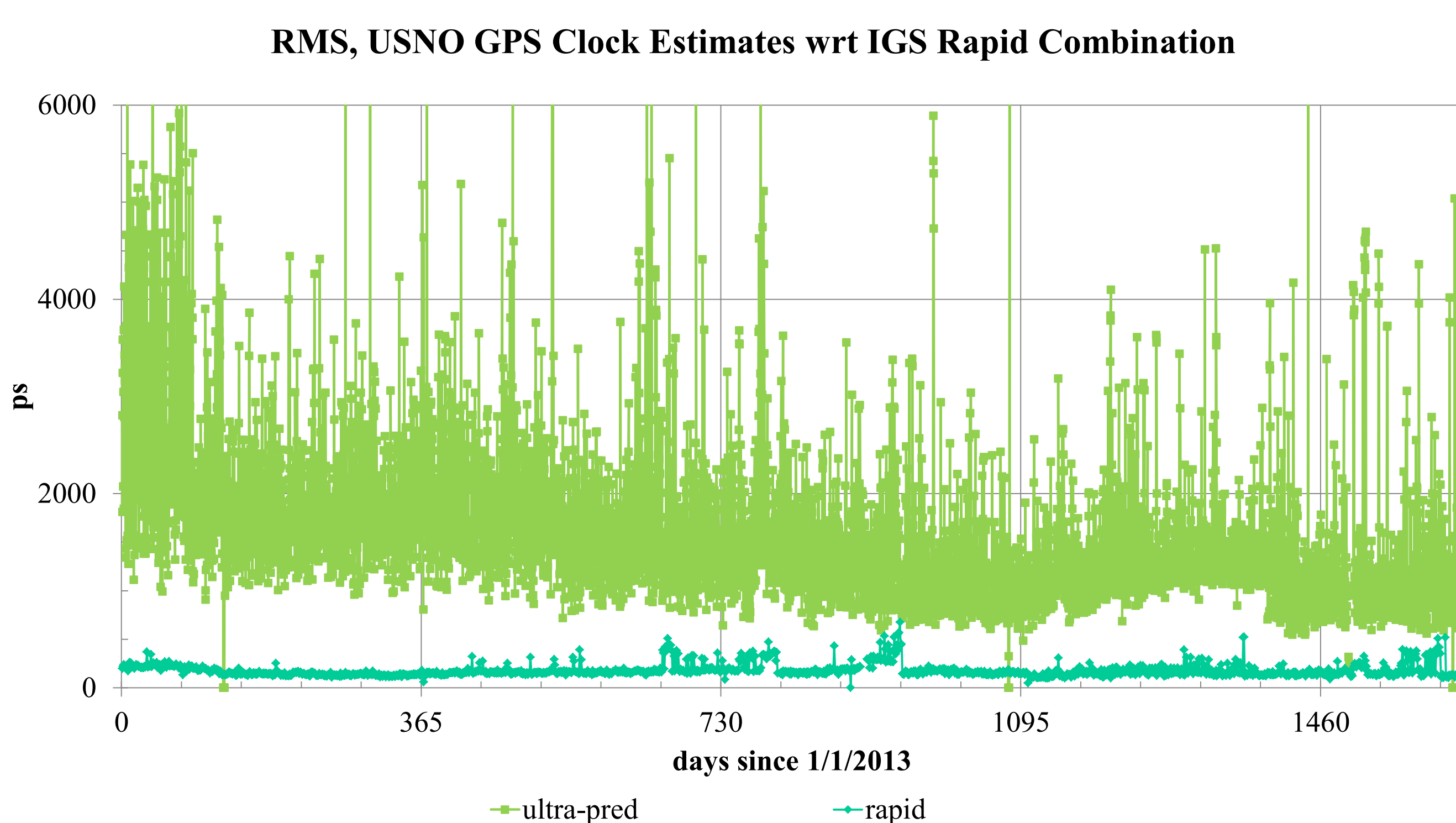
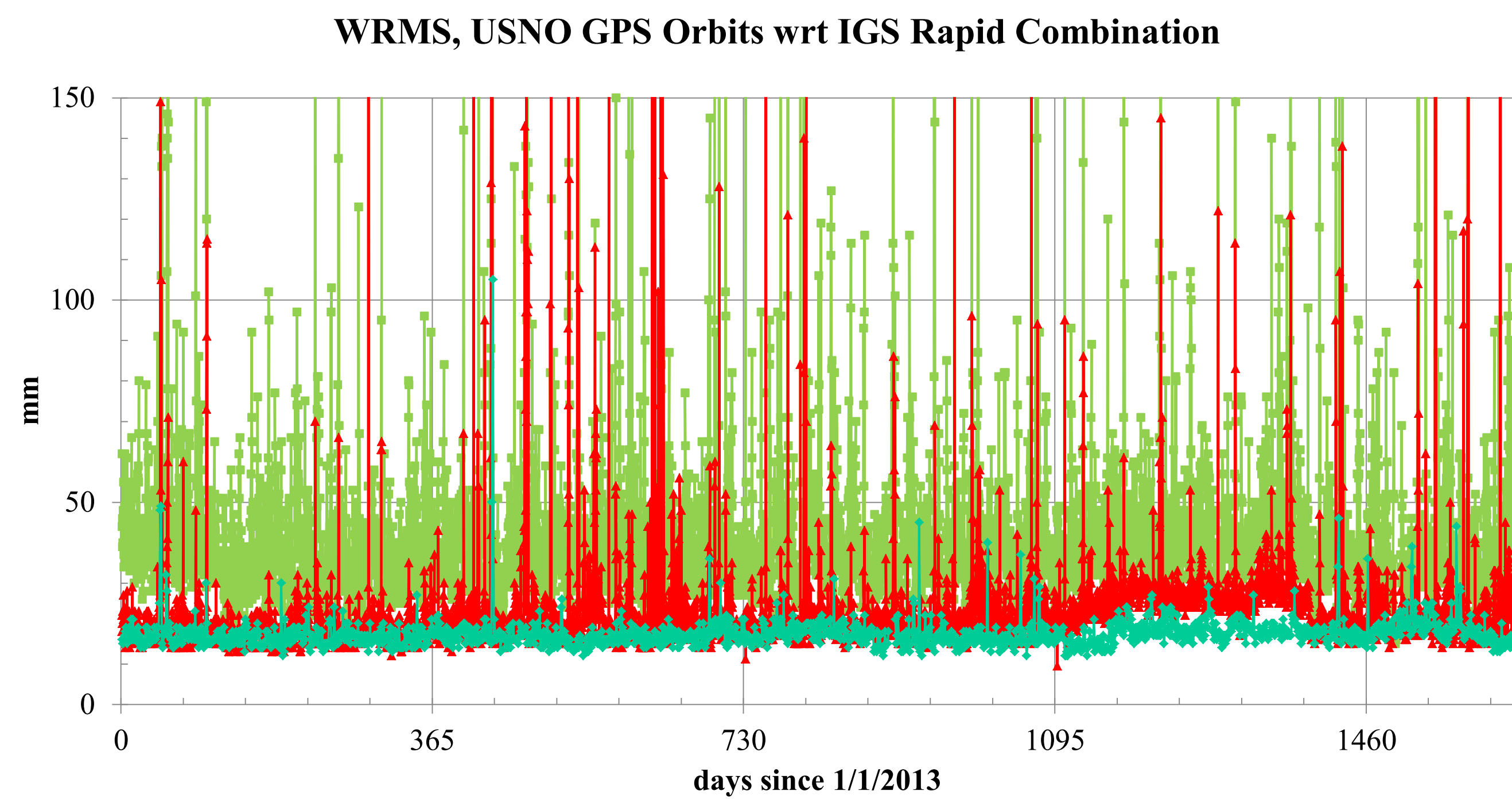
- 27-hour Observation Window
- Daily RINEX Data Files Downloaded
- ~180 Stations Processed in Parallel Network Solution

IGS FINAL TROPOSPHERE ESTIMATES

- Precise Point Positioning (PPP) Method
- Fixed GPS Clocks, ERPs, and Orbits as A Priori Inputs: IGS Final Products
- Elevation Angle Cutoff: 7 degrees (Receiver Dependent)
- Troposphere Mapping Function: GMF (Global Mapping Function)
- A Priori Troposphere Estimate: Dry Niell Model
- Temporal Resolution: 5 minutes
- ~360 Stations Files/Day

(for more details see poster in Troposphere session)

Rapid and Ultra-Rapid Processing



Notable AC Processing Updates

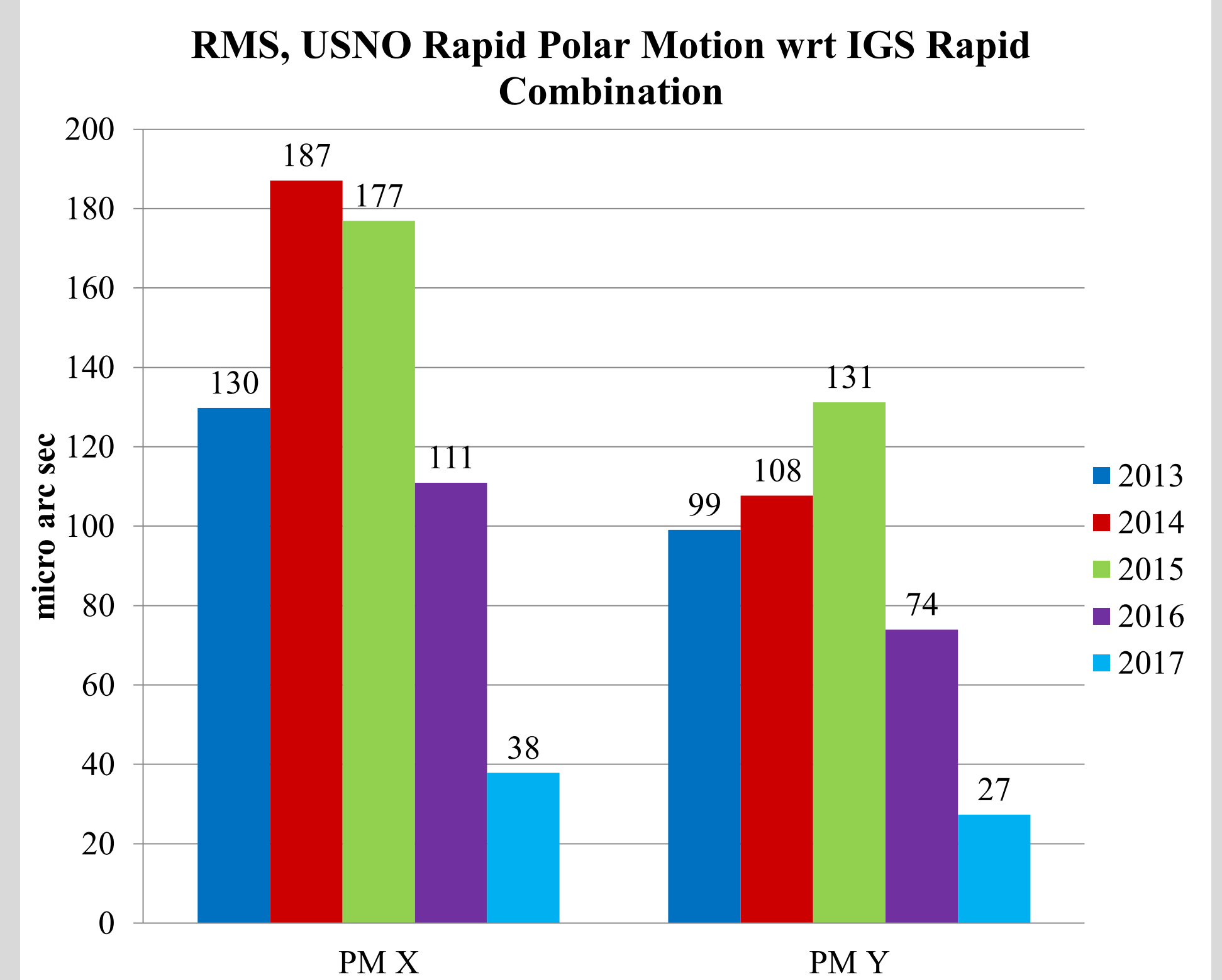
- Switched to ITRF2014 on DOY 029 of 2017 from IGB08
- Upgraded to *Bernese GNSS Software v5.2* from *v5.0*

ULTRA RAPIDS

- Long Arc 40-hour Observation Window in Ultra Rapids from 27-hour Observation Window Mid-2013
 - 25% Reduction in Predicted Clock RMS in 2013

RAPIDS

- Parallel Processing of ~180 Stations in Rapids (up from ~30 Stations) Starting in 2016
- Improved Polar Motion Estimation Mid-2016
 - 65% Reduction of PM X RMS
 - 63% Reduction of PM Y RMS



Additional AC Activities

- Produce UTGPS, a GPS-based UT1-UTC quantity used to supplement VLBI UT1-UTC estimates and improve UT1-UTC predictions
 - 5 times/day (for IERS)
- Produce 30s Satellite Clock Estimates Consistent with USNO Rapid Solutions (Since Beginning of 2017)
- Chair of Troposphere Working Group
- Produce Test Solutions of GPS+GLONASS since 2012: Ultra Rapids and Rapids

Major Future AC Activities

- Update Data Retrieval and Processing of Rinex 3 Observation Files
- Investigate Hourly Processing and Normal Equation Stacking for Parallel Processing of Greater Number of Stations in Ultra Rapids
- Participation in Repro2 for Troposphere Estimates

Analysis Center Products Available Online: <http://www.usno.navy.mil/USNO/earth-orientation/gps-products>

For more information:

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