Monitoring Time Offset to GPS at European GNSS stations

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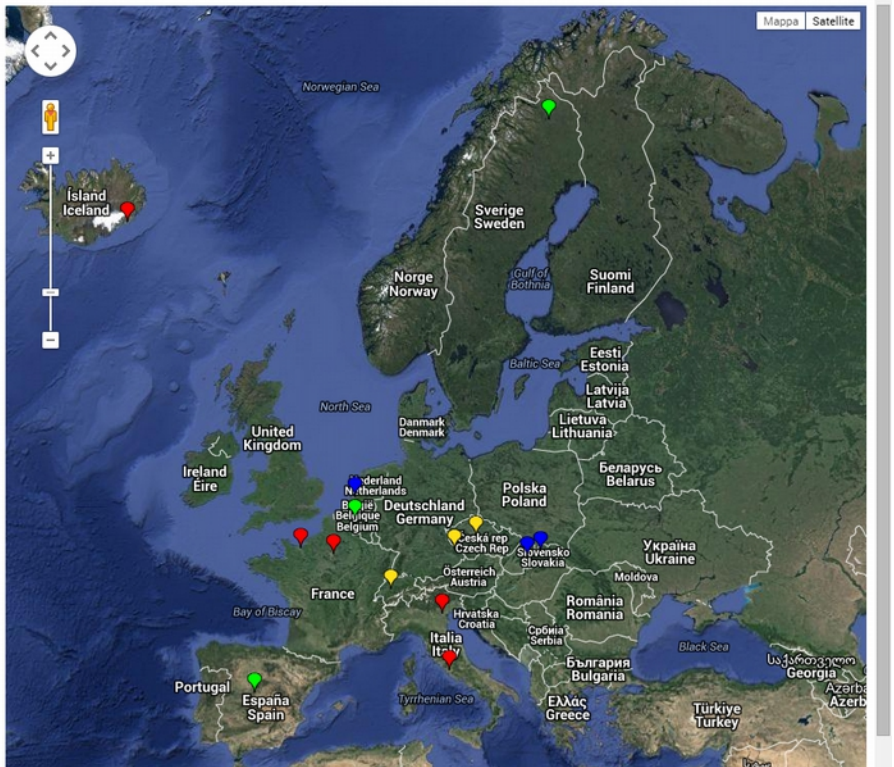
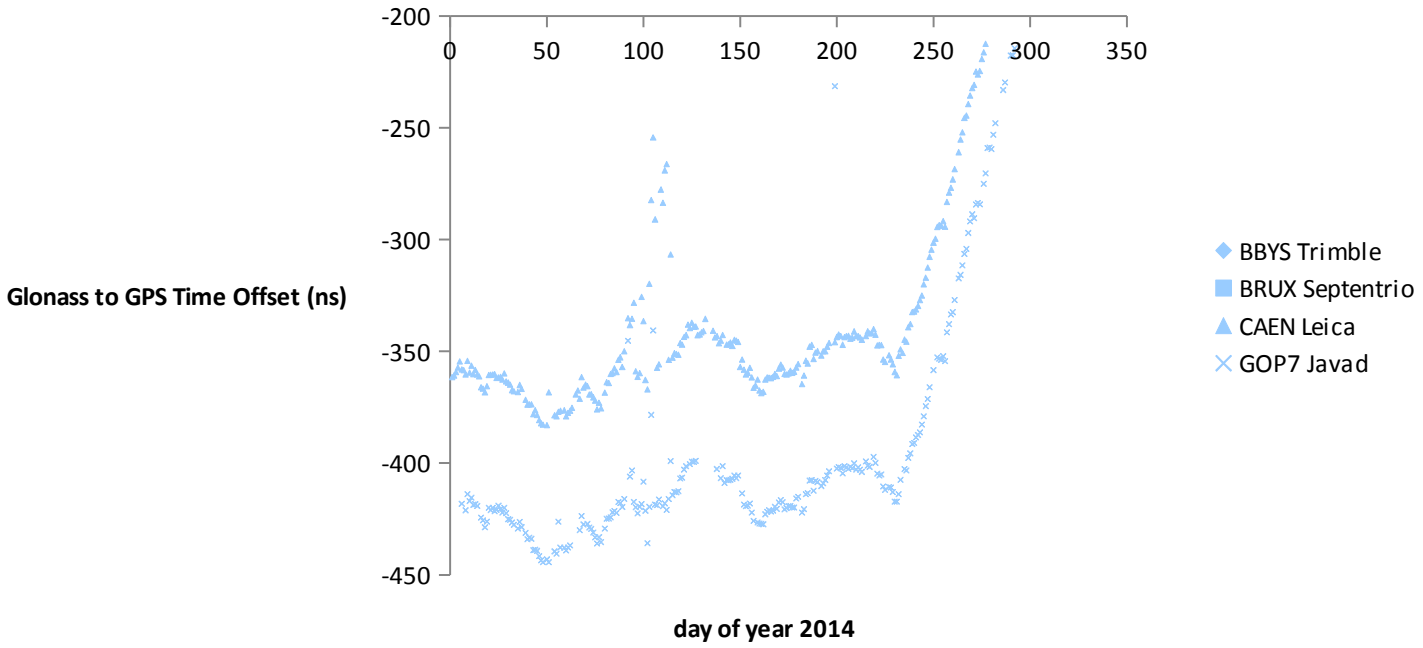
Systematic monitoring of 14 multiGNSS European sites

- Web page: map of multiGNSS permanent sites in Europe, with different receiver types; updated weekly
- For each site, link to downladable plots and data sheets (.csv) with the following information
  - Time offset to GPS
  - Coordinate residuals from multiGNSS processing
  - Post Fit residuals, with different symbols for different GNSS's
  - TZD estimates
- Software: own Matlab development

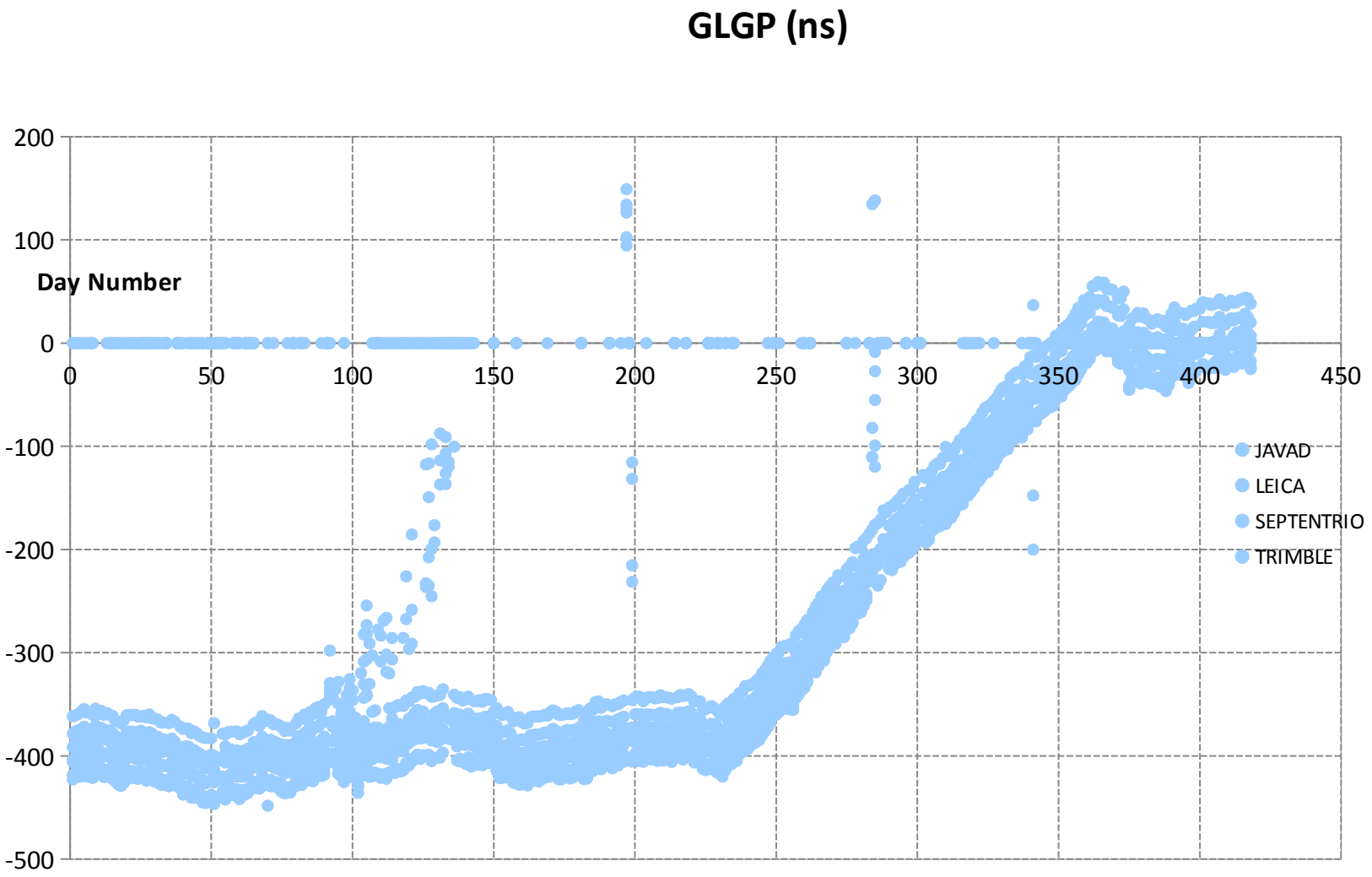


Glonass clock steering as of October 2014 (TWG and IGC meetings)

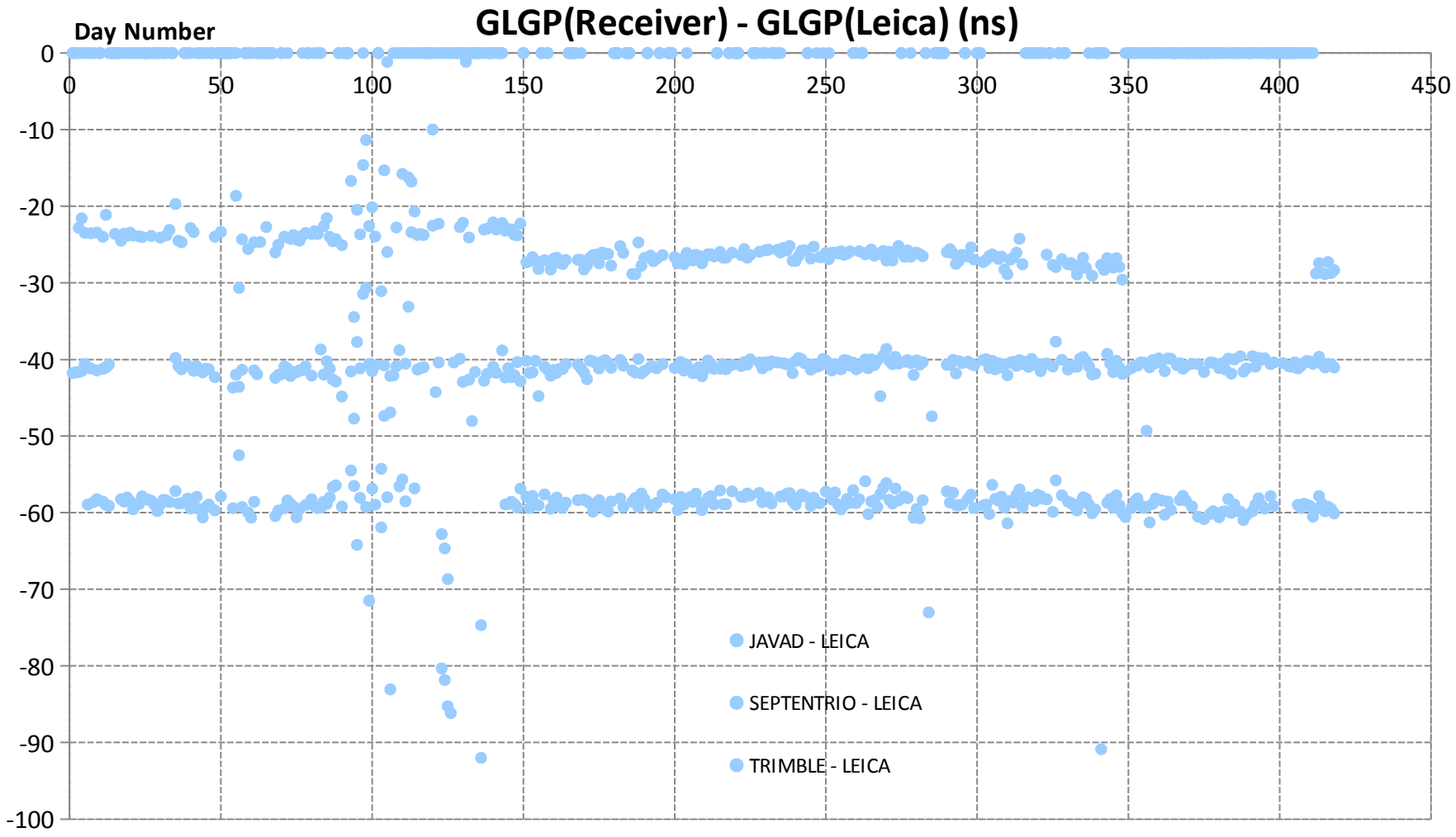


Starting August 19, 2014 (doy 231) the Glonass time offset relative to GPS is being reduced progressively

Glonass to GPS time offset 2014->today: small, but receiver dependent biases still exist)



GLGP relative to Leica receiver

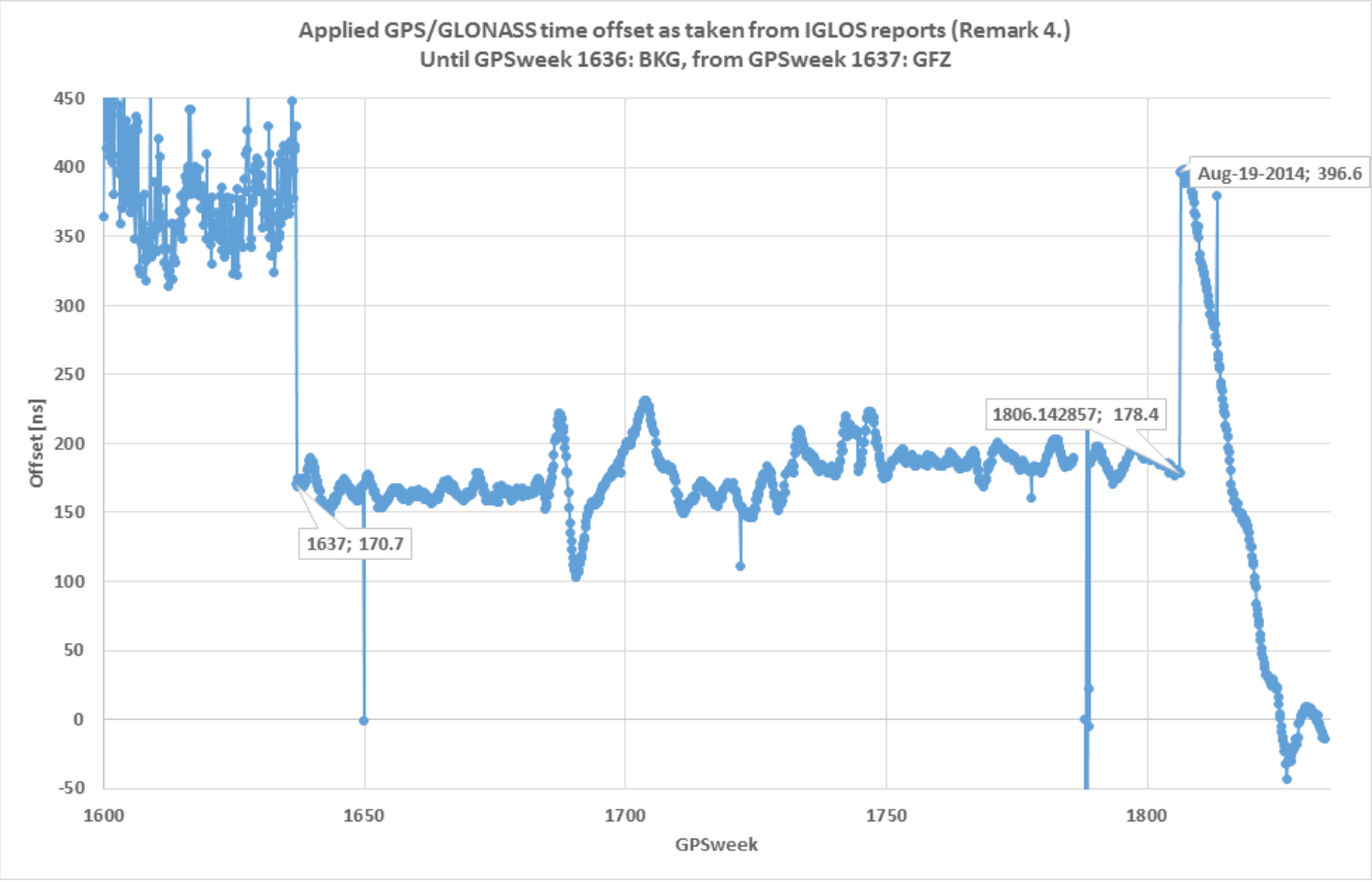


Time offset of the weekly IGLOS reports of the IGS

GPS/GLONASS time offsets added to the broadcast clocks

Before GPS Week 1637, the time offsets were derived from the bkg summary files;

Starting Week 1637 the offsets are derived from the gfz summary files

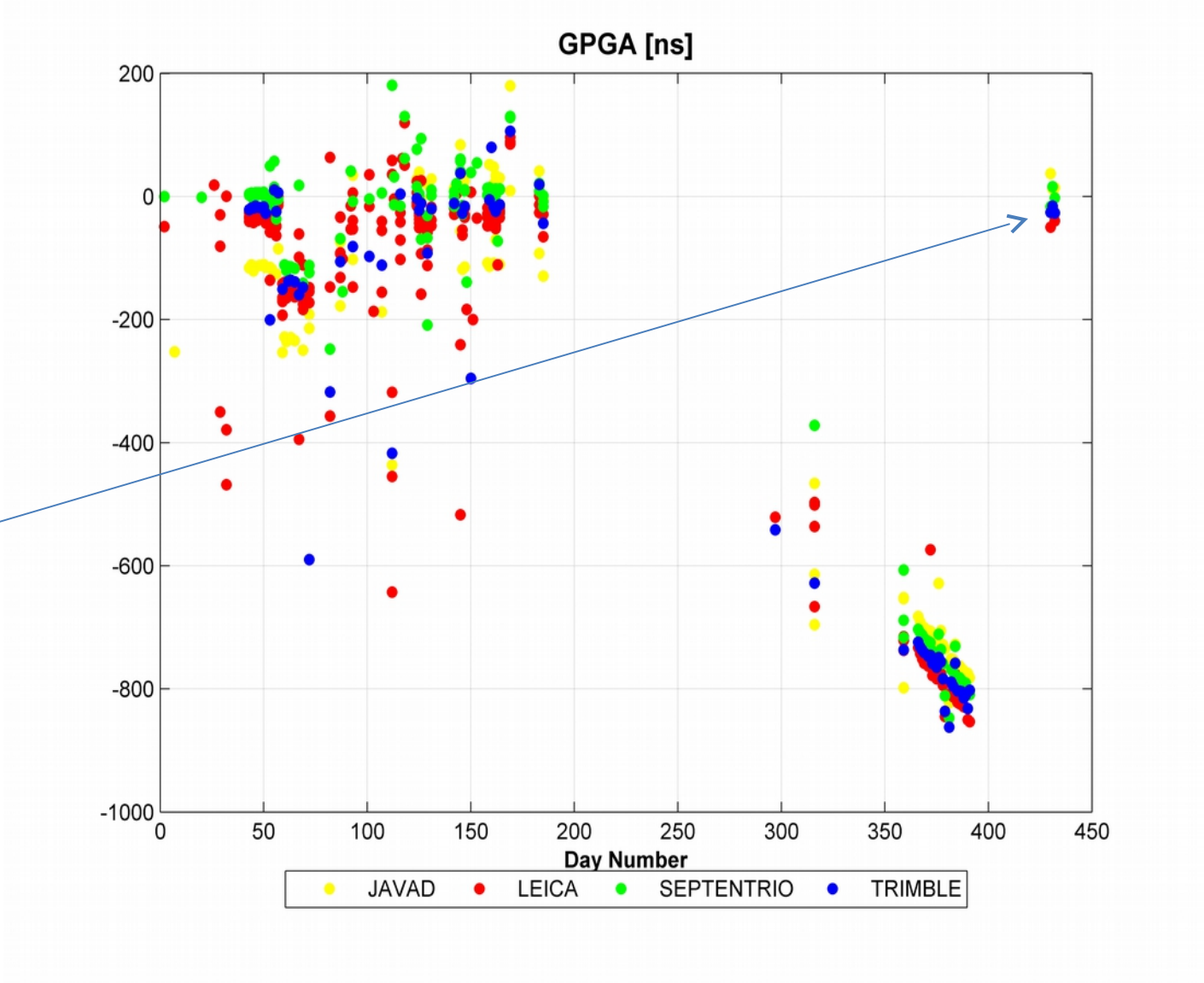


Galileo to GPS time offset

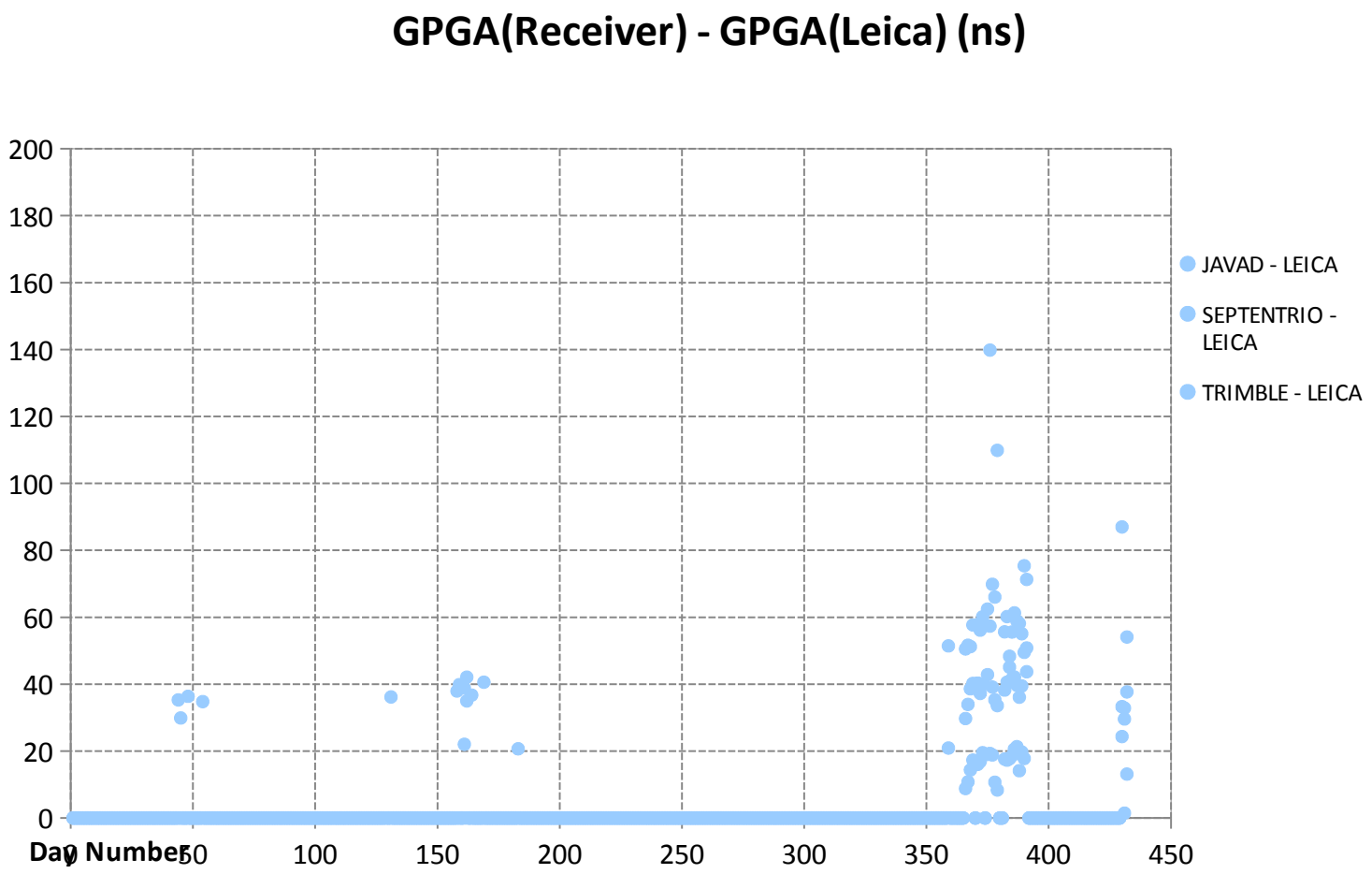
We decided to ignore the complicated flagging system containing the quality issues in the Galileo Navigation Message, as it appears not to be active/operational

The Galileo message was not available in the doys 28-32, 34-39, 41-64 of 2015

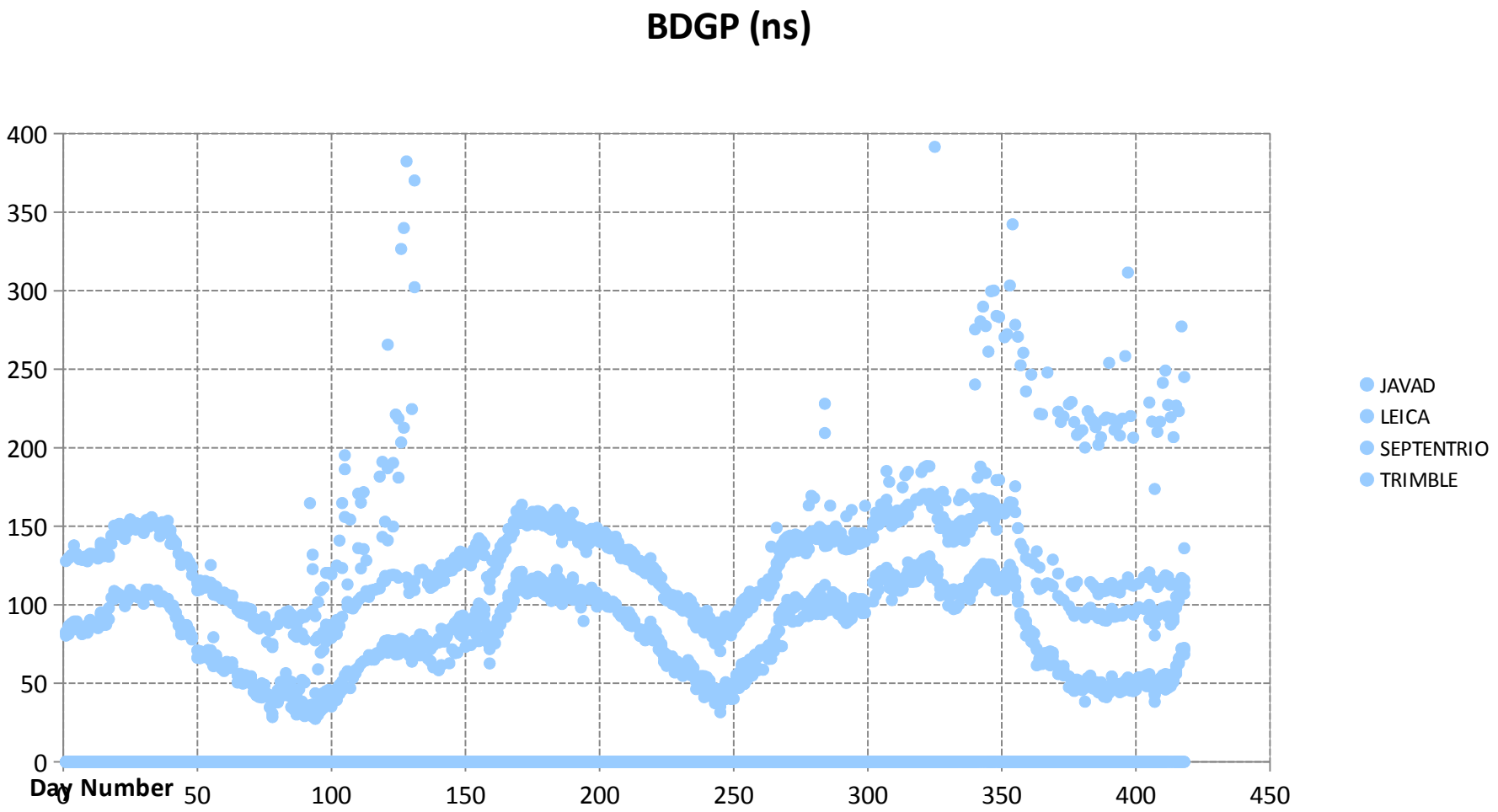
In the last weeks it appears there has been an alignment to GPS



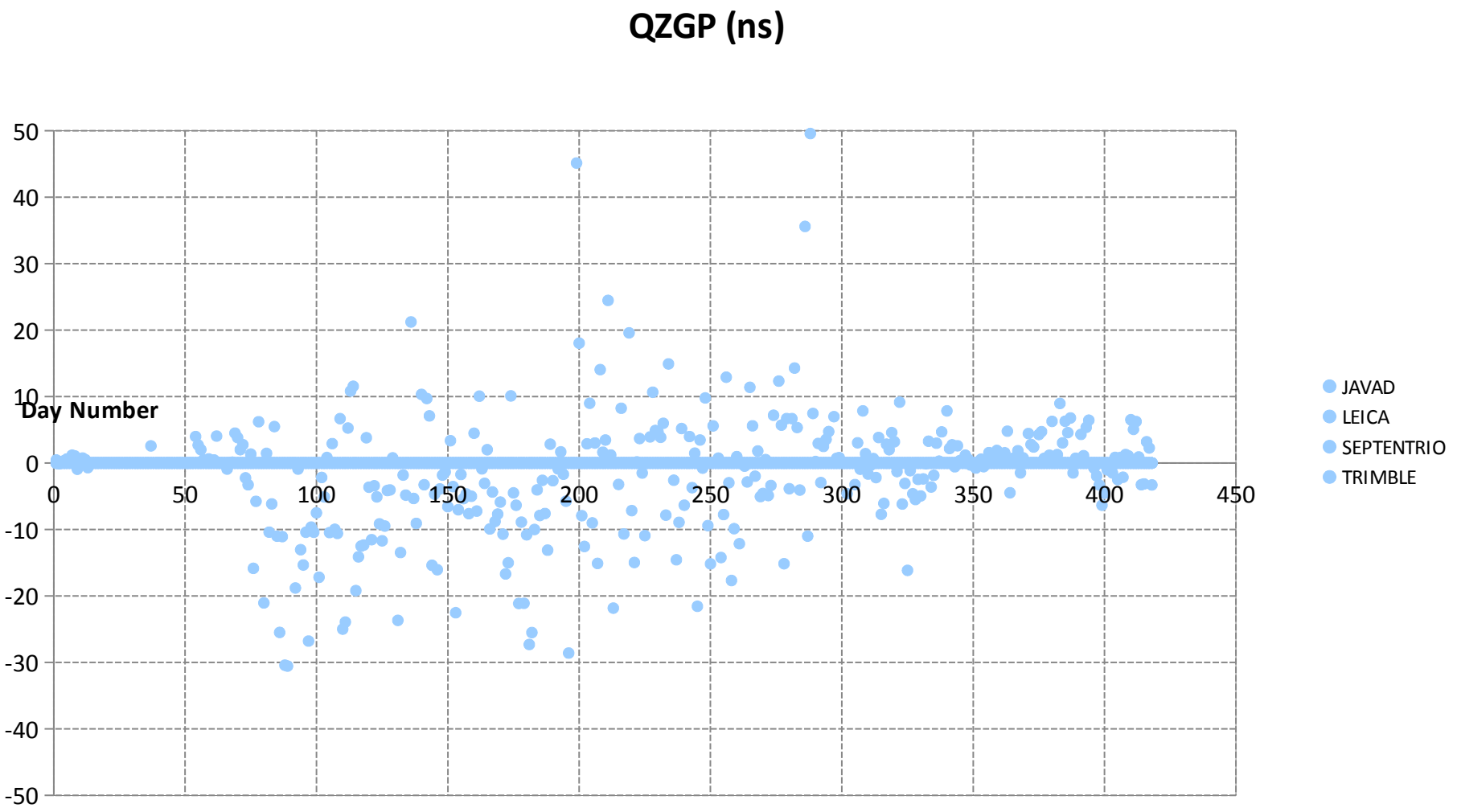
GGTO taking the Leica receiver as reference 2014.0 - present



BeiDou to GPS clock bias



QZSS1 to GPS Clock bias (KIR0 only)



Conclusions

- Statistics available for several european receivers of different type since 2014.0, routinely updated in Web site
- Glonass time has aligned to GPS time
- Galileo: improving
- BeiDou: periodic offsets to GPS time
- QZSS1: random offsets, improving
- Receiver dependent biases clearly visible