Early Results from New Initiatives on SLR Tracking of GNSS and Synchronous Satellites

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GNSS Action from the GNSS Study Group

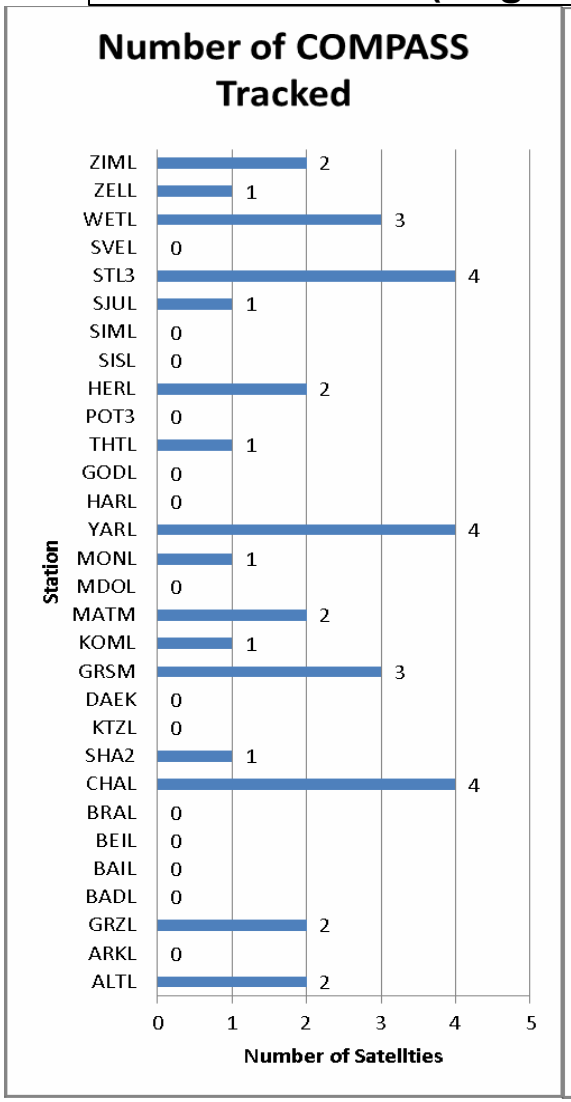
- Recommend an operational strategy for expanded SLR tracking of the GNSS constellations taking into account the GLONASS, GGOS, and ILRS requirements and constraints, and the issues delineated in the note from the April 8, 2013 meeting (see Attachment 3);
- Evaluate the network performance based on data already acquired and new data flowing from the implementation of expanded strategies, including the informal campaign with expanded GNSS tracking which has been underway since October 2013;

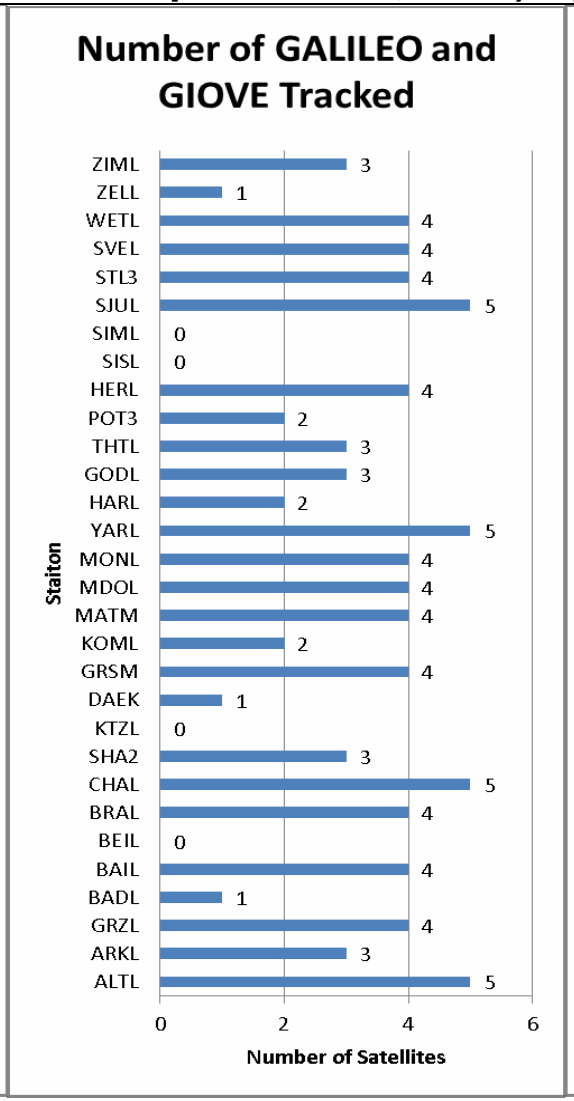
GNSS Campaign
August 1 – September 30, 2014

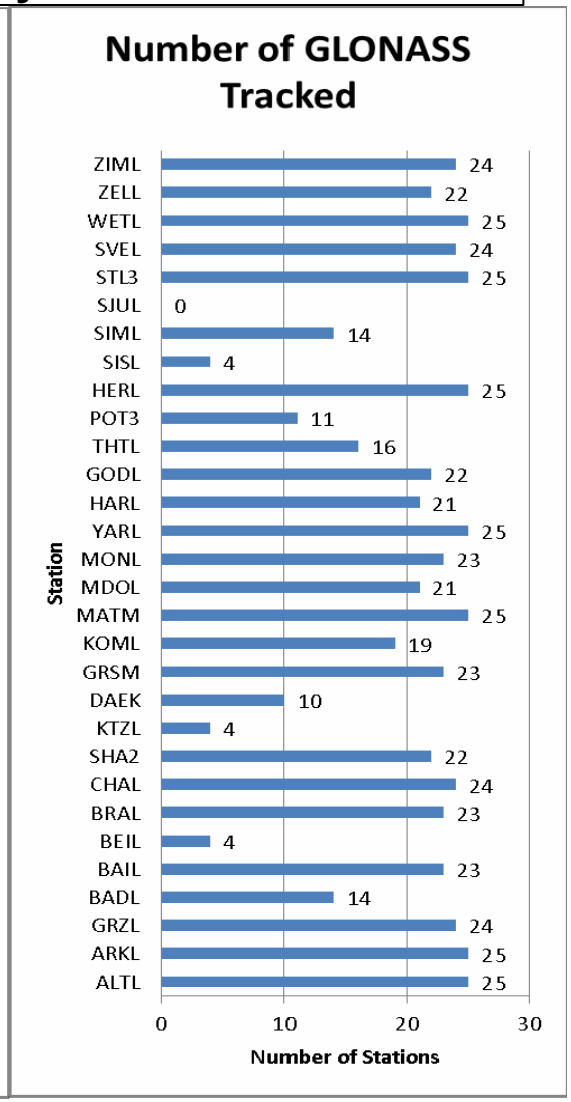
Campaign organized to test the capability of the ILRS network, using the full constellation of GNSS satellites with retroreflectors, inviting all stations to participate.
Plan:

- The stations should make their best effort to acquire three sets of 3 normal points distributed over that transit of the satellite.
- The stations should try to cycle through all of the GNSS satellites on the updated roster;
- Those stations with high repetition rate lasers should try to use the 1000 FR/NP recipe to improve their yield and lessen the impact on other missions;

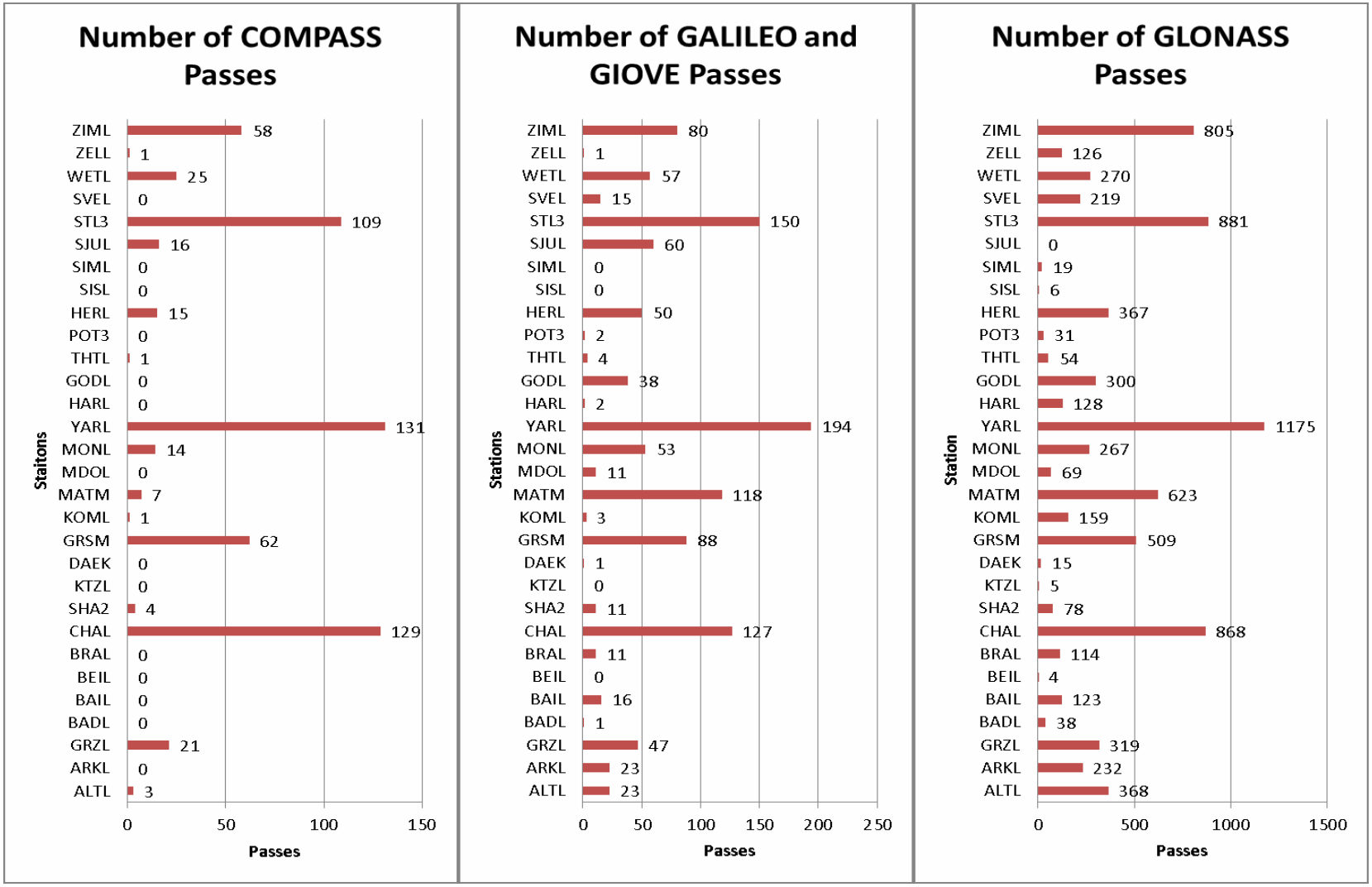
Number of Satellites by Category Tracked During the GNSS Tracking Campaign (August 1 – September 30, 2014) By Station



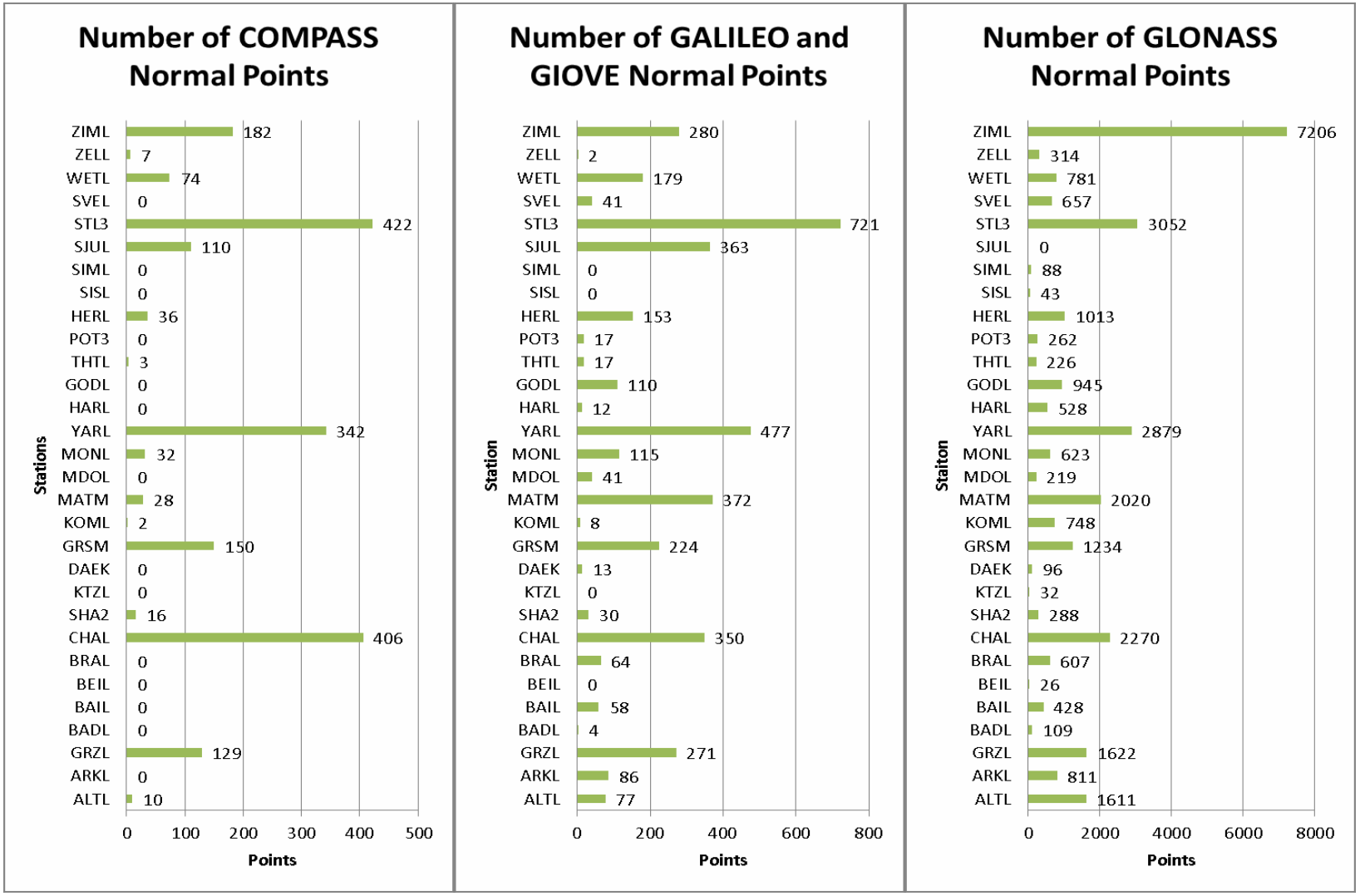




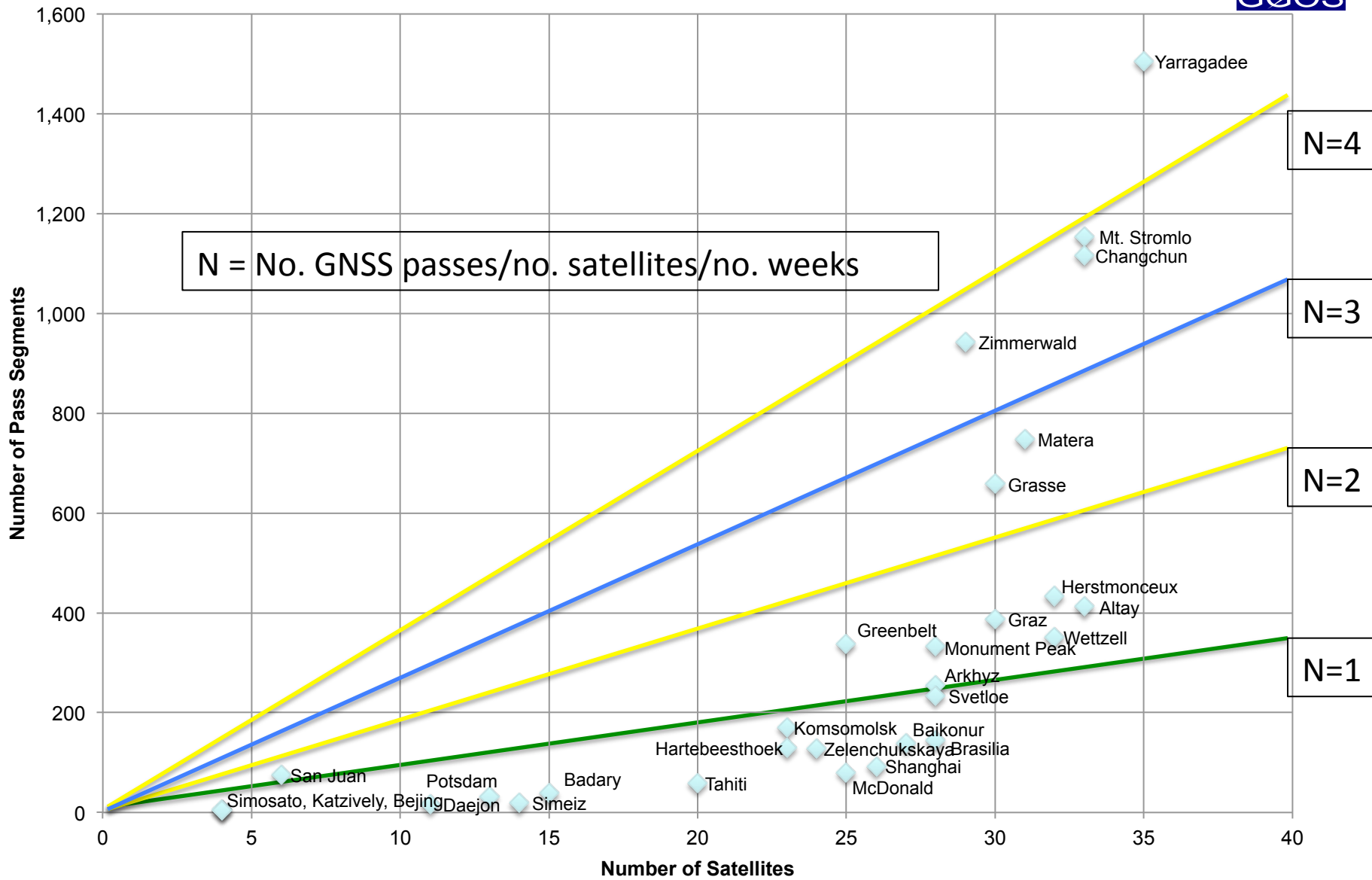
Number of Passes by Category Tracked During the GNSS Tracking Campaign (August 1 – September 30, 2014) By Station



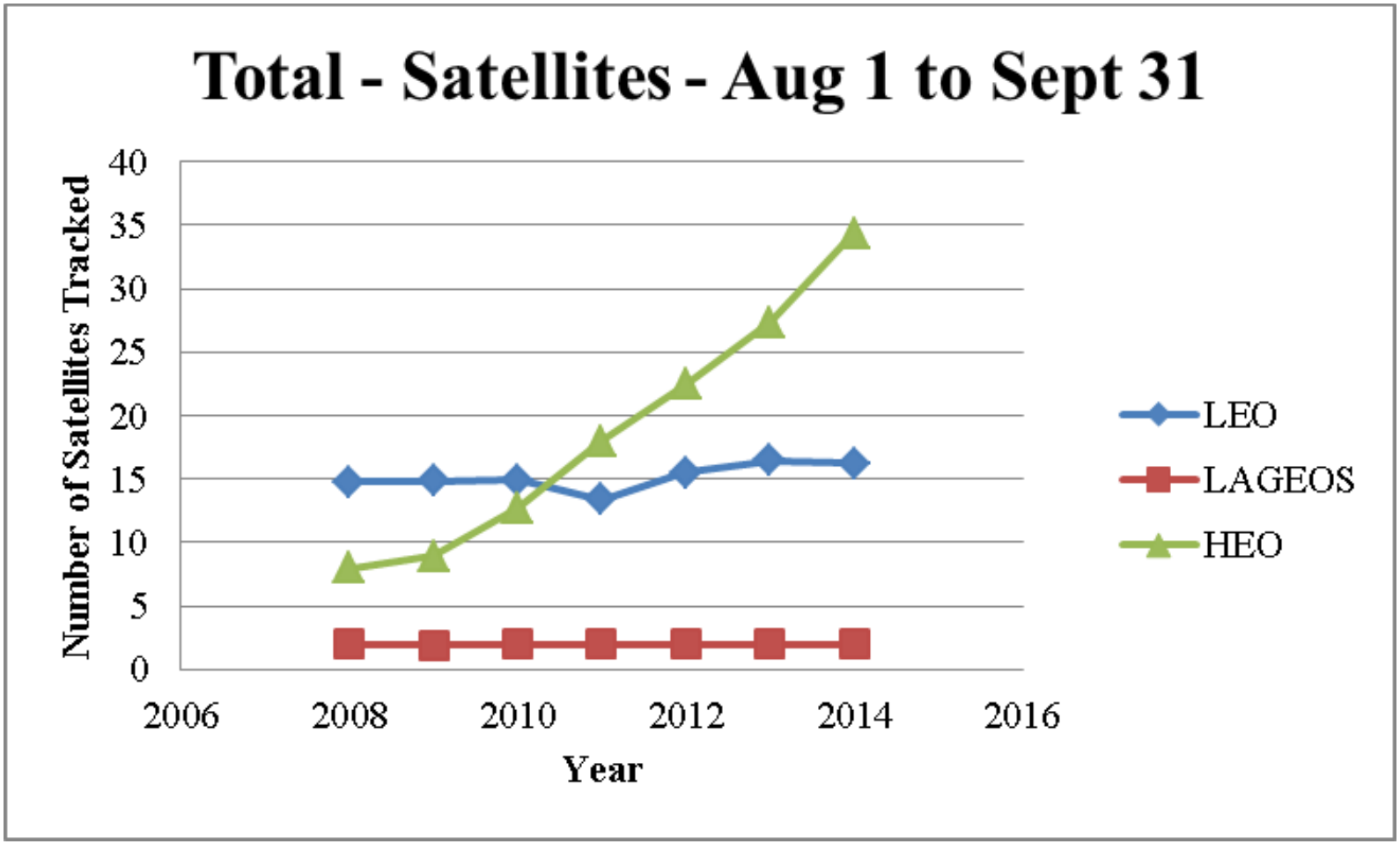
Number of Points by Category Tracked During the GNSS Tracking Campaign (August 1 – September 30, 2014) By Station



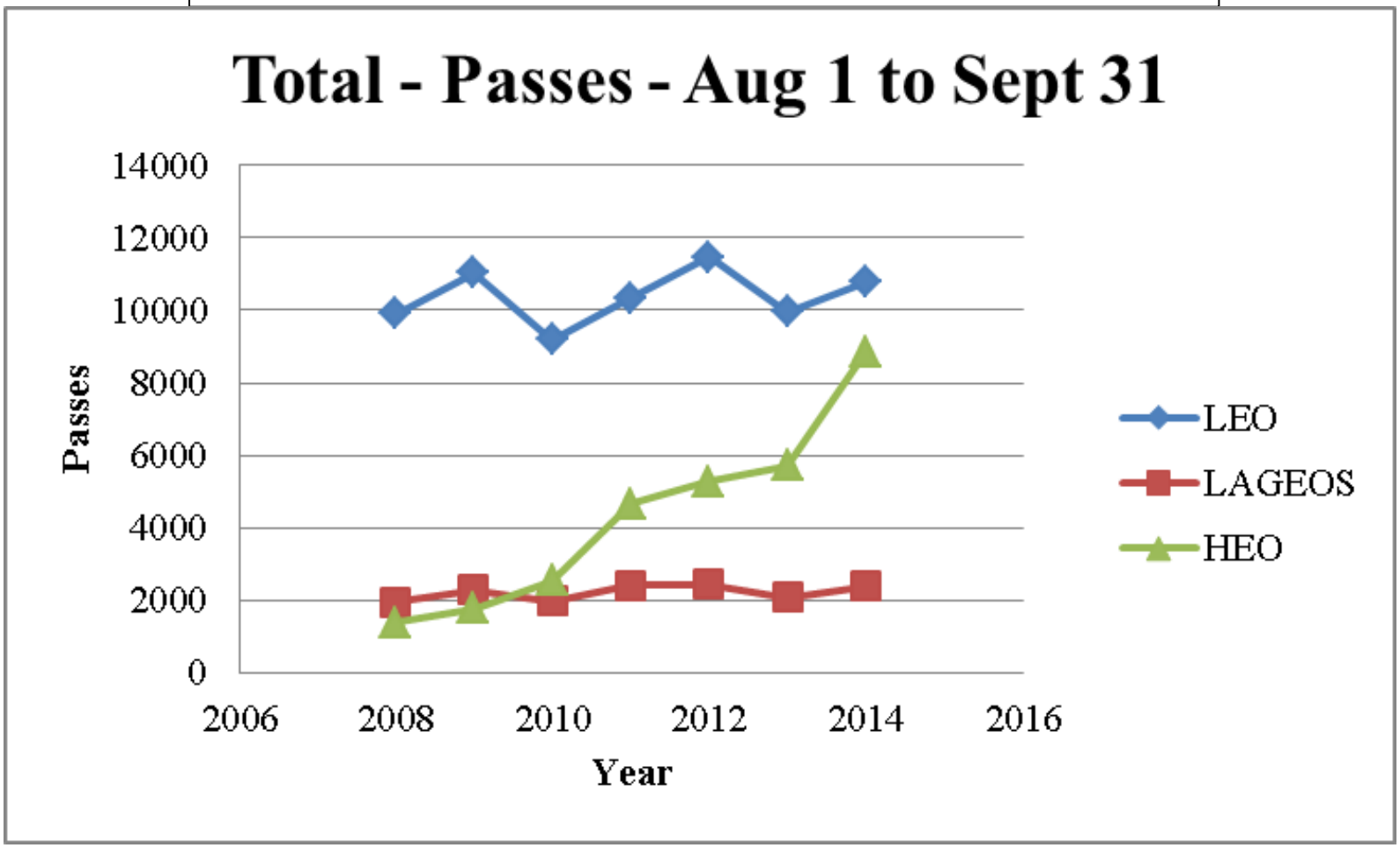
GNSS Campaign Results



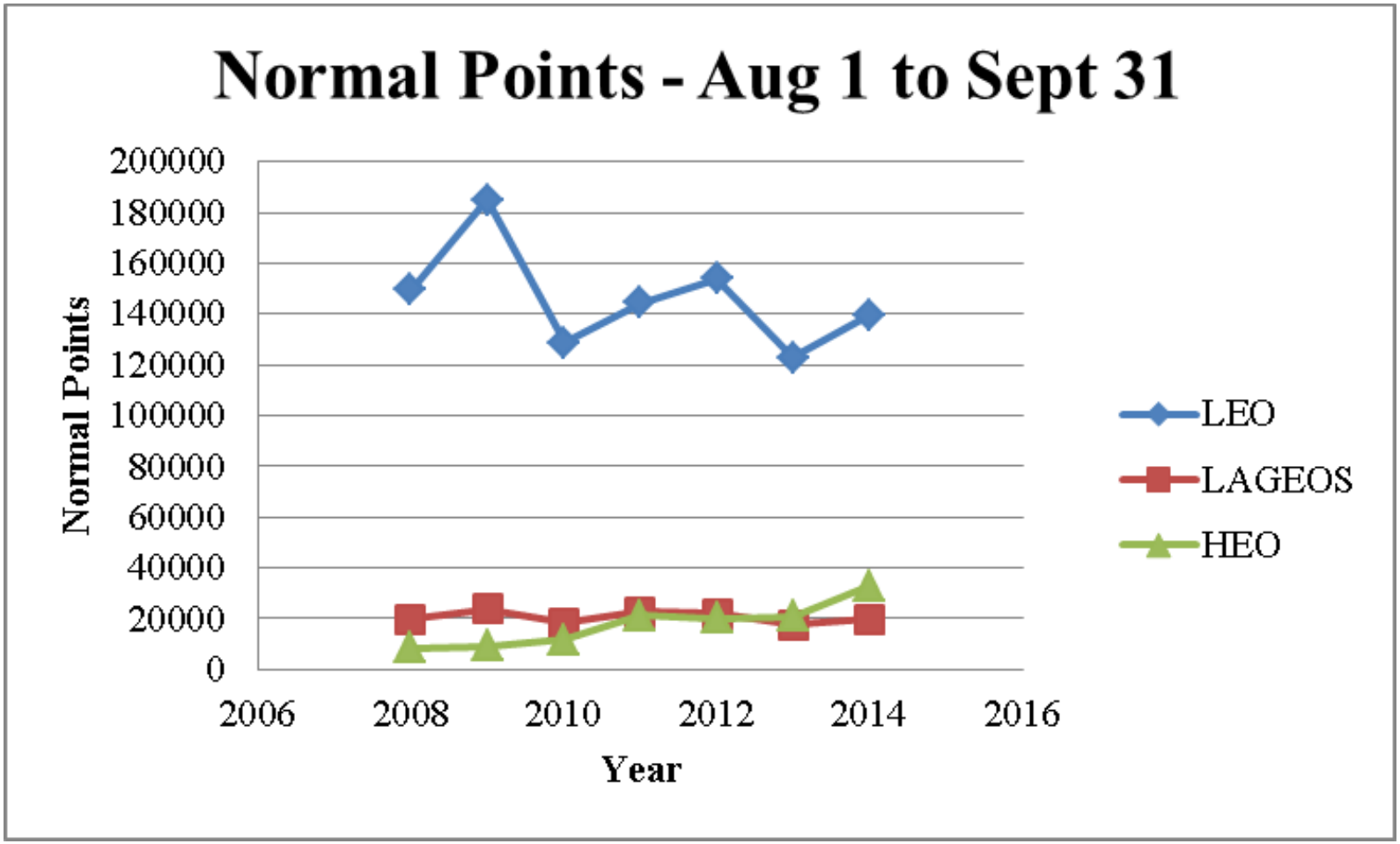
Number of Satellites Tracking During the August – September Period

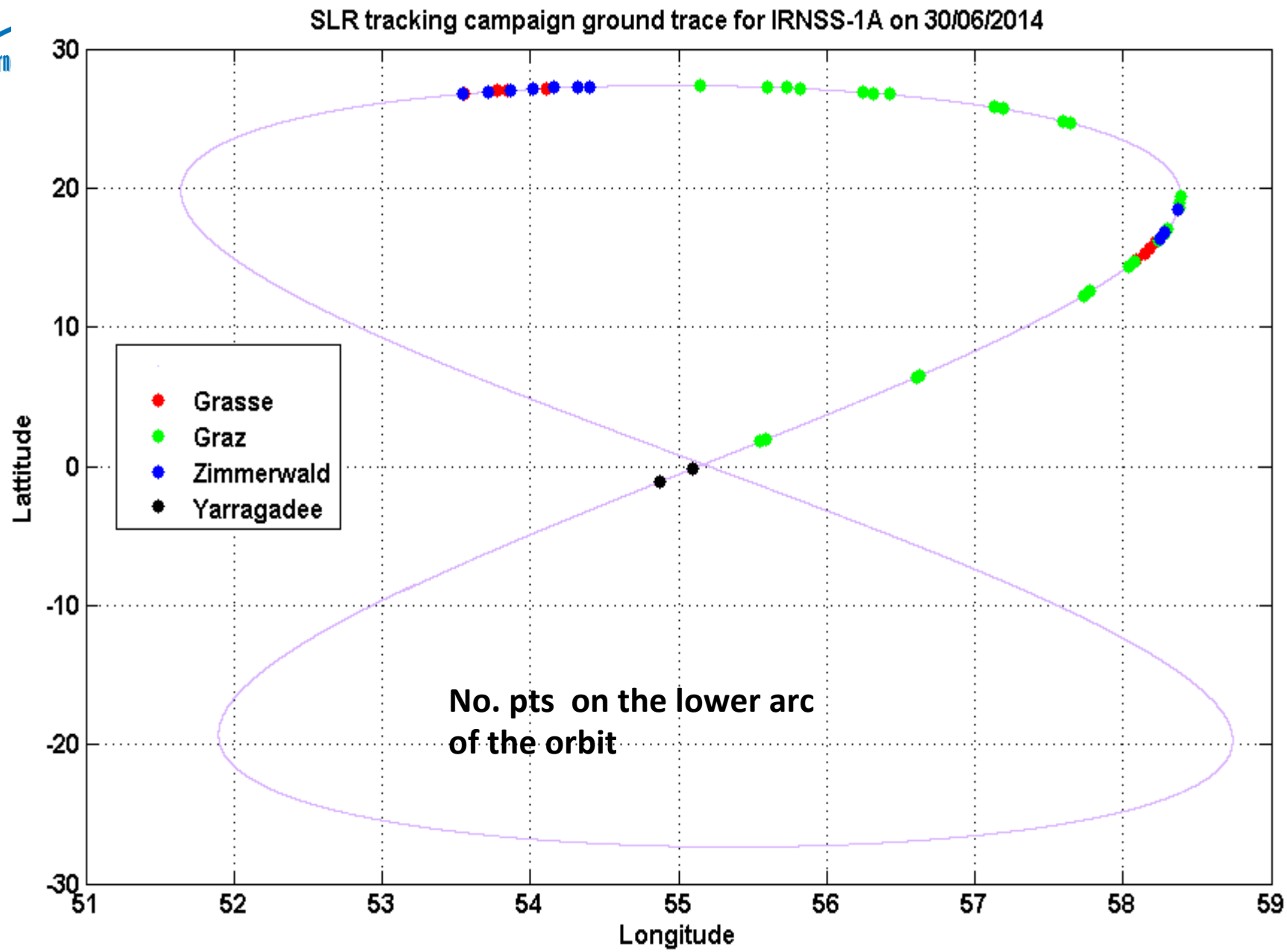


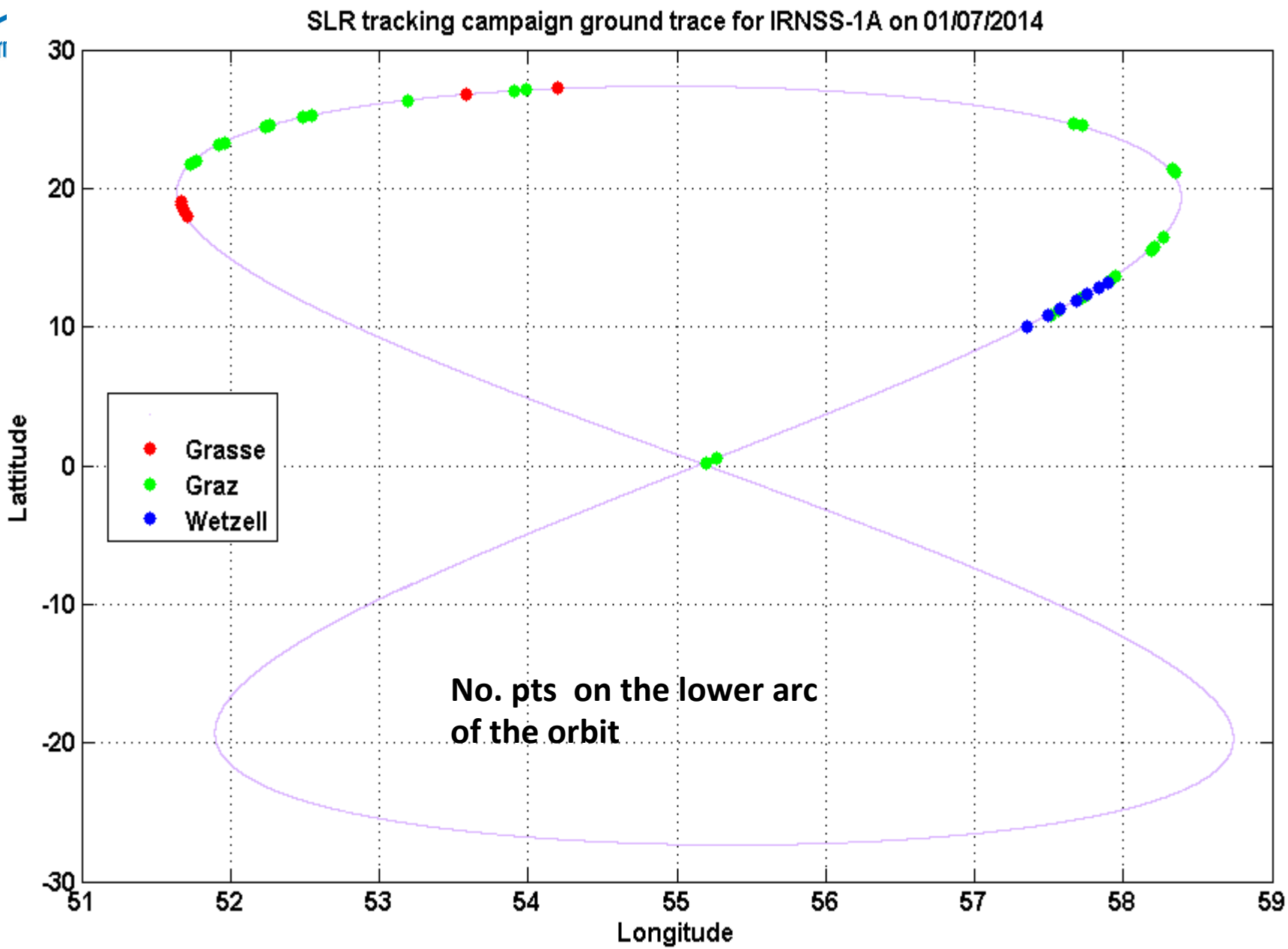
Number of Passes Acquired During the August – September Period

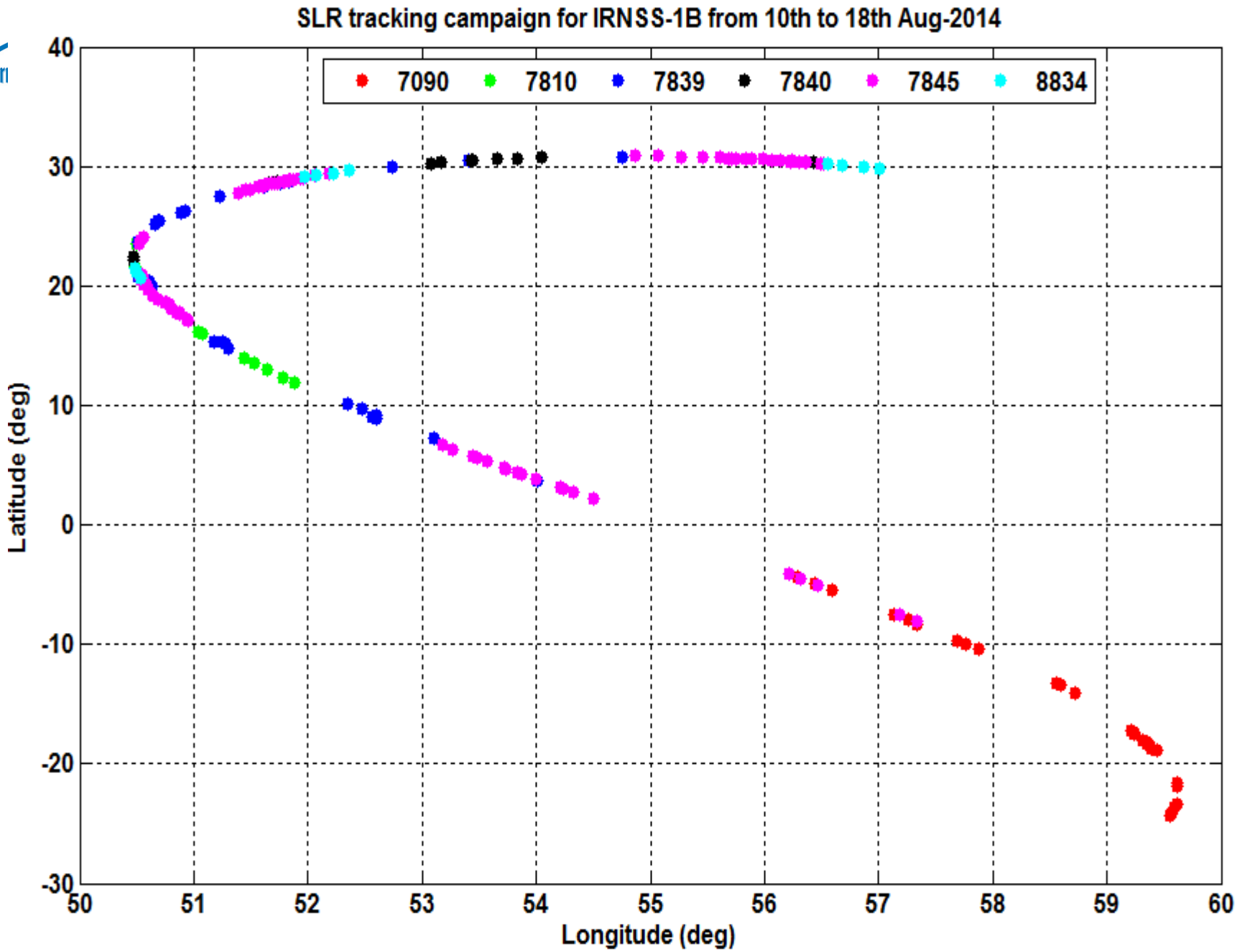


Number of NP's Acquired During the August – September Period



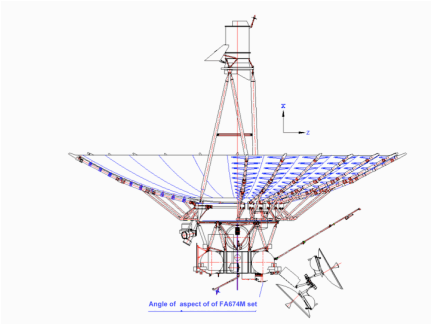

SLR tracking campaign ground trace for IRNSS-1A on 30/06/2014
Grasse
Graz
Zimmerwald
Yarragadee
No. pts on the lower arc of the orbit
Lattitude
Longitude
30
20
10
0
-10
-20
-30
51
52
53
54
55
56
57
58
59


SLR tracking campaign ground trace for IRNSS-1A on 01/07/2014
Lattitude
Longitude
30
20
10
0
-10
-20
-30
51
52
53
54
55
56
57
58
59
Grasse
Graz
Wetzell
No. pts on the lower arc
of the orbit


SLR tracking campaign for IRNSS-1B from 10th to 18th Aug-2014
7090
7810
7839
7840
7845
8834
Latitude (deg)
Longitude (deg)
40
30
20
10
0
-10
-20
-30
50
51
52
53
54
55
56
57
58
59
60

RadioAstron

- The RadioAstron project (the Spectr-R project) is an international collaborative mission to launch a free flying satellite carrying a 10-meter radio telescope in high apogee (~350,000 km) orbit around the Earth. The aim of the mission is to use the space telescope to conduct interferometer observations in conjunction with the global ground radio telescope network in order to obtain images, coordinates, motions and evolution of angular structure of different radio emitting objects in the Universe with the extraordinary high angular resolution.
- Russian Radio Astronomy Satellite
- Altitude: 500 to 350,000 km
- Success – Only a few passes from Grasse



Next Step with GNSS

- Cut back on the GNSS Tracking Constellation and try to expand satellite data yield
- Discussing this now with the customers

Thank you