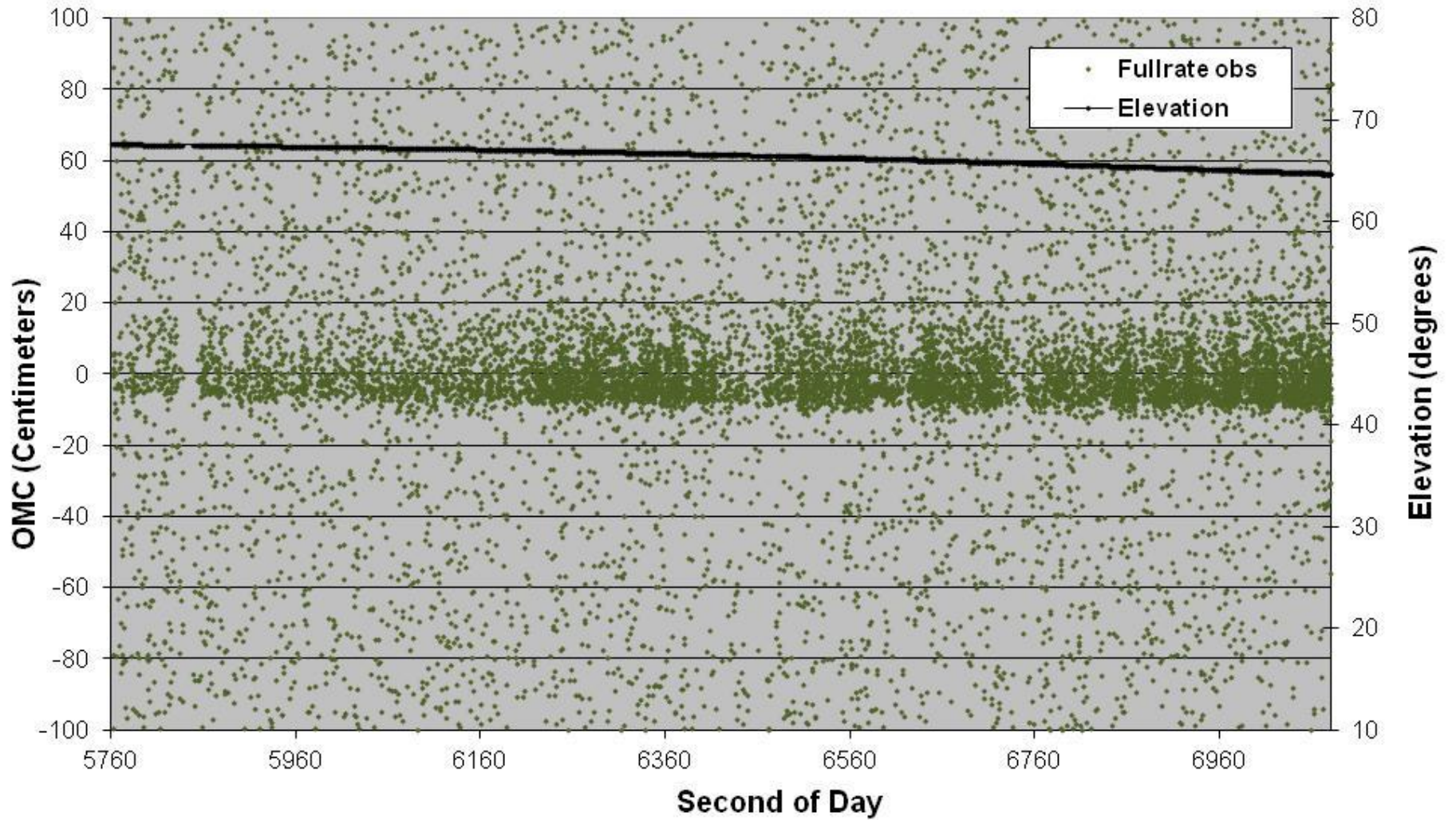# NGSLR EXPERIENCE WITH GNSS RANGING: McGarry

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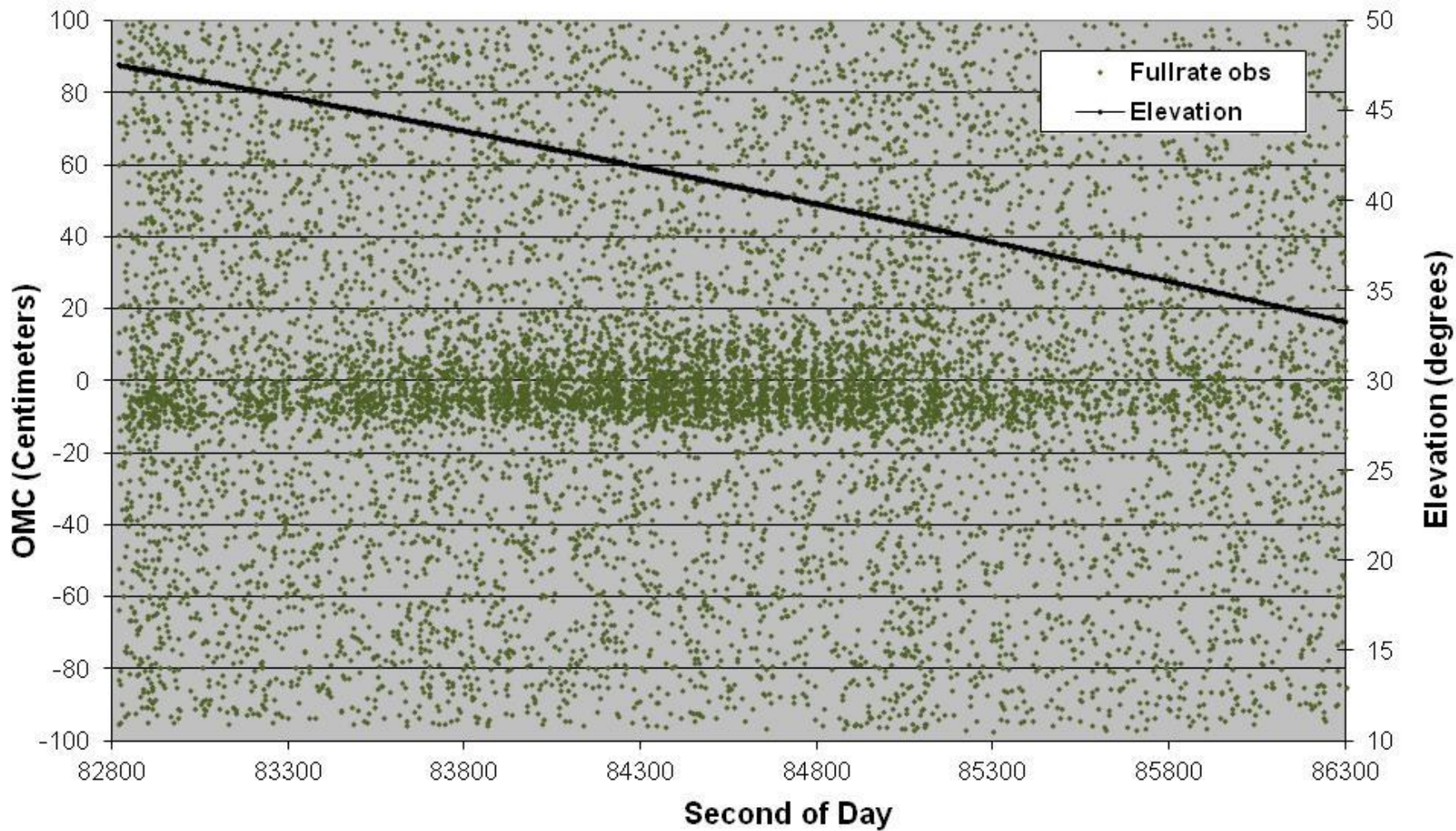
NGSLR GNSS (& ETALON) RANGING APRIL– JUNE 2012

Satellite	SIC	DOY	HH:MM	#obs	RR%	#NPTS	# segs
ETALON-2	4146	094	02:15	5374	0.2	8	3
ETALON-2	4146	102	01:55	3026	0.1	6	3
ETALON-2	4146	147	02:55	759	0.1	2	1
Galileo-101	7101	090	01:36	8010	0.3	5	1
Galileo-102	7102	097	00:34	573	<0.1	3	1
Galileo-102	7102	168	00:44	1210	<0.1	5	1
GLONASS-109	9109	093	23:00 DAY	4644	0.1	12	1
GLONASS-115	9115	094	18:15 DAY	778	0.1	3	1
GLONASS-122	9122	090	02:08	11181	0.8	12	1
GLONASS-122	9122	152	01:55	2293	0.1	6	1
GLONASS-122	9122	153	00:16	589	<0.1	4	1
GLONASS-123	9123	108	02:40	2568	0.1	4	1
GLONASS-123	9123	139	01:35	1046	0.1	4	1
GLONASS-123	9123	147	02:14	409	0.1	4	2
GLONASS-123	9123	150	18:27 DAY	3767	0.1	9	1

Galileo-101 d090 01:36 2012

Glonass-109 d093 23:00 2012

Legend:
- Fullrate obs
- Elevation

OMC (Centimeters) — Elevation (degrees) vs Second of Day

NASA Network Experience with GNSS Tracking

ILRS Technical Workshop, Frascati, Italy
7 November 2012

Dave McCormick, NASA GSFC
Jan McGarry, NASA GSFC
Dr. Thomas Varghese
Nikki Desch, Exelis Inc.

NASA Station Tracking Status

- ➢ Capability
  - ➢ 5 MOBLAS Stations (Day/Night)
    - ▪ Monument Peak – **7110**
    - ▪ Yarragadee - **7090**
    - ▪ Hartebeesthoek - **7501**
    - ▪ Greenbelt - **7105**
    - ▪ Tahiti – **7124**
  - ➢ MLRS - **7080** (Day/Night)
  - ➢ 2 TLRS Systems *future* (Night)
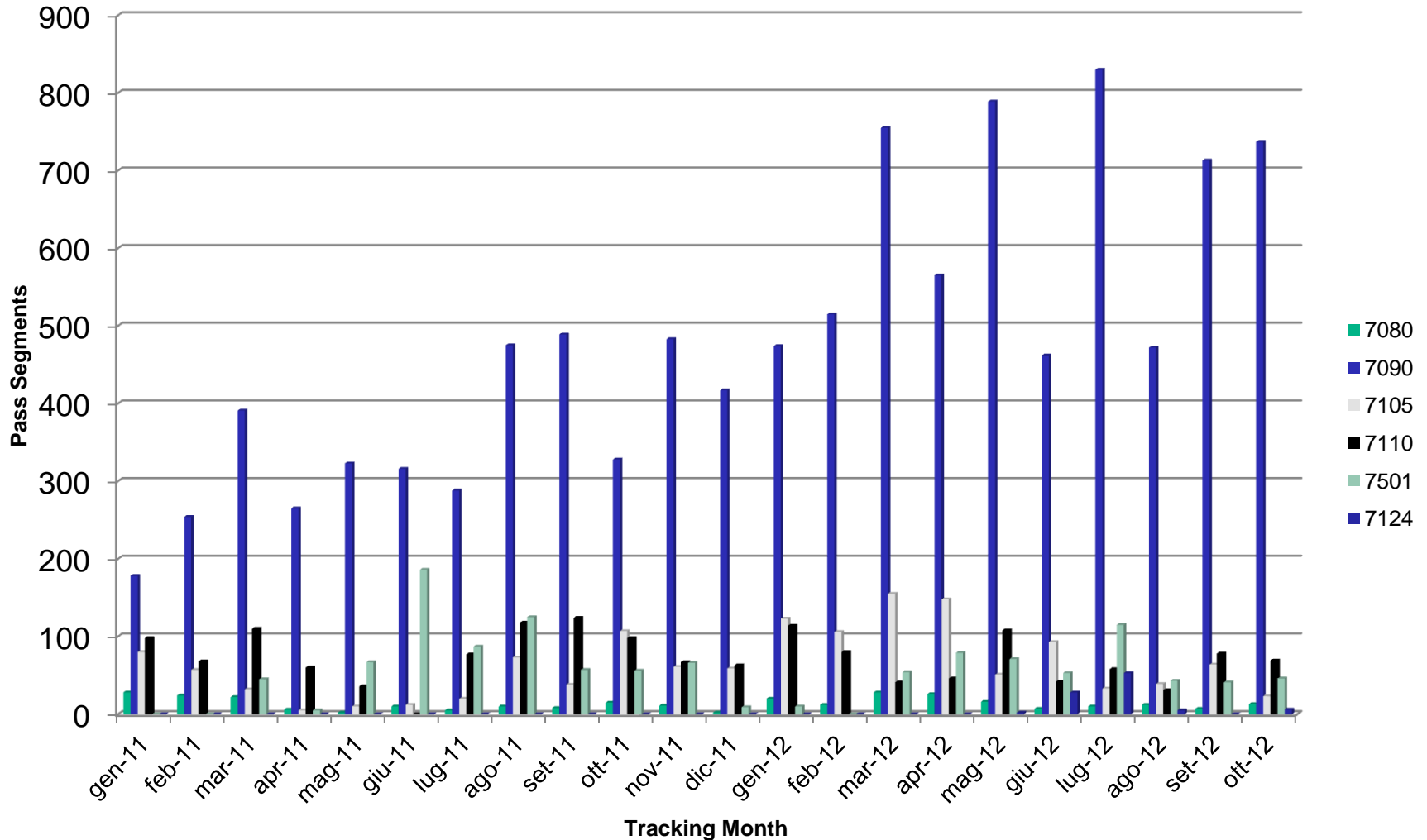   - ▪ Arequipa – **7403**
    - ▪ Haleakala – **7119**
- ➢ Tracking Constraints
  - ▪ Transmit Link (Large beam divergence)
  - ▪ Repetition Rate (4pps)
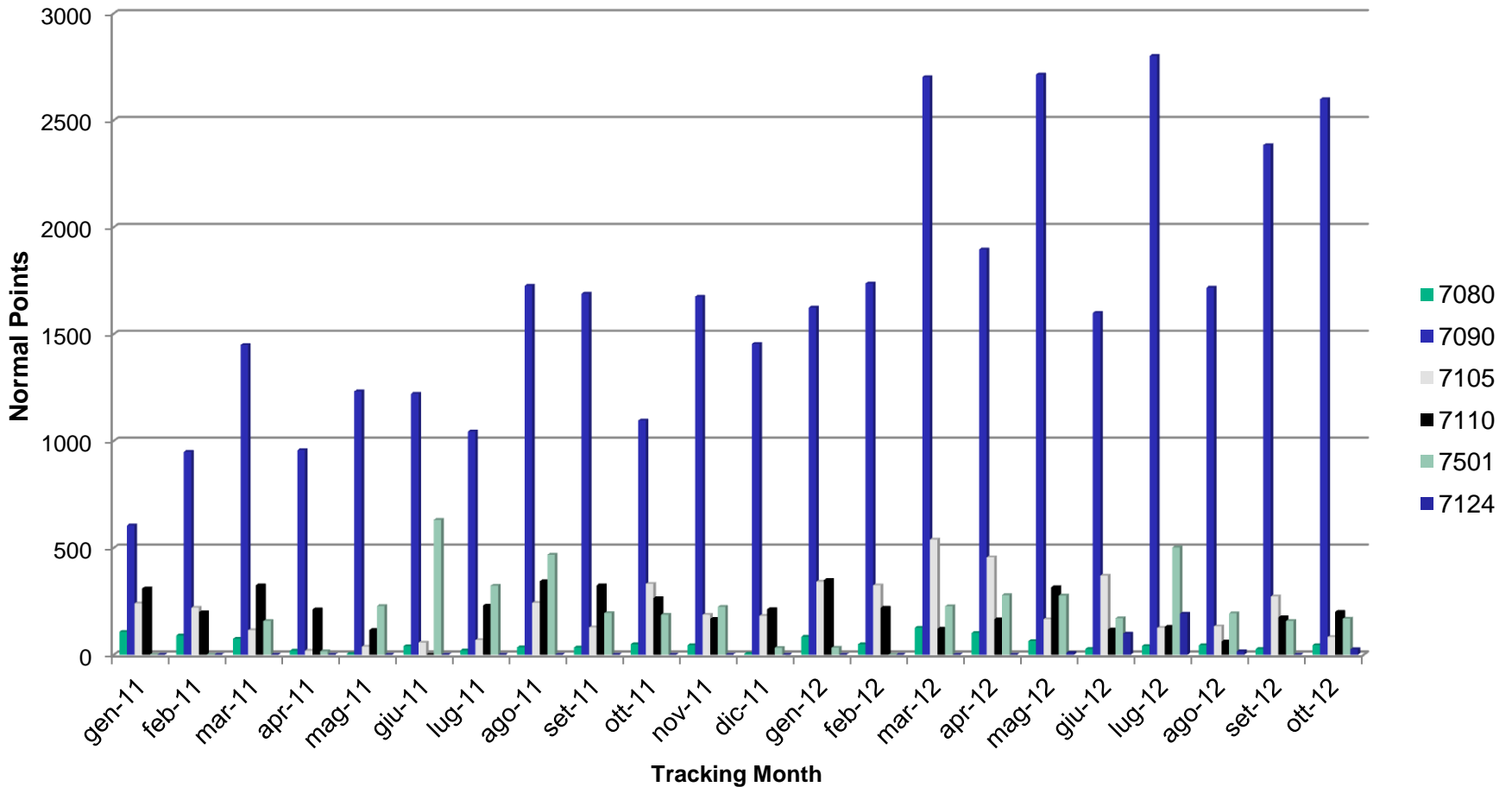 - ▪ Receiver gain

Current Network Performance

NASA Network GNSS Pass Segment Total for 2011-2012

NASA Network GNSS Normal Point Total for 2011-2012

- Event Timer Upgrade throughout the network to support 10 pps and higher operations
- Servo-system upgrade for improved acquisition, tracking, and points
- TLRS upgrade to improve link and pointing

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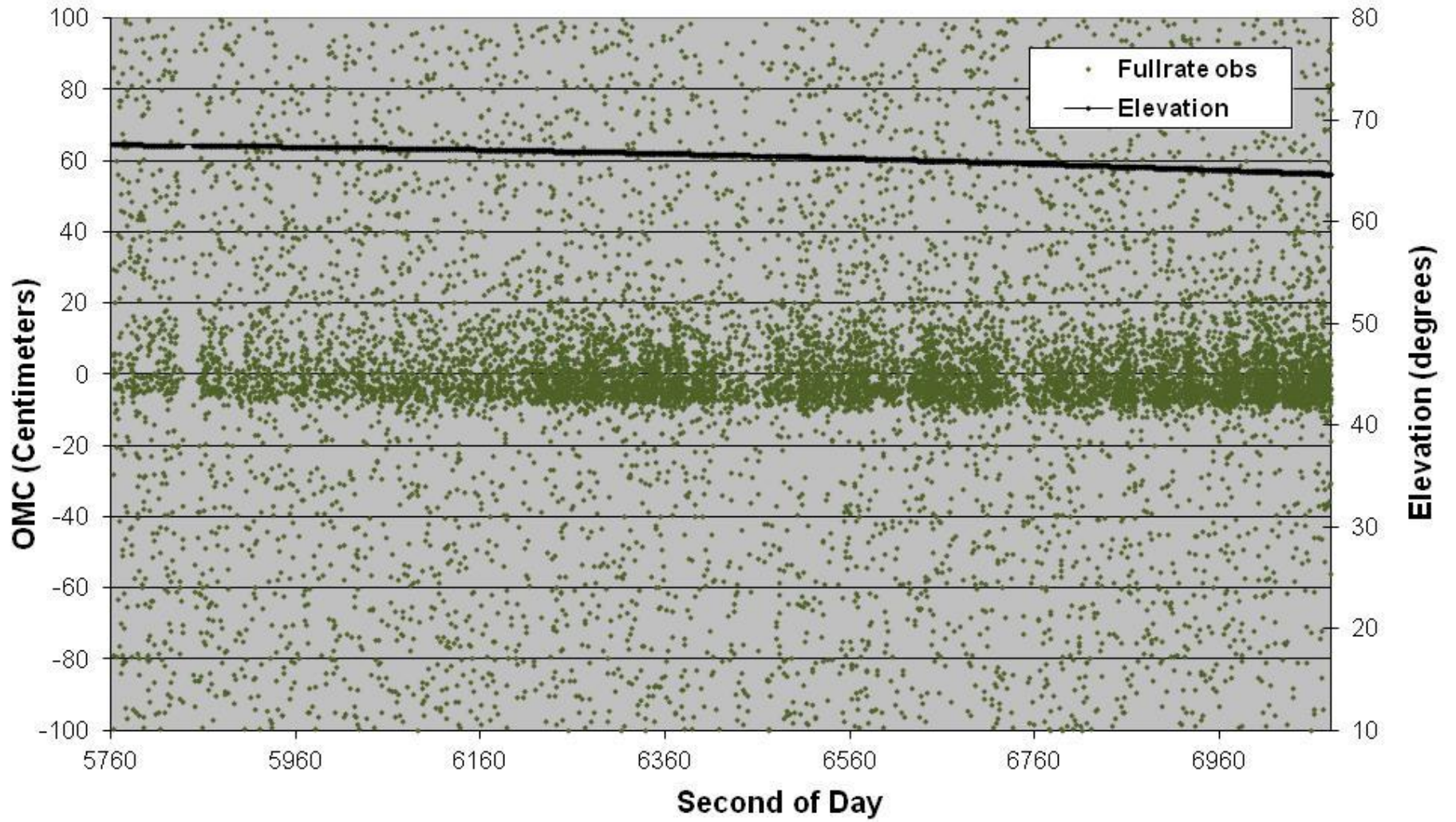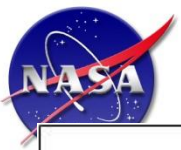
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