

GEO Satellites from Two Line Elements in a short time period

Cyril Ron and Luboš Perek

Astronomical Institute

Czech Academy of Sciences

4 June 2012

ron@ig.cas.cz, perek@ig.cas.cz

Diagrams of daily paths of GEO satellites are presented as seen on the equator. The paths are centered at epochs of the NORAD Two Line Elements (TLE) taken from the web page Celestrak (administered by T.S. Kelso)¹ with epochs between May 3 and May 11, 2012. The time span between two points of a path is 1.2 hours. At the highest or lowest point of each orbit, wherever appropriate and to avoid overlaps, the abbreviated COSPAR international designator identifies the satellite. The diagrams were made in program MATLAB by students of the West Bohemian University, Pilsen, Czech Republic, in the tutorial of Space Geodesy.

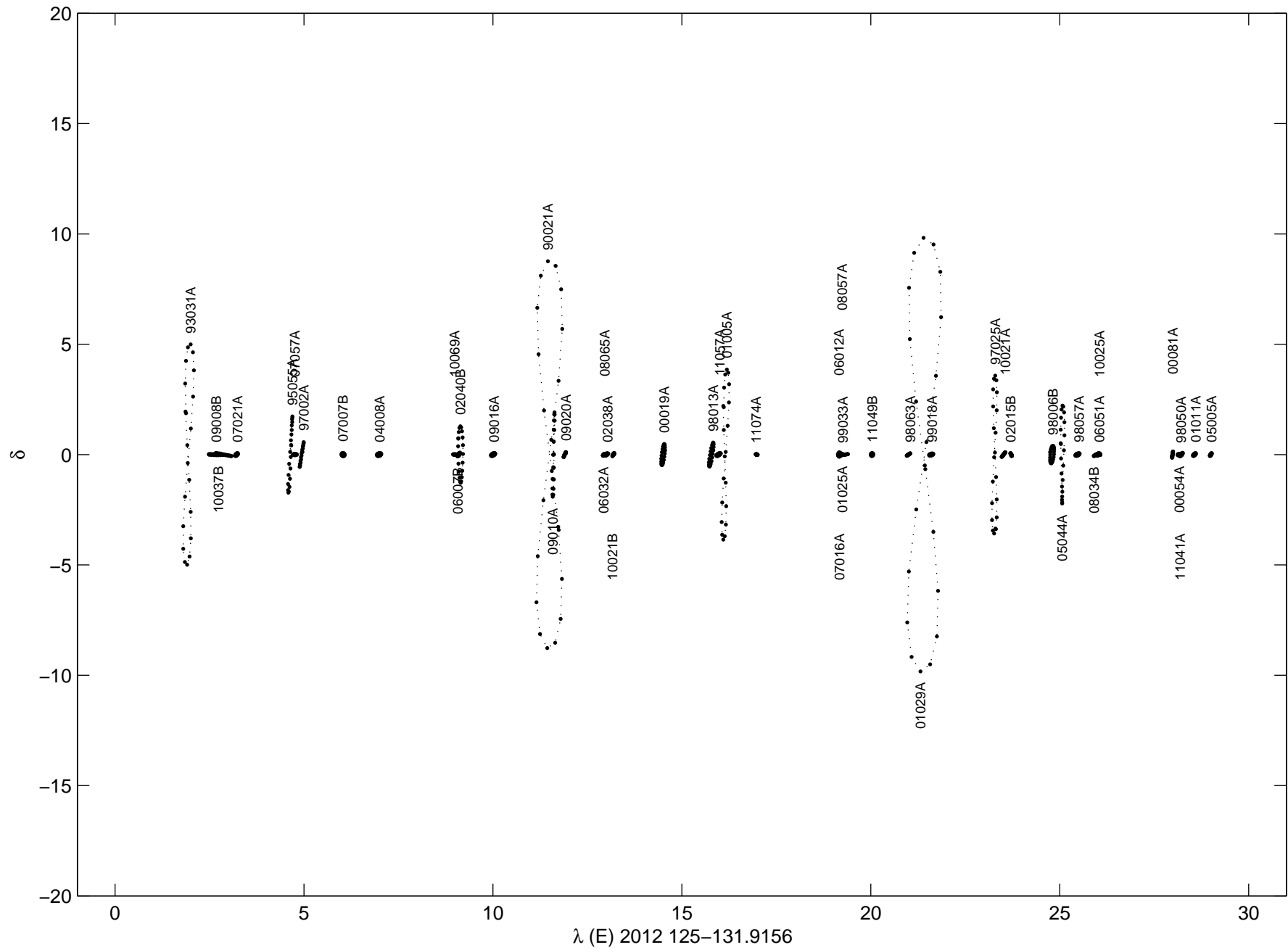
The TLE contain active satellites as well as some drifting objects and satellites in libration orbits around the Eastern, 75E or Western, 105W (or -105 in the diagrams), stable point. The 12 diagrams are ordered in geographic longitude. An accompanying table gives a comparison with the situation at the beginning of the year 2012 in order to show the major as well as minor changes which occurred within a span of four months. The first column gives the nominal position of the relevant space radio networks, the second gives the name, or one of the names, of the satellite, the third column shows the full COSPAR international designator, the fourth column shows the longitude of a satellite as it was at the end of 2011. The last column contains remarks or alternative names of satellites.

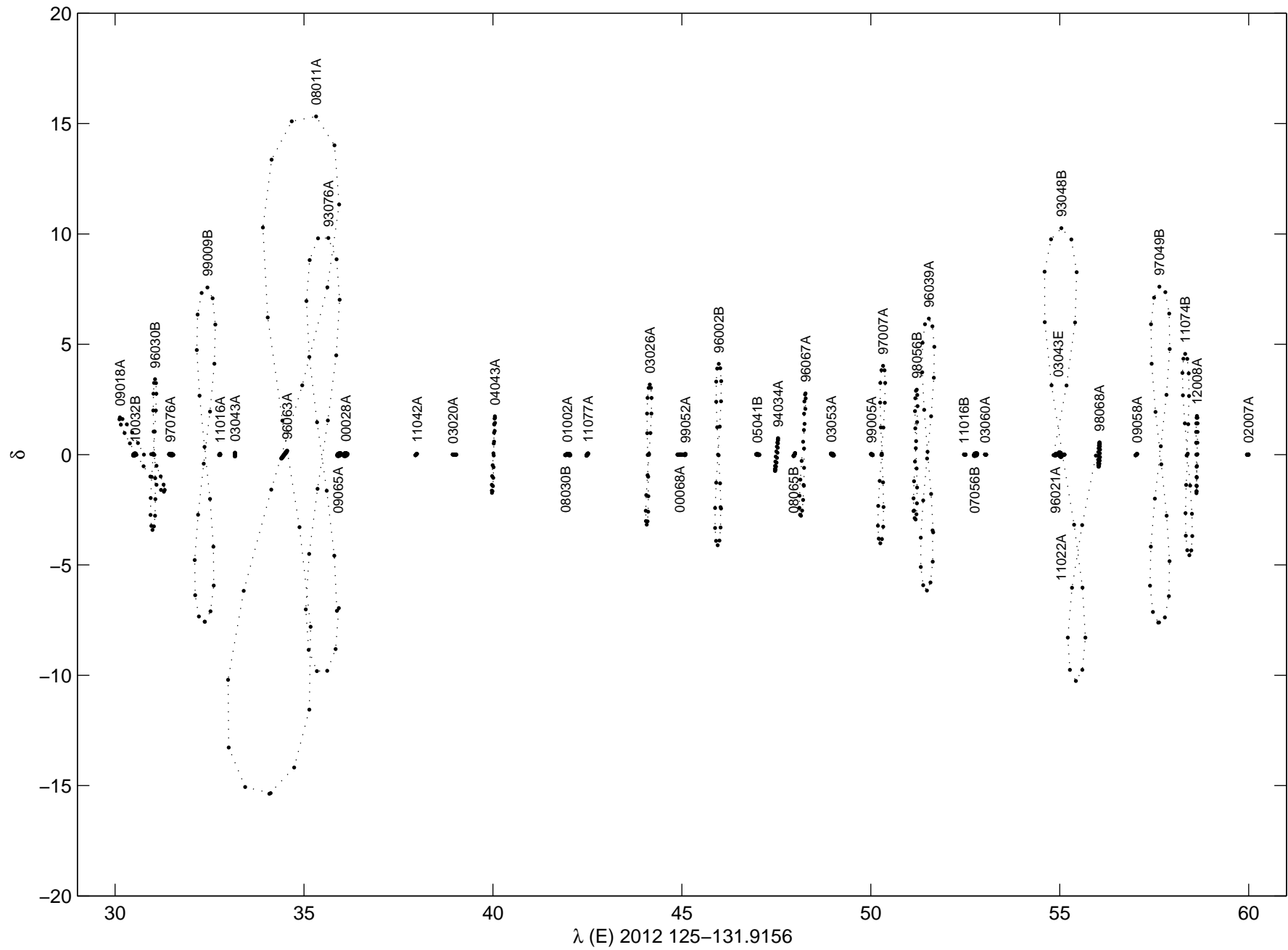
The position of a fully controlled satellite appears as a small disc, such as 07007B at about 6E on the first diagram "0 to 30". Satellites with only small changes in position show extended discs or ovals, such as 00019A at 15E. Large

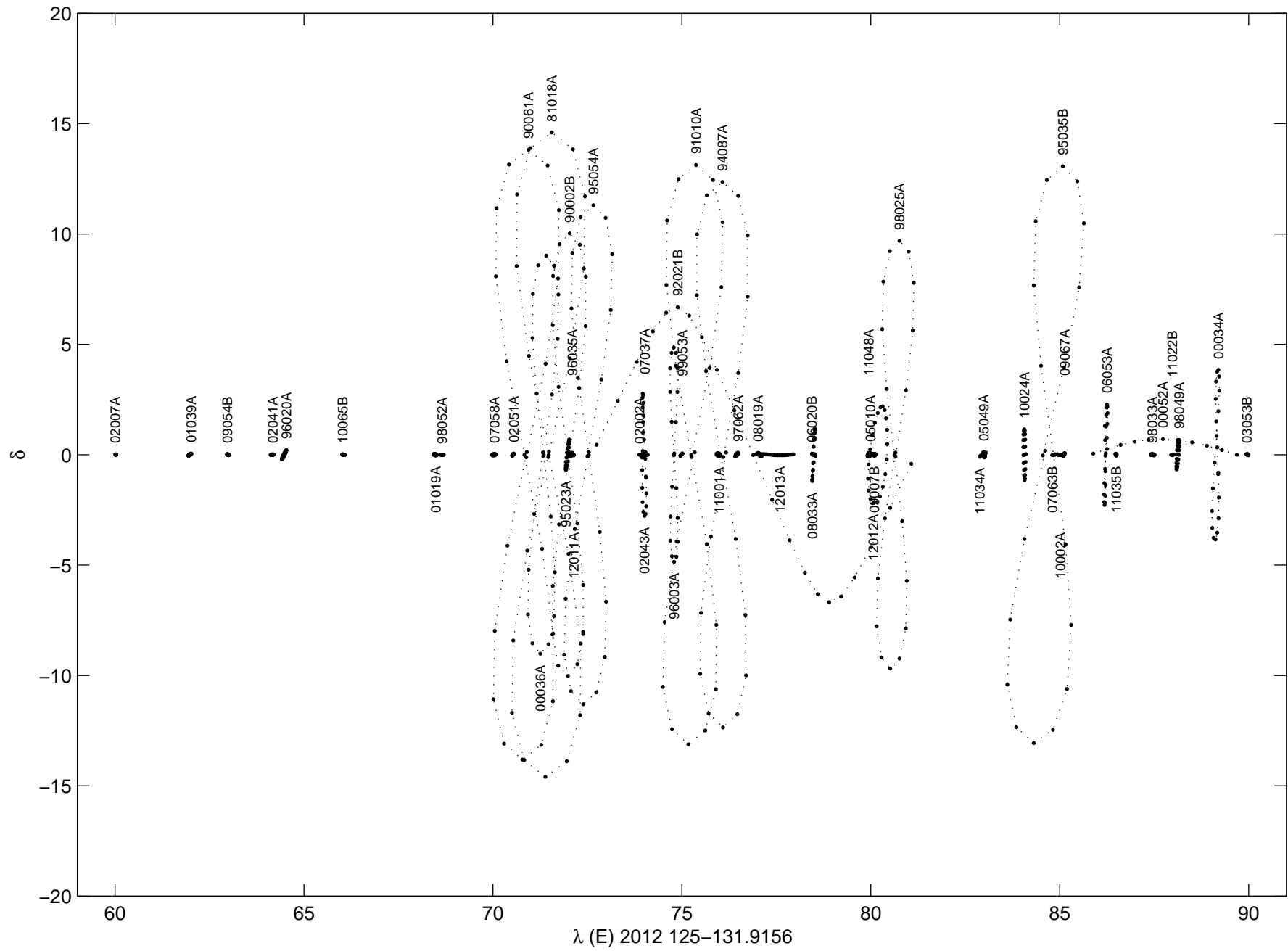
¹ <http://www.celestrak.com/NORAD/elements/geo.txt>, on May 11, 2012

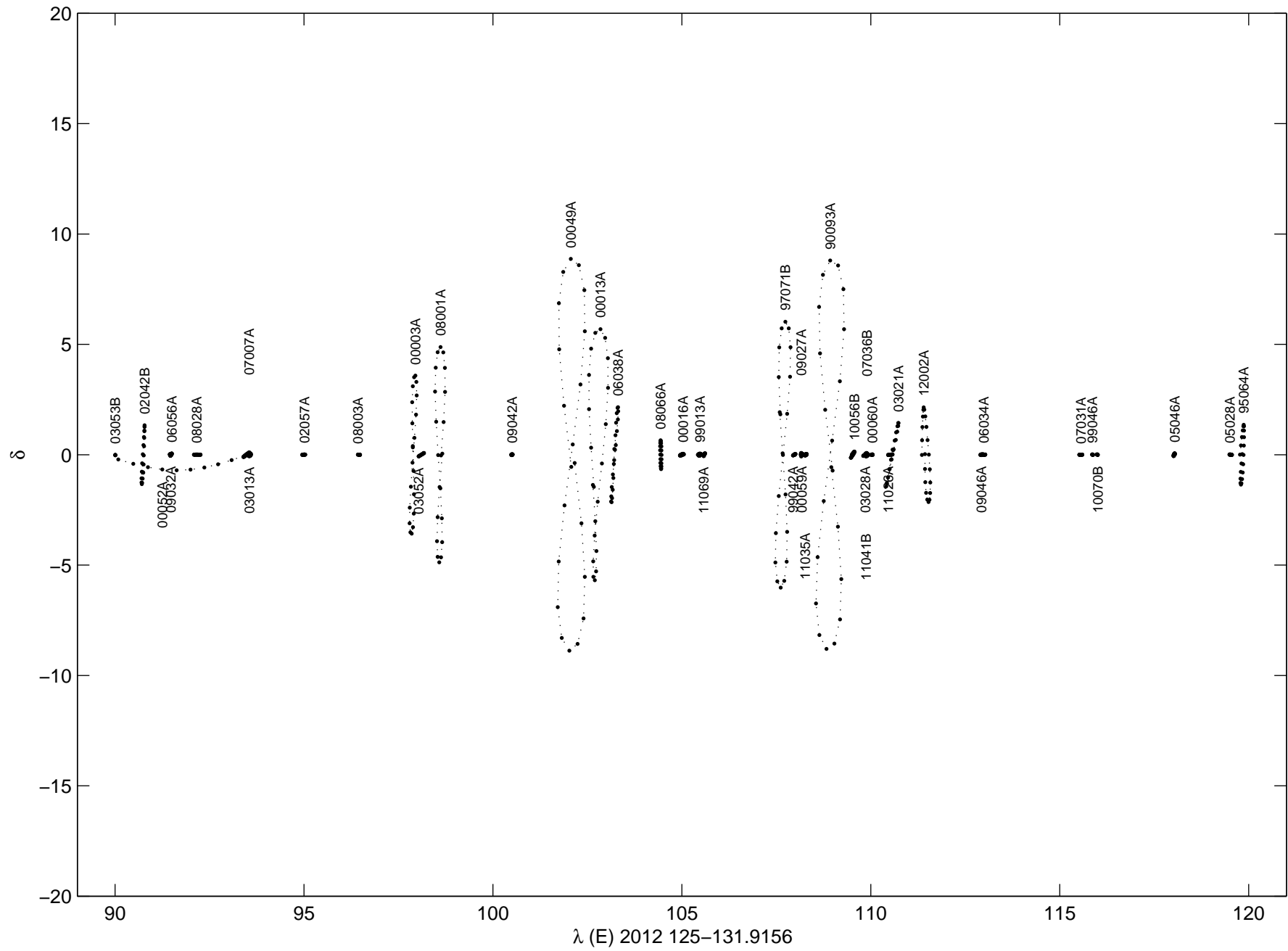
“figures-eight” show satellites in inclined orbits, such as 90021A, Intelsat 603, inclination 8.08° . A daily “figure-eight” orbit is marked by 20 small black discs and several dots in-between. A satellite with a non-negligible eccentricity and inclination may show an oval, such as 02011A, TDRS 9, at 41W on page “-60 to -30”. A drifting satellite shows an open path, such as 94047A, DIRECTV 2, on pages “-90 to -60” and “-60 to -30”.

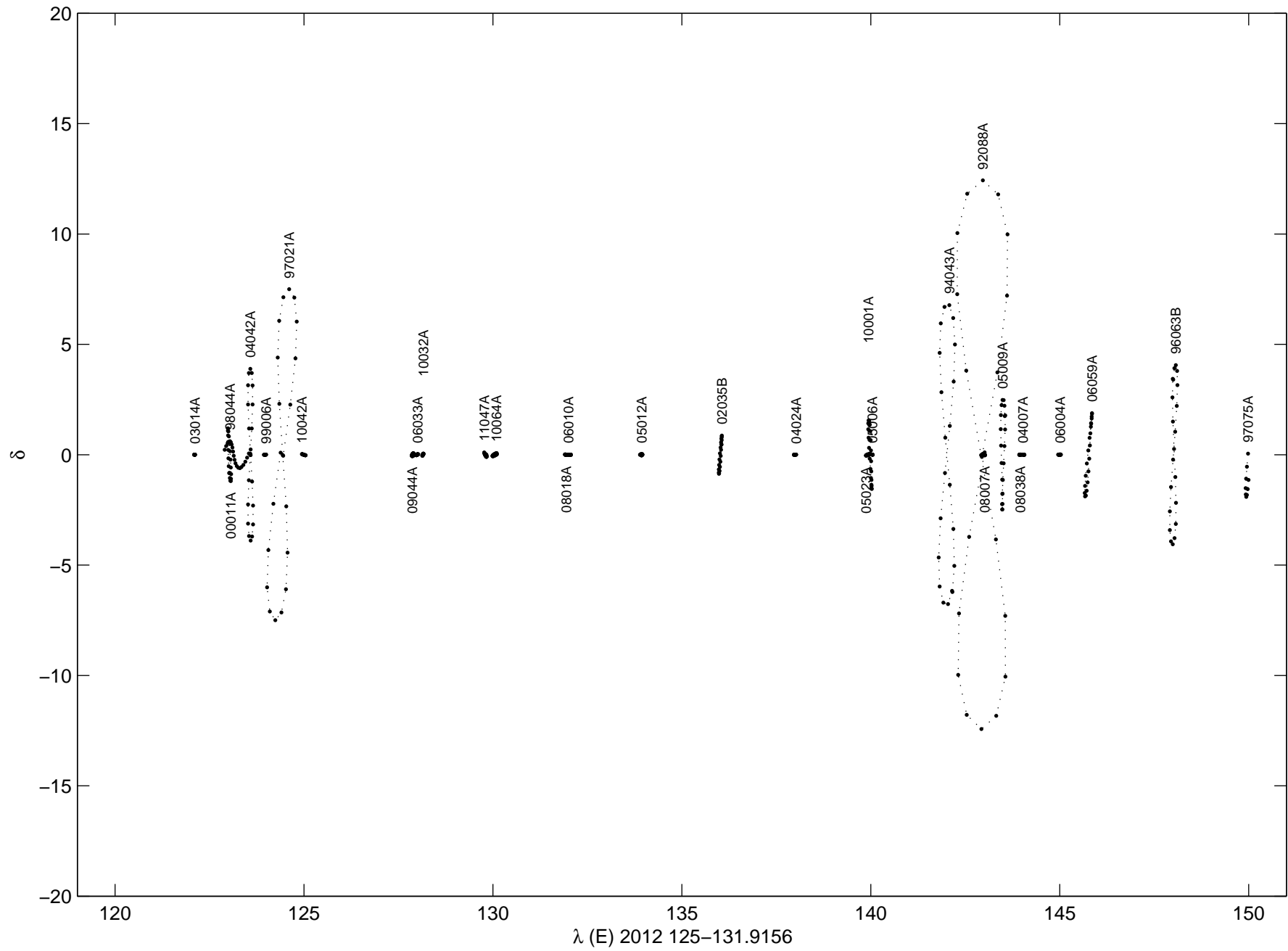
The actual density of objects in the GEO is larger than that shown in the diagrams because the 800 debris and other objects are without published TLE. A relatively large number of “figure-eight” objects appear around the two stable points at 75E and 105W while over the Pacific, at 170W to 150W, is an empty quarter. Remarkable is also the regular spacing of satellites in the Eastern Pacific between 140W and 120W.

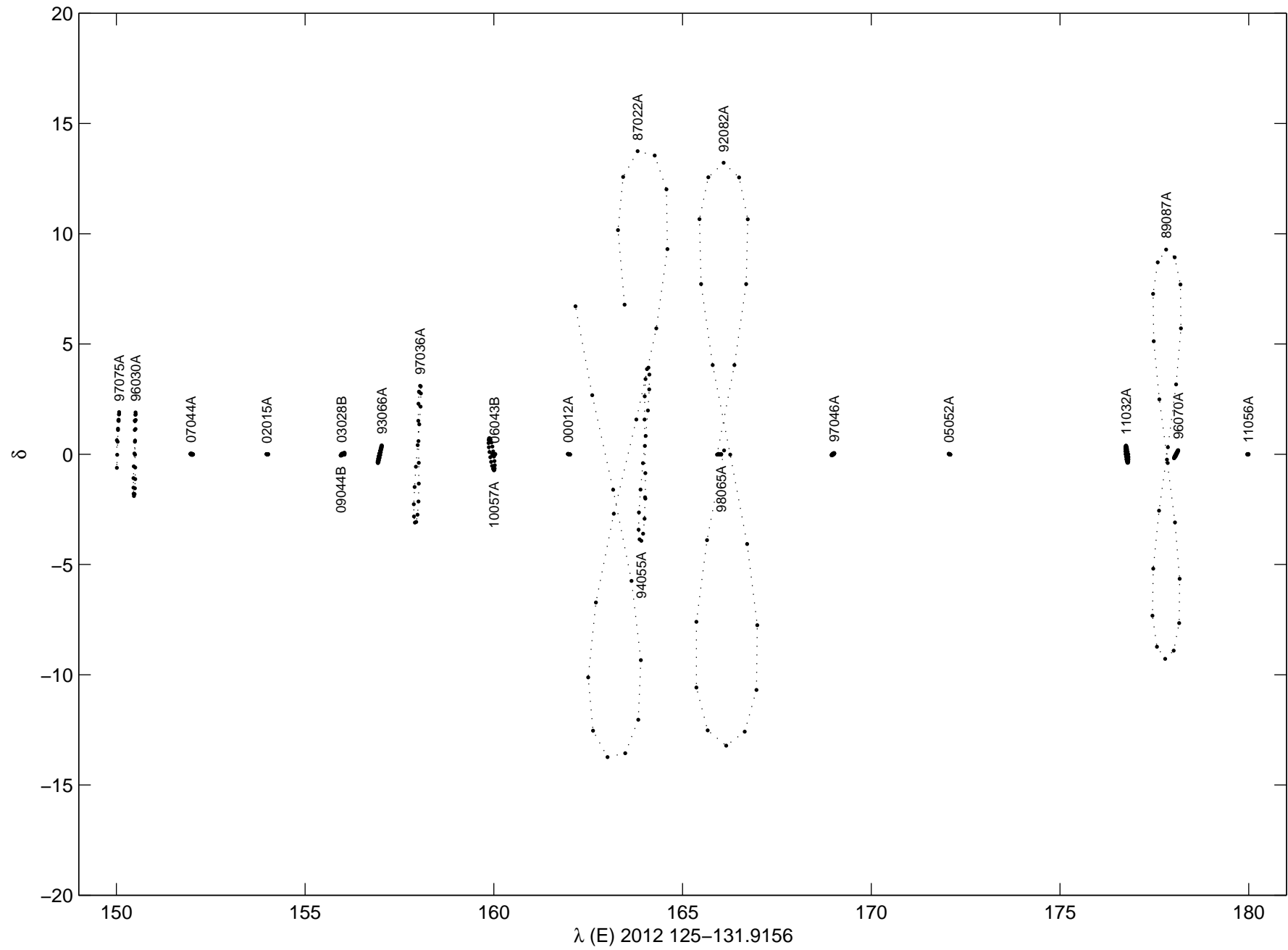


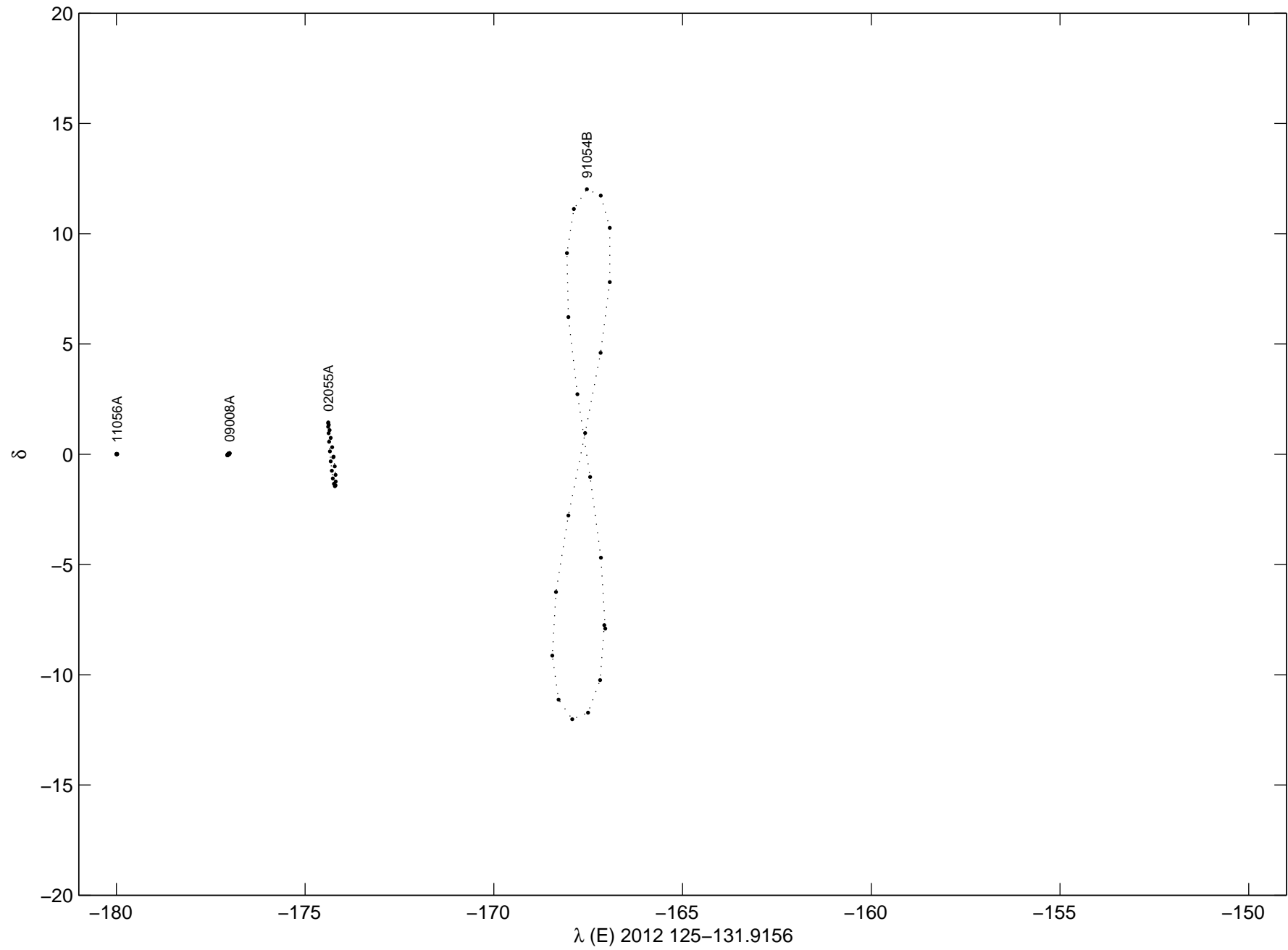


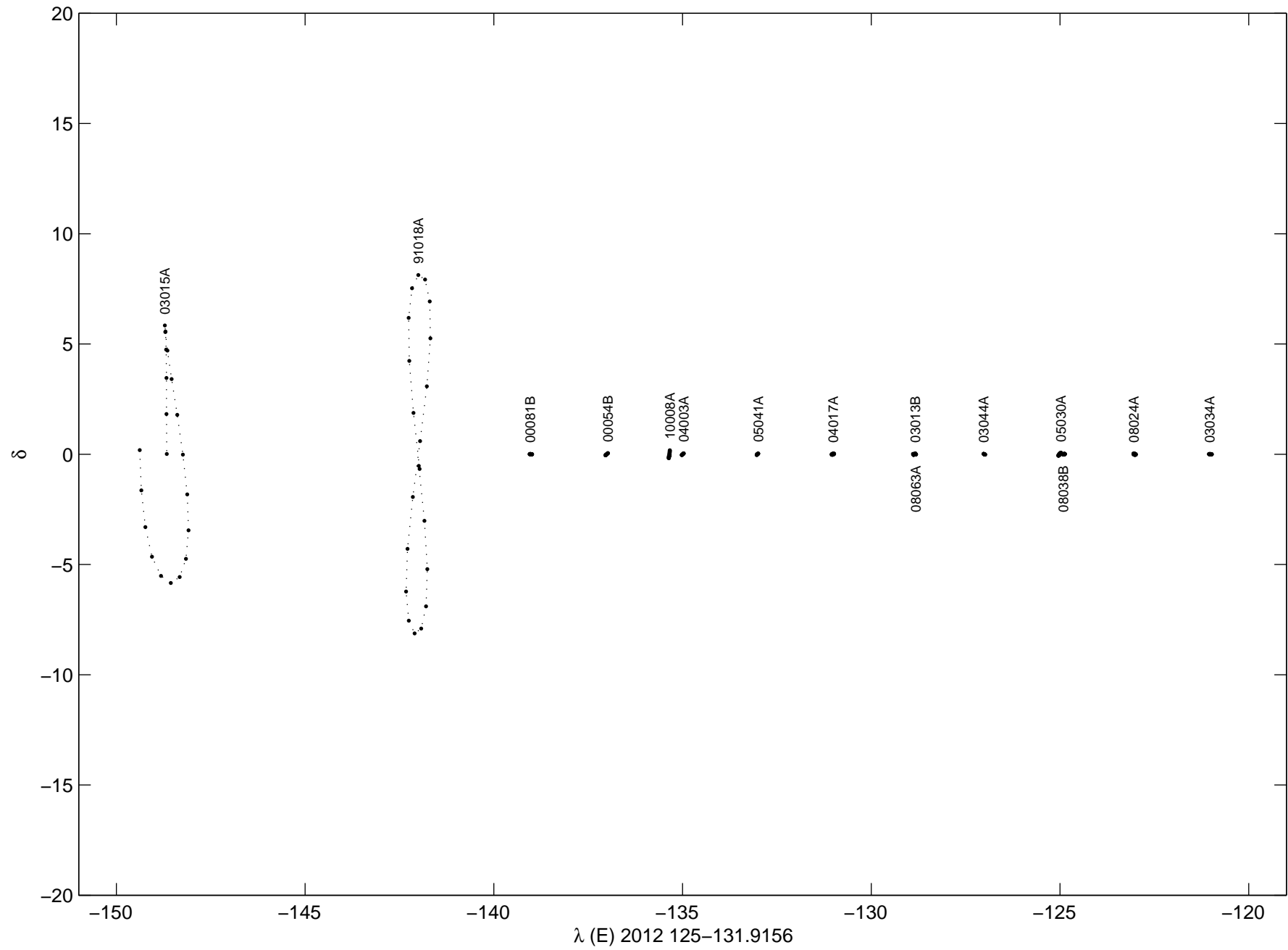


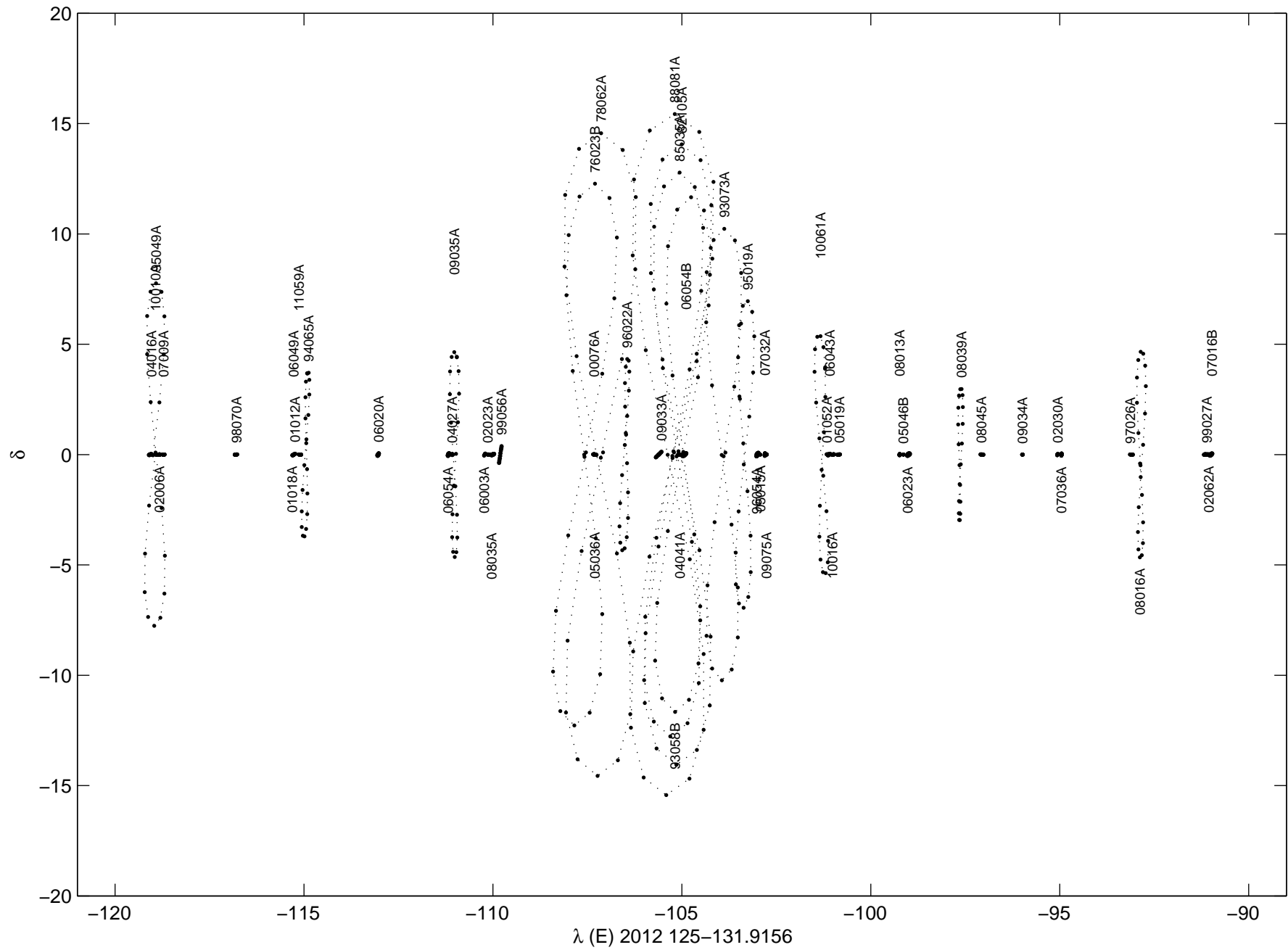


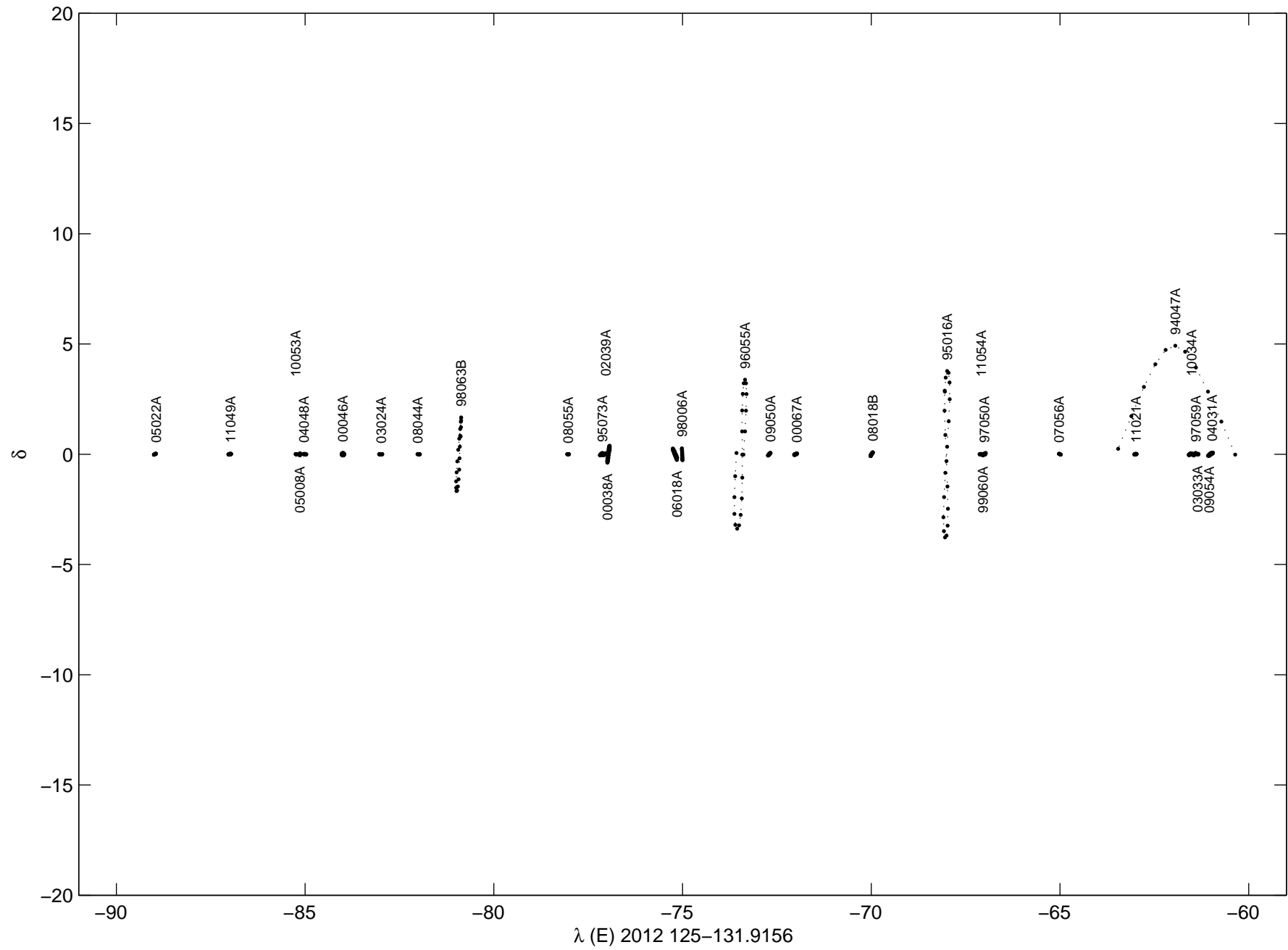


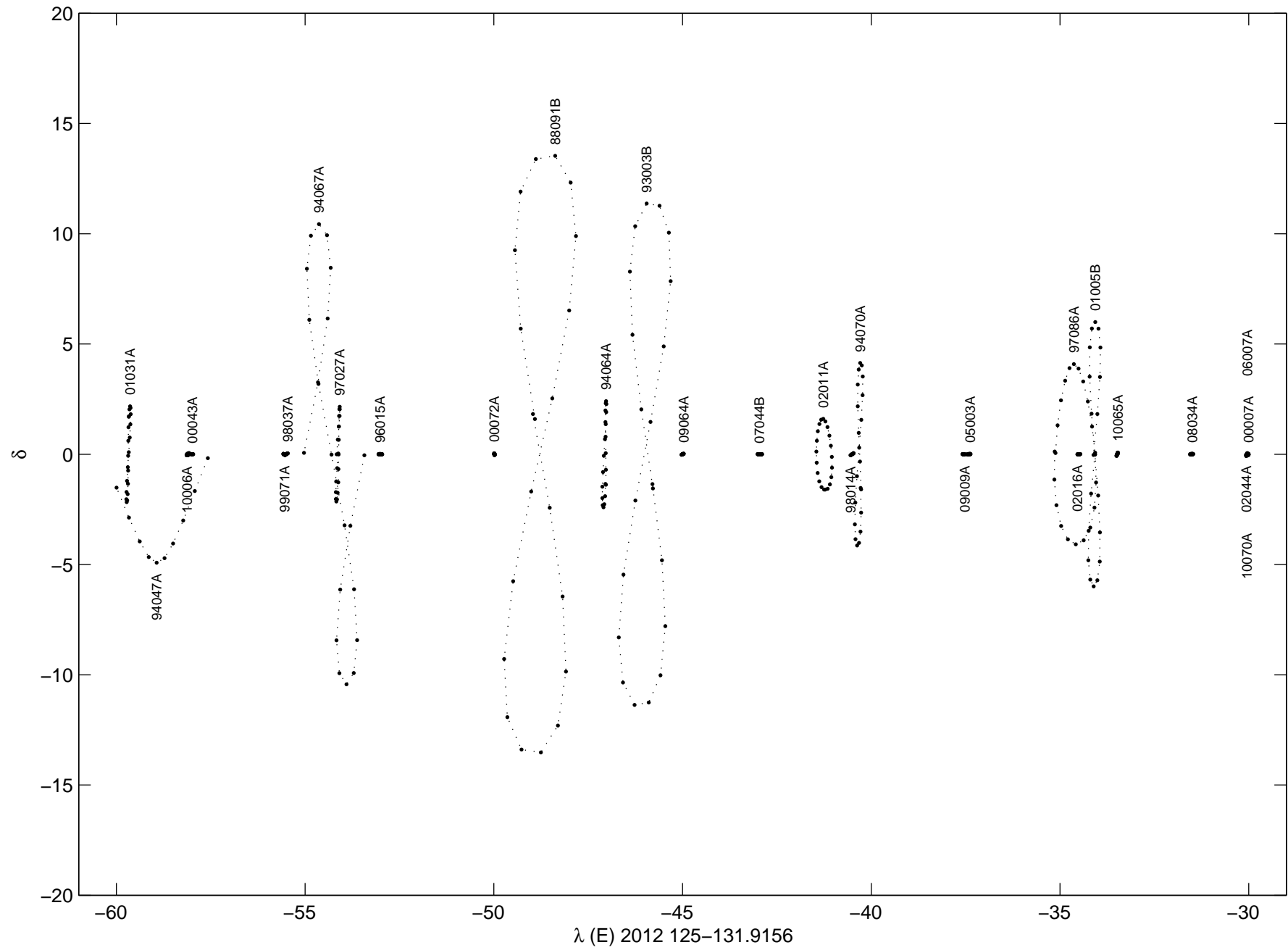


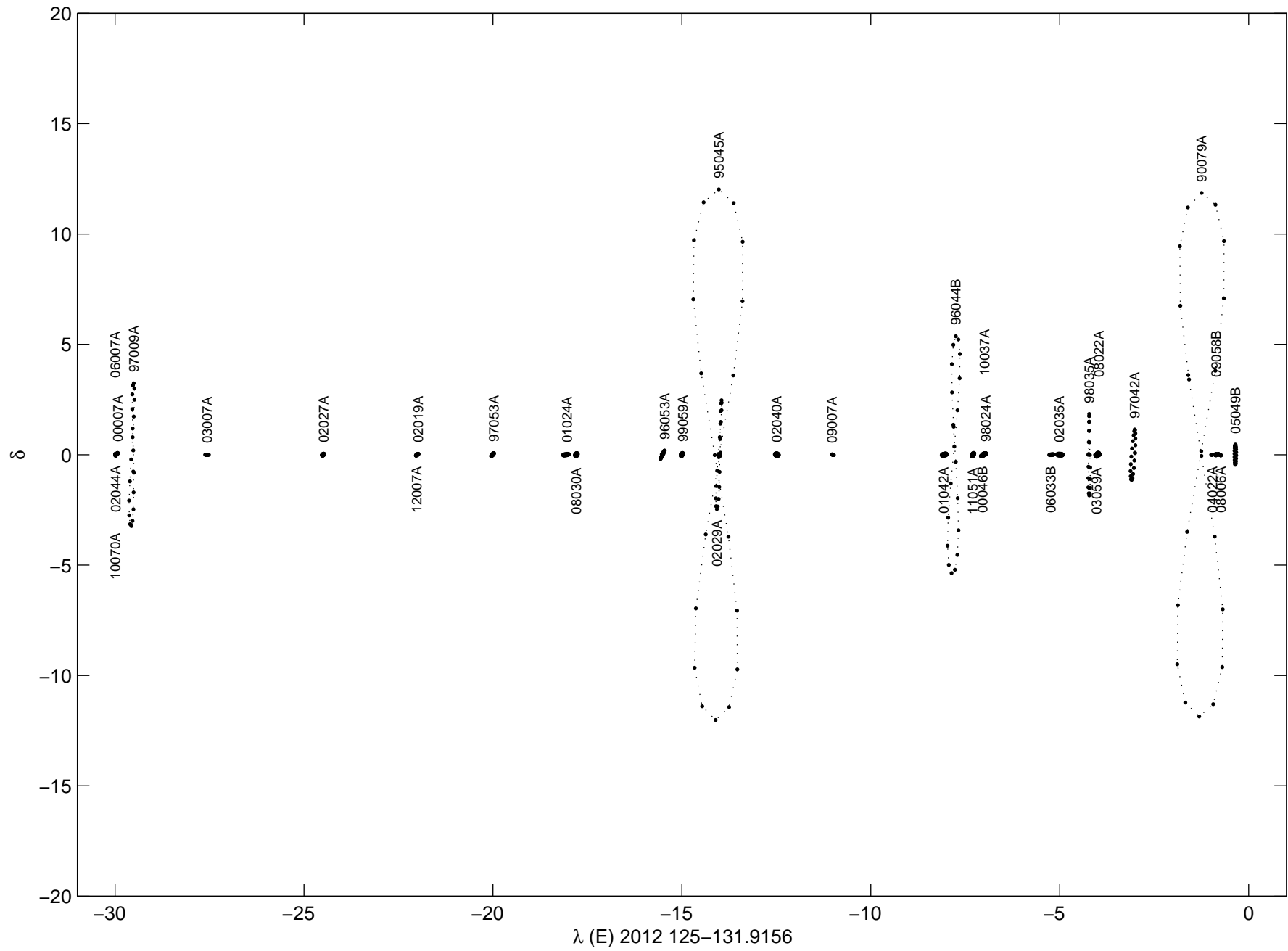












Satellites with TLE from 2012, days 125 to 131

Version of 1 June 20121

| Nominal position | Satellite name | International designator | Longitude end 2011 | Other names Remarks |
|------------------|-----------------------|--------------------------|--------------------|------------------------------|
| 2.00 E | ASTRA 1C | 1993-031A | 1.87E | |
| 3.00 E | RASCOM-QAF 1R | 2010-037B | 2.88E | |
| 3.00 E | EUTELSAT-3A | 2007-021A | 3.32E | Sinosat 3 |
| 3.00 E | EUTELSAT-3C | 2009-008B | 3.11E | Hot Bird 10, Atlantic Bird 4 |
| 4.80 E | SIRIUS 4 | 2007-057A | 4.82E | |
| 5.00 E | ASTRA 1E | 1995-055E | 4.95E | |
| | AMC-2, GE-2 | 1997-002A | 33.8W | Drifting in Dec 2011 |
| 6.00 E | SKYNET 5A | 2007-007B | 5.96E | |
| 7.00 E | EUTELSAT 7A | 2004-008A | 7.01E | Eutelsat W3A |
| 9.00 E | EUTELSAT KA-SAT-9A | 2010-069A | 9.02E | |
| 9.00 E | HOT BIRD 7A | 2006-007B | 9.00E | |
| 10.00 E | METEOSAT-8, MSG-1 | 2002-040B | 9.71E | Eumetsat |
| 10.00 E | EUTELSAT 10A | 2009-016A | 10.06E | Eutelsat W2A |
| 11.80 E | INTELSAT 603 (IS-603) | 1990-021A | 11.53E | |
| 11.80 E | SICRAL 1B | 2009-020A | 11.84E | |
| 12.00 E | RADUGA 14 8 | 2009-010A | 12.15E | |
| 13.00 E | EUTELSAT HOT BIRD 13A | 2002-038A | 13.11E | Hot Bird 6 |
| 13.00 E | EUTELSAT HOT BIRD 13C | 2008-065A | 13.01E | Hot Bird 9 |
| 13.00 E | EUTELSAT HOT BIRD 13B | 2006-032A | 13.09E | Hot Bird 8 |
| 13.00 E | COMSATBW-2 | 2010-021B | 13.19E | |
| 16.00 E | EUTELSAT 16C | 2000-019A | 15.99E | Sesat 1 |
| 16.00 E | EUTELSAT 16B | 1998-013A | 15.77E | Eurobird 16, Hot Bird 4 |
| 16.00 E | EUTELSAT 16A | 2011-057A | 15.12E | Eutelsat W3C |
| 16.20 E | SICRAL-1 | 2001-005A | 16.13E | |
| | AMOS 5 | 2011-074A | | Arrived in Jan 2012 |
| 19.20 E | ASTRA 1M | 2008-057A | 19.17E | |
| 19.20 E | ASTRA 1H | 1999-033A | 19.23E | |
| 19.20 E | ASTRA 1L | 2007-016A | 19.19E | |
| 19.20 E | ASTRA 1 KR | 2006-012A | 19.15E | |
| 19.20 E | ASTRA 2C | 2001-025A | 19.22E | |
| 20.00 E | ARABSAT 5C | 2011-049B | 19.22E | |
| 21.00 E | AFRISTAR | 1998-063A | 20.08E | Afristar 1 |
| 21.50 E | ARTEMIS | 2001-029A | 21.18E | |
| 21.50 E | EUTELSAT 21A | 1999-018A | 21.57E | Eutelsat W3 |
| 23.20 E | THOR II | 1997-025A | 23.30E | Arrived in June 2011 |
| 23.50 E | ASTRA 3B | 2010-021A | 23.48E | |
| 23.50 E | ASTRA 3A | 2002-015B | 23.47E | |
| 25.00 E | INMARSAT 3-F5 | 1998-006B | 24.72E | |
| 25.00 E | INMARSAT 4-F2 | 2005-044A | 25.11 E | |
| 25.50 E | EUTELSAT 25A | 1998-057A | 25.52E | Hot Bird 5 |
| 26.00 E | BADR 5 | 2010-025A | 26.00E | Arabsat 5B |
| 26.00 E | BADR 4 | 2006-051A | 26.01E | Arabsat 4B |
| 26.00 E | BADR 6 | 2008-034B | 26.03E | Arabsat 3C |

| | | | | |
|---------|----------------------|-----------|--------|---------------------------|
| 28.20 E | ASTRA 2D | 2000-081A | 28.16E | |
| 28.20 E | ASTRA 2B | 2000-054A | 28.22E | |
| 28.20 E | ASTRA 2A | 1998-050A | 28.17E | |
| 28.50 E | ASTRA 1N | 2011-041A | 28.33E | |
| 28.50 E | EUTELSAT 28A | 2001-011A | 28.48E | Eurobird 1 |
| 29.00 E | XTAR-EUR | 2005-005A | 29.02E | |
| 30.50 E | ARABSAT 5A | 2010-032B | 30.50E | Badr 5A |
| 30.50 E | BEIDOU G2 | 2009-018A | | Drifting in 2011 |
| 31.00 E | INTELSAT 24 (IS-24) | 1996-030B | 30.92E | Amos 1 |
| 31.00 E | ASTRA 1G | 1997-076A | 31.49E | |
| 33.00 E | INTELSAT NEW DAWN | 2011-016A | 32.79E | Yahsat 1A |
| 33.00 E | EUTELSAT 33A | 2003-043A | 35.17 | Eurobird 3 |
| 34.20 E | NATO 4B | 1993-076B | 34.19E | USA 98 |
| 34.5 E | ARABSAT-2B | 1996-063A | 34.5 E | Was at 20.0E in 2011 |
| 34.00 E | AMC 14 | 2008-011A | 33.59E | Malfunction, inclined |
| 35.00 E | SKYNET 4E | 1999-009B | 35.17E | |
| 36.00 E | EUTELSAT 36B | 2009-065A | 35.91E | Eutelsat W7 |
| 36.00 E | EUTELSAT 36A | 2000-028A | 36.10E | Eutelsat W4 |
| 38.00 E | PAKSAT-1R | 2011-042A | 37.99E | |
| 39.00 E | HELLAAS=SAT 2 | 2003-020A | 39.01E | |
| 40.00 E | EXPRESS-AM-1 | 2004-043A | 40.08E | Ekspress AM-1 |
| 42.00 E | TURKSAT 3A | 2008-030B | 42.01E | |
| 42.00 E | TURKSAT 2A | 2001-002A | 41.98E | Eurasiasat 1 |
| 42.00 E | NIGCOMSAT 1R | 2011-077A | 42.5 E | |
| 44.00 E | THURAYA-2 | 2003-026A | 44.04E | |
| 45.00 E | INTELSAT 12 (IS-12) | 2000-068A | 45.00E | Europe*Star 1 |
| 45.00 E | GALAXY 27 (G-27) | 1999-052A | 45.08E | Telstar 7 |
| 46.00 E | AFRICASAT-1 | 1996-002B | 45.95E | Measat-1 |
| 47.00 E | SYRACUSE 3A | 2005-041B | 47.00E | |
| 47.20 E | INTELSAT 702 | 1994-034A | 47.50E | |
| | EUTELSAT-48B | 2008-065B | 16 E | Eutelsat W2M, drf.in 2011 |
| 48.00 E | EUTELSAT-48A | 1996-067A | 48.19E | Hot Bird 2, Eurobird 9 |
| 49.00 E | YAMAL 202 | 2003-053A | 49.01E | |
| 50.00 E | GALAXY 26 (G-26) | 1999-005A | 50.00E | Telstar 6 |
| 50.00 E | INTELSAT 26 (IS-26) | 1997-007A | 50.39E | |
| 51.00 E | SIRIUS 3 | 1998-056B | 51.25E | |
| 51.50 E | APSTAR 1A | 1996-039A | 51.45E | |
| 52.50 E | YAHSAT 1A | 2011-016B | 52.51E | |
| 53.00 E | SKYNET 5B | 2007-056B | 52.71E | |
| 53.00D | EXPRESS-AM-22 | 2003-060A | 52.99E | |
| 55.00 E | ASTRA-1F | 1996-021A | 54.87E | |
| 55.00 E | INSAT-3E | 2003-043E | 55.02E | |
| 55.00 E | GSAT-8 | 2011-022A | 55.03E | |
| | INSAT-2B | 1993-048B | | Driftging in 2011 |
| 56.00 E | BONUM-1 | 1998-068A | 55.94E | |
| 57.00 E | NSS-12 | 2009-058A | 57.04E | |
| 57.34 E | METEOSAT 7 | 1997-049B | 57.34E | |
| | LUCH 5A | 2011-074B | | Drifting in 2011 |
| | BEIDOU G5 | 2012-008A | | Navigation systém |
| 60.00 E | INTELSAT 904(IS-904) | 2002-007A | 60.01E | |

| | | | | |
|---------|-----------------------|-----------|---------|-----------------------|
| 62.00 E | INTELSAT 902 (IS-902) | 2001-039A | 61.99E | |
| 63.00 E | COMSATBW-1 | 2009-054B | 63.02E | |
| 64.00 E | INTELSAT 906 (IS-906) | 2002-041A | 64.14E | |
| 64.50 E | INMARSAT 3 F-1 | 1996-020A | 64.46E | |
| 66.00 E | INTELSAT 17 (IS-17) | 2010-065B | 66.00E | Hylas |
| 68.50 E | INTELSAT 10 (IS-10) | 2001-019A | 68.51E | PAS 10 |
| 68.50 E | INTELSAT 7 (IS-7) | 1998-052A | 68.69E | PAS 7 |
| 70.00 E | RADUGA-1M1 | 2007-058A | 70.02E | Cosmos 2434 |
| 70.50 E | EUTELSAT 70A | 2002-051A | 70.51E | Eutelsat W5 |
| | COSMOS 2085 | 1990-061A | | Librating 70E to 80E |
| | COSMOS 2371 | 2000-036A | | Librating 70E to 80E |
| | ESIAFI 1, Comstar 4 | 1981-018A | | Librating 70E to 80E |
| 72.00 E | INTELSAT 7A F-1 | 1995-023A | 72.04E | |
| 72.00 E | IEASAT 5 | 1990-002B | 72.20E | |
| 72.00 E | INTELSAT 709 | 1996-035A | 72.10E | |
| 72.00 E | INTELSAT 22 | 2012-011A | | Operating since 8 May |
| | LUCH 1 | 1995-054A | | Slowly drifting |
| 74.00 E | INSAT 3C | 2002-002A | 74.02E | |
| 74.00 E | KALPANA 1 | 2002-043A | 74.03E | MetSat 1 |
| 74.00 E | INSAT 4CR | 2007-037A | 73.98E | |
| 75.00 E | MUGUNGHWA 2 | 1996-003A | 74.83E | Koreasat 2 |
| | INMARSAT 2F-4 | 1992-021B | 109 E | In Dec 2011 |
| 75.00 E | LMi 1 | 1999-053A | 75.00E | |
| | COSMOS 2133 | 1991-010A | | Librating 70 to 81E |
| 76.00 E | ELEKTRO L1 | 2011-001A | 76.08E | |
| | RADUGA 32 | 1994-087A | | Librating 70 to 80E |
| 76.50 E | APSTAR 2R | 1997-062A | 76.54E | |
| 77.00 E | TIAN LIAN (CTDRS-1) | 2008-019A | 77.03E | Tian Lian 1A |
| 76.50 E | APSTAR-7 | 2012-013A | | Launched 2 Apr 2012 |
| 78.50 E | THAICOM 5 | 2006-020B | 78.48E | |
| 78.50 E | COSMOS 2440 | 2008-033A | 78.58E | Drifting |
| 80.00 E | COSMOS 2473 | 2011-048A | 79.89E | Kosmos 2473 |
| 80.00 E | EXPRESS-AM2 | 2005-010A | 80.02E | |
| 80.00 E | EXPRESS-MD1 | 2009-007B | 80.11E | |
| 80.00 E | COSMOS 2479 | 2012-012A | | Replaced Cosmos 2440 |
| 80.00 E | COSMOS 2350 | 1998-025A | 74.23 E | Librating 69E to 81E |
| 80.00 E | INSAT 4A | 2005-049A | 83.04E | |
| 83.00 E | GSAT-12 | 2011-034A | 83.06E | |
| 83.00 E | BEIDOU G3 | 2010-024A | 84.02E | Beidou DW4 |
| 83.00 E | HORIZONS-2 | 2007-063B | 74.06W | Drifdting to 84.85E |
| 85.00 E | RADUGA-1M2 | 2010-002A | 84.99E | |
| 85.00 E | INTELSAT 15 (IS-15) | 2009-067A | 85.13E | |
| 85.00 E | TDRS 7 | 1995-035B | 85.68E | |
| 86.50 E | FENGYUN 2D | 2006-053A | 86.49E | |
| 86.50 E | KAZSAT-2 | 2011-035B | 86.51E | |
| 87.50 E | CHINASAT 5A (ZX 5A) | 1998-033A | 87.51E | Zhongwei 1 |
| 86.50 E | EUROBIRD 4A | 2000-052A | 3.99E | Eutelsat W1 |
| 88.00 E | ST-2 | 2011-022B | 88.03E | |
| 88.00 E | ST-1 | 1998-049A | 88.14E | |
| 90.00 E | TDRS-8 | 2000-034A | 89.19E | |

| | | | | |
|-----------|-----------------------|-----------|---------|-------------------------|
| 88.00 E | YAMAL 201 | 2003-053B | 90.03E | |
| 90.75 E | KODAMA (DRTS) | 2002-042B | 90.74E | |
| 91.50 E | MEASAT-3A | 2009-032A | 91.44E | |
| 92.20 E | CHINASAT 9 (ZX 9) | 2008-028A | 92.18E | Zhongxing 9 |
| 91.50 E | EUROBIRD 4A | | | See Eutelsat W1 |
| 93.50 E | INSAT 3A | 2003-013A | 93.59E | |
| 93.50 | INSAT 4B | 2007-007A | 93.51E | |
| 95.00 E | NSS-6 | 2002-057A | 94.97E | |
| 96.50 E | EXPRESS-AM33 | 2008-003A | 96.53E | |
| 98.00 E | ZHONGXING-22 | 2000-003A | 97.91E | |
| 98.00 E | ZHONGXING-20 | 2003-052A | 98.02E | |
| 98.50 E | THURAYA-3 | 2008-001A | 98.59E | |
| 108.50 E | ASIASAT 5 | 2009-042A | 100.54E | |
| 98.50 E | RADUGA-1 5 | 2000-049A | | Librating 45E to 104E |
| 103.00 E | EXPRESS-A2 | 2000-013A | 102.89E | Ekspress 2A |
| 103.00 E | ZHONGXING-22A | 2006-038A | 103.30E | |
| 105.00 E | FENGYUN 2E | 2008-066A | 104.50E | |
| 105.00 E | ASIASTAR | 2000-016A | 104.98E | |
| 101.50 E | ASIASAT 3S | 1999-013A | 105.52E | |
| 105.00 E | ASIASAT 7 | 2011-069A | 101.40E | |
| 107.70 E | INDOSTAR 1 | 1997-071B | 107.85E | Cakrawatra 1 |
| 108.00 E | TELKOM 1 | 1999-042A | 108.07E | |
| 108.00 E | PROTOSTAR 2 | 2009-027A | 108.10E | Indostar II, SES-7 |
| 108.00 E | NSS-11 (AAP-1) | 2000-059A | 108.21E | GE-1A |
| 108.20 E | SES-3 | 2011-035A | 108.2 E | In 2012 relocated |
| 109.00 E | INMARSAT 2-F1 | 1992-021B | 108.75E | Inmarsat 2 F-4 |
| 109.85 E | BSAT- 3B | 2010-056B | 109.83E | |
| 109.850 E | BSAT-2C | 2003-028A | 109.87E | |
| 109.85 E | BSAT-3C (JCSAT-110R) | 2011-041B | 109.94E | |
| 109.85 E | BSAT-3A | 2007-036B | 109.86E | |
| 110.00E | NSAT 110 (JCSAT 110R) | 2000-060A | 110.01E | |
| 110.50E | CHINASAT 10 (ZX10) | 2011-026A | 110.53E | |
| 110.50 E | BEIDOU 1C | 2003-021A | 110.57E | |
| 110.50 E | FENGYUN 2F | 2012-002A | | |
| 113.00 E | KOREASAT 5 | 2006-034A | 113.07E | Mugunghwa 5 |
| 113.00 E | PALAPA D | 2009-046A | 112.99E | Palapa D1 |
| 115.50 E | ZHONGXING-6B | 2007-031B | 115.54E | |
| 116.00 E | MUGUNGHWA 3 | 1999-046A | 116.00E | Koresat 3 |
| 116.00 E | KOREASAT 6 | 2010-070B | 116.00E | |
| 118.00 E | TELKOM 2 | 2005-046A | 118.05E | |
| 119.50 E | THAICOM 4 | 2005-028A | 119.50E | IPStar 1 |
| 119.50 E | ASIASAT 4 | 2003-014A | 122.09E | |
| 123.00 E | GARUDA 1 | 2000-011A | 122.96E | |
| 122.00 E | CHINASAT 5B | 1998-044A | 110.32E | Sinosat 1, pos. In 2011 |
| 123.50 E | FENGYUN 2C | 2004-042A | 123.72E | |
| 124.00 E | JCSAT 4A | 1999-006A | 124.00E | JCSat 6 |
| | DFH 3-2 | 1997-021A | | Drifting in 2011 |
| 125.00 E | CHINASAT 6A (ZX 6A) | 2010-042A | 125.05E | XN-6, Sinosat 6 |
| 128.00 E | JCSAT 3A | 2006-033A | 128.01E | JCSAT 10 |
| 128.00 E | JCSAT RA (JCSAT-12) | 2009-044A | 127.94E | |

| | | | | |
|----------|------------------------|-----------|----------|------------------|
| 128.20 E | COMS 1 | 2010-032A | 128.24E | Cheollian |
| 128.00 E | CHINASAT 1A (ZX 1A) | 2011-047A | 129.87E | |
| 130.00 E | ZHONGXING 20A | 2010-064A | 130.09A | |
| 132.00 E | VINASAT-1 | 2008-018A | 131.97E | |
| 132.00 E | JCSAT 5A | 2006-010A | 132.08E | JCSAT 9 |
| 134.00 E | APSTAR 6 | 2005-012A | 133.98E | |
| 136.00 E | N-STAR C | 2002-035B | 136.03E | N-Star 3 |
| 140.00 E | APSTAR 5 (TELSTAR 18) | 2004-024A | 138.00E | |
| 140.00 E | BEIDOU G1 | 2010-001A | 140.11E | Beidou DW3 |
| 140.00 E | EXPRESS AM-3 | 2005-023A | 139.94E | |
| 140.00 E | HIMAWARI 6(MTSAT-1R) | 2005-006A | 140.06E | MTSAT-1R |
| 142.00 E | APSTAR 1 | 1994-043A | 142.17E | |
| | COSMOS 2224 | 1992-088A | | Drifting in 2011 |
| 143.00 E | KIZUNA | 2008-007A | 142.17E | |
| 143.50 E | INMARSAT 4-F1 | 2005-009A | 143.52E | |
| 144.00 E | SUPERBIRD C2 | 2008-038A | 143.95E | |
| 144.00 E | MBSAT | 2004-007A | 144.08E | |
| 145.00 E | MTSAT 2 | 2006-004A | 145.05E | |
| 146.00 E | KIKU-8 (ETS-VIII) | 2006-059A | 145.74E | |
| 148.00 E | AFRICASAT-2 (MEASAT-2) | 1996-063B | 147.97E | |
| 150.00 E | JCSAT-1B | 1997-075A | 150.05E | JCSat-5 |
| 150.50 E | PALAPA C2 | 1996-030A | 150.51E | |
| 152.00 E | OPTUS D2 | 2007-044A | 152.06E | |
| 154.00 E | JCSAT-2A | 2002-015A | 153.92 | JCSat-8 |
| 152.00 E | OPTUS-C1 | 2003-028B | 156.03E | Defense C1 |
| 156.00 E | OPTUS-D3 | 2009-044B | 156.03E | |
| | INTELSAT 701 | 1993-066A | | Recently moved |
| 158.00 E | SUPERBIRD-A3 | 1997-036A | 158.03E? | |
| 160.00 E | BEIDOU G4 | 2010-057A | 160.09E | Beidou DW6 |
| 160.00 E | OPTUS D1 | 2006-043B | 160.01E | |
| 162.00 E | SUPERBIRD-B2 | 2000-012A | 162.00E | Superbird 4 |
| | GOES 7 | 1987-022A | 172.25W | Active? |
| 164.00 E | OPTUS B3 | 1994-055A | 164.09E | |
| 166.00 E | INTELSAT 8 (IS-8) | 1998-065A | 165.99E | PAS 8 |
| | GORIZONT 27 | 1992-082A | | Drifting in 2011 |
| 169.00 E | INTELSAT 5 (IS-5) | 1997-046A | 169.00E | PAS 5 |
| 172.00 E | AMC-23 | 2005-052A | 172.01E | |
| 177.00 E | TIAN LIAN 1-02 | 2011-032A | 176.90E | Tian Lien 1B |
| 172.00 E | INTELSAT 602 (IS-602) | 1988-087A | 178.16E | |
| 178.00 E | INMARSAT 3-F3 | 1996-070A | 178.10E | |
| 180.00 E | INTELSAT 18 (IS-18) | 2011-056A | 179.98E | |
| 177.00 W | NSS-9 | 2009-008A | 177.01W | |
| 174.00 W | TDRS 10 | 2002-055A | 173.24W | |
| 165.00 W | TDRS 5 | 1991-054B | 167.01W | |
| | COSMOS 2397 | 2003-015A | drifting | |
| 142.00 W | INMARSAT 2-F2 | 1991-018A | 141.98W | |
| 139.00 W | AMC-8 (GE-8) | 2000-081B | 139.01W | |
| 137.00 W | AMC-7 (GE-7) | 2000-054B | 136.95W | |
| 135.00 W | GOES 15 | 2010-008A | 135 W | Moving to 135 W |
| 135.00W | AMC-10 (GE-10) | 2004-003A | 134.94W | |

| | | | | |
|----------|--------------------------|-----------|---------|---------------------------|
| 133.00 W | GALAXY 15(G-15) | 2005-041A | 132.97W | Librating, controlled |
| 131.00 W | AMC-11 (GE-11) | 2004-017A | 131.00W | |
| 129.00 W | CIEL 2 | 2008-063A | 128.85W | |
| | GALAXY 12 (G-12) | 2003-013B | | Moving to 129W |
| 127.00 W | GALAXY 13 (HORIZONS-1) | 2003-044A | 126.96W | |
| 125.00W | GALAXY 14 (G-14) | 2005-030A | 124.89W | |
| 125.00 W | AMC-21 | 2008-038B | 124.92W | |
| 123.00 W | GALAXY 18(G-18) | 2008-024A | 123.01W | |
| 121.00 W | GALAXY 23(G-23) | 2003-034A | 121.02W | Echostar 9, Telstar 13 |
| 119.00 W | DIRECTV-7S | 2004-016A | 119.02W | |
| 118.70 W | ECHOSTAR 14 | 2010-010A | 118.84W | Echostar XIV |
| 118.70 W | ECHOSTAR 7 | 2002-006A | 118.78W | |
| | TELSTAR 4 (TELSTAR 402R) | 1995-049A | | Drifting in 2011 |
| 118.70 W | ANIK F3 | 2007-009A | 118.66W | |
| 116.80 W | SATMEX 5 | 1998-070A | 116.81W | |
| 115.00 W | XM -4 (BLUES) | 2006-049A | 115.23W | XM Radio 4 (Blues) |
| 115.00 W | SIRIUS XM-1 Roll | 2001-018A | 115.21W | |
| 115.00 W | SIRIUS XM-2 Rock | 2001-012A | 115.19W | |
| 115.00 W | VIASAT-1 | 2011-059A | 115.12W | |
| 114.90 W | SOLIDARIDAD 2 | 1994-065A | 114.79W | |
| 113.00 W | SATMEX 6 | 2006-020A | 112.96W | |
| 111.10 W | WILDBLUE-1 | 2006-054A | 111.18W | |
| 111.10 W | ANIK F2 | 2004-027A | 111.06W | |
| 110.20 W | TERRESTAR-1 | 2009-035A | 110.29W | |
| 110.00 W | ECHOSTAR-11 | 2008-035A | 109.94W | |
| | DIRECTV 1R | 1999-056A | | Deorbiting |
| 107.30 W | ANIK F1R | 2005-036A | 107.30W | |
| | LES 9 | 1976-023B | | Slowly drifting in 2011 |
| | GOES 3 | 1978-062A | | Slowly drifting in 2011 |
| 106.50W | MSAT M1 | 1996-022A | 106.57W | MSAT |
| 105.00 W | GOES 14 | 2009-033A | 105.32W | |
| | GSTAR 3 | 1988-081A | 104.58W | Librating 105.2 to 105.5W |
| 105.00 W | GSTAR 1 | 1985-035A | 105.12W | |
| 105.00 W | AURORA I | 1982-105A | 105 W | Librating 104.9 to 105.6W |
| 105.00 W | AMC-15 | 2004-041A | 105.03W | |
| 105.00 W | AMC-18 | 2006-054B | 104.91W | |
| | ACTS | 1993-058B | 105.47W | Inactive |
| | SOLIDARIDAD 1 | 1993-073A | 101.52W | Librating 101 to 109W |
| 103.00 W | AMSC 1 | 1995-019A | 103.46W | |
| 103.00 W | AMC-T(GE-1) | 1996-054A | 103.00W | |
| 103.00 W | SPACEWAY 1 | 2005-015A | 102.89W | |
| 103.00 W | DIRECTV 10 | 2007-032A | 102.82W | |
| 103.00 W | DIRECTV 12 | 2009-075A | 102.74W | |
| 101.20 W | SKYTERRA 1 | 2010-061A | 101.19W | |
| 101.00 W | DIRECTV 9S | 2006-043A | 101.06W | |
| 101.00 W | DIRECTV-4S | 2001-052A | 101.12W | |
| 101.00 W | SES-1 | 2010-016A | 100.96W | |
| 100.80 W | DIRECTV 8 | 2005-019A | 100.83W | |
| 99.00 W | DIRECTV 11 | 2008-013A | 99.22W | |
| 99.00 W | SPACEWAY 2 | 2005-046B | 99.11W | |

| | | | | |
|----------|-----------------------|-----------|--------|-----------------------|
| 99.00 W | GALAXY 16 (G-16) | 2006-023A | 98.99W | |
| 98.00 W | INMARSAT 4-F3 | 2008-039A | 97.60W | |
| 97.00 W | GALAXY 19 (G-19) | 2008-045A | 97.08W | |
| 96.00W | SIRIUS FM-5 | 2009-034A | 95.99W | |
| 95.00 W | GALAXY 3C (G-3C) | 2002-030A | 95.04W | |
| 95.00 W | SPACEWAY 3 | 2007-036A | 94.93W | |
| 93.00 W | GALAXY 25 (G-25) | 1997-026A | 93.08W | Telstar 5 |
| 93.00 W | ICO G1 | 2008-016A | 92.84W | |
| 91.10 W | NIMIQU 1 | 1999-027A | 91.08W | |
| 91.10 W | NIMIQU 2 | 2002-062A | 91.16W | |
| 91.00 W | GALAXY 17 (G-17) | 2007-016B | 91.01W | |
| 89.10 W | GALAXY 28 (G-28) | 2005-022A | 89.02W | IS Americas8,Telstar8 |
| 87.00 W | SES-2 | 2011-049A | 87.00W | |
| 85.10 W | XM 5 | 2010-053A | 85.24W | Sirius XM-5 |
| 85.10 W | XM-3 (RHYTM) | 2005-008A | 85.08W | XM Radio 3 (Rhytm) |
| 85.00 W | AMC 16 | 2004-048A | 84.97W | |
| 84.00 W | BRASILSAT B4 | 2000-046A | 83.97W | |
| 83.00 W | AMC-9 (GE-12) | 2003-024A | 83.02W | |
| 82. 00 W | NIMIQU 4 | 2008-044A | 81.97W | |
| 79.00 W | AMC-5(GE-5) | 1998-063B | 79.01W | |
| 78.00 W | VENESAT-1 | 2008-055A | 77.99W | Simon Bolivar |
| 77.00 W | EHOSTAR 1 | 1995-073A | 77.13W | |
| 77.00 W | EHOSTAR 8 | 2002-039A | 77.04W | |
| 77.00 W | EHOSTAR 6 | 2000-038A | 76.95W | |
| 75.00 W | GOES13 | 2006-018A | 75.01W | GOES N |
| 75.00 W | BRASILSAT B3 | 1998-006A | 74.96W | Brasilsat B-3A |
| | EHOSTAR 2 | 1996-055A | 72.65W | Inactive since 2008 |
| 73.00 W | NIMIQU 5 | 2009-050A | 72.65W | |
| 72.00 W | AMC-6 (GE-6) | 2000-067A | 72.01W | GE 6 |
| 70.00 W | STAR ONE C2 | 2008-018B | 70.02W | |
| 68.00 W | BRASILSAT B2 | 1995-016A | 67.92W | |
| 67.00 W | QUETZSAT 1 | 2011-054A | 67.07W | |
| | AMC 3 (GE 3) | 1997-050A | 86.87W | Position on Dec 2011 |
| 67.00 W | AMC 4 (GE 4) | 1999-060A | 66.98W | |
| 65.00 W | STAR ONE C1 | 2007-056A | 65.01W | |
| 63.00 W | TELSTAR 14H | 2011-021A | 63.00W | Estrela do Sul 2 |
| | DIRECTV 2 (DBS-2) | 1994-047A | 98.12W | Drifting |
| 61.50 W | EHOSTAR 15 | 2010-034A | 61.54W | Echostar 15 |
| 61.50 W | EHOSTAR 3 | 1997-059A | 61.39W | |
| 61.50 W | EHOSTAR 12 | 2003-033A | 61.33W | Rainbow 1 |
| 61.00 W | AMAZONAS 2 | 2009-054A | 61.00W | |
| 61.00 W | AMAZONAS 1 | 2004-031A | 60.97W | |
| 60.00 W | GOES 12 | 2001-031A | 59.57W | |
| 58.00 W | INTELSAT 16 (IS-16) | 2010-006A | 58.12W | |
| 58.00 W | INTELSAT 9 (IS-9) | 2000-043A | 58.00W | PAS 9 |
| | DIRECTV-2 (DBS) | 1994-047A | 98.12 | Drifting |
| 55.50 W | GALAXY 11 (G 11) | 1999-071A | 55.47W | |
| 55.50 W | INTELSAT 805 (IS-805) | 1998-037A | 55.53W | |
| 55.50 W | EXPRESS 1 | 1994-067A | | Drifting |
| 54.00 W | INMARSAT 3-F4 | 1997-027A | 54.01W | |

| | | | | |
|---------|-----------------------|-----------|----------|------------------------|
| 53.00 W | INTELSAT 707 (IS-707) | 1996-015A | 52.98W | Intelsat VIIA F-2 |
| 50.00 W | INTELSAT 1R (IS-1R) | 2000-072A | 49.94W | PAS 1R |
| 49.00 W | TDRS-3 | 1988-091B | 48.70W | TDRS West |
| 47.00 W | NSS-703 | 1994-064A | 47.04W | |
| | TDRS 6 | 1993-003B | 171.20W | Position in Dec 2011 |
| 45.00 W | INTELSAT 14 (IS-14) | 2009-064A | 44.98W | |
| 43.00 W | INTELSAT 11 (IS-11) | 2007-044B | 42.96W | |
| 41.00 W | TDRS 9 | 2002-011A | 40.92W | |
| 40.50 W | NSS-806 | 1998-014A | 40.46W | Intelsat 806 |
| | ASTRA 1D | 1994-070A | | Drifting in 2011 |
| 37.50 W | TELSTAR 11N | 2009-009A | 37.57W | |
| 37.50 W | NSS-10 (AMC-12) | 2005-003A | 37.38W | |
| | HGS-1 (ASIASAT 3) | 1997-086A | inactive | PAS-22 |
| 34.50 W | INTELSAT 903 (IS-903) | 2002-016A | 34.45W | |
| 34.00 W | SKYNET 4F | 2001-005B | 34.08W | |
| 33.50 W | HYLAS 1 | 2010-065A | 33.46W | |
| 31.50 W | INTELSAT 25 (IS-25) | 2008-034A | 31.44W | Protostar 1 |
| 30.00 W | HISPASAT-1C | 2000-007A | 30.03W | |
| 30.00 W | SPAINSAT | 2006-007A | 29.95W | |
| 30.00 W | HISPASAT-1D | 2002-044A | 29.46W | |
| 30.00 W | HISPASAT-1E | 2010-070A | 29.98W | |
| 29.50 W | INTELSAT 801 (IS-801) | 1997-009A | 29.53W | |
| 27.50 W | INTELSAT 907 (IS-907) | 2003-007A | 27.46W | |
| 24.50 W | INTELSAT 905 (IS-905) | 2002-027A | 24.49W | |
| 22.00 W | NSS-7 | 2002-019A | 21.99W | |
| 22.00 W | SES-4 | 2012-007A | 22 W | |
| 20.00 W | NSS-5 | 1997-053A | 19.99W | Intelsat 803 |
| 18.00 W | INTELSAT 901 (IS-901) | 2001-024A | 17.99W | |
| 18.00 W | SKYNET 5C | 2008-030A | 17.78W | |
| 15.50 W | INMARSAT 3-F2 | 1996-053A | 15.43W | |
| 15.00 W | TELSTAR 12 (ORION 2) | 1999-059A | 15.00W | |
| | COSMOS 2319 | 1995-045A | | Librating 143E TO 179W |
| 14.00 W | EXPRESS-A4 | 2000-029A | 13.91W | |
| 12.50 W | EUTELSAT 12 WEST A | 2002-040A | 12.44W | Atlantic Bird 1 |
| 11.00 W | EXPRESS-AM44 | 2009-007A | 10.98W | |
| 8.00 W | EUTELSAT 8 WEST A | 2001-042A | 8.09W | Atlantic Bird 2 |
| 8.00 W | TELECOM 2D | 1996-044B | 7.80W | |
| 7.00 W | EUTELSAT 7 WEST A | 2011-051A | 7.28W | Atlantic Bird 7 |
| 7.00 W | NILESAT 102 | 2000-046B | 7.04W | |
| 7.00 W | NILESAT 101 | 1998-024A | 7.00W | |
| 7.00 W | NILESAT 201 | 2010-037A | 7.02W | |
| 5.00 W | SYRACUSE 3B | 2006-033B | 5.10W | |
| 5.00 W | EUTELSAT 5 WEST A | 2002-035A | 4.95W | Atlantic Bird 3 |
| 4.00 W | THOR III | 1998-035A | 4.27W | |
| 4.00 W | AMOS-2 | 2003-059A | 3.95W | |
| 4.00 W | AMOS-3 | 2008-022A | 4.00W | |
| 3.00 W | ABS-5 | 1997-042A | 3.08W | Agila 2, ABS 3 |
| 1.00 W | SKYNET 4C | 1990-079A | 1.20W | |
| 1.00 W | INTELSAT 10-02 | 2004-022A | 0.97W | |
| 0.80 W | THOR 6 | 2009-058B | 0.82W | |

| | | | |
|--------|--------------------|-----------|-------|
| 0.80 W | THOR 2R | 2008-006A | 0.77W |
| 0.00 E | METEOSAT-9 (MSG-2) | 2005-049B | 0.44W |