

Statement on Leap Second

The International GNSS Service (IGS) publishes many GNSS analysis products based on satellite data collected from a network of over 500 ground stations. In keeping with the IGS's legacy conventions, data and product records have timestamps aligned to TAI – 19 seconds making its timescale consistent with GPS System Time, Galileo System Time and QZSS System Time. These timestamps vary, however, with respect to UTC depending on the present number of leap seconds.

The following points are important to consider in the IGS's position on leap seconds.

1. References to UTC and leap seconds are common in several file formats including: RINEX, SINEX, Clock Rinex (soon to change) in order to clarify system time integer offsets. These may require updating as leap seconds are declared and added.
2. With a greater number of multi-GNSS products and differing implementations of leap seconds between GNSS providers, the possibility of confusion between timescales has grown. A leap second header line is required in RINEX files starting in version 4.00.
3. The offset UT1 – UTC is recorded in the SINEX file with format 21.15E milliseconds. This allows an offset of 10^6 seconds with nanosecond level precision. The elimination of leap seconds therefore poses no concern for the IGS's SINEX files. This offset value is also recorded in the ERP file, but it has been noted that an update of this format is possible to accommodate a larger UT1 – UTC.
4. Changing discrepancies between the IGS's time tags and UTC, the internationally recognized timescale, is not desirable. Further, the boundaries of a GNSS-based day versus a UTC-based day differ. Additional leap seconds will cause a greater number of records in a typical IGS daily product file to belong to the previous UTC day.
5. Discontinuities in UTC can affect firmware performance in GNSS receiving equipment and/or timing systems which may add maintenance load at IGS sites.

Although the IGS has methods and architectures to handle and document leap seconds, discontinuities in UTC – GNSST are undesirable. The IGS therefore recommends that additional leap seconds not be added to UTC.