

Long Product Filenames in the IGS v1.0

I. Romero¹, P. Steigenberger², O. Montenbruck²

¹ IGS Infrastructure Committee Chair,
ESA/ESOC Navigation Support Office, Darmstadt, Germany

² DLR/GSOC, Wessling, Germany

Introduction

As part of the evolution of the IGS it is deemed necessary to adapt the product names to using longer designations rather than the 8.3 names inherited from initial OS naming limitations.

To this effect it was unanimously agreed at the IGS Governing Board Meeting 48 after the 2017 IGS Workshop in Paris, France that the following naming scheme be adopted by all Analysis Centers, starting with the Multi-GNSS Pilot Project (MGEX) product files.

Additionally at the IGS Analysis Center Workshop in Potsdam in April 2019 the attendees agreed without objection the long names defined below for start of use with the reprocessing 3 campaign (repro3) products, including the test solutions.

The long product filenames will be applicable to all IGS products after coordination with the IGS ACC once switching to repro3 standards in the operational processing.

Product Filenames

This new file naming allows for a proper distinction of legacy and MGEX products for the different product lines (ultra-rapid, rapid, and final products). The file name is all in upper case and composed of different fields providing information about Analysis Center, product version, campaign/project, product type, start epoch, sampling, content type, and format:

AAAVPPPTTT_YYYYDDDDHHMM_LEN_SMP_CNT.FMT [.gz]

Field	Length	Content
AAA	3 characters	Analysis Center/Combination abbreviation; e.g. COD, EMR, ESA, GFZ, GRG, IGS, JAX, JPL, MIT, NGS, SIO, SHA, WUH, etc.
V	1 character	Version/Solution identifier (0-9)
PPP	3 characters	Campaign/Project specification
TTT	3 characters	Solution type identifier
YYYYDDDDHHMM	11 digits	Product intended nominal start epoch*
LEN	3 characters	Intended (nominal) product period. The longest time unit to be used (e.g. '01D' instead of '24H')*
SMP	3 characters	Temporal product sampling resolution. The longest time unit to be used (e.g. '01H' instead of '60M') (use '00U' if not applicable/unspecified)
CNT	3 characters	Content type
FMT	3 characters	File format
.gz		Compression method extension; gzip

*Long-term products exclusively can have start/end epochs as defined below

Considering the following agreed values for the different identifiers:

Campaign/Project specifications (**PPP**):

- MGX** Multi-GNSS Project product
- OPS** Operational IGS product
- R01** Reprocessing Campaign 1
- RNN** Reprocessing Campaign N
- TGA** Tide Gauge Benchmark Monitoring (TIGA)

Solution Type identifiers (**TTT**):

- FIN** Final products*
- NRT** Near-Real Time products (products between **ULT** and **RTS**)
- RAP** Rapid products*
- RTS** Real-Time streamed products

- SNX** SINEX Combination product
 - ULT** Ultra-rapid products (every 6 hours)*
- *Definitions as agreed by the relevant IGS WG

Abbreviations for specifying the product period (**LEN**) and the sampling interval (**SMP**), the longest time unit to always be used (e.g. '01D' instead of '24H'):

- S** Second
- M** Minute
- H** Hour
- D** Day
- W** Week
- L** Month
- Y** Year

Only long-term product files without specific lengths can use start/end epochs as; **YYYYDDS_YYYYDDE**, instead of start/length as all others (e.g., multi-year SINEX solution, accumulated time series of ERPs or biases, etc).

The following content types (**CNT**) are currently agreed within the IGS Analysis Centers:

- ATT** Attitude information
- BIA** Biases (except for DCB and OSB biases)
- CLK** Receiver and/or satellite clock parameters
- CRD** Station Coordinates/velocities in SINEX
- DCB** Differential code biases
- ERP** Earth rotation parameters
- ION** Ionosphere product
- ORB** Satellite orbits
- OSB** Observable-specific signal bias
- SOL** Variance/covariance information or normal equations in SINEX
- TRO** Troposphere ZPD product

The following content types (**CNT**) are currently agreed for the **IGS Reference Frame WG products exclusively**:

- CRA** Station Coordinates/velocities for all stations
- CRR** Reduced set of station Coordinates
- RES** Residuals w.r.t. Daily Combination
- REI** Residuals w.r.t. current IGS RF
- REC** Residuals w.r.t. cumulative IGS solution

Using these file formats (**FMT**):

- BIA** bias SINEX, Schaer (2018)
- CLK** clock RINEX, Ray and Gurtner (2012)
- ERP** IGS ERP format, Kouba and Mirault (1998)
- IOX** IONEX ionospheric TEC grid product format, Schaer et al. (1998)
- OBX** ORBEX satellite orbit/attitude format, Loyer (2019)
- SNX** Solution INdependent EXchange (SINEX) format, Rothacher and Thaller (2006)

- SP3** Standard Product 3 (SP3) orbit format, Hilla (2016)
- SUM** Summary of the indicated product, combination summary, etc
- TRO** Tropo SINEX product format, Pacione and Dousa (2019)

Examples

COD0OPSFIN_20173360000_01D_05M_ORB.SP3 denotes a Final Operational orbit file in SP3 format of the CODE analysis center covering one day (day of year 336/2017) with 5 min sampling and uncompressed.

SHA0MGXRAP_20182700000_01D_05M_CLK.CLK.gz denotes a Rapid MGEX clock file in clock RINEX format from the Shanghai Observatory analysis center covering one day (270/2018) with 5 min sampling and gzip compressed.

EUR0OPSFIN_20190480000_07D_01H_TRO.SUM denotes a Final EUREF TZD summary file from a weekly combination process. The corresponding TZD values would be in the file; **EUR0OPSFIN_20190480000_07D_01H_TRO.TRO**

IGS0OPSSNX_1994002_2019159_00U_CRR.SNX denotes the GPS week 2056 release of the operational IGS cumulative SINEX solution (old filename: IGS19P23.snx).

Adoption Timeline

Each IGS product Analysis Center Coordinator will agree with its participating Analysis Centers on the adoption timeline and inform the Infrastructure Committee and Data Center Working Group Chair.

References

Hilla S. (2016) The Extended Standard Product 3 Orbit Format (SP3-d). URL: <ftp://igs.org/pub/data/format/sp3d.pdf>

Pacione R., Dousa J. (2019) SINEX_TRO - Solution (Software/technique) INdependent EXchange Format for combination of TROpospheric estimates Version 2.0

Kouba J. and Mireault Y. (1998) [IGSMail-1943] New IGS ERP Format (version 2). URL: <https://lists.igs.org/pipermail/igsmail/1998/003315.html>

Ray J., Gurtner W. (2012) RINEX Extensions to Handle Clock Information, Version 3.02 . URL: ftp://igs.org/pub/data/format/rinex_clock302.txt

Rothacher M.,Thaller D. (2006) SINEX – Solution (Software/technique) INdependent EXchange Format Version 2.02 (December 01, 2006). URL: https://www.iers.org/SharedDocs/Publikationen/EN/IERS/Documents/ac/sinex/sinex_v202.pdf

Schaer S., Gurtner W. and Feltens J. (1998) IONEX: The IONosphere Map EXchange Format Version 1. URL: <ftp://igs.org/pub/data/format/ionex1.pdf>

Schaer (2018) SINEX BIAS—Solution (Software/technique) Independent EXchange Format for GNSS Biases Version 1.00. URL: http://ftp.aiub.unibe.ch/bcwg/format/sinex_bias_100.pdf

Loyer S., Montenbruck O., Hilla S., (2019) The Orbit Exchange Format ORBEX, v0.09, 6 May 2019. URL: <http://acc.igs.org/> (search for ORBEX)