include_comments_SINEX.py

version 2.2

26 October 2018

Purpose

The script include_comments_SINEX.py is a stand-alone script to insert a FILE/COMMENT block in all SINEX files stored in a specified directory. It is meant for SINEX files with coordinates/time series (T4). It is written in Python and should run on versions 2.6.6 and higher. The program can be found at: https://gitlab.com/segalubi/EPOS_Python_scripts.

The purpose is to ensure consistency in the naming of parameters between all EPOS analysis centres. In addition, it ensures that all required fields are provided.

In addition, this script is also useful to create an additional text-file metadata to accompany the upload of PBO files.

An example of the user interaction is:

```
bash-3.2$ ./include_comments_SINEX.py --directory=INGV

Which reference frame?
0) IGS08
1) IGS14
2) free-network
3) IGb08
4) INGV_EU

Enter choice:0

Which is the reference epoch of this reference frame?
Enter day:1
Enter month:1
Enter year:2005

The Covariance matrix is block-diagonal, full or diagonal?
0) block-diagonal
1) full
2) diagonal

Enter choice:0

Is it a Analysis or Combination centre?
0) Analysis Centre
```

```
1) Combination Centre
Enter choice:0

Which EPOS analysis/combination centre?
0) BFKH
1) INGV
2) ROB-EUREF
3) UGA
4) WUT-EUREF

Enter choice:1

Which software package was used to analyse the GNSS data?
0) Bernese GNSS Software 5.2
1) GIPSY-OASIS
2) CATREF

Enter choice:2

Which version of SINEX is used?
Enter SINEX version:2.02

What was the cut-off angle used?
Enter cut-off angle:5

Which OTL model was used?
0) FES2004
1) FES2014b
2) GOT4.10c

Enter choice:0

Which antenna calibration model was used?
0) epn_14_1958.atx
1) igs08_wwww.atx
2) epn_14.atx

Enter choice:1

Do you have a DOI?
(y/n):n

Which is the creation date of these solutions?
Enter day:2
Enter month:2
Enter year:2018
What is the release number?
Enter release number:1
What is the sampling rate?
0) weekly
```

```
1) daily

Enter choice:1

Entered information
--------------------
 ReferenceFrame     IGS08
 EpochOfFrame       01/01/2005 00:00:00
 CovarianceMatrix   block-diagonal
 AnalysisCentre     INGV
 Software           CATREF
 SINEX_version      2.02
 CutOffAngle        5
 OTLmodel           FES2004
 CalibrationModel   igs08_wwww.atx
 DOI                unknown
 CreationDate       02/02/2018 00:00:00
 ReleaseNumber      1.0
 SamplingPeriod     daily

Is this correct (y/n)y
```

The information that is added to the SINEX files is:

```
+FILE/COMMENT
 ReferenceFrame     IGS08
 EpochOfFrame       01/01/2005 00:00:00
 CovarianceMatrix   block-diagonal
 AnalysisCentre     INGV
 Software           GIPSY-OASIS
 SINEX_version      2.02
 CutOffAngle        5
 OTLmodel           FES2004
 Antennamodel       igs08_wwww.atx
 DOI                unknown
 CreationDate       02/02/2018 00:00:00
 ReleaseNumber      1
 SamplingPeriod     daily
-FILE/COMMENT
```

If the sampling period is 'daily, then only SINEX files ending with 0-6.snx are modified. If the sampling period is 'weekly', then only SINEX files ending with 7.snx are modified.

In the latest version of this script, the SINEX files can also be zipped (extension .Z). The script automatically, unzips the SINEX file, modifies the header and afterwards zips again the file (using gzip).

The predefined values are listed in Table 1. Note that if you have a reference frame or software package that is not listed in the program, then please contact us at UBI and we will add it to the Python script.

Predefined values for some of the parameters

Field	Values
ReferenceFrame	IGS08, IGS14, free-network, IGb08 and INGV_EU
CovarianceMatrix	block-diagonal, full, diagonal
AnalysisCentre or CombinationCentre	UGA, INGV, WUT-EUREF, BFKH and ROB-EUREF
Software	Bernese GNSS Software 5.2, GIPSY-OASIS, CATREF
AntennaModels	epn_14_1958.atx, igs08_wwww.atx, epn_14.atx
SamplingPeriod	daily, weekly
OTLmodels	FES2004, FES2014b, GOT4.10c

Usage

The script has to be called with at least one argument which is the full directory name with the SINEX files. An example of calling the script is:

```
include_comments_SINEX.py --directory=./EPOS/data/INGV
```

where `directory` points to the directory with the SINEX files. It may happen that you find an error and want to remove the FILE/COMMENT block you have added. In this case run:

```
include_comments_SINEX.py --directory=./EPOS/data/INGV --remove
```

Although this script is mainly meant to be used for modifying the header of SINEX files, it can also store the meta data in a text file which can be uploaded together with the PBO files. An example is:

```
include_comments_SINEX.py --directory=./EPOS/data/INGV --textfile
```