RNX2GTEX 2.0
User Guide

Summary

RNX2GTEX is an application for creating total electron content (TEC) data files in GNSS-TEC Exchange (GTEX) format from RINEX observation files.
This document describes how you can use RNX2GTEX.

Operation Environment

Microsoft Windows Vista 32bit/64bit
Microsoft Windows 7 32bit/64bit
Microsoft Windows 8.1 32bit/64bit

Version Information

RNX2GTEX 2.0

How to install RNX2GTEX

1. Insert RNX2GTEX CD-ROM into the CD-ROM drive.
   Note: If the installer does not start automatically, run Setup.exe from the CD.
2. Follow the on-screen instructions to complete the installation.



Note: Please input a mail address during installation.
This is used in order to download satellite's orbit data required for TEC calculation from an FTP site (Anonymous FTP).

Note: After the installation is complete, a shortcut icon for RNX2GTEX is placed on your desktop.

How to uninstall RNX2GTEX

1. Start the installer using RNX2GTEX CD-ROM.
2. Select [Remove RNX2GTEX].

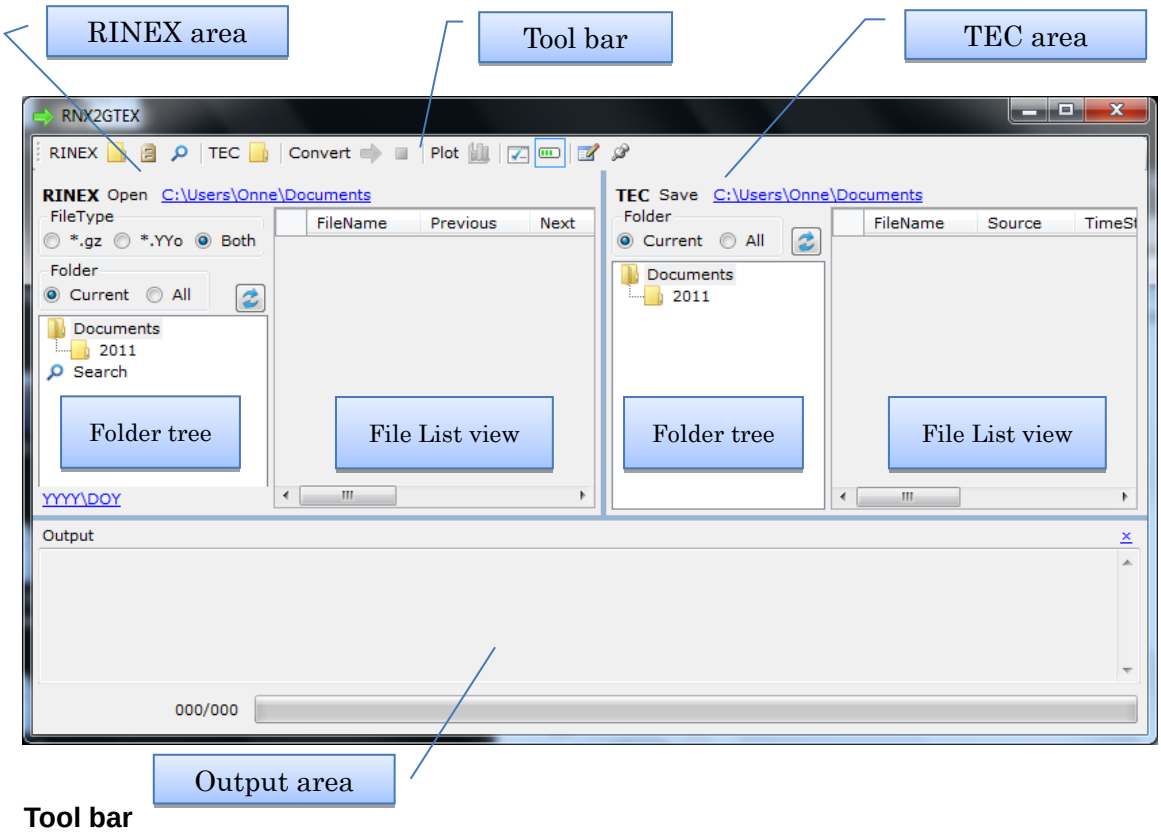
From the Windows Start menu, you can also uninstall RNX2GTEX.

1. Click on the Start button and select Control Panel.
2. Open Add/Remove Programs (for Window XP users), or Programs and then Programs and Features (for Windows 7 and Vista users).
3. Select RNX2GTEX in the Programs list.

How to start up RNX2GTEX

To start RNX2GTEX, double-click the RNX2GTEX shortcut icon on your desktop; otherwise, click the Windows Start menu and select All Programs, NICT and then RNX2GTEX.

Main Screen



Tool bar



- Selects a root folder for RINEX files.
- Specifies the folder structure where RINEX files are stored.
- Searches for RINEX files
- Selects a root folder in which to store the converted TEC file.
- Converts the RINEX file.
- Stops the file conversion process.
- Plots a TEC file.
- Customizes column display in File List view.
- Shows/Hides the Output area.
- Displays conversion history logs.
- Displays the version information of RNX2GTEX.

Before using RNX2GTEX

A. File name of RINEX file

The file name format for an uncompressed file is as follows: {SSSS}{DOY}0.{YY}o; where SSSS is the four-character marker name, DOY is the day of year and YY is two-digit year.

The file name format for a compressed file is as follows: {SSSS}{DOY}0.{YY}o.gz; where SSSS is the four-character marker name, DOY is the day of year and YY is two-digit year.

For example when a marker name is ssss and a RINEX file has the data that is dated January 12, 2012, the file name is ssss0120.12o or ssss0120.12o.gz.

B. Folder structure of TEC file

TEC files are automatically located under "< Specified Root Folder > ¥<YYYY>¥<DOY >".

C. File name of TEC file

The file name format is as follows: {SSSS}{DOY}0.{YY}_TEC ; where SSSS is the four-character marker name, DOY is the day of year and YY is two-digit year.
For example when a marker name is ssss and a RINEX file has the data that is dated January 12, 2012, the file name is ssss0120.12_TEC.

D. Converting program RINEX files to TEC files

The RNX2GTEX application is developed for Windows by National Institute of Information and Communications and Technology (NICT), Japan. The original Fortran code was developed by GNSS ionospheric observation team of NICT, Kyoto University, and Nagoya University. Carrier phase and pseudorange in a RINEX file are used to derive TEC value for each epoch. The slant TEC derived from the carrier phase is adjusted to that derived from the corresponding pseudorange of the satellite-receiver pair. This procedure requires satellite orbit information. The derived TEC values are slant values including satellite and receiver biases. The TEC data are output in the GTEX format (ASCII format) for each marker and day, similar to the RINEX observation file.

E. About satellite orbit data

RNX2GTEX application requires satellite orbit data for calculating TEC values. Satellite orbit data have a Final level (a file prefix character begins in "igs") and a Rapid level (a file prefix character begins in "igr"), and this application user can select type of orbit data for calculating TEC values. RNX2GTEX downloads satellite orbit data automatically from the following FTP site.

ftp://igscb.jpl.nasa.gov/igscb/product/

And so, basically, you can use this application under environment can use internet connection. But, if you download satellite orbit data in advance

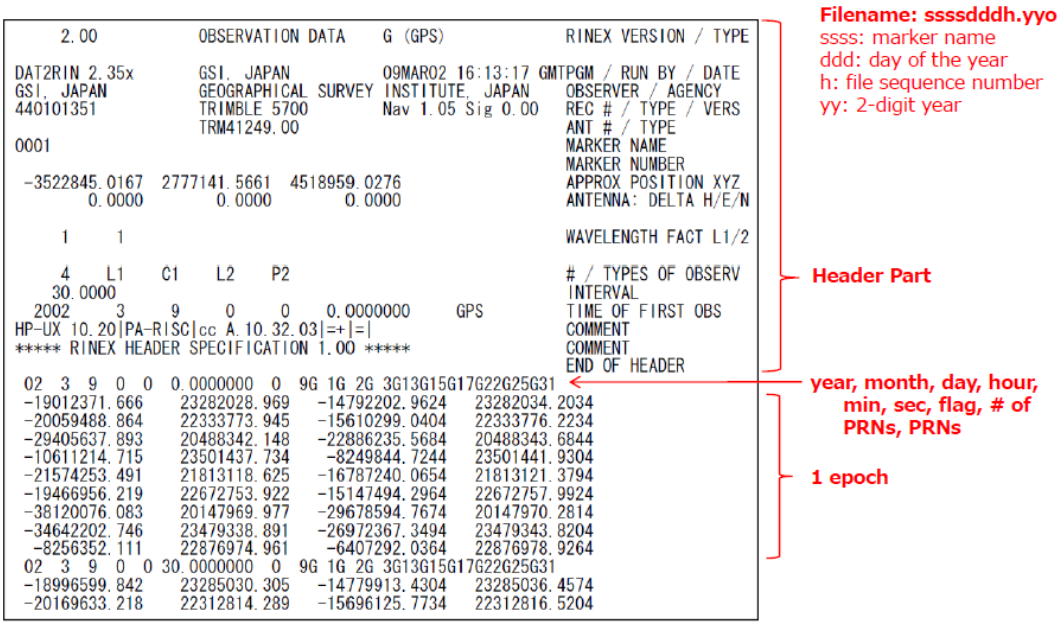
Downloaded satellite orbit data (UNIX Compress(*.Z) form) is uncompressed and saved below.

< ORBIT Folder > ¥YYYY¥MM¥ig[sr]<WOY ><DOW>.sp3

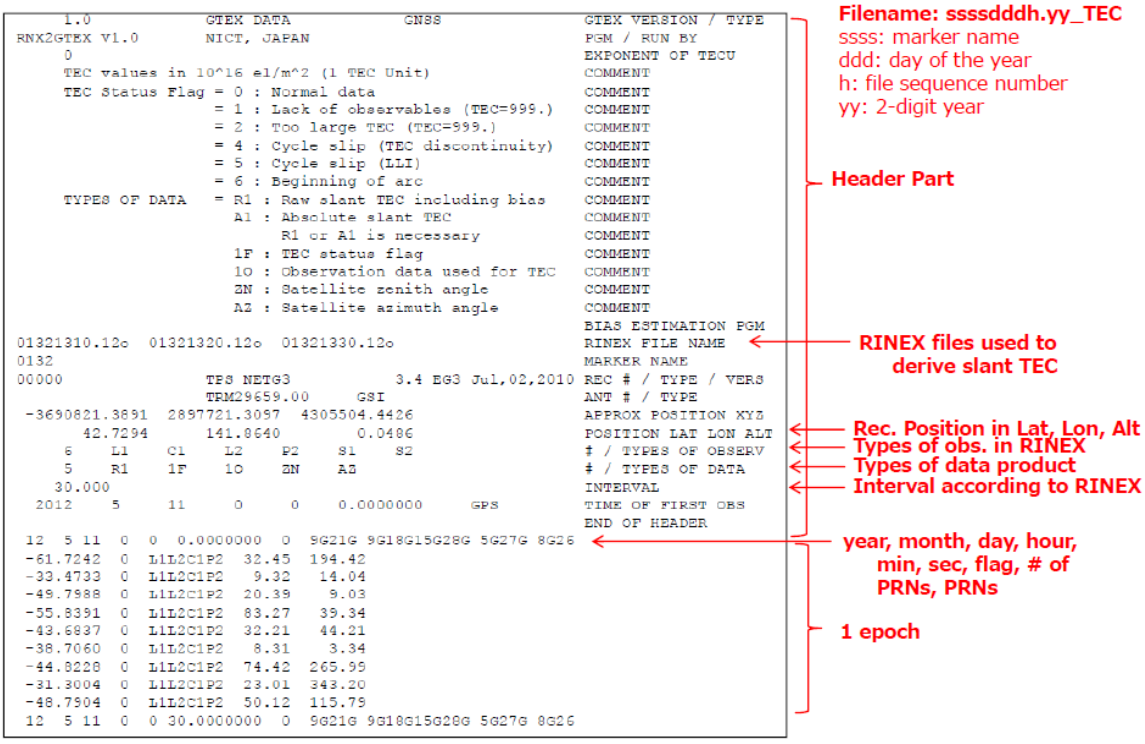
(*) “YYYY” is Year, “MM” is Month, “WOY” is Week of year, “DOW” is Day of week

(*) Default value of “<ORBIT Folder>” is “%USERPROFILE%¥Documents”

The input file: RINEX observation file (ASCII format)

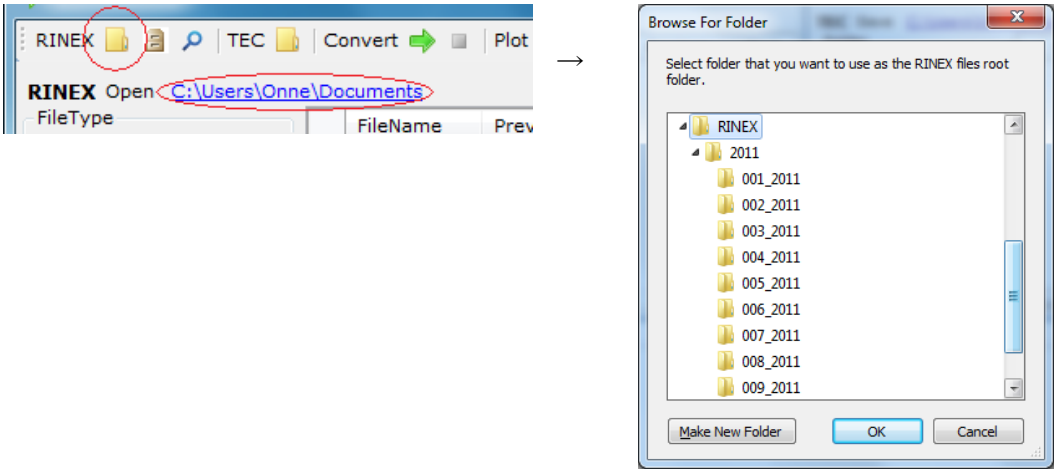


The output file: TEC file in the GTEX format (ASCII format)

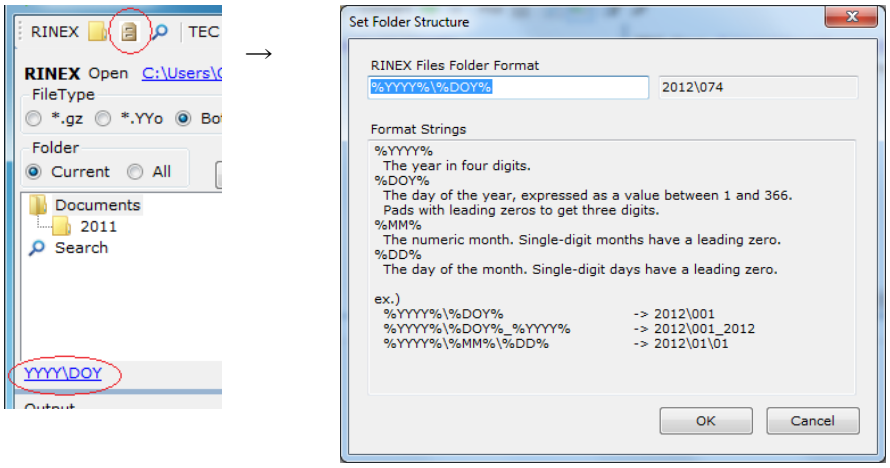


Basic operations

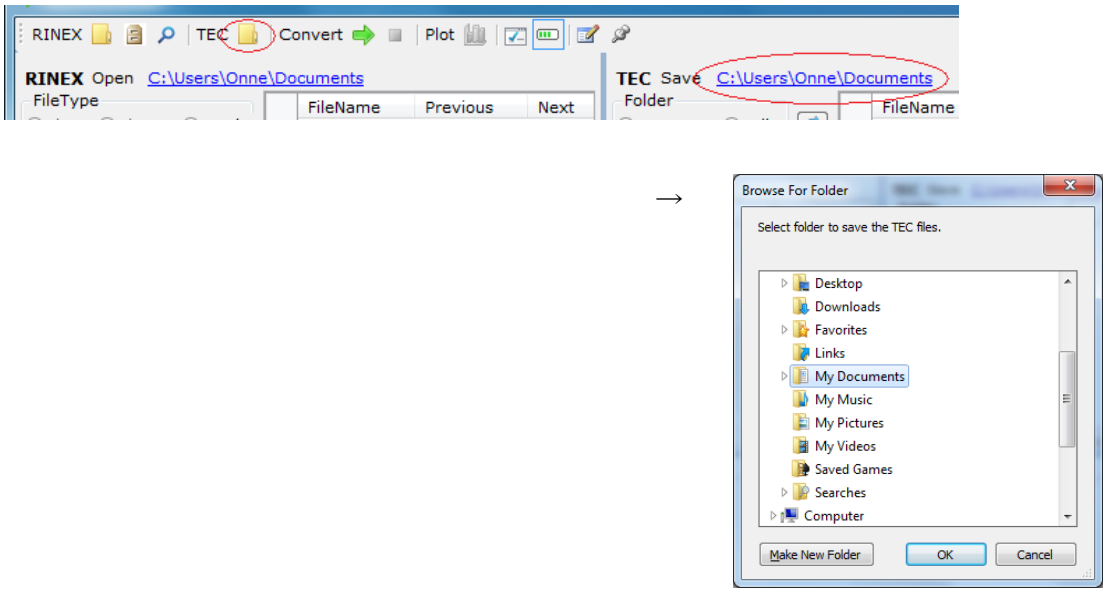
1. Select a root folder for RINEX files.



2. Specify the folder structure where RINEX files are stored.

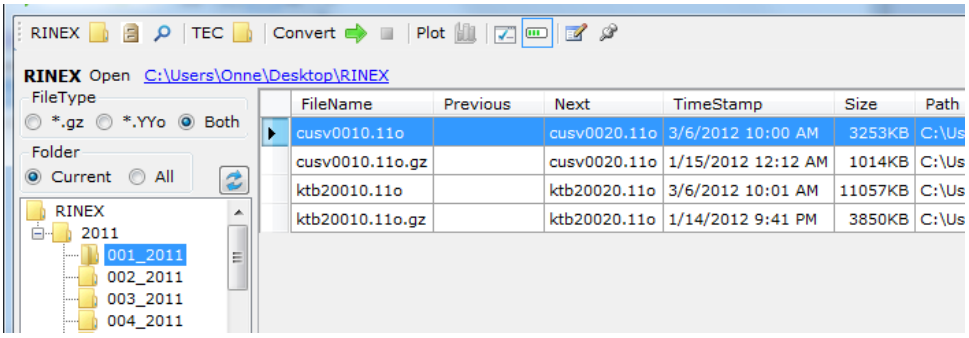


3. Select a root folder in which to store the converted TEC file.

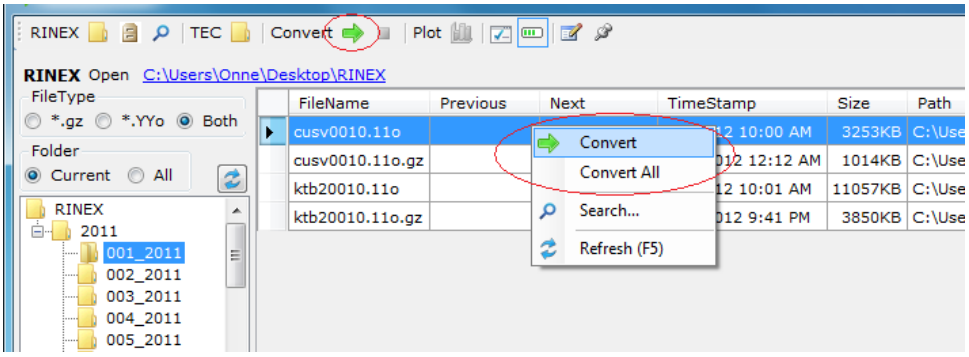


4. In the RINEX folder tree, select the folder where the RINEX file you want to convert is stored.

   In the RINEX File List view, select the RINEX file you want to convert.



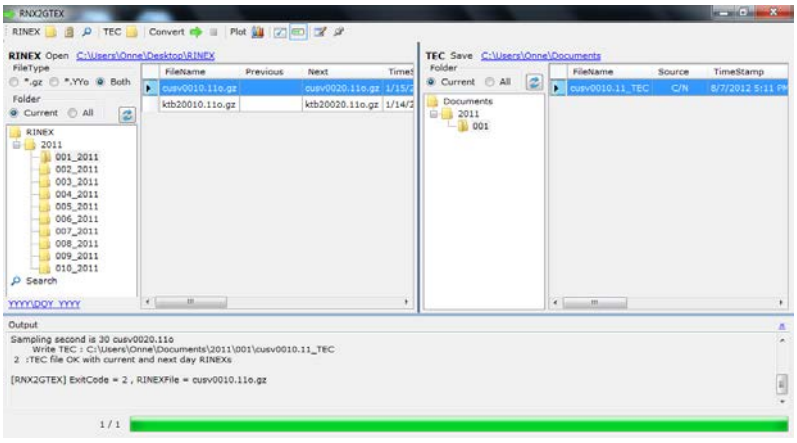
5. Convert the RINEX file.



To convert the RINEX file, perform one of the following:

- Click the Convert button in the toolbar.
- Double-click the RINEX file you want to convert.
- Right-click on the RINEX area, and then click [Convert]. [Convert All] allows you to convert all of the RINEX files currently displayed.

6. When the file conversion is complete, the created TEC files are displayed in the TEC File List view. Logs during conversion are displayed in the Output area.

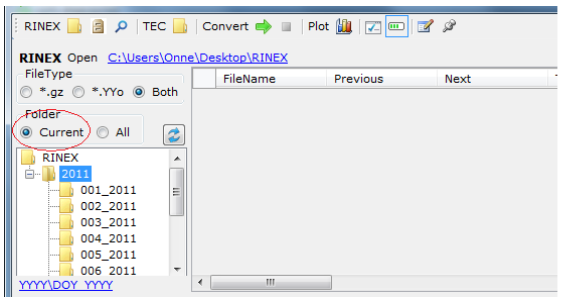


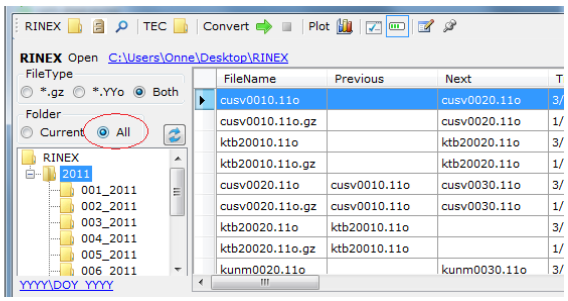
Optional Functions

✧ Specifying files to display in the File List view

You can specify the files you want to display in the File List view using the following radio buttons:

- [Current] Displays the files stored directly under the folder you selected on the folder tree.
- [All] Displays all the files stored under the folder you selected on the folder tree (including subfolders).

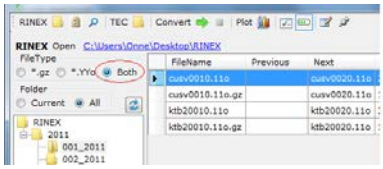




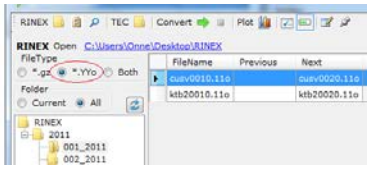
✧ Specifying RINEX files to be displayed

You can specify the RINEX file you want to display in the RINEX File List view.

- [Both] Displays both uncompressed files and compressed files.
- [*.gz] Displays only compressed files.
- [*.YYo] Displays only uncompressed files.



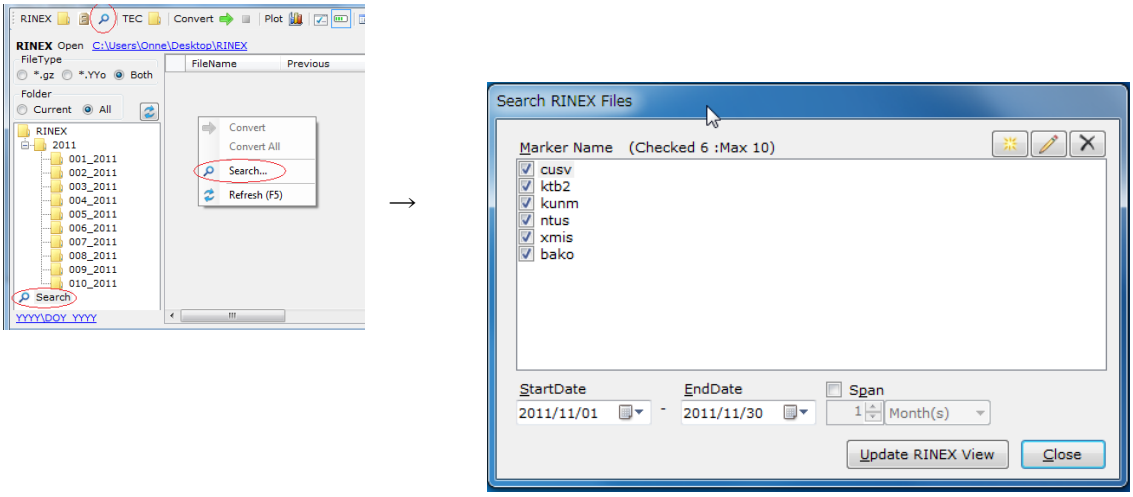




✧ Searching for RINEX files

To search for RINEX files, perform one of the following:

- Click the Search button on the toolbar.
- Click the Search node on the RINEX folder tree.
- Right-click on the RINEX area, and then click Search.



[Marker Name]

Select the marker name by which you want to search for RINEX files.

The three buttons shown in the upper right corner allow you to add a marker name, change the name of a marker name and delete a marker name, respectively.

[Start Date]

To search for RINEX files by the RINEX file date range, specify the start date.

[End Date]

To search for RINEX files by the RINEX file date range, specify the end date.

[Span]

When you want to specify a time span instead of the end date, click this checkbox.

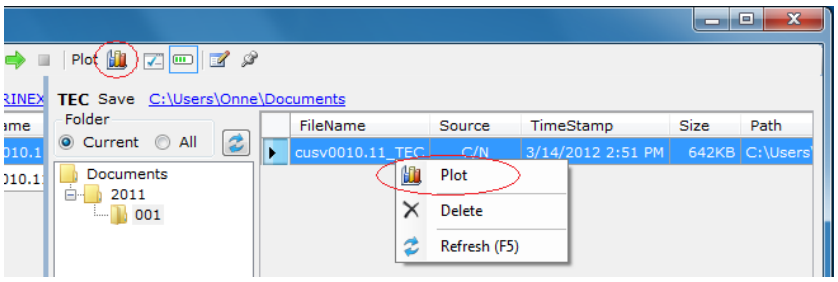
[Update RINEX View]

The RINEX files that meet the specified conditions (marker name and Date) are displayed in the RINEX File List view.

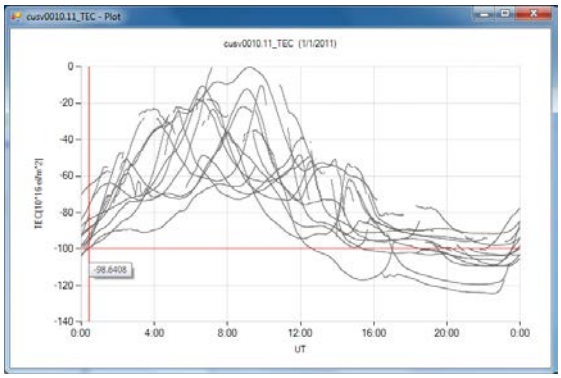
Note: When you uncheck all the checkboxes of marker name, you can search for RINEX files only based on the specified date range or time span.

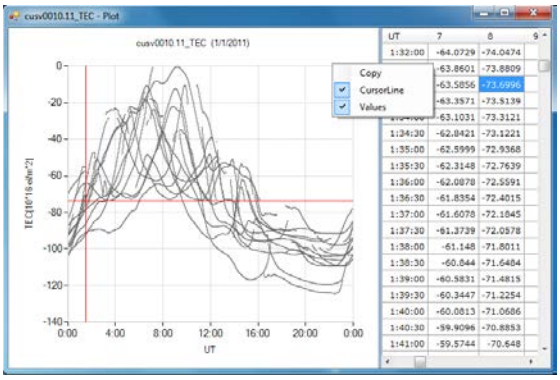
✧ Plotting TEC file

You can plot the data of the TEC file created by converting.



1. From the TEC File List view, select the TEC file you want to plot.
2. Click the Plot button on the toolbar ; otherwise, right-click on the TEC file, and then click Plot.





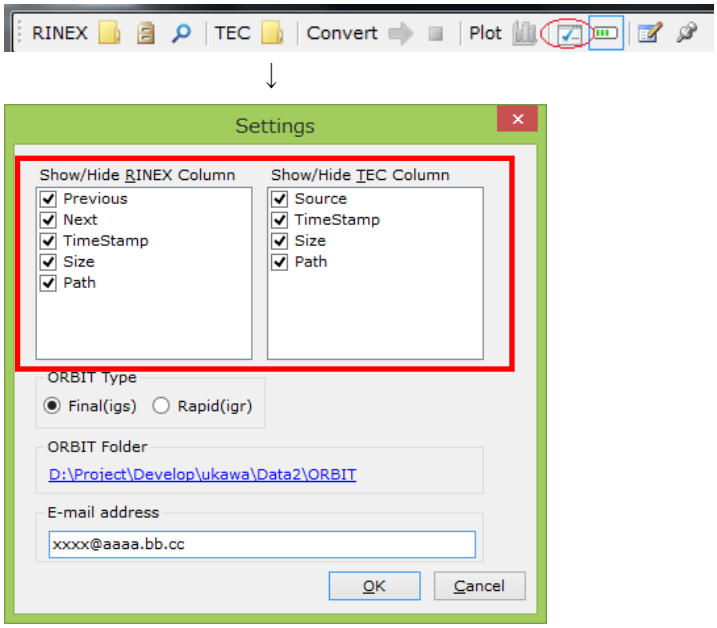
When you right-click on the screen, the following options are available:

- [Copy] Copies the plot to the clipboard.
- [Cursor Line] Chooses to show or hide the cursor line.
- [Values] Displays the data values. Note that this operation can take some time depending on the environment.

The cursor line on the plot and the current cell where the data value is displayed are synchronized.

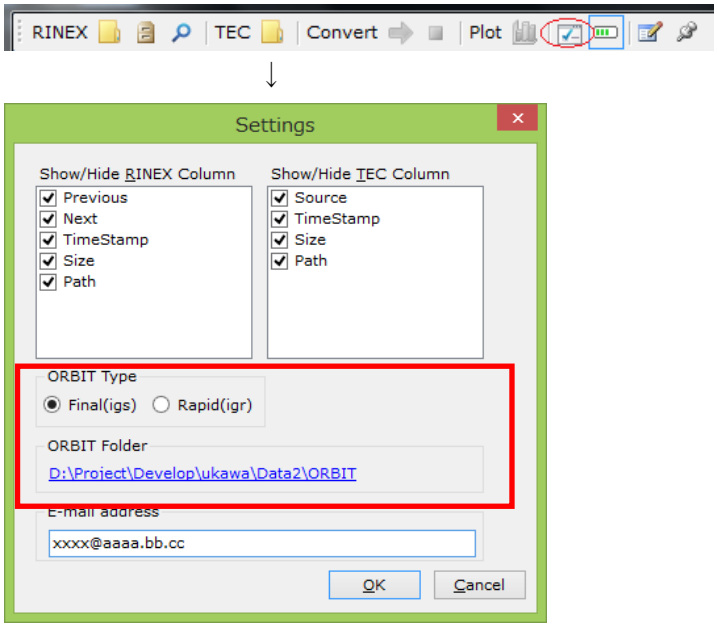
✧ Customizing column display in File List view

You can choose to show or hide the column in the File List view.



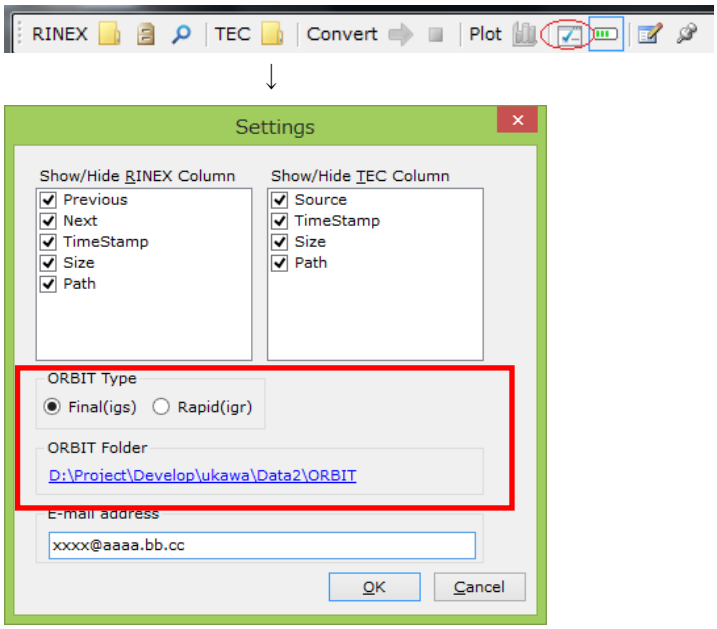
✧ Change satellite orbit data type and specify orbit folder

You can choose satellite orbit data type (Final [Default] or Rapid). and specify a folder save the satellite orbit data by file chooser window.



✧ Preference of your e-mail address

You can change your e-mail address (used by download of satellite orbit data from FTP site) when you installed this application.



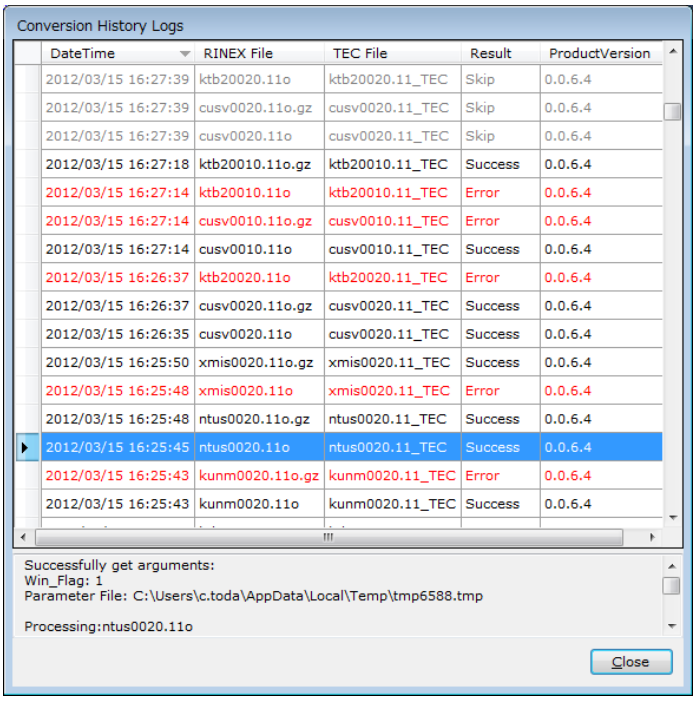
✧ Conversion history logs

The logs generated during conversion are displayed.



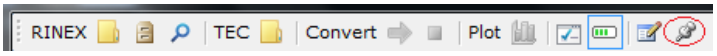
The conversion logs are kept for the most recent one-month period. Even after one month has passed, at least 100 conversion logs are kept.

These logs may be helpful, when a problem occurs.



✧ Version information

You can determine the version of RNX2GTEX.



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