



TracyTools

Application Notes

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PREFACE

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TRACYTOOLS SOFTWARE

1.1. TracyTools purposes and functions

TracyTools is the Windows application that allows the user to add user defined datum and user defined geoid separation data to the JAVAD GNSS Tracy RTK.

1.2. Setting up TracyTools

1.2.1. System requirements

Before installing and using TracyTools, take a moment to run through the system requirements listed below:

- PC-compatible with Intel® Pentium® 100 MHz or faster
- 5 Mb free disk space
- 16 Mb RAM or more (32 Mb recommended)
- 32-bit operating system such as MS Windows 95/98/Me/NT/2000/XP
- Color monitor with minimum 640x480 screen resolution

1.2.2. Installing TracyTools

To install TracyTools on your computer, take the following steps:

1. Download the `TracyTools_pcsetup.exe` from the JAVAD GNSS website.
2. Create a folder on your local disk drive. It is recommended to use `C:\Program Files\JAVAD GNSS\TracyTools`.

3. Double click the executable file TracyTools_pcsetup.exe (Figure 1-1)

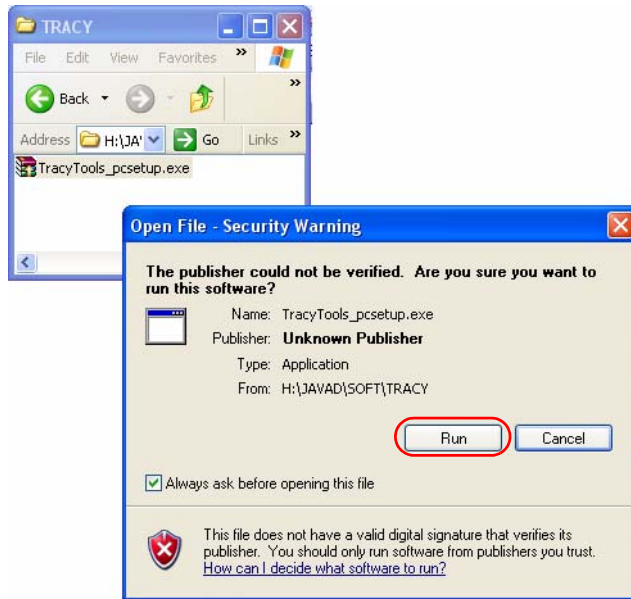


Figure 1-1. Open file

4. Follow the installation wizard's on screen instructions to continue.

1.2.3. Uninstalling TracyTools

To uninstall TracyTools, double click the executable file TracyTools_pcsetup.exe (Figure 1-1). Start installation wizard and select *Remove TracyTools*.

1.3. Getting Started

To start TracyTools press the *Start* button in the bottom-left corner of your computer's screen and select *JAVAD GNSS ▶ TracyTools ▶ TracyTools-Datums* or *TracyTools-Geoids* from the pull-up menu.

TRACYTOOLS-DATUMS

2.1. How to Add a User Datum Transformation to Tracy RTK

1. Connect your Victor controller with Tracy Software to PC using Microsoft ActiveSync.
2. Copy the file `csr.db3` from Victor to your PC. The file is located at Victor's folder `\Storage\Tracy_RTK`. This file stores all coordinate systems available in Tracy.
3. It is strongly recommended to back up the file `csr.db3` in a separate folder.
4. Start TracyTools-Datums application on your PC (see page 10).
5. The following window will appear for the first start (Figure 2-1). Later on the last opened database will appear.

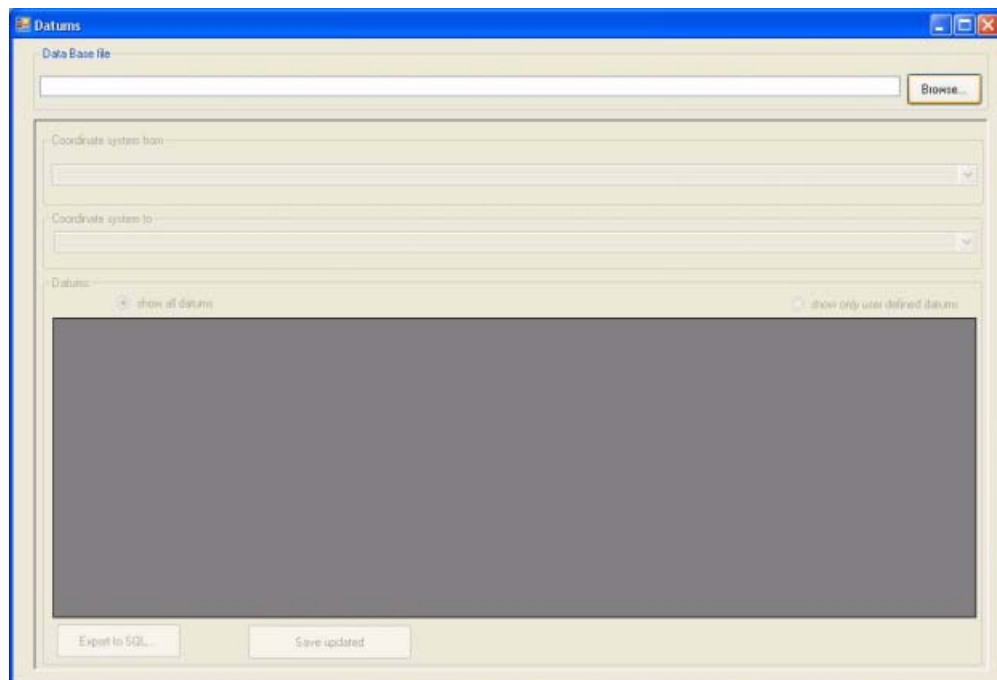


Figure 2-1. Start window

6. Click *Browse* button to open the data base file (Figure 2-2) and select the `crs.db3` file saved on PC:

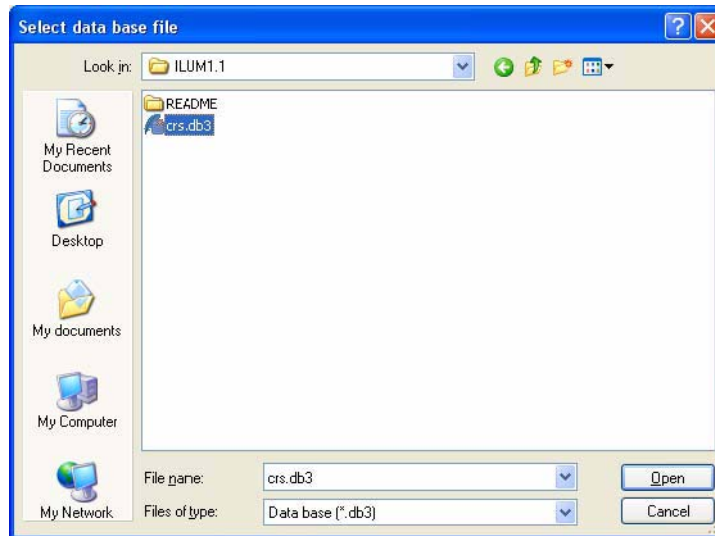


Figure 2-2. Select data base file

7. The main window will get active (Figure 2-3):

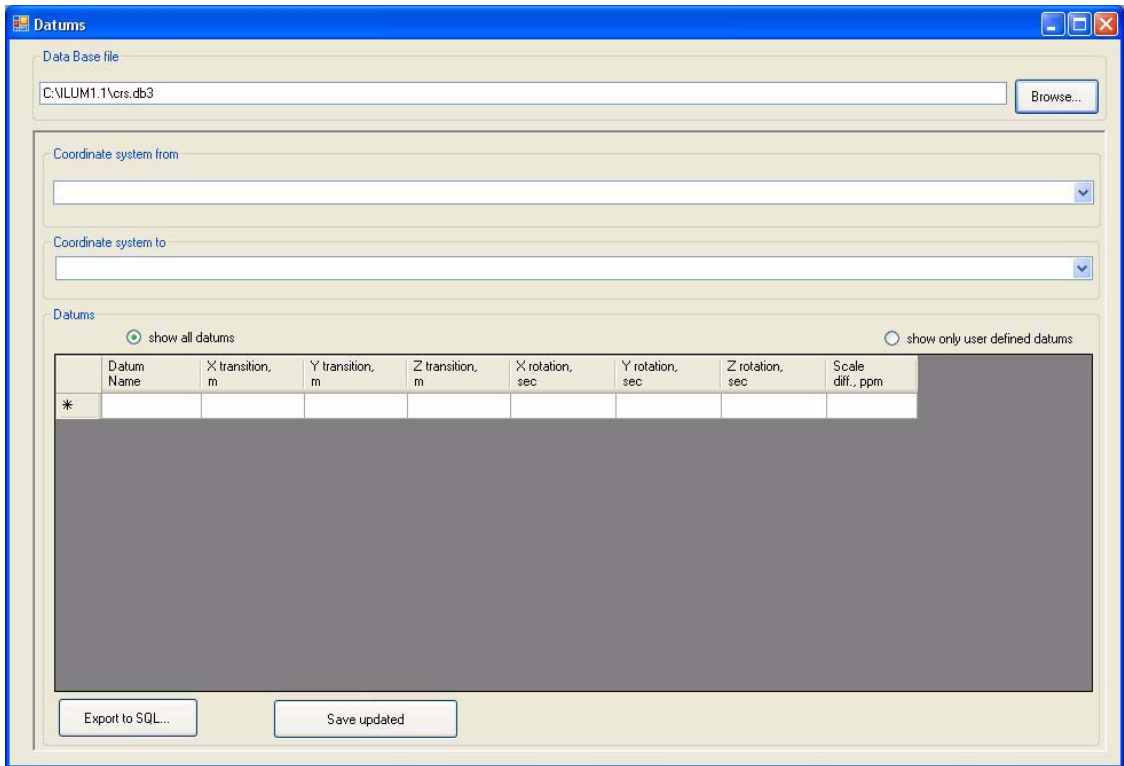


Figure 2-3. Main window

8. Select from the list the appropriate coordinate systems using *Coordinate system from* and *Coordinate system to* drop-down list boxes:

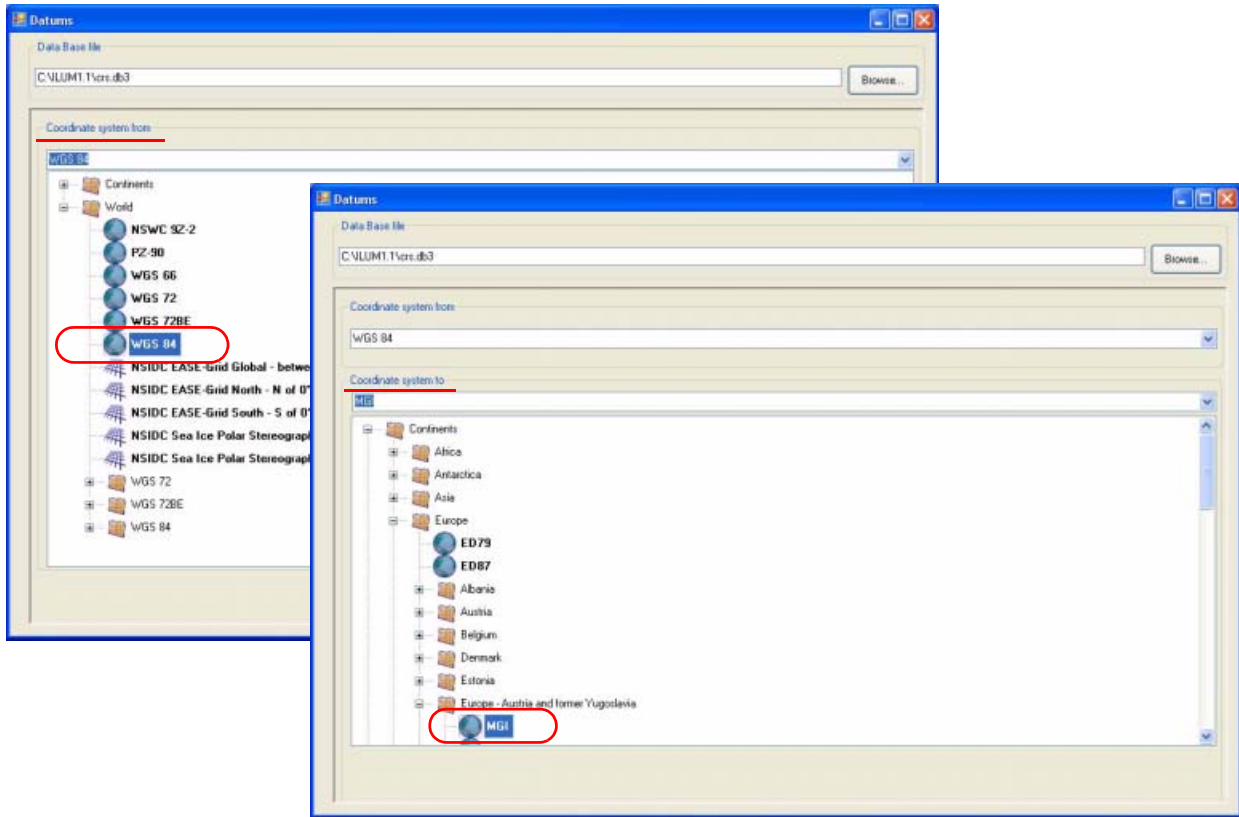


Figure 2-4. Select Coordinate system

Note: You can select either grid or geographical systems (the CS type is specified with icon) and create direct transformation between the systems. But for datum transformation it's recommended to create transformation between geodetic systems which are the bases for the system.

Note: Also you can select XYZ (Cartesian) systems. The datum transformation will work between them as well. But in that case the transformation affects much more systems, because the XYZ system can be the base for other geodetic systems which are base for many grid systems. So we recommend to create datum transformation between geodetic systems (with globe icon in the list).

- As an example let's select the datum transformation between WGS84 and MGI (Croatian coordinate system).

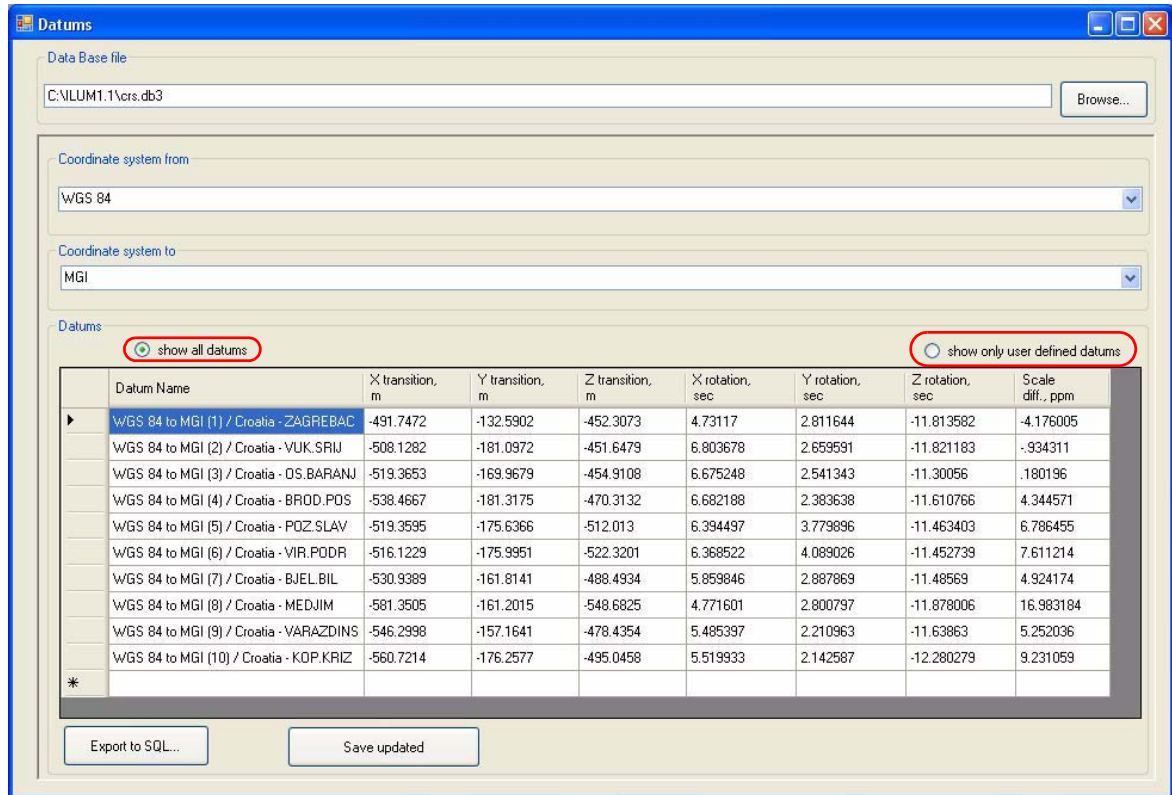


Figure 2-5. Datum transformations

- All datum transformations will be displayed in the table. You can filter the datums and see all of them or user defined datums only switching with the radio buttons the datum list (Figure 2-5).
- Now you can modify the list of datums. The datum can be selected by clicking on the appropriate line and deleted by pressing the *Delete* key.
- The datums' numbers and names in the list can be modified as well. You can type your own datum entering data into empty line on the bottom.

Note: To cancel your changes and re-read data from database, just select anew the coordinate system. You can save the data or ignore the modification.

- Click *Save updated* button to save all changes you made, or just exit the program. Confirm the modification and rebuild datum list between two coordinate systems.
- Replace the *crs.db3* file in the Victor's `\Storage\Tracy_RTK` folder with the modified file.
- Start Tracy RTK on your Victor controller.

16. Click the *Job* button and open the *CS* tab. Select the Croatian coordinate system, e.g. “Balkans zone 6”. You will see the list of transformations based on your data (Figure 2-6).

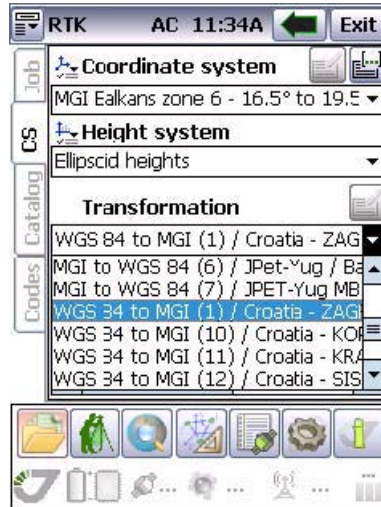


Figure 2-6. Tracy RTK. CS tab

TRACYTOOLS-GEIDS

3.1. How to Add User Geoid Separation Data to Tracy RTK

1. Connect your Victor controller with Tracy Software to PC using Microsoft ActiveSync.
2. Copy the file `csr.db3` from Victor to your PC. The file is located at Victor's folder `\Storage\Tracy_RTK`. This file stores all coordinate systems available in Tracy.
3. It is strongly recommended to back up the file `csr.db3` in a separate folder.
4. Start TracyTools-Geoids application on your PC (see page 10).
5. The following window will appear (Figure 3-1).

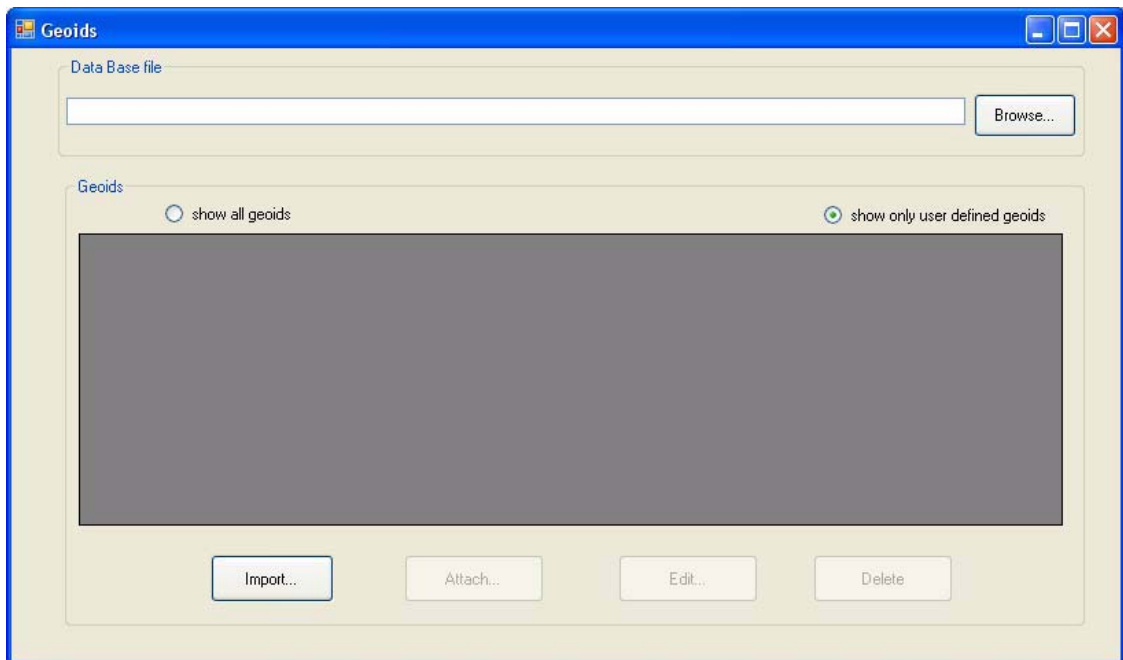


Figure 3-1. First start window

- 6. Click the *Browse* button to open the data base file (Figure 3-2) and select the *crs.db3* file saved on PC:

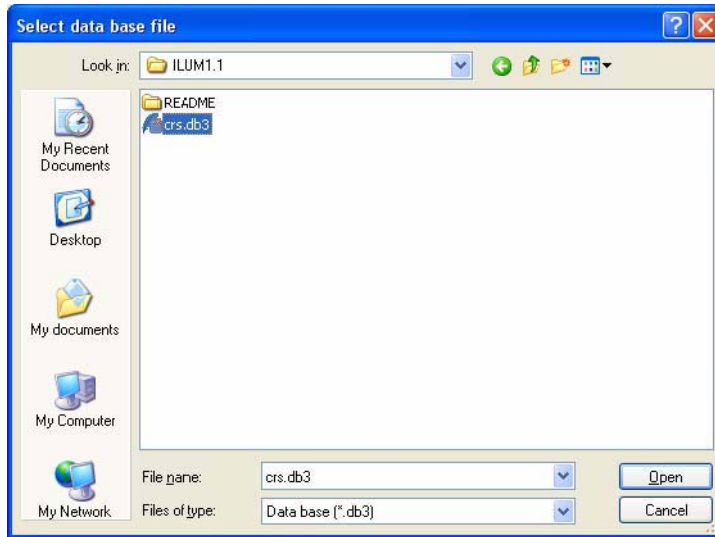


Figure 3-2. Select data base file

- 7. The main window will get active (Figure 3-3):

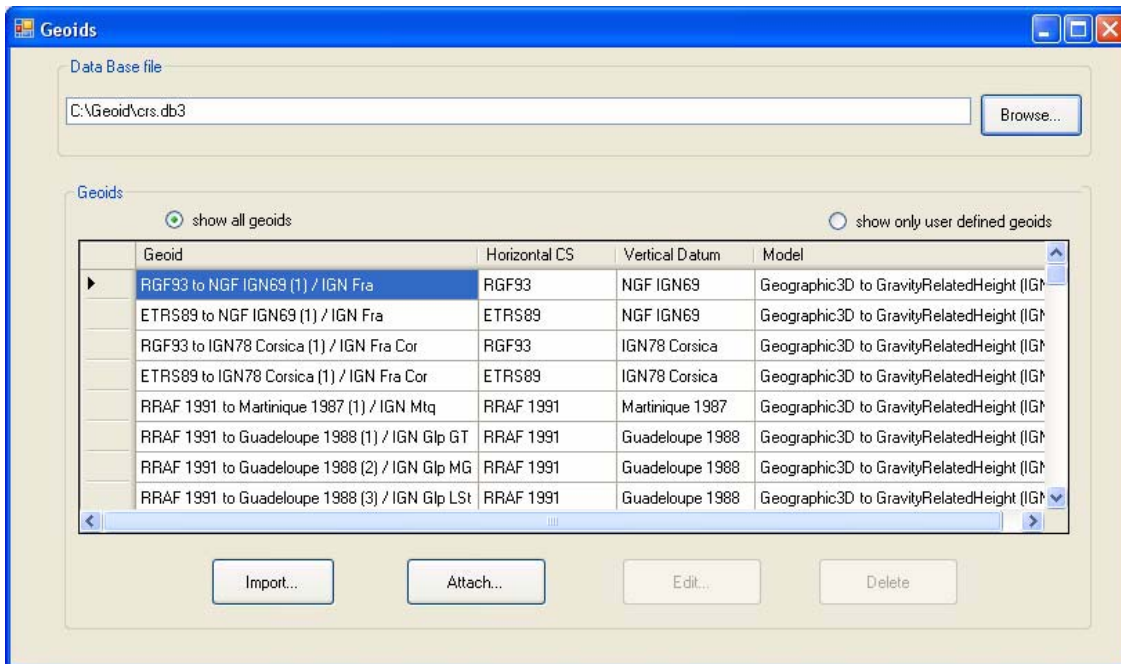


Figure 3-3. Main window

8. You will see the list of all geoids and/or user geoids in the file, or if there are no user geoids in the list, the table will be empty. Use the radio buttons to switch between all geoids and user defined geoids.
9. Click *Import* button to create .bin file from your text data file. The following dialog window appears (Figure 3-4):

Create Geoid Separation File

Geoid model file
[Text Box] [Browse...]

Delimiter char
 Tab Semi-colon Comma Space Other: [Text Box]
 Treat consecutive characters as one Start import from line: [Text Box]

Preview
* [Table]

Region
South: [Text Box] West: [Text Box]
North: [Text Box] East: [Text Box]
Step N-S: [Text Box] Step W-E: [Text Box]

Transformation model
[Dropdown Menu]

[Start >>]

Figure 3-4. Create Geoid separation file

10. Click the *Browse* button to select your text file with geoid separation data.

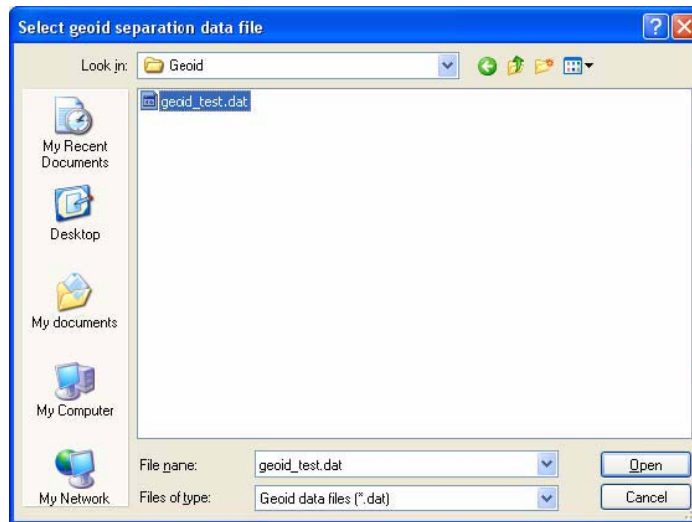


Figure 3-5. Browse file

11. The TracyTools-Geoids application tries to understand the file automatically. Otherwise all data will be shown in one column and you have to arrange the data manually.

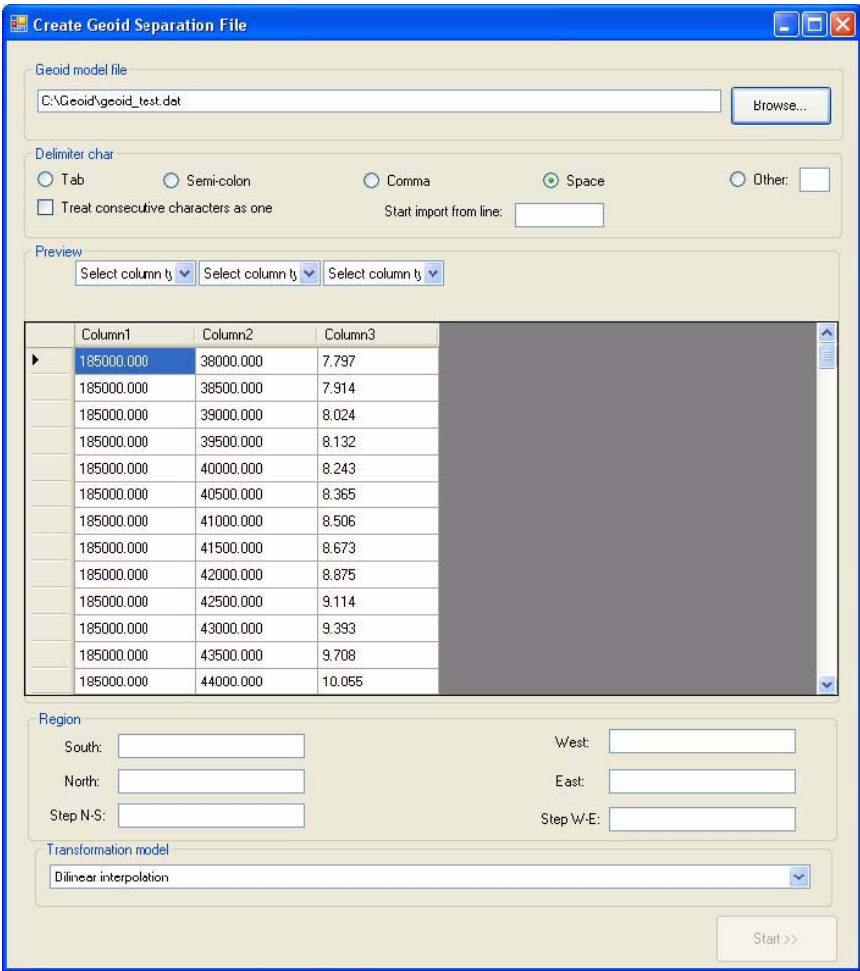


Figure 3-6. Create geoid separation file

12. Set a column for easting, northing and undulation values.

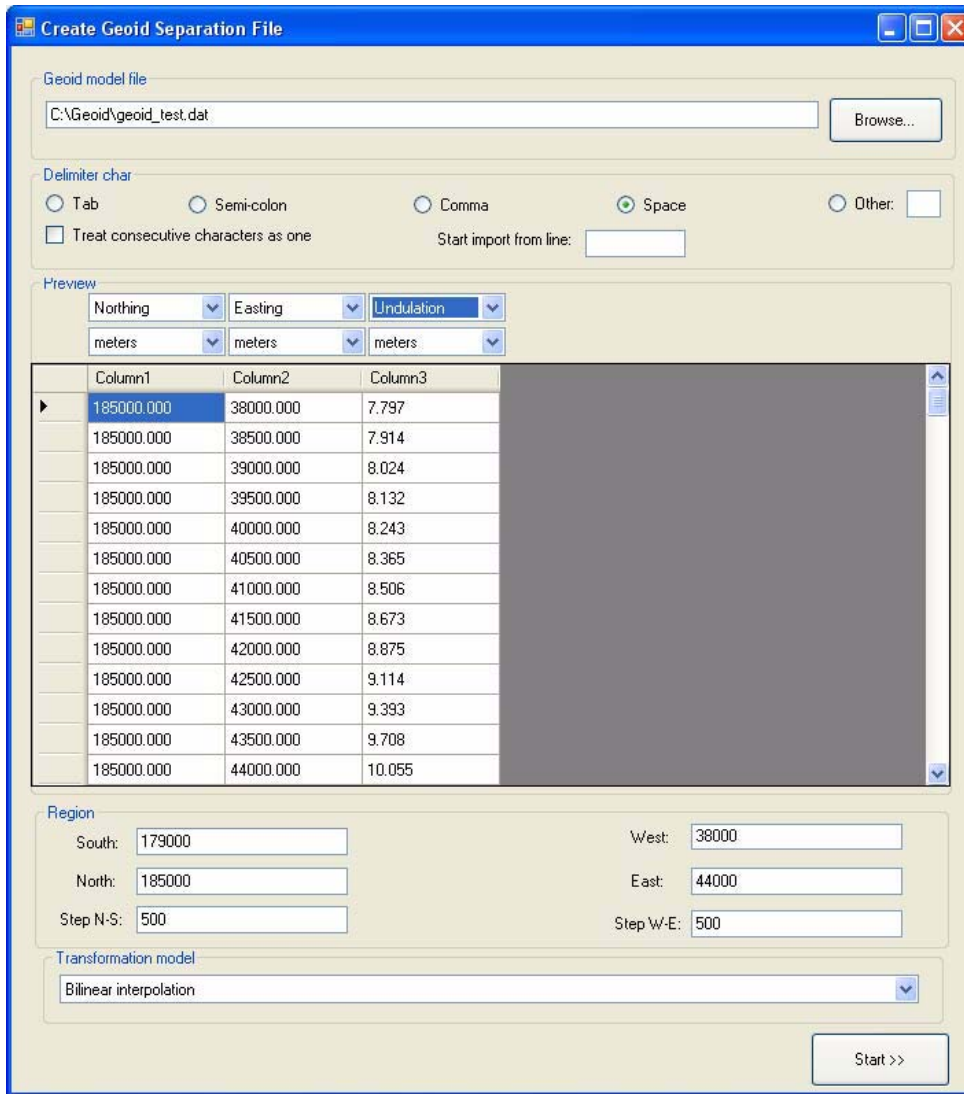


Figure 3-7. Edit table

13. The *Start* button gets active and you can accomplish the conversion to the .bin file. The .bin file name will be the same as .dat file has.

Note: Now Tracy works wrong with the files with more one dot in the file name. Please name the file as simple as possible.

14. Attach the geoid file to Tracy CS DB by clicking the *Attach* button. After import is over the attach step runs automatically.

15. The *Add geoid Separation file to Data base* dialog window appears.

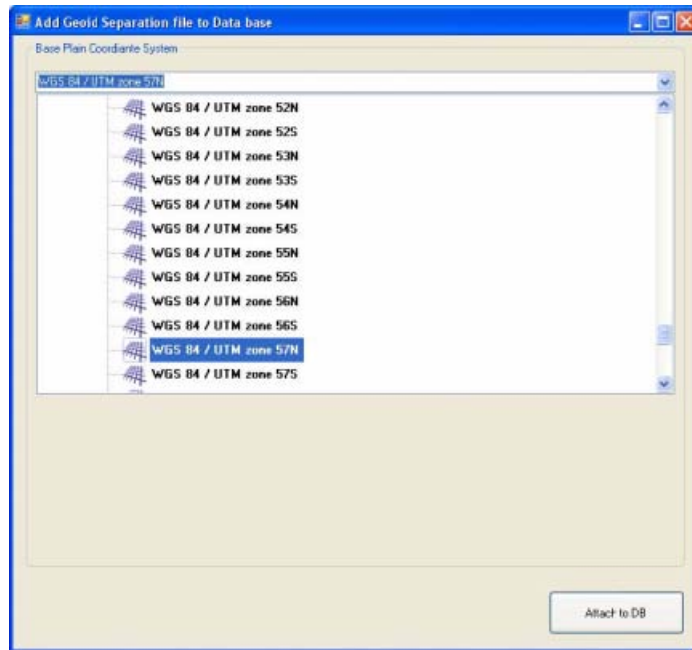


Figure 3-8. Add geoid separation file to data base

16. In this dialog, you should select Plane Coordinate System and Height system for your geoid separation data.

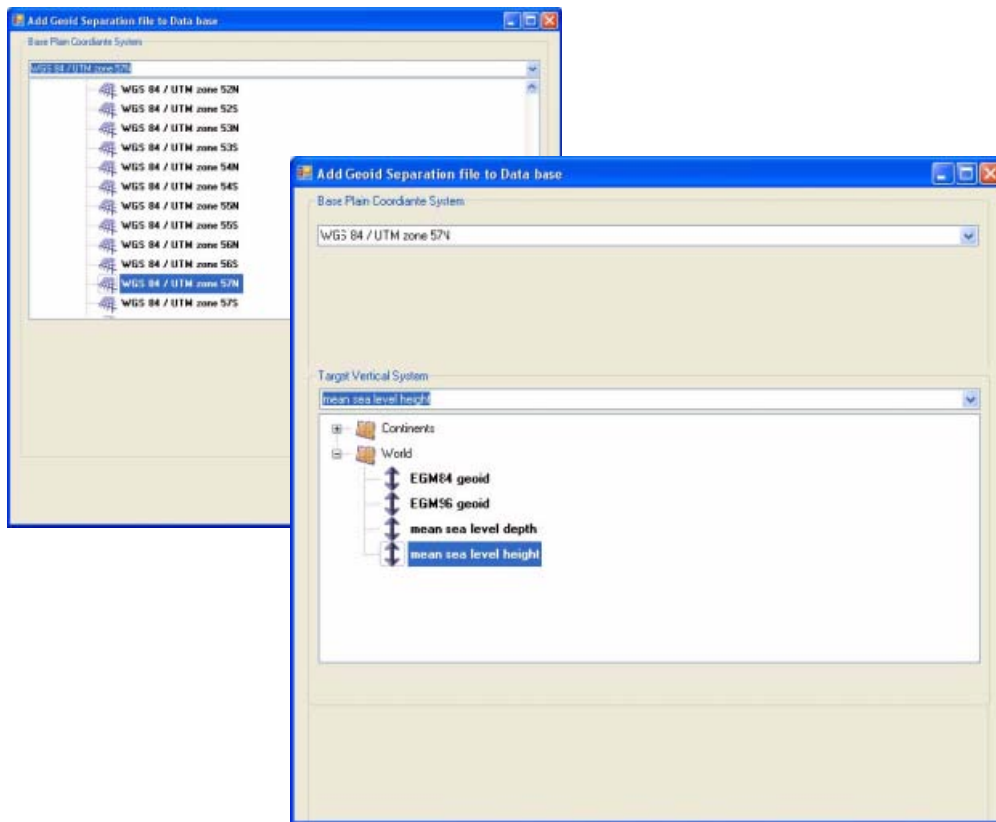
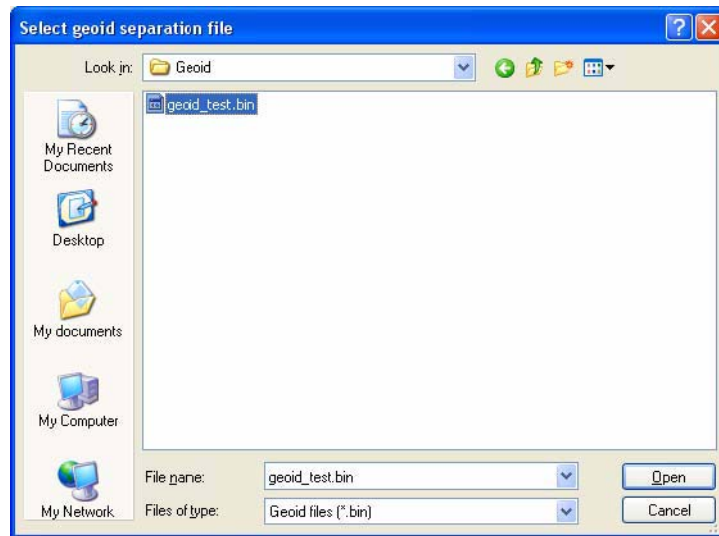


Figure 3-9. Add geoid separation file to data base

17. Select geoid .bin file:



18. Click the *Attach to DB* button to save the information in crs.db3 file (Figure 3-10).

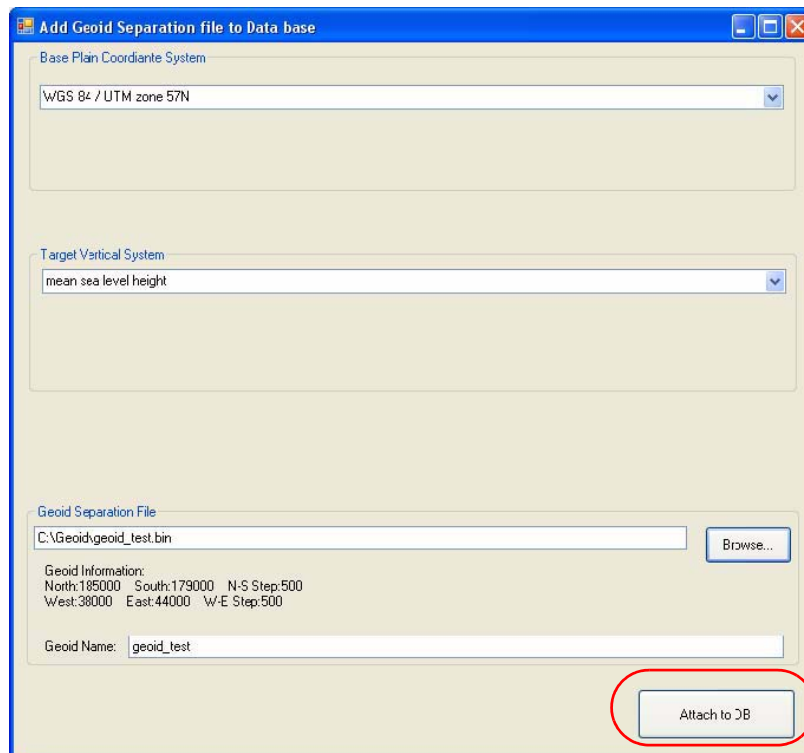


Figure 3-10. Attach to DB

19. Return back to *Main* window. You can see crs.db3 has one user defined geoid (Figure 3-11)

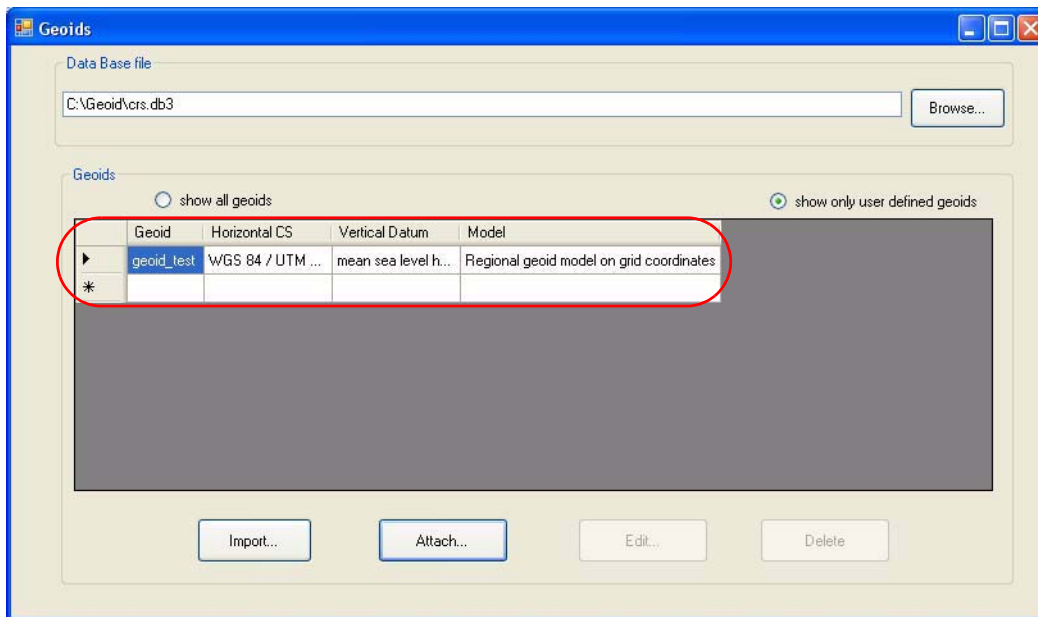


Figure 3-11. A user defined geoid

20. Replace the crs.db3 file in the Victor's \Storage\Tracy_RTK folder with the modified file.
21. Copy the user geoid separation .BIN file into Tracy RTK to the Victor's \Storage\Tracy_RTK\Geoids folder.
22. Start Tracy RTK on your Victor controller.

23. Click the *Job* button and open the *CS* tab. Select coordinate system WGS 84 and Height system Ellipsoid heights to enter the data in this system.

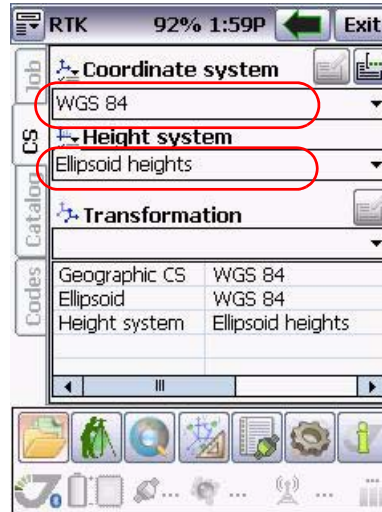


Figure 3-12. CS tab

24. Click the *Map* button and open the *Data* tab. Create a new control point as an example with coordinates Latitude $01^{\circ}37'00.00000''N$ and Longitude $154^{\circ}52'00.0000''E$ and Height 100.000. Check them in *Data* tab (Figure 3-13):

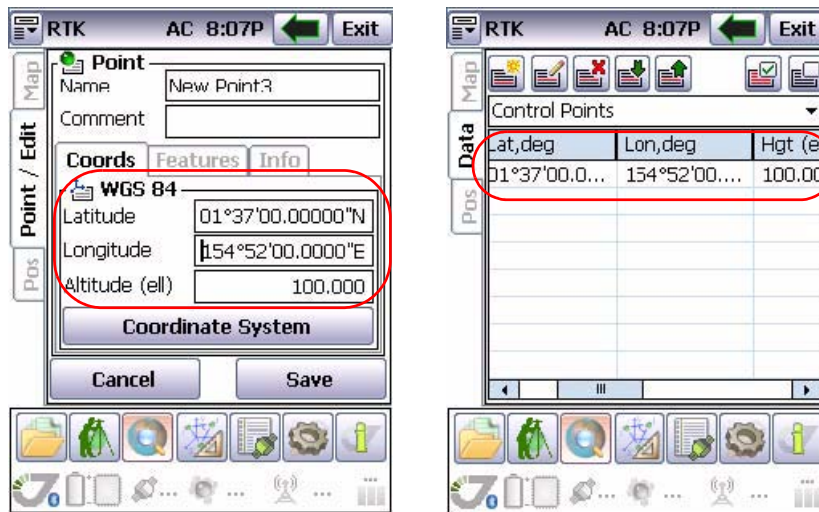


Figure 3-13. Data tab - New point

25. Click the *Job* button, open *CS* tab, and select the same coordinate system as was set for the geoid file (Figure 3-14):

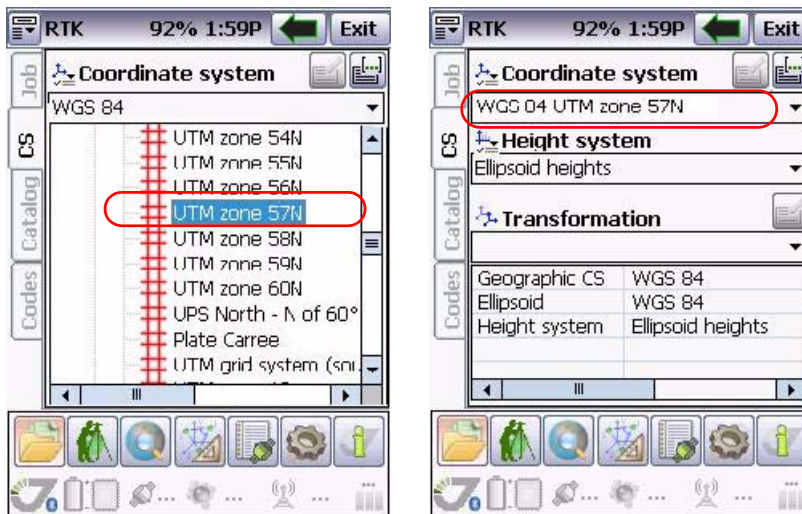


Figure 3-14. CS tab - Coordinate system

26. Open the *Data* tab to control recomputed coordinates and height (should be still ellipsoidal - Hgt (ell)) (Figure 3-15).

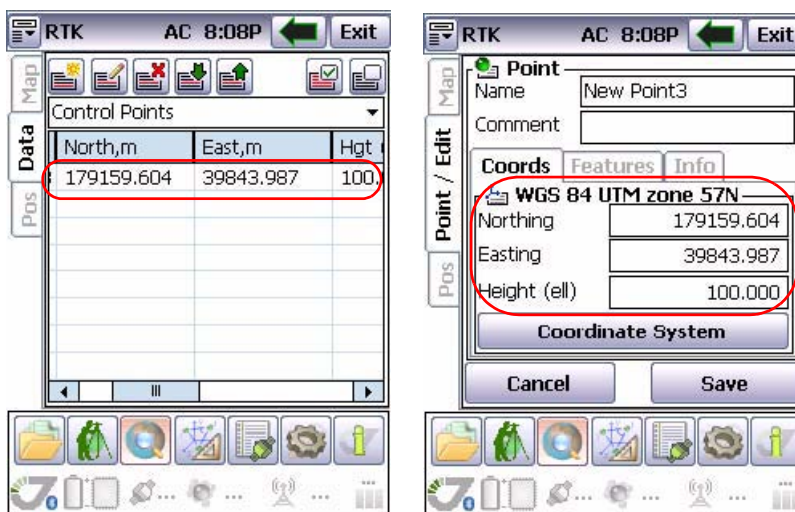


Figure 3-15. Data tab and Point/Edit tab

27. Return to *CS* tab and select your geoid name in the *Height system* drop-down list (Figure 3-16).

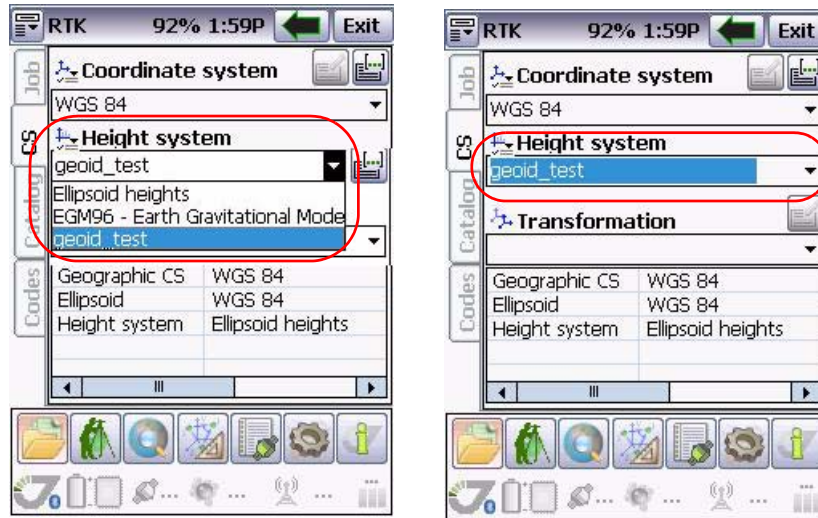


Figure 3-16. CS tab - Height system

28. Go to the *Data* tab again and see orthometric heights on your local geoid (Figure 3-17).

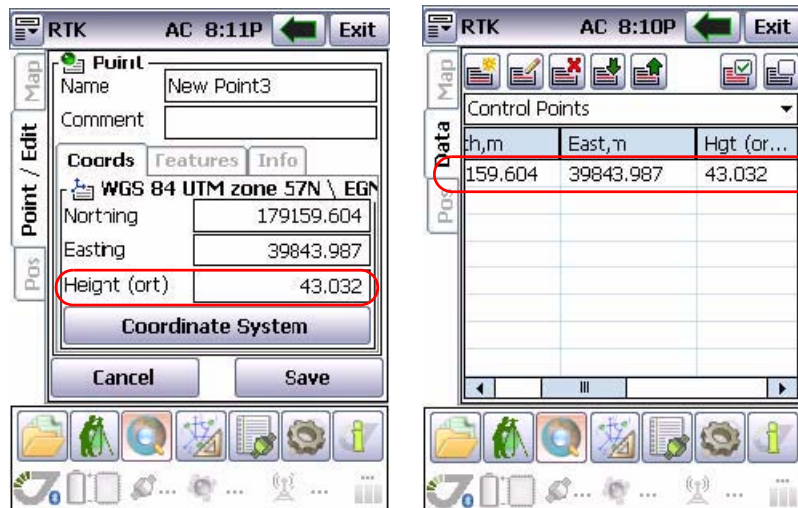


Figure 3-17. Data tab



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