

Global Positioning System (GPS): Processing GPS Data

By

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1. If you were using the base station to collect data for differentially-correcting your GPS measurements (DGPS), halt the execution of the "Reliance Datlogr" software by pressing the "Esc" key on the keyboard of the connected computer (to "Stop Receiving" data from the base station receiver). You will then need to hit the "Esc" key again to exit the program and confirm your selection by pressing the "Y" key.
2. Connect the 9-pin female connector of the GPS roving unit to the serial port of the computer (COM2:).
3. Switch on the computer (if not already on) and double-click the "Reliance Processor" icon on the desktop. You should see the screen in Figure 1.
4. Select the "Project" option from the "Project" drop-down menu, and select "New" (or "Open" if you have an existing project that you want to view, modify, or overwrite).
5. Enter the name of the new project and click the "Save" button (or select an existing project and click the "Save" button to overwrite). If you chose to "Open" an existing project, select the project and click the "Open" button. This will bring out the "Project Control" window as shown in Figure 2.

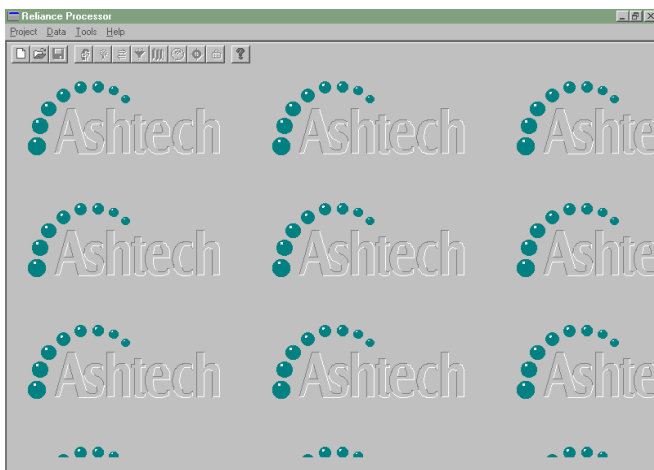


Figure 1. Main screen of Reliance Processor.

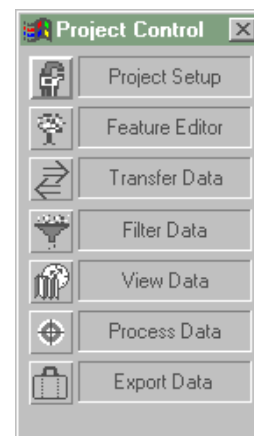


Figure 2. "Project Control" Window.

6. Click on the "Transfer Data" icon in the "Project Control" window to start transferring data from the roving unit. The software should display the "Transfer Data" Window (refer to Figure 3).

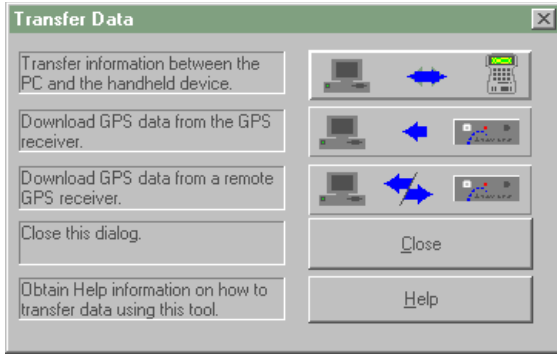


Figure 3. “Transfer Data” window.

- Click on the button that corresponds to the second option on the “Transfer Data” window (i.e., “Download GPS data from the GPS receiver”). You will need to “ensure that the GPS receiver is connected”. If the connection between the receiver of the roving unit and the computer is set correctly, you will see a window similar to the one depicted in Figure 4 showing the recorded files on the receiver of the roving unit.

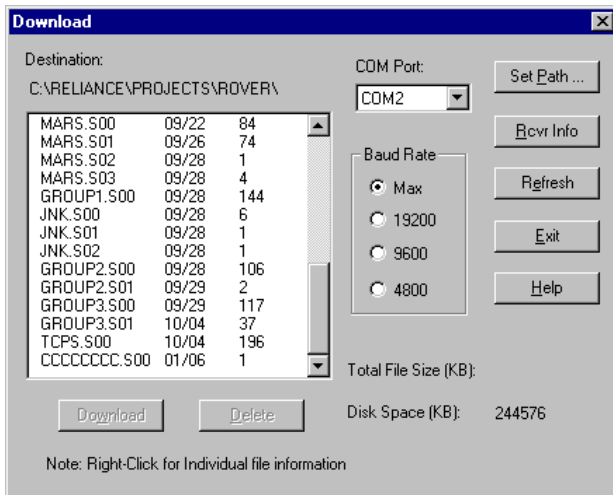


Figure 4. Sample “Download” window.

- Select the file(s) you would like to have downloaded and click on the “Download” button (Figure 5). The “Set Path...” button can be selected to view and alter the pathname of

downloaded files as these are being saved to the hard disk (by default, the downloaded files will have the path `c:\Reliance\Projects\Rover`). You may delete any recorded file(s) from the receiver by first selecting and then pressing the “Delete” button. When done, click on the “Exit” button.

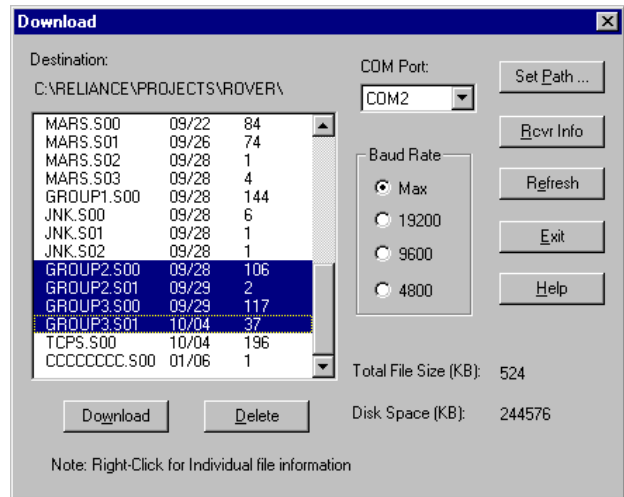


Figure 5. Sample file selection from the “Download” window.

- Click on the “Close” button to close the “Transfer Data” window.
- Click on the button that corresponds to “Project Setup” option on the “Project Setup” window. The “Setup the open project” window will appear as shown in Figure 6. Click on the “Open file” icon for the “Rover:” to view the list of available files in the default directory of the rover unit. Your rover file should be among those displayed. Select the file and click on the “Open” button. Repeat the same for the “BASE:” file entry, if you are interested in differentially-correcting your GPS measurements using the base station data.

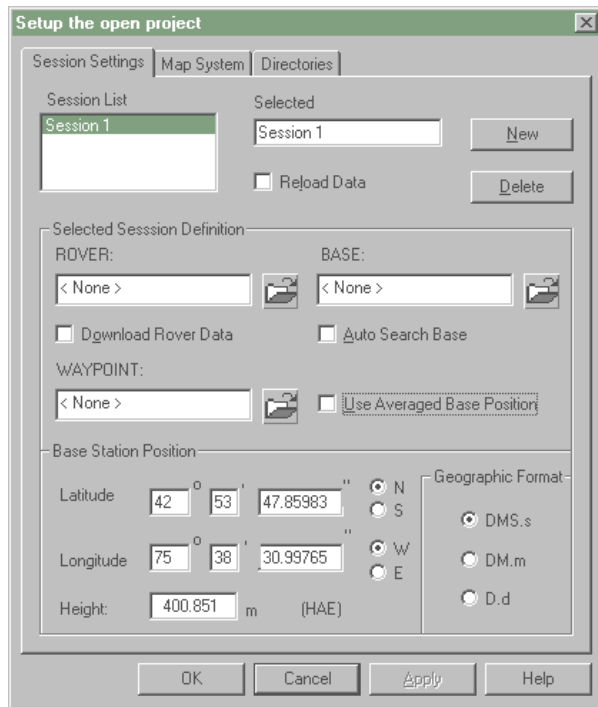


Figure 6. “Setup the open project” window.

11. Check the “Use Averaged Base Position” or enter the Latitude, Longitude, and Height of our base station in Charlton Hall as shown in Figure 6.
12. Click on the “Ok” button to save your selections and return to the main screen of Reliance Processor.
13. Click on the button that corresponds to the “View Data” option of the “Project Control” window (refer to Figure 2). A “Time View” window similar to the one shown in Figure 7 will appear. Also, a “Map View” window will appear below the “Time View” window (refer to Figure 8).
14. Click on the “Map View” window to select it. You can explore the several available options at your disposal in this window from the pull-down menus, including the option to “Print” map. You may

double-click any feature on the view to display the feature’s attributes (including the area for the area feature). Note, however, that differential corrections using base station measurements are not incorporated until after the “Process Data” option is executed from the “Project Control” window (Figure 2).

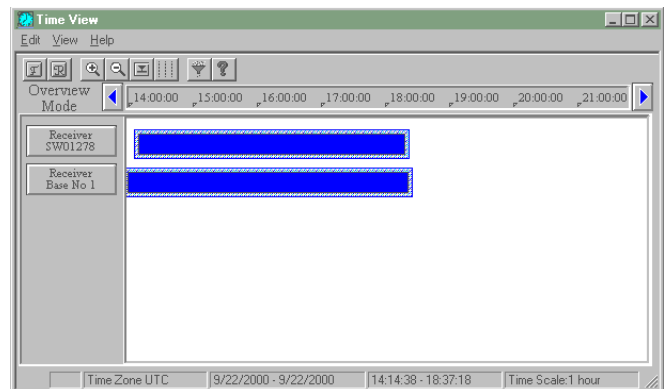


Figure 7. Sample “Time View Window”.

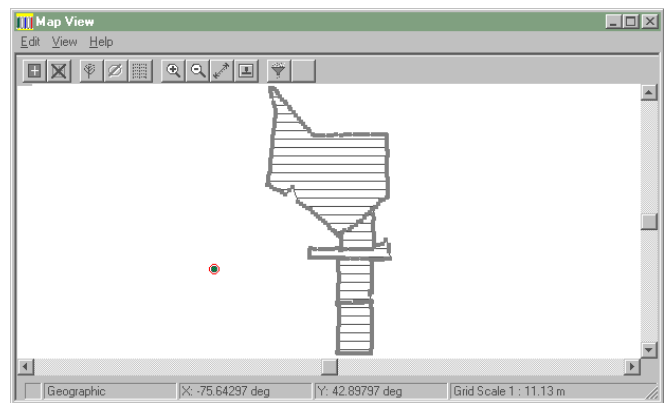


Figure 8. Sample “Map View” window.

15. If you are interested in differentially- correcting your GPS measurements using a base station file, you must first return to the “Project Control” window and then click the icon that corresponds to the “Process Data” option. A “Process Selection” window, similar to the one depicted in Figure 9, will appear. Check the “Sub-meter”

processing mode and click on the “Begin” button to start processing your roving unit data. Click on the “Close” button when the processing is complete. Note that an error message will appear if a base station file is not selected in the “Project Setup” option or the selected file does not have the right data.

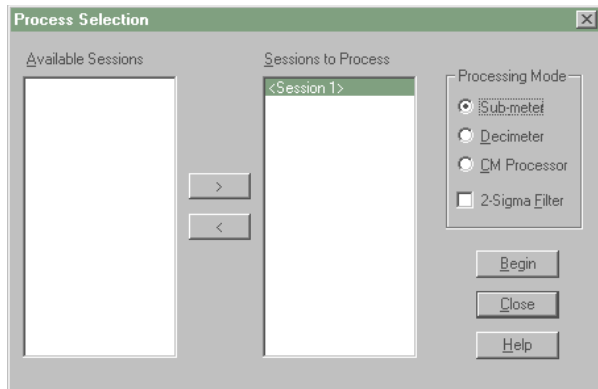


Figure 9. “Process Selection” window.

16. Repeat steps 13 to 14 if you chose to follow step 15.
17. To export the GPS data, click the icon that corresponds to the “Export Data” option from the “Project Control” window (refer to Figure 2). Enter a filename in the “File name” entry and choose the type of export data file you wish to use from the “Save as type:” list box control (refer to Figure 10). Selecting “Shape (*.SHP)” as the type will produce a shape file for use in ArcView GIS.
18. Repeat steps 4 to 17 to view, differentially-correct, and process data from other roving unit files.

19. Once done, close all windows and return to the Desktop.
20. Unplug the two camcorder batteries from the receiver and recharge.
21. Unless otherwise instructed, logoff the computer and wait until the screen displays the message “It’s now safe to turn off your computer” before switching-off the computer.
22. If you were the one who turned on the Base station in 201 Charlton for DGPS, make sure that you switch-off the receiver by disconnecting the power cable before leaving the laboratory.

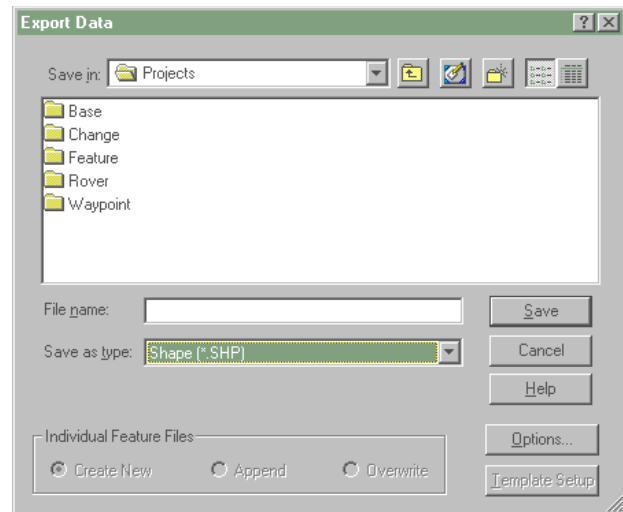


Figure 10. “Export Data” window.