

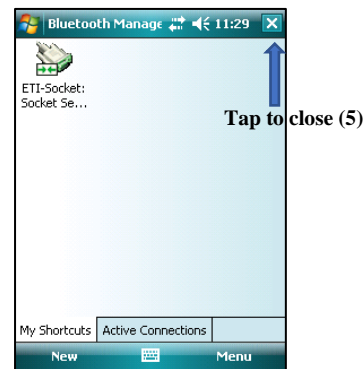
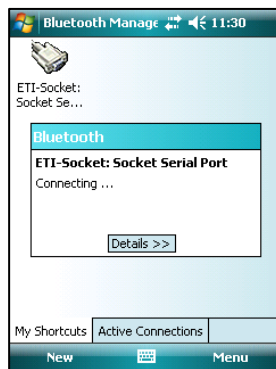
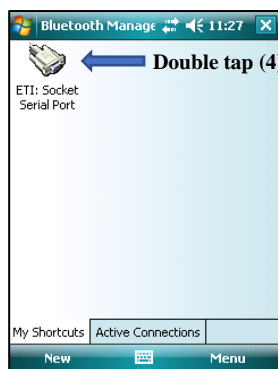
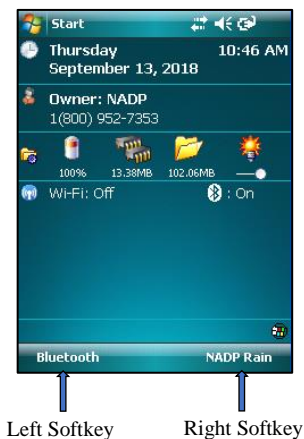


Procedures for Downloading Data using iPAQ PDA

Connecting via Bluetooth

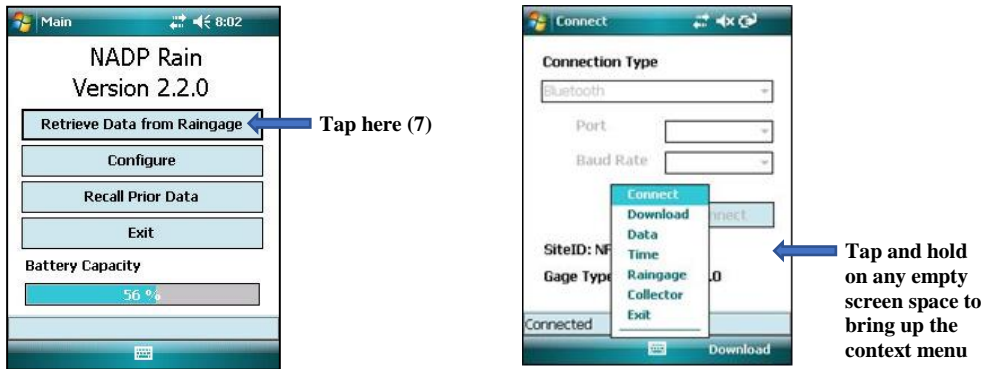
What is Bluetooth? It's a short-range wireless protocol that the PDA uses to communicate with the rain gauge.

1. **Charge the PDA:** Before traveling to the site, make sure the PDA is adequately charged.
2. **Turn on the PDA:** Upon arrival at the site, turn on the PDA using the on/off switch.
3. **Open the Bluetooth Manager:** Tap the left softkey to open the Bluetooth Manager. This will turn on the Bluetooth Radio, if necessary, and will open display the Bluetooth shortcuts. If no shortcuts are displayed, follow the Bluetooth Configuration steps in the NADP Rain setup instructions.
4. **Open the connection to the raingage.** The Bluetooth manager should display an icon for your rain gage. It will look like the one shown below (left), but the label may vary depending on the rain gage at your site. **Double tap** on the icon to open the connection. A window will open showing that the connection is being attempted (below center). When the connection is established, the icon will change and appear like the one below (right).



5. **Close the Bluetooth Manager** Tap on the X in the upper right hand corner of the screen to close the Bluetooth Manager (above right). Then close the IPAQ Wireless window by tapping on the X. This will return you to the Today screen.
6. **Start the NADPRain program:** Tap the right softkey to start the NADP Rain program. It may take up to 10 seconds for the program to load and initialize.

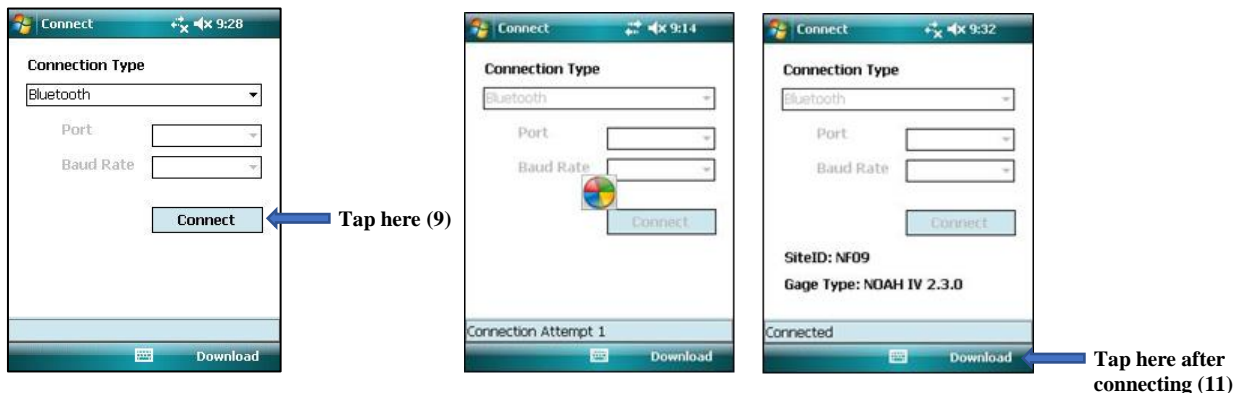
7. Start Retrieve Data: Tap on the Retrieve Data from Raingage button to open the data retrieval form. This form has seven screens:
 1. Connect
 2. Download
 3. Data
 4. Time
 5. Raingage
 6. Collector
 7. Exit.



8. The name of the current page will be shown at the top of the page. You can navigate between them using the softkeys. The right softkey will move to the next screen, and the left softkey will move to the previous page. You can also jump to any page performing a Tap and Hold on any empty portion of the screen. This will display a context menu that allows you to choose any page. The top of the page displays the name of the current page.

Connecting to a NADP Raingage

9. **Connect to the raingage:** Unless you have been directed otherwise, leave the connection type on the default entry. For iPAQs, this will be labeled Bluetooth. For a Dell Axim, it will be Bluetooth (COM7). Then click on the button that says “Connect”. The Port and Baud Rate options are only used if you connect to the rain gage using a RS-232 cable.

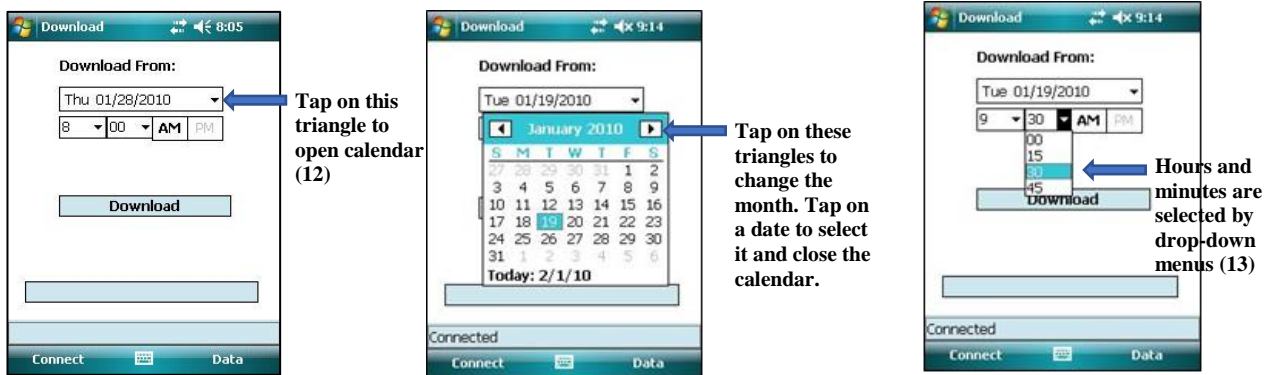


10. **Wait for connection:** It will take a few seconds for the connection to be established. During this time, you will be shown a rotating wait cursor. When the connection is established, the rotating cursor will disappear and the word “Connected” will appear at

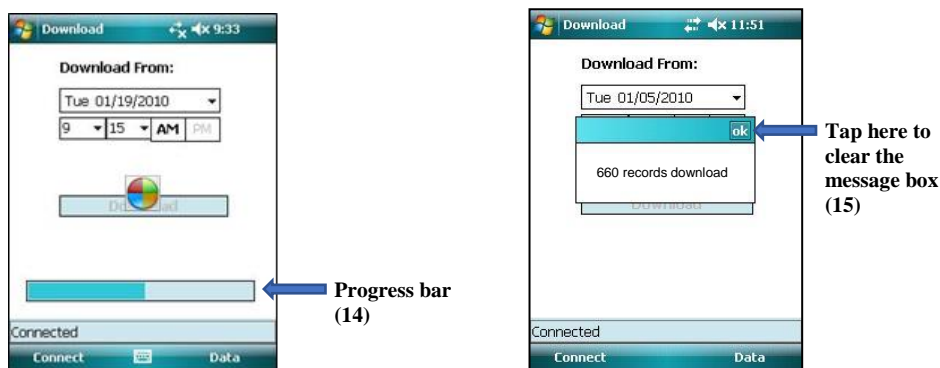
the bottom of the screen. The PDA will display gage information such as the site ID, gage type, and software version.

Downloading from a NADP Raingage

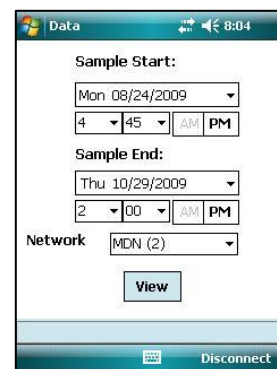
11. **Move to the Download page:** Click on the Right softkey to move to the Download page.
12. **Select the start date:** To change the date, click on triangle in the date box. This will open the calendar. Clicking on a date will select that date and close the calendar. If you need to change the month, click on the triangles in the top corners of the calendar display.



13. **Select the start time:** To change the hour, click in the hour box and select the hour from the drop down box. Click in the minute box to select the quarter hour that followed the sample. Lastly, click on either the AM or PM button, as necessary.
14. **Click on the download button:** This is the large button immediately below the time. A progress bar will be displayed during the transfer.



15. **Wait for the download:** After the download completes, a message box will appear that displays the number of records downloaded. There will be approximately 600 records for a week-long sample. Click on the message box to clear it.
16. **Change to the data page:** Click on the Right Softkey (data) to view daily amounts.
17. **Select sample start/end times:** The data tab will allow you to select the sample start and end dates and times. These are initialized to the first and last records that were just downloaded from the raingage. Adjust these to the correct values, so they show the quarter hour following the actual time the sample was changed. Select the appropriate network, and tap the "View" button.



Viewing Daily Precipitation Amounts

18. **View daily amounts:** The daily precipitation amounts in inches will be displayed in a new window. If you selected AIRMoN as the network, hourly, rather than daily values will be displayed.
19. **Scroll if needed:** Not all of the data can be displayed in the window, so scroll bars are provided at the bottom and possibly the right side of the window. You need to adjust any of the column widths by dragging the right edge of the column border.
20. **Also displayed are the following columns:**
 1. wetExp: wet exposure, hours
 2. dryExp: dry exposure, hours
 3. missedExp: missed exposure, hours
 4. Cycles: the number of times the collector opened and closed
21. **Repeat 17-20, if necessary:** If more than one collector are connected to the raingage, you can close this window (after recording the values) and enter sample start and end times for the sample from the other collector.



Date	ppt	wetExp	dryExp
Tue	0.13	4.18	0.08
Wed	0.00	1.68	0.16
Thu	0.00	0.00	0.00
Fri 01/22	0.00	0.00	0.00
Sat	0.00	0.00	0.00
Sun	0.08	3.76	0.34
Mon	0.21	7.27	0.06
Tue	0.02	2.97	0.09
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Total	0.44	19.86	0.74

Drag this border to widen the date column, if necessary

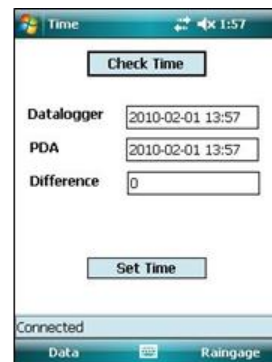
Drag here to scroll left and right if necessary

Exposure Definitions and Notes

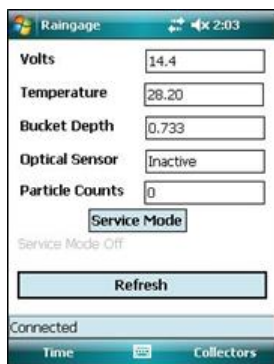
- With the ETI Noah IV gage, exposure type is determined by optical sensor activity. With the Ott Pluvio, it is determined by increases in the weight of the collection chamber.
- Wet exposure: The time the collector was open and the gage indicated that precipitation was occurring.
- Dry exposure: The time the collector was open, but the gage indicated that precipitation was not occurring, and the collector should have remained closed. A sample with total dry exposure times exceeding 6 hours may be flagged as undefined and disqualified.
- Missed exposure: The time the collector was closed, but the gage indicated that precipitation was occurring, and the collector should have been opened.
- A fourth possible state is not monitored or reported. This is when the collector is closed and no precipitation is falling.
- A small amount of dry exposure and missed exposure is inevitable, due to the differences between the optical and grid sensors. In certain conditions such as dry blowing snow, extensive periods of dry exposure will be recorded. This is also due to equipment limitations, and do not automatically invalidate a sample.

Clock and Raingage Status

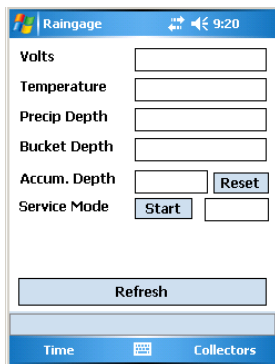
22. **Check the datalogger clock:** Change to the Time page. Tap the Check Time button and wait for a response. Any difference between the datalogger and PDA clocks will show in the Difference text box. If it is not zero, tap the Set time button to update the datalogger clock.
23. **Check the Raingage status:** Change to the Raingage page, and tap on the refresh button if necessary. This page shows you the current status of the raingage. **The information shown varies by raingage type**



- **ETI Noah IV:** The Reported Precip and Particle Counts are cumulative since the last 15 minute reporting period, and reset to zero on the quarter hour. The possible values of the Optical sensor box are Inactive, Active, and Blocked. If the Optical sensor box says Blocked, determine what is causing the blocked situation and correct it. The holes in the bucket may be mis-aligned. If you have just reassembled the gage, you may have forgotten to plug the optical sensor cables into the sockets underneath the bucket, or plugged the plugs into the wrong sockets.
- **Hach OTT Pluvio:** The form shows Volts, Temperature, Precipitation Depth, Bucket Depth, and Accumulated Depth. The Precipitation depth is the precipitation for the current 15 minute period, and is reset every quarter hour. Bucket Depth is the raw bucket weight, and Accumulated Depth is the accumulated depth since it was last reset. The accumulated depth has a maximum value of 99, and should be reset when it approaches that value.



ETI NOAH IV



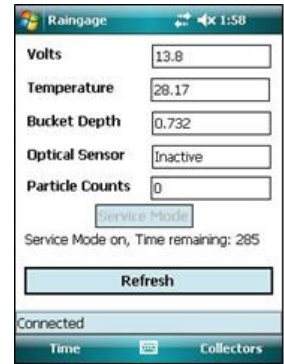
OTT Pluvio

Service Mode

Note: Service mode is only available on gages with Version 2.1 or later of the Campbell datalogger program. If you have an earlier version, the service mode button will be deactivated and will appear grayed out. The version of the datalogger program is displayed on the connect Screen.

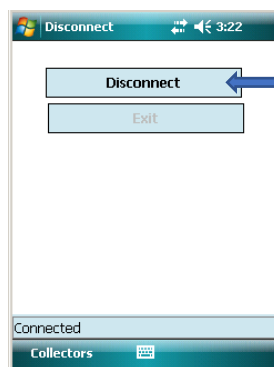
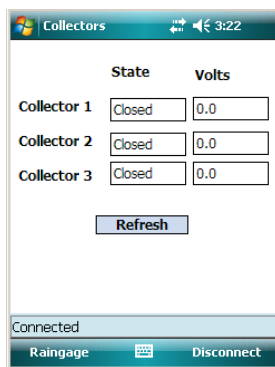
24. **Service Mode:** The gage should be put into service mode whenever you perform maintenance that could be misinterpreted as precipitation. For example, the gage should be in service mode whenever you add antifreeze, or whenever a field technician performs a calibration check. While in service mode, the gage will not report as precipitation any additions to the weighing chamber.

To enter service mode, tap the Service Mode button. This will also start a countdown timer that shows the time remaining on service mode. To maintain service mode for a longer period, hit the refresh button before the timer reaches 0. This will reset the timeout to 5 minutes. The gage will automatically resume monitoring 5 minutes after the timer reaches zero. If you leave the gage in service mode, it will resume monitoring on its own after 5 minutes.



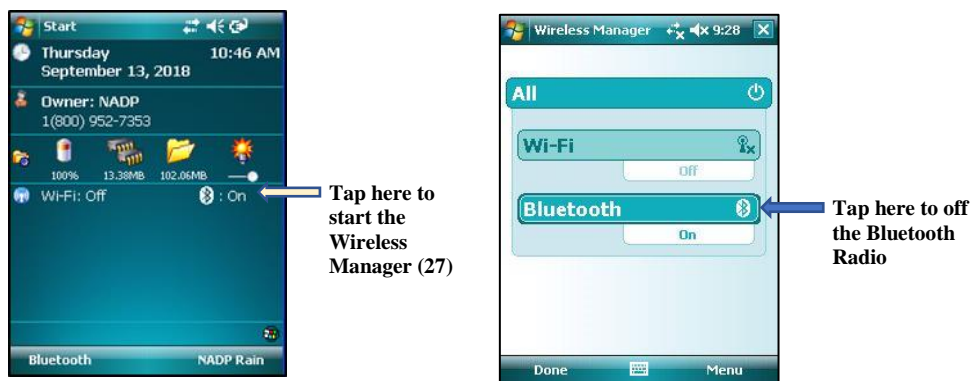
Precipitation Collector Status

25. **Check the status of the Precipitation Collectors:** Change to the Collector page. For each collector, this will show if the collector is open or closed, and if the collector has power. To test the connection between a collector and the raingage, trigger the collector to open and tap on Refresh after the collector fully opens. If you have an N-Con MDN collector, you can use this page to verify that you turned the collector back on after servicing the collector.
26. **Disconnect and Exit:** Change to the Exit page. Tap on Disconnect to end the Bluetooth connection to the raingage. Then tap on Exit to end the Program. Tap exit again to return to the Today Screen.



Turn off Bluetooth

27. **Turn of Bluetooth Radio.** Following the instructions for your PDA model, start the Wireless Manager and turn off the Bluetooth Radio. To turn off the Bluetooth radio. This will help conserve the PDA battery.
28. **Close the Wireless Manager.** Tap the x in the upper right hand corner to exit the Wireless Manager.



Transmitting Data

- Record the daily precipitation values from the PDA on the field form. Specify in the notes section of the field form that the daily values are from an electronic gauge.
- To transmit the electronic data, connect your PDA to your desktop computer using the sync cable. On your desktop, click on My Computer, and then on Mobile Device. This will display the files in the My Documents folder of the PDA. Two files with data are created each time you download. One file will have a .txt extension, and the other will have a .xml extension. The file name of both will contain your NADP siteid, the date and the time. The XML file name will have the siteid before the date and time, while the TXT file will have the siteID after the date and time. For example, if I download from WI06 on April 2, 209 at 10:00 am, the filenames will be:

- 20190402T1000WI06.txt
- WI0620190402T1000.xml

You can drag these files to the Archive directory that you created during Activesync setup.

- Each time you download, please email the XML file to nadp-precip@slh.wisc.edu. In your email, please write the start and end dates and times for the sample. Also please mention if you have added antifreeze.

Miscellaneous Notes

- You should not need to manually adjust the time of the PDA. Each time you connect the PDA to your desktop computer, the ActiveSync software will synchronize the PDA's clock to the time of the desktop computer. However, if you arrive at the site and discover that the PDA is on the wrong date, You can set it by tapping on Start, then on Settings. Tap on the System tab, then on the Clocks and Alarm Icon. Correct the date and time, and then tap OK to save.
- If you need to display the daily precipitation values after you have disconnected from the raingage, click on "Recall Prior Data" on the main NADP Rain page. This will read in the

last set of data that was downloaded, and allow you to display the daily values after selecting sample start and end times.

The PDA Introduction – iPAQ Classic 110



This photo shows the PDA's Today page. The Today page is what is shown on the PDA when no programs windows are visible. It is similar to the desktop on your PC.

You interact with the PDA by softly tapping on the touch-sensitive screen with the stylus.

Tapping the screen is similar to clicking with a mouse. There are three types of taps:

- Single tap: Tap once.
- Double tap: Tap twice in rapid succession
- Tap and hold: Press the stylus to an object on the screen and hold it there for a few seconds. If the screen object has a context menu, a menu of choices will appear. This is similar to right-clicking with a mouse on a desktop computer.

In most situations, you will only use the single tap method. If you are required to use the double tap or tap and hold methods, we will point that out.

The light sensor adjusts the brightness of the screen based on the ambient light. Make sure you are not covering it with your hand, or the screen may be more difficult to see on a sunny day.

If you need to reboot the PDA, Use the stylus to press the recessed button on the right edge.