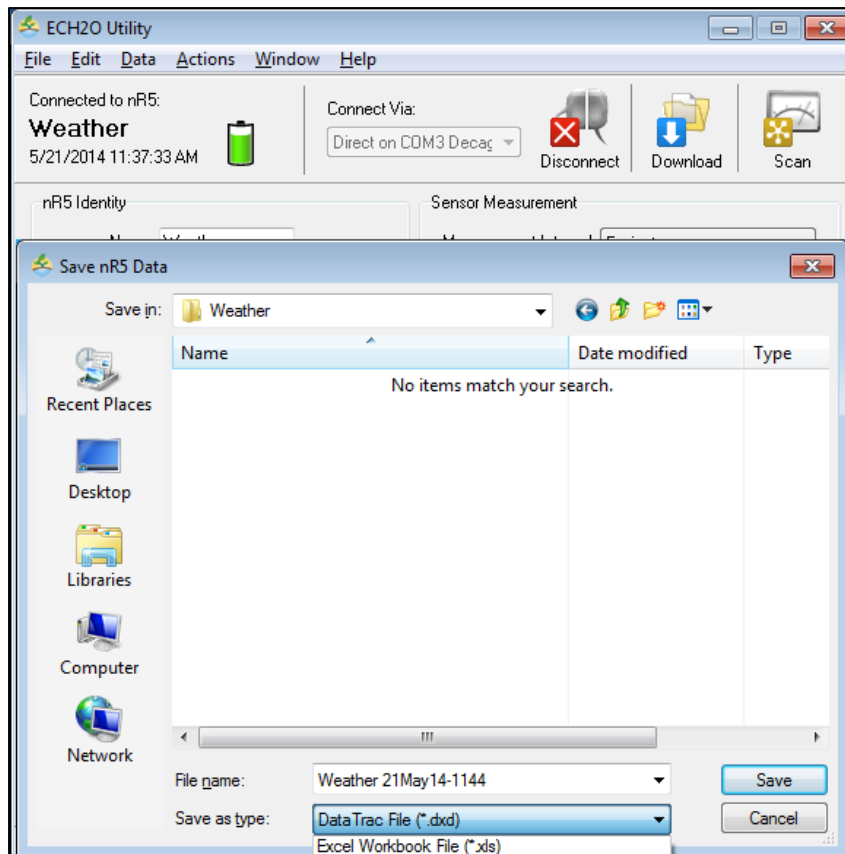## 2.1. Downloading and erasing data

Using ECH2O Utility, both processed/calibrated and unprocessed data can be downloaded from the Em50 series data loggers in different file formats. The file formats available are excel workbook file (*.xls), Datatrac file (*.dxd), processed data text file (*.txt) and raw file (*.csv). Brief explanation of the file formats is given below (Decagon Devices, Inc. 2013).

i) **Excel Workbook File (.xls):** converts the raw downloaded measurement data into processed values appropriate for each sensor type. The converted data are saved to sheet 1 of the workbook. Raw data are saved to sheet 2. You can use the raw measurement data to apply custom calibration to your sensor data.

ii) **DataTrac Data File (.dxd):** saves the file in a format that DataTrac can import. Each dxd file contains information about the ECH2O logger's settings, identity, and status along with the raw data for each sensor.

iii) **Processed Data Text File (.txt):** converts the raw downloaded data into processed values appropriate for each sensor type. Data are saved as a tab delimited text file.

iv) **Raw Data (.csv):** saves the raw data in comma delimited file format.

ECH2O Utility uses the default conversion equation for each sensor when converting raw data to processed data (Decagon Devices, Inc. 2013). Information about the default conversion equations can be found in the data logger or sensor manual. To download stored data from Em50 series data loggers, follow these steps.

- Connect to the device directly through ECH2O Utility
- Click "Download New Data" or "Download All Data" in the "Data" menu depending on what is desired. The "Download" button on the tool bar or the keyboard short cut combination "Ctrl+D" can alternatively be used to download new data only. All new data download options collect data that is stored since the last download.
- Choose the folder to save the file in, file name, and the file format desired (Figure 7). The default file name has the name of the logger followed by the date and time of download. The file name can be changed if desired.

-   Figure 7. A *.dxd file format is being saved for the node named Weather.

Data can be permanently erased from the Em50 series data logger memory. **This process is not reversible and deleted data cannot be retrieved. So, it is advisable to download and back up data before erasing.** The ECH2O Utility software by default will ask for confirmation to make sure data is not erased by mistake. When starting new experiments or when changes in sensor configurations are made, it is advisable to download and erase old data. Similarly, firmware updates for the Em50 series data loggers erase data. Data should be downloaded and backed up before updating firmware. To erase/delete data permanently, follow the two steps below.

-   Click the "Erase Stored Data" option in the Data menu
-   Click "Erase Data" in the following pop-up window.

The "Report Stored Data" option in the Data menu gives the number of data scans stored in the logger and whether they have been downloaded or not.