Manual Rainfall & Meteorological Data

Overview:

This procedure outlines the process of entering Manual Rainfall and Meteorological data (collected by members of the public) into Hilltop, running statistics in Hydro and producing a Yearly Rainfall Reader Letter to be sent out to the individuals who collected the data. The purpose of collecting these data sets is to help verify the amount of rainfall occurring within our region compared with our own measured rainfall sites, along with associated meteorological data, as well as providing a statistical summary of the long term rainfall trend at these specific sites. The Yearly Rainfall Reader Letter helps to keep those collecting this data informed of what it is telling us about our region and to encourage their continued assistance in collecting the data. The statistics produced are done on the data from July to June (e.g. July 2013 to June 2014) with the Yearly Rainfall Reader Letter being sent out no later than October of the latter year. This is to allow for any delays in receiving the rainfall and/or meteorological data from the members of the public who choose to record and send in their data. Furthermore within the yearly letters some general information about what the Catchment Data team has been up to in the past year is to be included.

Rainfall & Meteorological Data:

The manual Rainfall and associated Meteorological Data can be accessed from the following folder:

\\ares\Environmental Data Validation\Manual Rainfall

This folder contains site folders of where Manual Rainfall/Meteorological data is recorded, emails of the recorded rainfall and/or meteorological data, associated Yearly Rainfall Reader Letters to the appropriate recipient and the Manager File which contains the entered data obtained from the members of the public. This Hilltop file can be directly accessed from the following link:
\\ares\Environmental Data Validation\Manual Rainfall\ManualRainfall.hts

At present, the following sites are actively monitored with Rainfall and/or Meteorological data coming in via mail or email with the associated person(s) recording the data and how to contact them:

Full Site Name:	Short Site Name:	Person Recording:	Method of Contact:	Contact Details:
Kahuterawa at 897 Kahuterawa Road	Kahuterawa	Ian Furkert	Email	897 Kahuterawa Road, Linton, RD 2, furkert@actrix.co.nz
Manakau at Manakau*	Manakau	Wilfred & Sharon Geerling	Email	Wilfred.sharon@outlook.com 0212 449562 Wilfred 0274508866 Sharon
Mangaone West Catchment at Mt Biggs*	Mt Biggs	Trevor Henson	Mail	684 Mount Stewart Halcombe Road, RD 9, Feilding 4779
Pukerimu Rd at Maxwell	Maxwell	Gilbert & Marie Lawrence	Mail	176 Pukerimu Rd, RD 4, Maxwell, Wanganui
Upper Manawatu at Rangiwiu Kumeroa	Rangiwiu	Tim & Annie Poulton	Email	tas@inspire.net.nz
Whanganui at Fordell	Fordell	Pam & John Matheson	Email	johnmatheson@farmside.co.nz

*Sites with an * have both Rainfall and Maximum & Minimum Air Temperatures recorded (Meteorological Data).*

Manual Rainfall & Meteorological Data

All data that is sent to Horizons via email needs to be **saved** into the appropriate site folder within the Manual Rainfall directory (\\ares\Environmental Data Validation\Manual Rainfall\ SiteName) to ensure the data is not lost. Data that is sent in via email must be saved as a .msg file and also must have attachments such as spreadsheets saved as well. Information **must also** be printed off and stored as a hardcopy in the site folder (currently located in the orange filing cabinet in the Archive Room). Data which is sent in via mail should be scanned and saved in the appropriate site folder. A hardcopy of data sent in via mail must be put in the site folder and filed away in the Archive Room.

Entering Data into Hilltop:

1) To enter the data, open the hilltop file located in the Manual Rainfall folder: \\ares\Environmental Data Validation\Manual Rainfall\ManualRainfall.hts

2) Select the appropriate site and right click the data source you would like to add data to – this will either be 'Rainfall', 'Air Temperature: Daily Maxima' or 'Air Temperature: Daily Minima'.

3) Click 'Add'. This will bring up a box with the Site Name and Data Source – Leave these how they are displayed.

4) If adding Rainfall or Meteorological data that is recorded at the same time every day then click on 'Automatic Date and Time' button – this will allow the date and time to be automatically generated once you begin to add data to the file to save time. If data is recorded at different times every day then unfortunately you will have to enter these manually. If you are unsure on what time the data is recorded at refer to the table below.

Site	Rainfall	Air Temp: Daily Minima	Air Temp: Daily Maxima	Air Temp: Mean
Kahuterawa	Yes- 09:00 NZST	N/A	N/A	N/A
Manakau	Yes- 09:00 NZST	Yes- At Time Recorded	Yes- At Time Recorded	Yes- 12:00 NZST
Mt Biggs	Yes- 09:00 NZST	N/A	N/A	Yes- 00:00 NZST
Maxwell	Yes- 09:00 NZST	N/A	N/A	N/A
Rangiwiu	Yes- 09:00 NZST	N/A	N/A	N/A
Fordell	Yes- 00:00 NZST	N/A	N/A	N/A

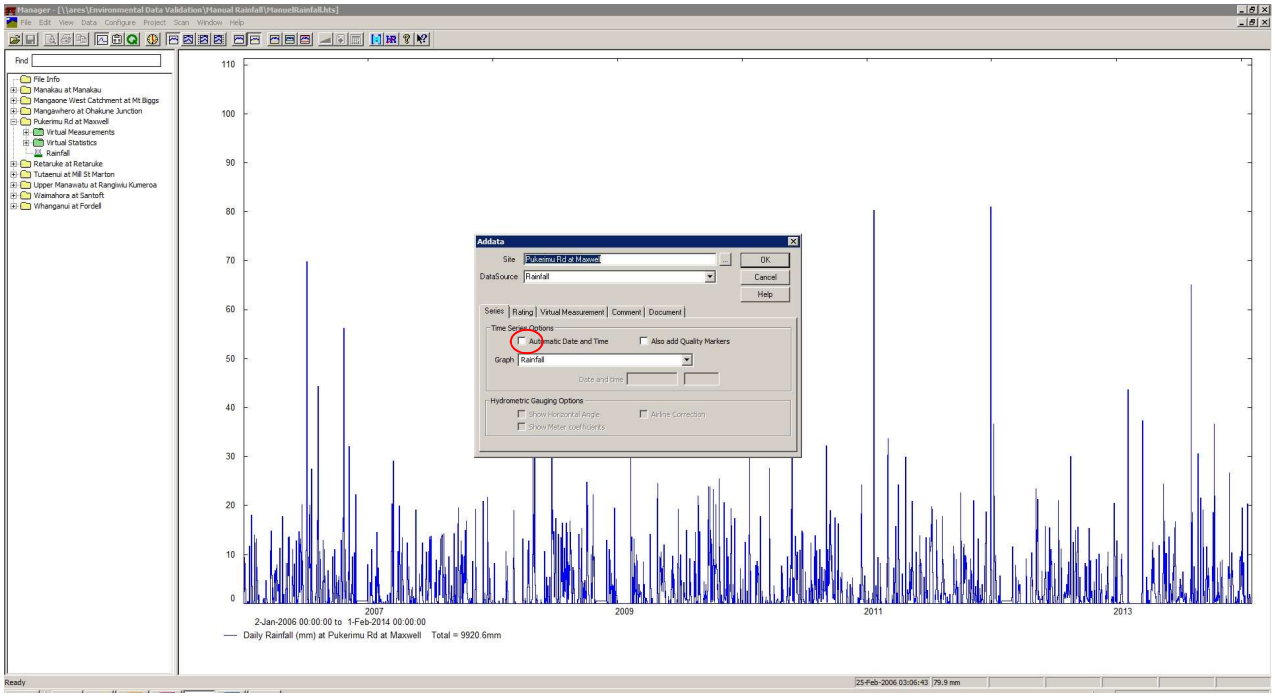
5) Click 'Ok'

6) This brings up the screen where you can now enter the date, time and amount of Rainfall (or Min/Max Air Temperature depending on what data source you chose to add to). Enter the date and time shown on the sheet that was either mailed or emailed to you from the recorder. For Min & Max Air Temperature the time will be recorded as 00:00:00. Press enter after each row.

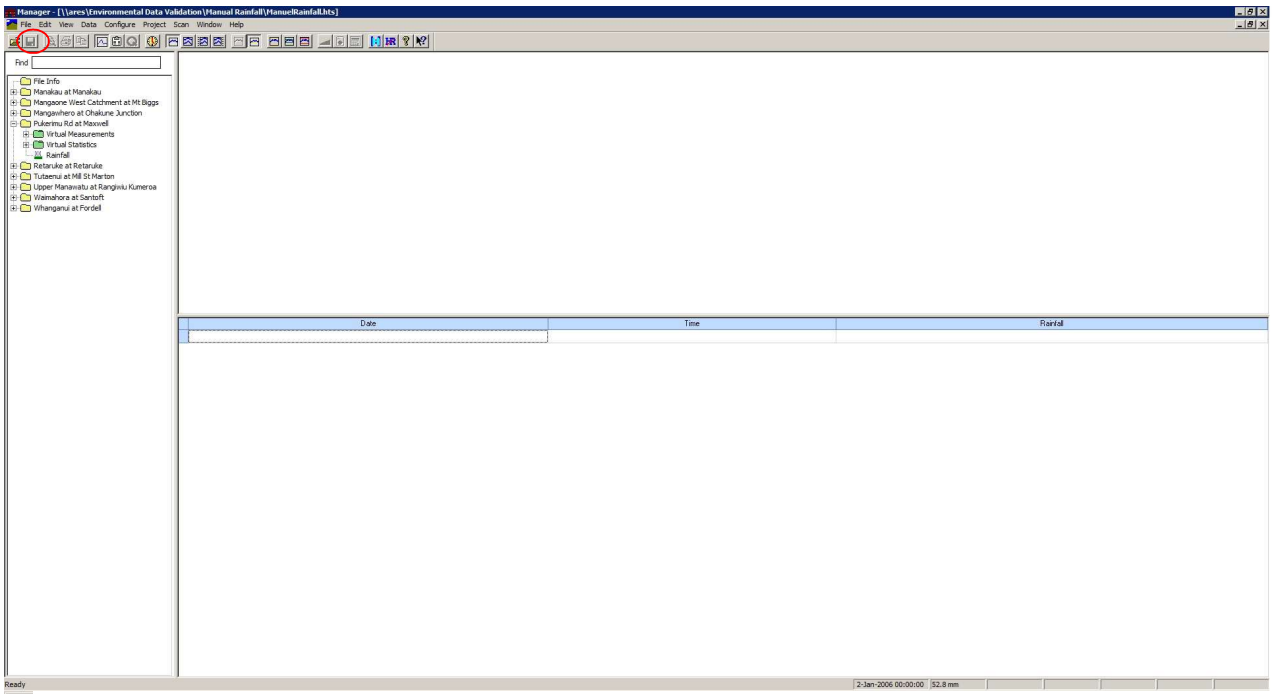
Note: Rainfall needs to be recorded in micromillilitres. Data sent in to us is usually in millilitres so we need to convert this. E.g. if recorded as '16.2' this would be entered at 16200

7) After the second entry if you have ticked 'Automatic Date and Time' button the Date & Time will generate by itself, letting you just enter the Rainfall or Meteorological value.

8) Once all the data is entered from the sheet or email, click the 'Save' button on the top left corner of the Hilltop Window. Make sure to mark the hardcopy of the data sheet that will be saved in the Archive Room with the 'Entered' stamp and file it away to keep track of what data has been entered into Hilltop.



Hilltop screen with 'Addata' box displayed; Make sure to tick 'Automatic Date and Time' box before clicking ok.



Hilltop screen where data is to be added. Remember that Rainfall is to be recorded in micromilliliters. Click the 'Save' icon in the top left hand corner once all the data that is required to be added is entered.

Running Statistics in Hydro:

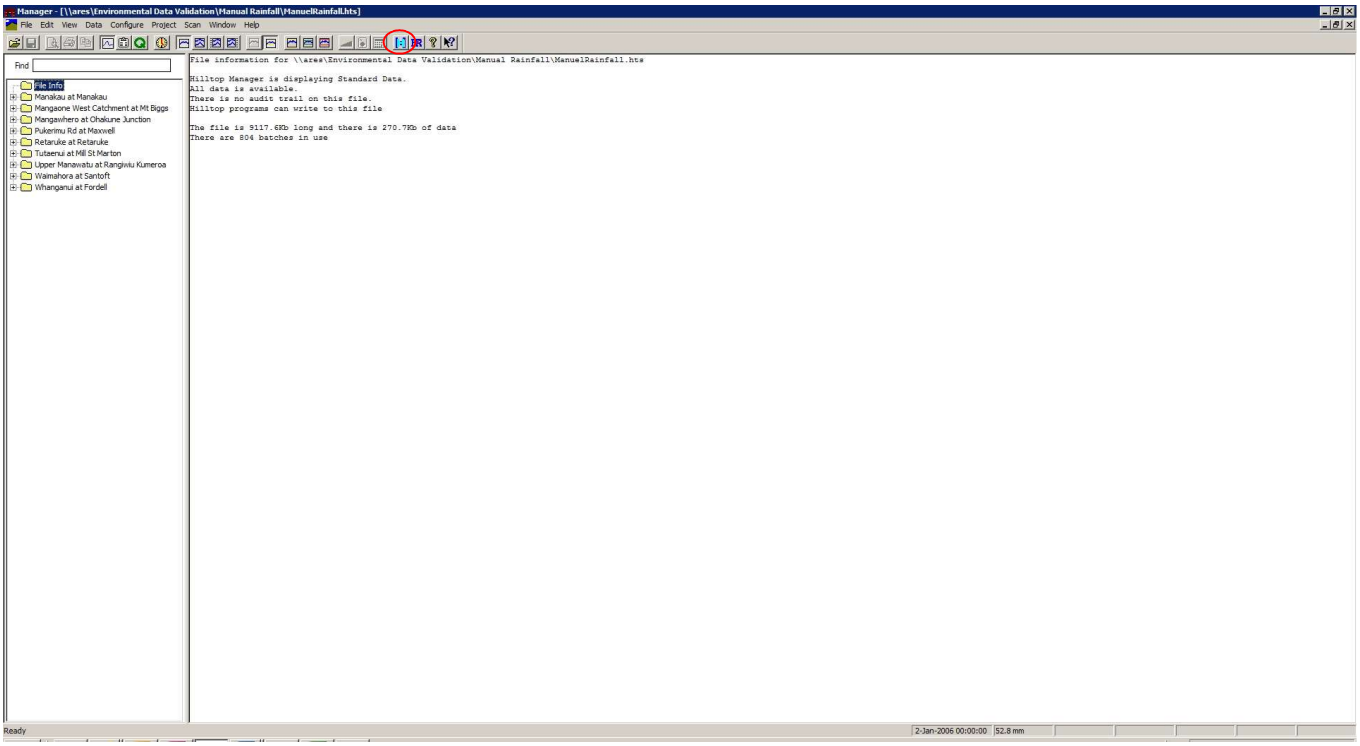
1) To open up the Hydro Statistics Package in Hilltop click the little blue H symbol located in the tool bar at the top of the screen within the ManualRainfall.hts file.

The Project file has already been set up – all you need to do is run the appropriate statistics to determine the amount of Rainfall that occurred each month during the year from July to June as well as from all years to date. If Meteorological data is recorded at the site then the mean, minimum and maximum for each month and the year to date along with the overall mean, minimum and maximum values for all years will need to be determined.

2) Select from the dropdown 'Tables' tab at the top of the screen the 'Monthly Stats PCal' option
3) Select the site that you would like to run the monthly statistics for.

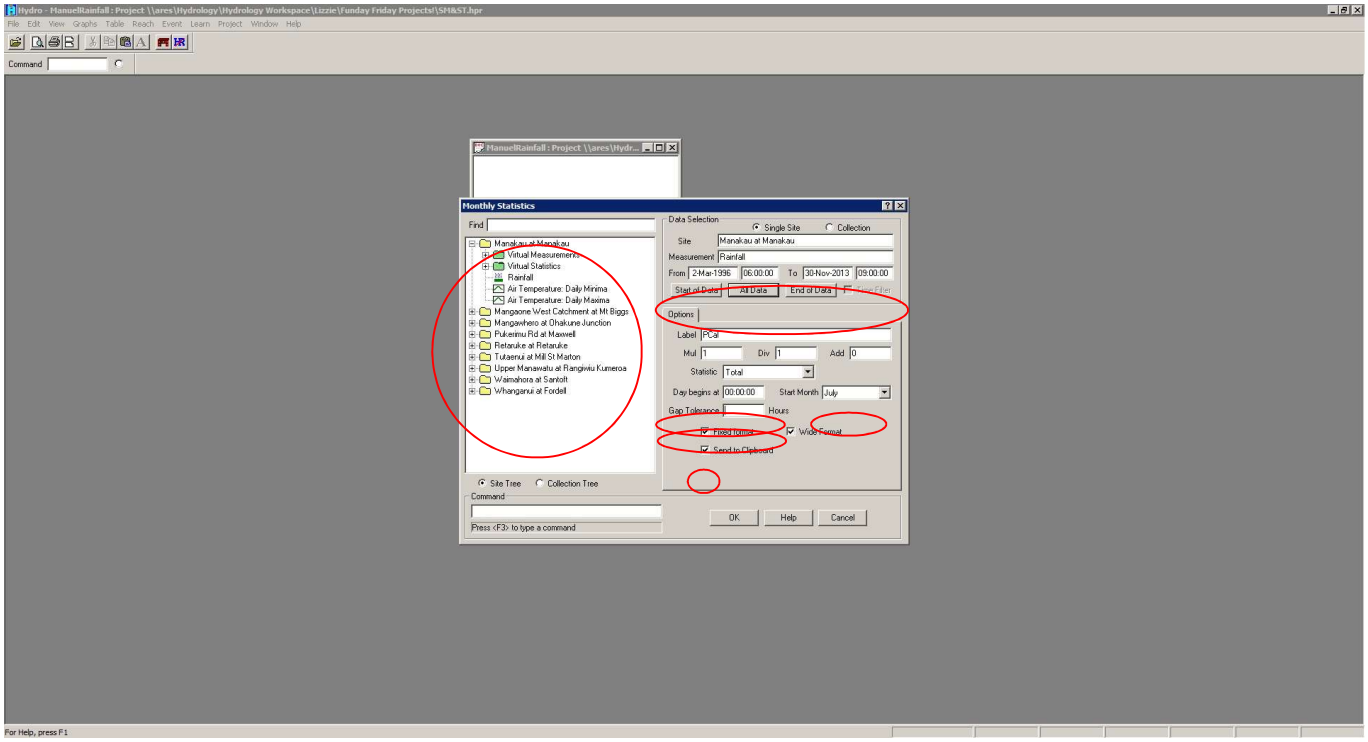
For calculating the monthly rainfall for the year to date in the Date and Time boxes type the start date '1-Jul-20XX' and time 'XX:XX:XX' and end date '30-Jun-20XX' and time 'XX:XX:XX'. For calculating the Monthly Rainfalls/Meteorological Data for all years select the 'All Data' button. In the 'Statistic' box select 'Total', in the 'Day begins at' box type when the data is recorded each day. Make sure the 'Start Month' is set to 'July'. For the 'Gap Tolerance' no more than 25% of the data can be missing in order to obtain meaningful statistics, therefore the value in this box can not be greater than 7 days (1 week). Tick the 'Send to Clipboard' box before clicking 'Ok' – the results can then be pasted straight into an excel spreadsheet.

4) Paste the output into an Excel spread sheet to generate Column graphs for Monthly Rainfall compared with maximum, minimum and mean Monthly Rainfall generated over all years at the site and Line graphs for Meteorological data with all minimum, maximum , mean and year to date data.

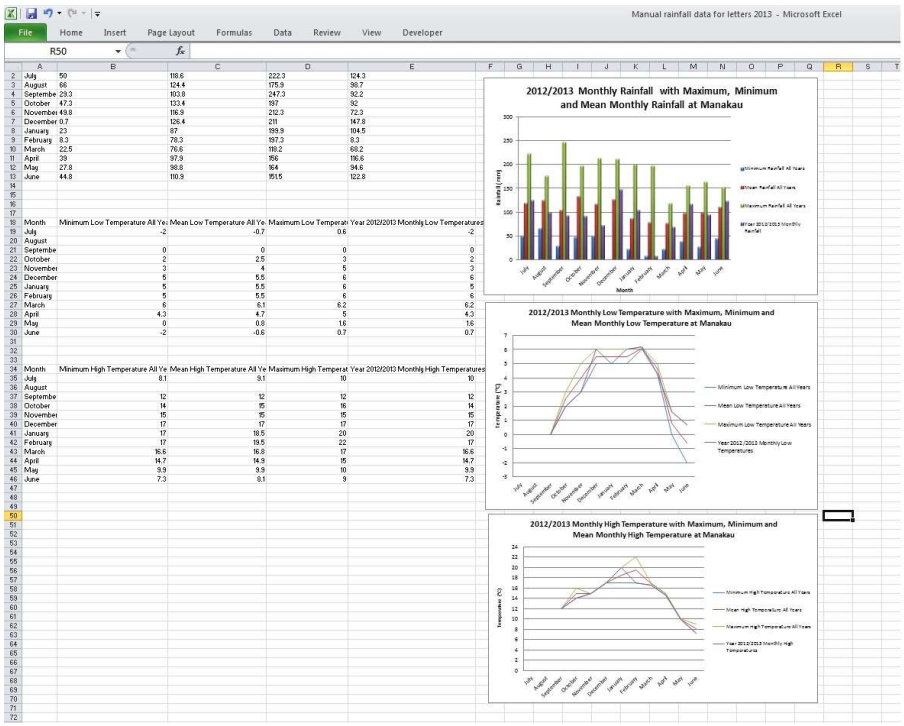


Select the little blue 'H' symbol to open up the Hydro Statistics Package in Hilltop in the ManualRainfall.hts file

Manual Rainfall & Meteorological Data



Select the site and the data source from the collection tree on the left to bring up the information on the right had side of the Monthly Statistics box. Enter the start and end date and time (or all data for All Years monthly statistics). Fill out the Data begins, Start Month and Gap Tolerance boxes appropriately and click the 'Send to Clipboard' tick box before clicking ok to produce the monthly statistics.



Within the Excel spread sheet where you pasted the Monthly Statistical results generate a column graph for Monthly Rainfall and Line Graphs for Meteorological Monthly Data.

Yearly Rainfall Reader Update Letter:

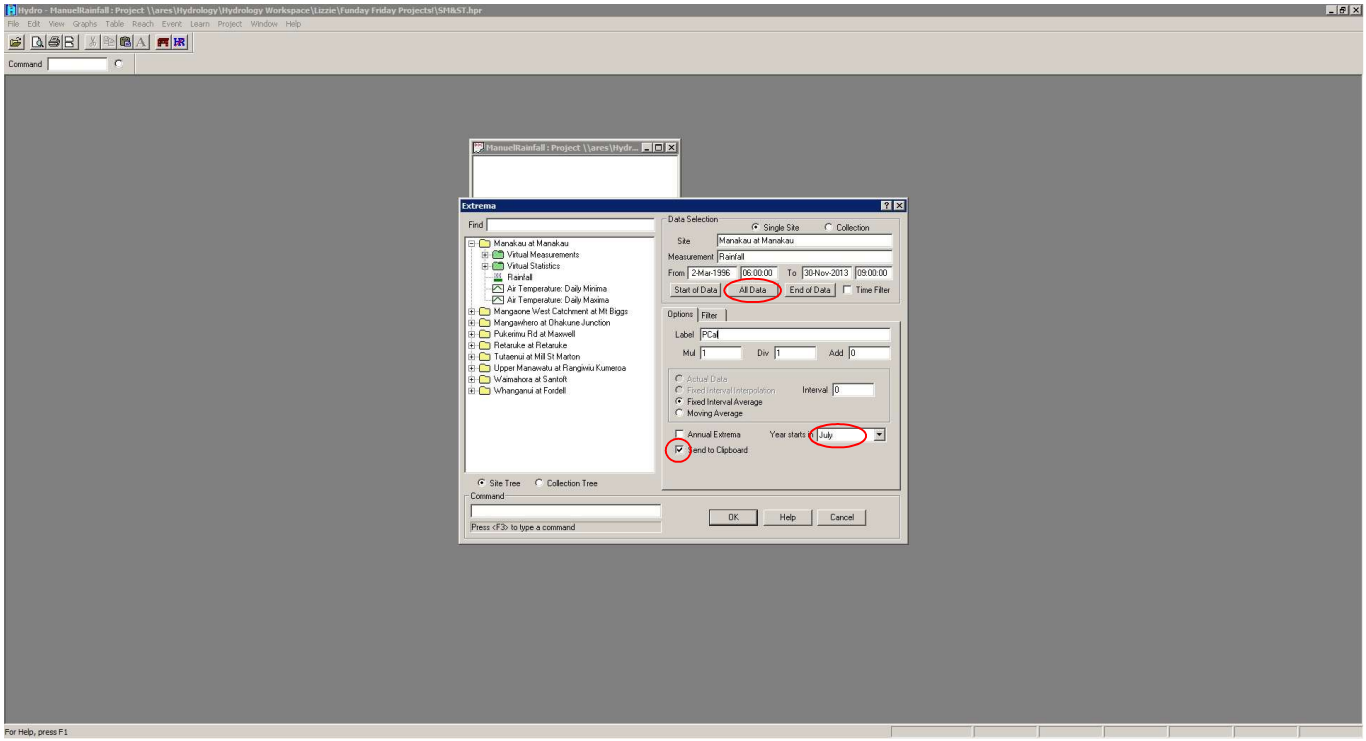
The above generated graphs will then be added to the yearly letter for each site which is sent to the applicable person(s) who records the Manual Rainfall and/or Meteorological data. These letters will provide a summary of the data they have collected themselves at their site including comparisons of previous data recorded at their location and a brief overview of what we have been up to. A template of what the Yearly Reader Letter needs to contain can be found in the following folder (using Manakau at Manakau as the example):

\\ares\Environmental Data Validation\Manual Rainfall\Template for Yearly Rainfall Reader Update.doc

Included in the Yearly Rainfall Reader are the extreme values for Manual Rainfall and/or Meteorological data. These values are generated by doing the following steps:

1) Within Hydro from the dropdown 'Table' menu select 'Min and Max PExtreme' – this will open a window similar to the PCal box as described in the previous section.
2) Select the site you wish to run the PExtreme statistics on

Make sure to select the 'All Data' button to calculate the minimum, maximum and mean values for the data source for all years it has been recorded. The 'Year starts in' box should have 'July' selected and the 'Send to Clipboard' box should be ticked to enable the results to be pasted directly into the Yearly Reader Letter word document.



Select the site and the data source from the collection tree on the left to bring up the information on the right had side of the PExtreme window box. Make sure 'All Data' is selected along with the Year starts at box has 'July' selected. Having the 'Send to clipboard' box ticked allows the results to be pasted directly into the Yearly Reader Letter word document.

Manual Rainfall & Meteorological Data

Once the Yearly Reader Letter has been completed including graphs, statistics and appropriate summary of results in paragraph form it needs to be saved in the site folder within the Manual Rainfall folder before being posted/emailed to the recorder. For those that mail in their data this needs to be printed off as well as including 12 free-to-post envelopes and recording sheets to enable them to continue to record the data sources.

Recording sheets can be found in the below link:

\\ares\Environmental Data Validation\Manual Rainfall\Docs\Daily Rainfall Readers Recent

For those who send in their data via email can have the document sent to them through this method.