

## Creating correlation charts using on-site and satellite data

### 1. Introduction

In order to review and analyze the accuracy of satellite data it is necessary to know to what extent on-site data and satellite data correlate. In this section we will explain how to create a correlation chart using Excel with the measurement chart constructed in the section entitled Acquiring the physical values from ASCII data format. These instructions presume that the user has a basic working familiarity with Excel.

### 2. Processing flow

Figure 1 shows the processing sequence for creating a correlation chart using Excel. Other detailed information on the processing procedure is also outlined below.

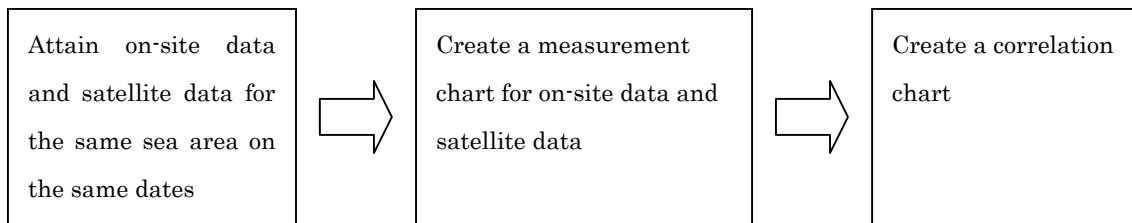


Fig 1. Processing flow.

#### (1) Attaining on-site data and satellite data for the same sea area on the same dates

To attain the satellite data, reference and follow the document outlining satellite data downloading procedures and how to obtain data in ASCII format.

#### (2) Creating a measurement table for on-site data and satellite data

Here we will use a measurement table composed from satellite data and on-site data gained from the Acquiring the physical values from ASCII data format. Please refer to the manual for the steps to create the measurement table. A sample measurement table is displayed in Figure 2.

St.No.	Date	Latitude	Longitude	Water temp.	Water temp. by satellite
1	2006/6/13	37.4113	137.5345	17.9	
2	2006/6/13	37.3954	137.8477	17.2	
3	2006/6/13	37.2105	137.2614	17.6	
4	2006/6/13	37.2105	137.5385	18.3	
5	2006/6/13	37.2297	137.8558	16.3	
6	2006/6/13	37.0411	137.3417	17.7	
7	2006/6/13	36.9035	137.2213	19.8	

Figure 2. On-site data and satellite data measurement table.

### (3) Creating a (correlation) chart

The sequence of steps necessary to create the chart using Excel are outlined in Figure 3.

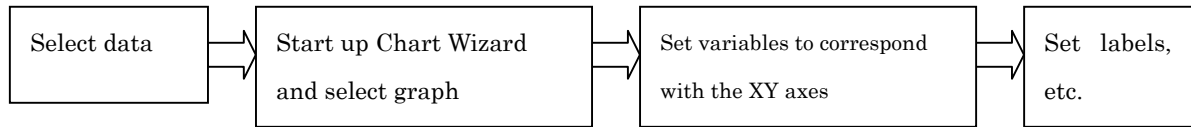


Figure 3. Sequence of steps for chart creation.

#### I. Data selection

Select data from the Excel sheet for the sample measurement chart.

E	F
Water Temp	Water temp. by Satellite
17.9	17.8
17.2	
17.6	18.1
18.3	18.5
16.3	16.2
17.7	17.9
19.8	19.5

Figure 4. Data field selection.

#### II. Starting up Chart Wizard

Start up Excel's Chart Wizard and select Scatter for Chart Type, and one that is in a format without lines.

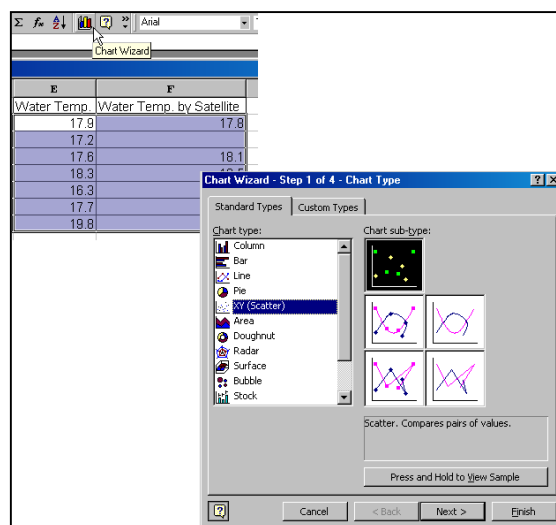
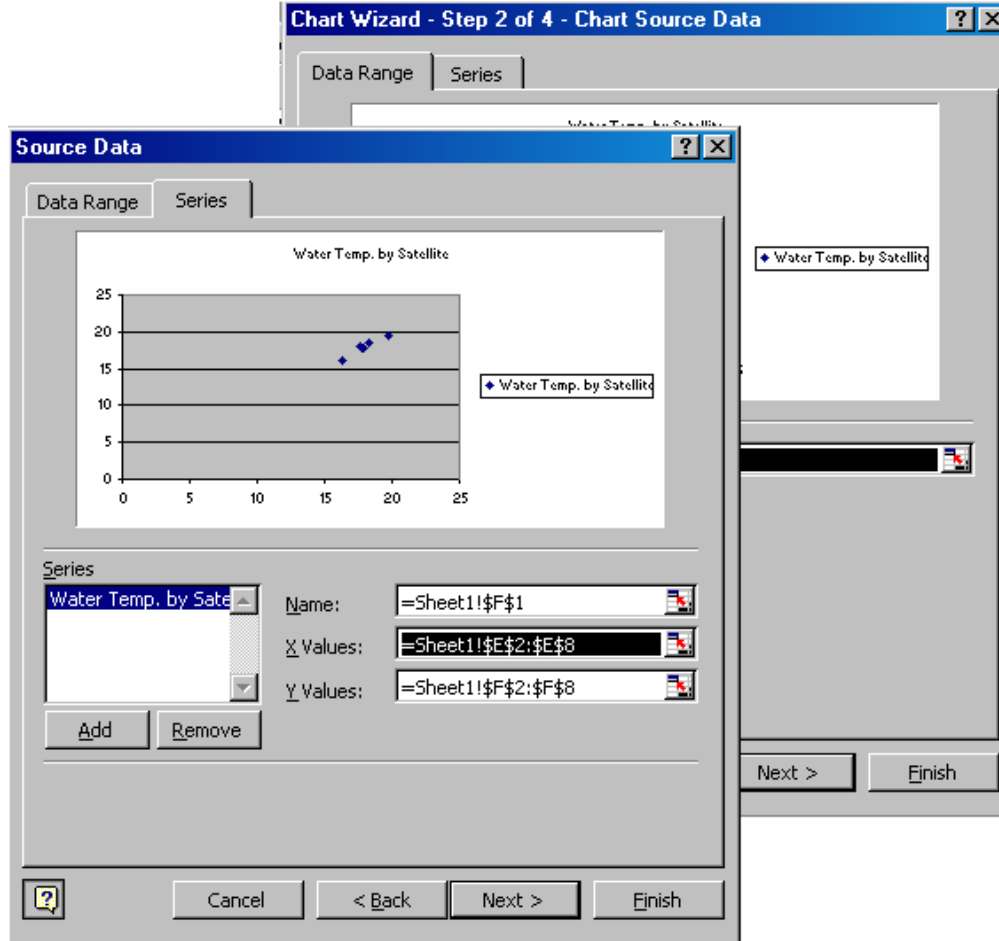


Figure 5. Chart Wizard start up.

III. Set the variables corresponding to the XY axes

Next, move to the Series tag and select the satellite water temperature values for the X Values and the on-site water temperature cell for the Y Values.



	C	D	E	F
	Latitude	Logitude	Water Temp.	Water Temp. by Satellite
2006	37.4113	137.535	17.9	17.8
	37.3954	137.848	17.2	
	37.2105	137.261	17.6	18.1
	37.2105	137.539	18.3	18.5
	37.2297	137.856	16.3	16.2
	37.0411	137.342	17.7	17.9
	36.9035	137.221	19.8	19.5

Source Data - X Values: =Sheet1!\$F\$2:\$F\$8

Figure 6. Setting the X Values.

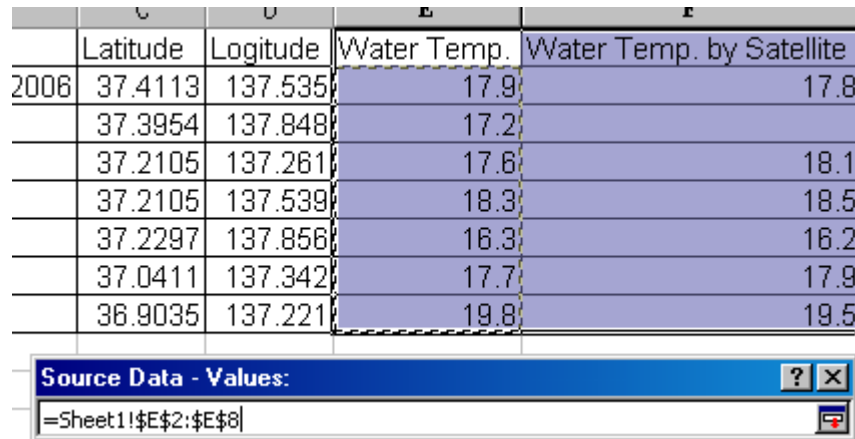


Figure 7. Setting the Y Values.

IV. Set labels, etc.

Move to Chart Options and set the Titles and the axes' labels.

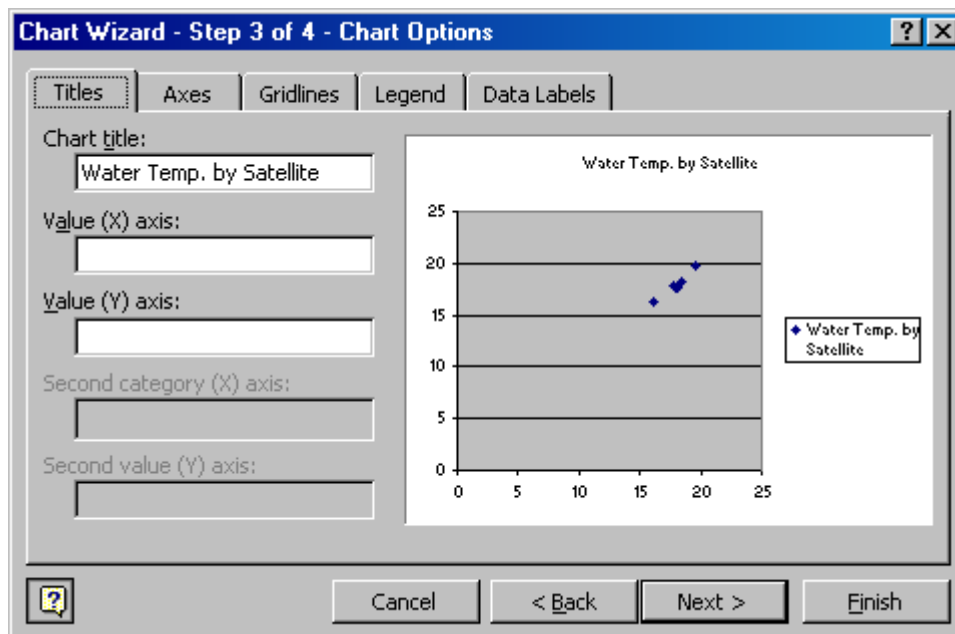


Figure 8. Chart option settings.

V. Chart creation

Designate the Chart Location where the graph is to be saved and create a correlation chart.

Figure 10 provides an example of a correlation chart.

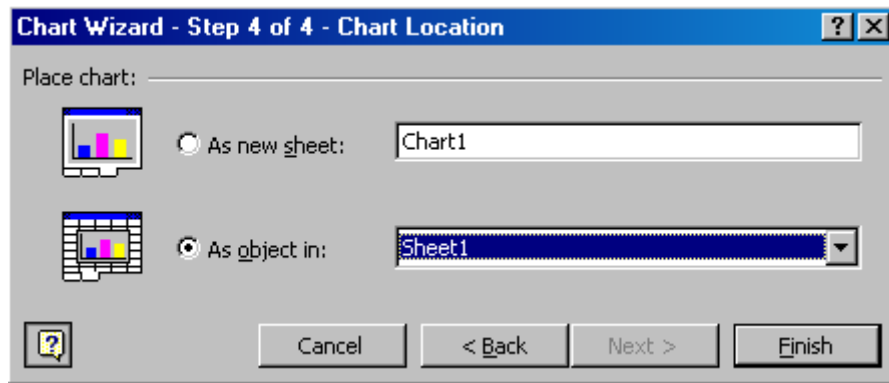


Figure 9. Graph Location.

VI. Add Trendline

The data series is selected by clicking on the plot point of the correlation chart.

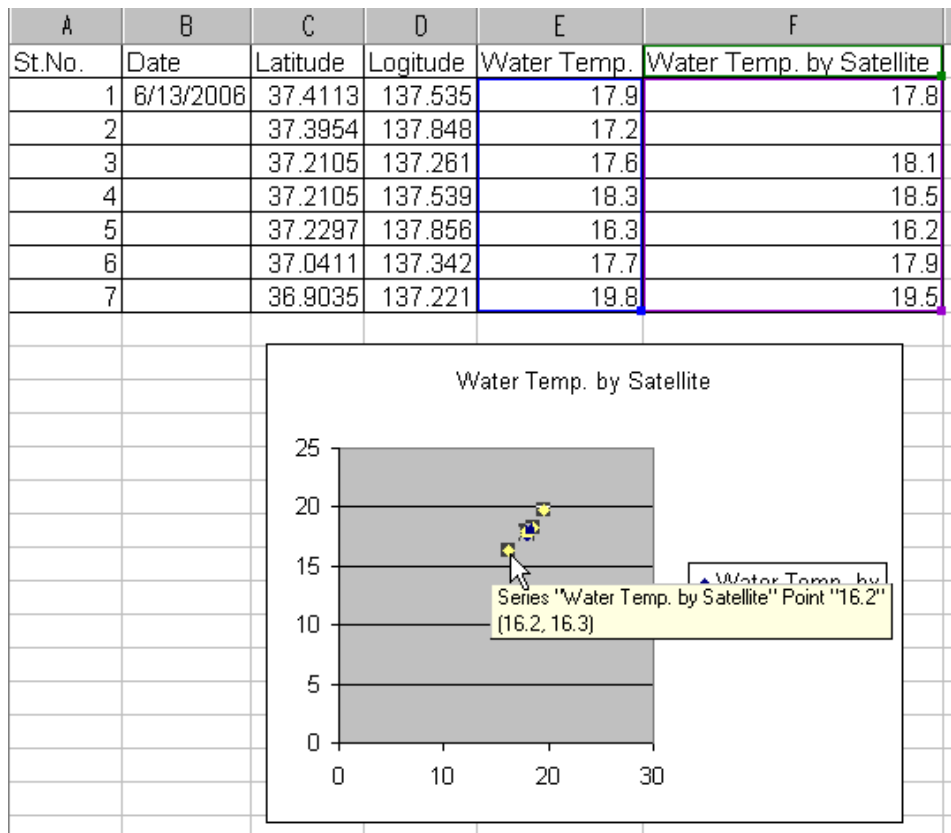


Figure 10. Select data series.

Place the cursor over the data series while it is selected, right click and select Add Trendline. Set the proximity type as Linear.

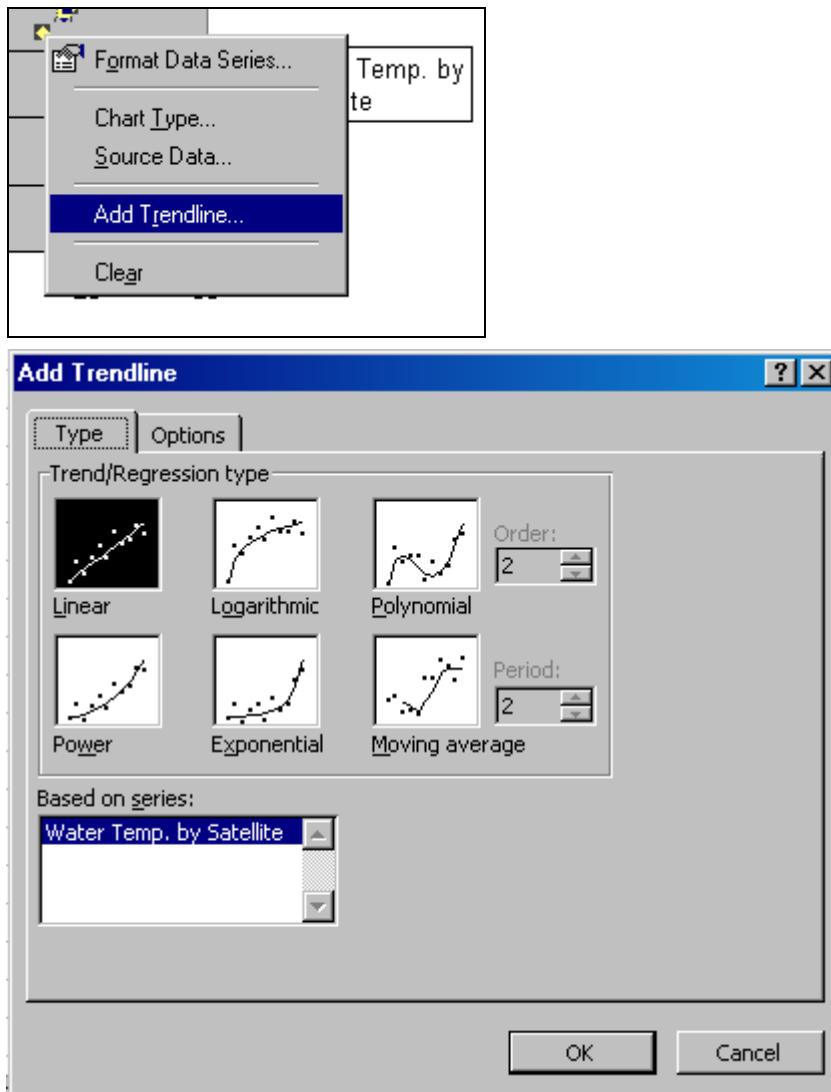


Figure 11. Add Trendline.

While selecting Trendline, right click and select Format Trendline. Here Trendline color and other settings can be altered.

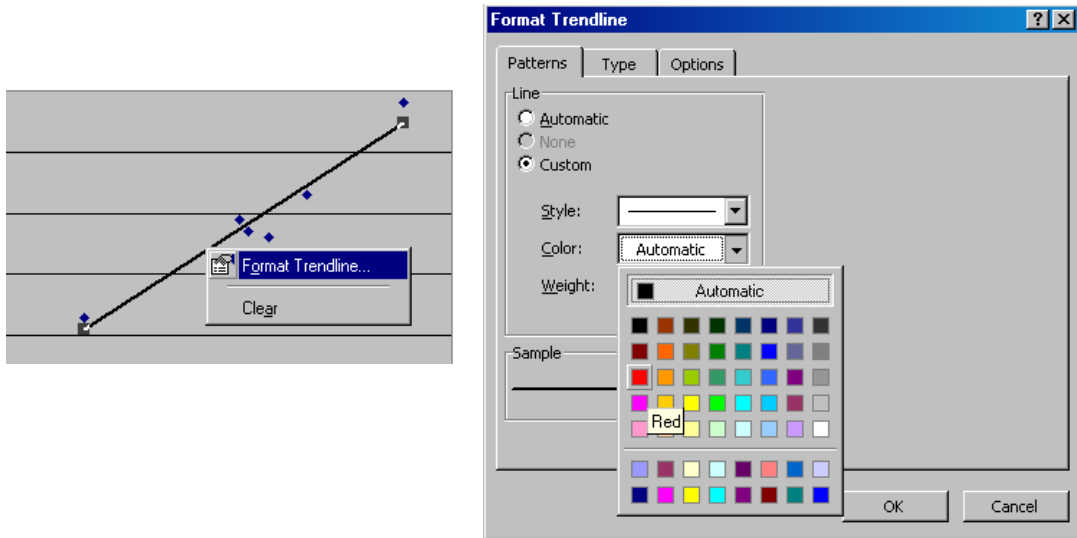


Figure 12. Format Trendline.

Figure 13 is a sample figure for your reference.

St.No.	Date	Latitude	Logitude	Water Temp.	Water Temp. by Satellite
1	6/13/2008	37.4113	137.535	17.9	17.8
2		37.3954	137.848	17.2	
3		37.2105	137.261	17.6	18.1
4		37.2105	137.539	18.3	18.5
5		37.2297	137.856	16.3	16.2
6		37.0411	137.342	17.7	17.9
7		36.9035	137.221	19.8	19.5

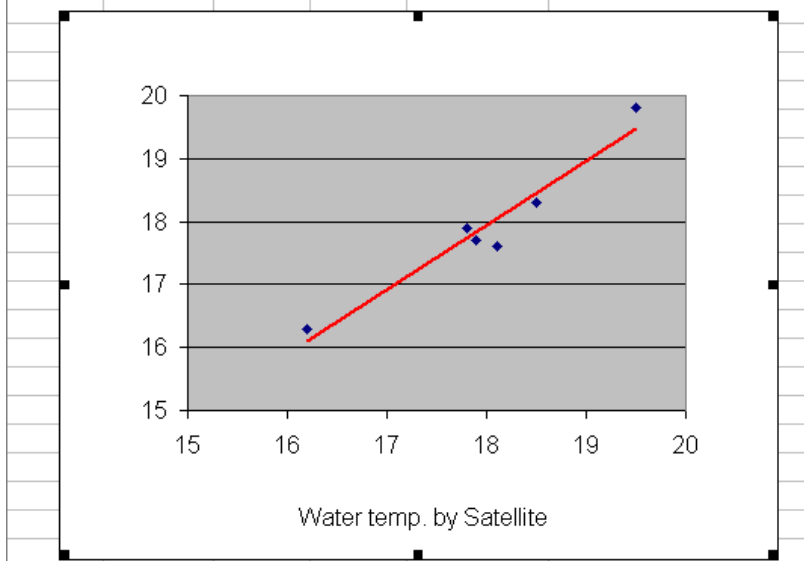


Figure 13. Sample correlation graph.