Editing with the Spreadsheet Editor (G11)   **Top**

The Spreadsheet Editor provides a numerical view of an INTREPID dataset. It enables you to directly edit data, create and manipulate fields, and perform search and replace operations using mathematical formulas.

You can edit line, point, polygon, grid, voxets and SEGY data using the Spreadsheet Editor. In this guided tour we will edit a line dataset.

The following illustration shows the specifications for a search and replace operation and some resulting values[1].

```
IF mlevel_mag > 1969 && linetype == 2

THEN mag_adj1 = mlevel_mag*.9994

ELSE mag_adj1 = mlevel_mag
```

mlevel_mag	mag_adjust1
1968.97	1968.97
1968.83	1968.83
1968.82	1968.82
1968.73	1968.73
1968.66	1968.66
1968.63	1968.63
1968.54	1968.54
1968.52	1968.52
1968.57	1968.57
1968.59	1968.59
1968.48	1968.48
1968.50	1968.50
1968.51	1968.51
1968.35	1968.35
1968.50	1968.50
1968.41	1968.41
1968.32	1968.32
1968.39	1968.39
1968.20	1968.20
1968.25	1968.25

Not greater than 1969

mlevel_mag	mag_adjust1
1973.71	1972.53
1973.77	1972.59
1973.80	1972.62
1973.75	1972.57
1973.72	1972.54
1973.78	1972.60
1973.69	1972.51
1973.66	1972.48
1973.70	1972.52
1973.58	1972.40
1973.52	1972.33
1973.57	1972.38
1973.53	1972.34
1973.50	1972.31
1973.51	1972.32
1973.55	1972.36
1973.48	1972.30
1973.52	1972.33
1973.58	1972.40
1973.52	1972.34

Greater than 1969

You can view and edit all of the new extended datatypes using this tool, including tensor, components, gradient vectors, complex structural geology and dates.

Overview

The INTREPID Spreadsheet Editor is one of the INTREPID editors (Spreadsheet, Flight Path, split cruise, clip line and Profile).

The INTREPID Spreadsheet Editor enables you to:

- **Directly edit** data by erasing and retyping individual values;
- **Search** for data according to a mathematical formula;
- **Create a new field** in a vector dataset or a new grid band;
- Use an 'If .. Then .. Else ..' **search and replace** operation to assign values in a dataset.
- Apply arithmetic, statistical and geophysical functions in a flexible formula format

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1.[8] Use the field name **mag_adj1**, not **mag_adjust1** when you use this guided tour.

The Spreadsheet Editor:

- Has a wide range of arithmetic, statistical and geophysical functions in a flexible formula format,

- Supports ALL INTREPID data formats—vector (line, point, polygon) grid, voxel and SEGY

- Supports grid-level arithmetic—you can add and subtract entire grids and create new grids.

- Supports user-written code,

- Supports smart geophysical observed data objects, such as Full magnetic tensor gradients combined with a scalar magnitude reading, or at V5.0, MT data 2D complex tensor decays.

- The V5.0 replacement tool is known as Gravitas.

Context of this guided tour

In the context of your data processing cycle, this tour represents direct editing and mathematical enhancement of data that you could wish to do at any stage. The use of the fully corrected **mlevel_mag** field puts the tour slightly out of sequence in our case study, since this field will be 'officially' created in a later tour (See Levelling—decorrugation and microlevelling (G14)). We chose **mlevel_mag** because the example in this tour would most likely be applied to fully corrected data.

Should you complete this guided tour?

This guided tour is intended for intermediate level users. Its process is more complex than that of an introductory level tour and its instructions are less detailed. If you are a beginner or wish only to have a brief overview of INTREPID's capabilities, you can omit this guided tour. Omitting this guided tour will not affect your understanding of later tours.

The ability to directly edit values and mathematically enhance data using your own formula is a desirable feature of a geophysical data processing system. You should note that INTREPID includes an extensible API for this kind of operation. The example macros are distributed.

Location of sample data for Guided Tours

We provide two complete sets of sample datasets, one in INTREPID format and one in *Geosoft* format. INTREPID works equally well with both formats. When you want to open a dataset, navigate to the directory containing the required data format.

Where **install_path** is the path of your INTREPID installation, the project directories for the *Guided Tours* sample data are
install_path\sample_data\guided_tours\intrepid_datasets and
install_path\sample_data\guided_tours\geosoft_datasets.

For example, if INTREPID is installed in
C:\Program Files\Intrepid\Intrepid4.5.nnn,
then you can find the INTREPID format sample data at
**C:\Program Files\Intrepid\Intrepid4.5.nnn\sample_data\
guided_tours\intrepid_datasets**

This is the default location for the sample data. If you have installed INTREPID normally, the data resides there. If you have installed INTREPID elsewhere, the exercises will work just as well. Just use the appropriate pathnames.

For more information about installing the sample data, see "Sample datasets—installing, locating, naming" in INTREPID Guided Tours Introduction (G01)

For a more detailed description of INTREPID datasets, see Introduction to the INTREPID database (G20). For even more detail, see INTREPID database, file and data structures (R05).

Location of sample data for CookBooks

Right next to the Guided tours data, is a rich set of more exotic geophysics datasets and grids, already prepared for the cookbook training sessions. A casual user might also gain some trial and error insights into the capbilities of the software, just by testing the Project Manger's ability to preview and describe the attributes of each of the cookbook datasets.

What you will do

Flowchart Summary
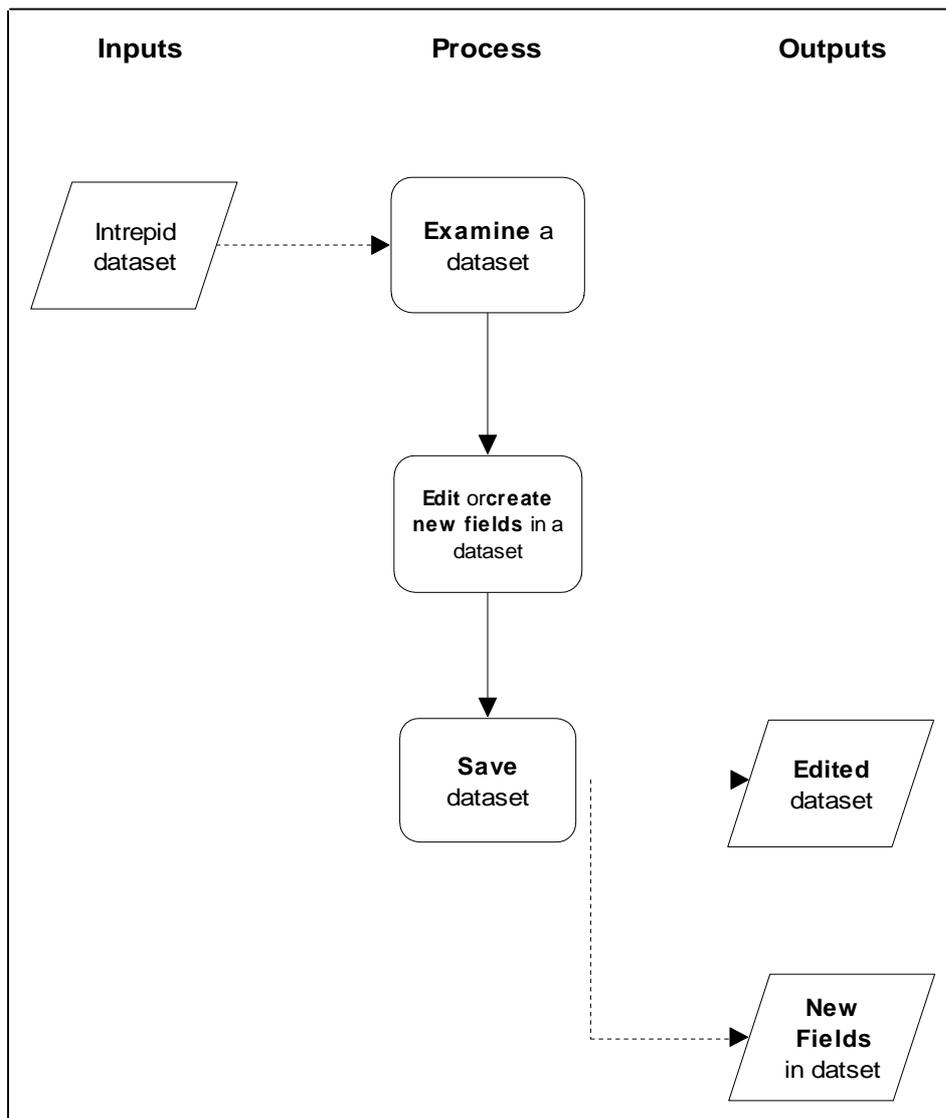
Steps to follow

Launch the
Spreadsheet
Editor

1 *Start the Project Manager. Navigate to the directory*
install_path\sample_data\guided_tours\intrepid_datasets. *Start
the Spreadsheet Editor. Choose* **File > Open Dataset***. When the Load Dataset
dialog box appears, select the line dataset* **ebagoola_ST**.

See Locating datasets, viewing, statistics, launching tools (G02) for instructions
about navigating to different directories and selecting datasets.

Choose **Spreadsheet Editor** from the **Editors** menu. After opening the dataset
ebagoola_ST, it displays the tabular data in the **Spreadsheet Editor** window.
Each column in the spreadsheet corresponds to a field in the dataset. The first row
of each column is preceded by the name of the field.
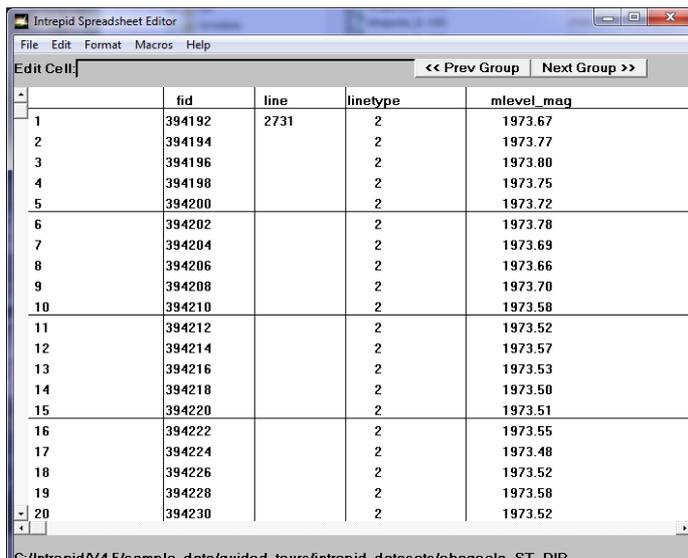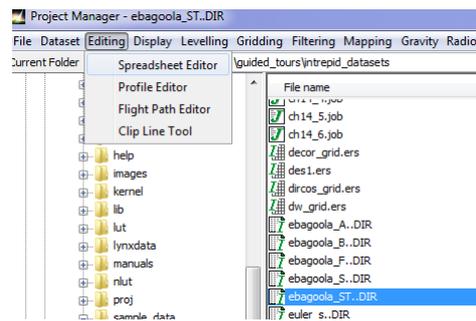
Directly editing a value

Directly edit an
individual
value

2 *Change the value of* **mlevel_mag** *in the first row to 1973.71.*

Click the value of **mlevel_mag** in the first row. INTREPID displays the value in
the **Edit Cell** text box. Click immediately to the right of the number in the **Edit
Cell** text box.
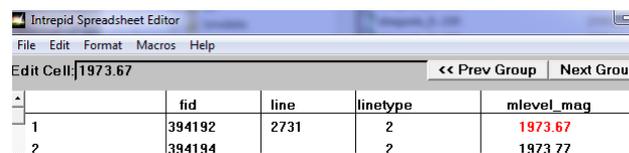
Press BACKSPACE twice or more to erase the 67. Type 71.

Edit Cell: 1973.

Edit Cell : 1973.71

Press ENTER. INTREPID displays the new value in the spreadsheet.

Tip: Remember that INTREPID saves your changes directly to the dataset files when you use the Spreadsheet Editor. This enables you to edit very large datasets without having to load them into your computer's memory.

Finding a certain value in a field

Search for a data point matching a condition

3 *Find the first data point in the dataset where the field* `mlevel_mag` *has a value less than 1959.*

Choose **Find** from the **Edit** menu. INTREPID displays the **Find** dialog box. Type `mlevel_mag < 1959` into the **Search for** text box. Choose **Forward**.
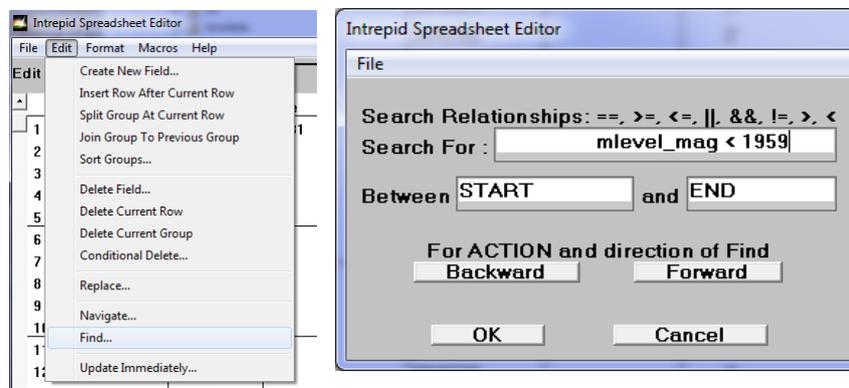
INTREPID will find and display the first data point that matches this condition.
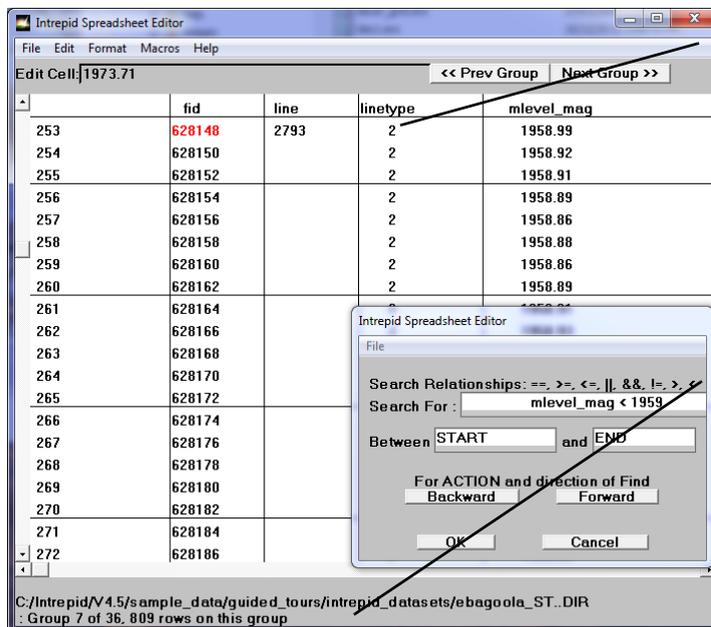
**First value < 1959**

Position in the dataset

Choose **OK** in the **Find** dialog box to dismiss it.

### Creating a new field (column) and assigning values using the Replace operation

Navigate to the beginning of the dataset

4 *Return to Row 1 of Group (line) 1 of the dataset.*

Choose **Navigate** from the **Edit** menu. INTREPID displays the **Navigate** dialog box. Enter the value **1** into each of the three text boxes.
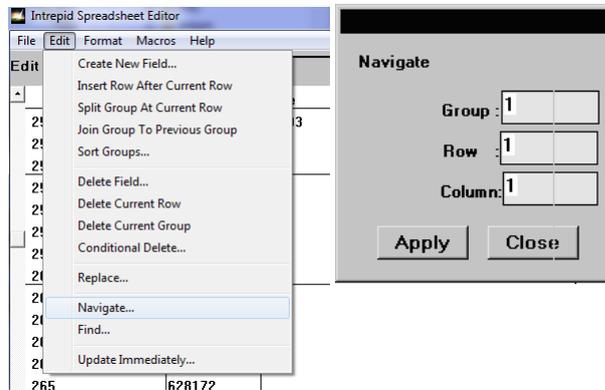
Choose **Apply**. INTREPID displays the first row of the first group (line) in the **Spreadsheet** window.
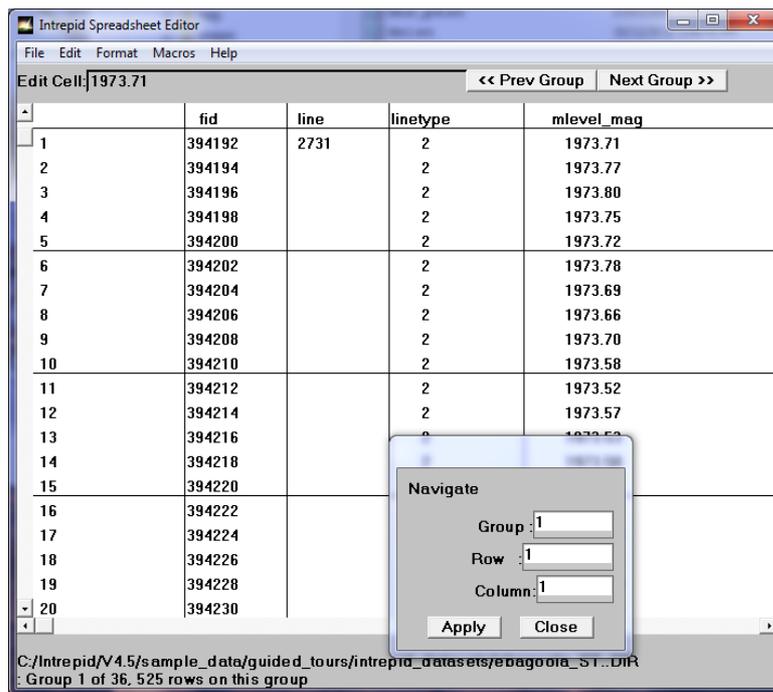

Choose **Close** in the **Navigate** dialog box to close it.

*Tip: You can leave the **Navigate** dialog box open for further use if required. You can change focus between the **Spreadsheet** window and the **Navigate** dialog box as required.*

Create a new   **5**   *Create a new column (i.e, new field) called* `mag_adj1`.
field

Choose **Create Column** from the **Edit** menu. INTREPID displays the **Create Column** dialog box. Type `mag_adj1` into the **Field name** text box.
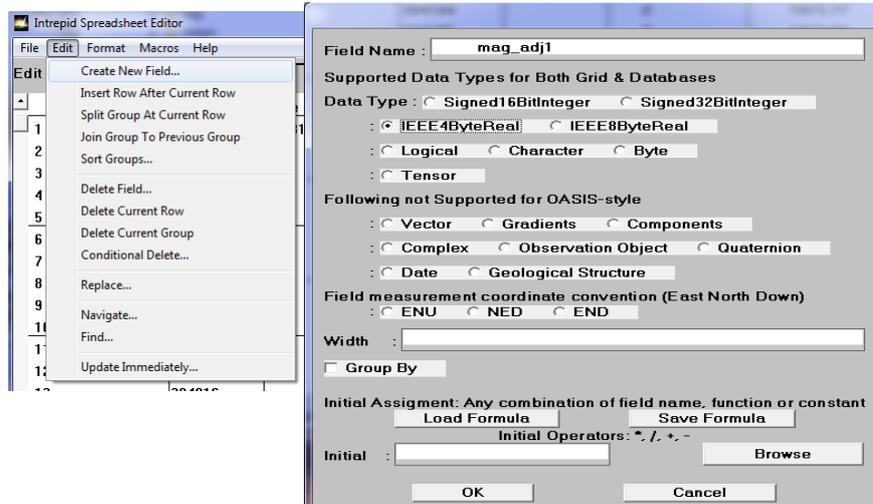
Choose **OK**. INTREPID will create the new column at the right hand end of the spreadsheet. By default, all values in the field will be set to Null. Use the horizontal scroll bar to view the new field (move the scroll box to the right).
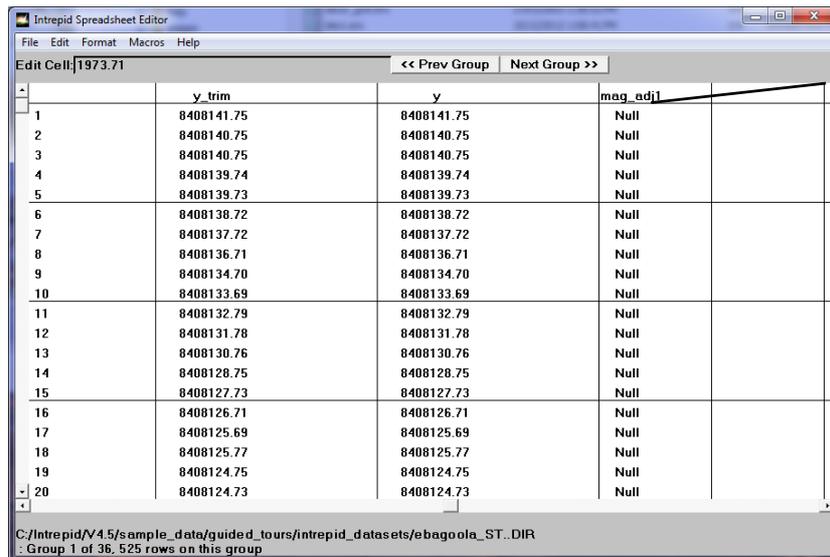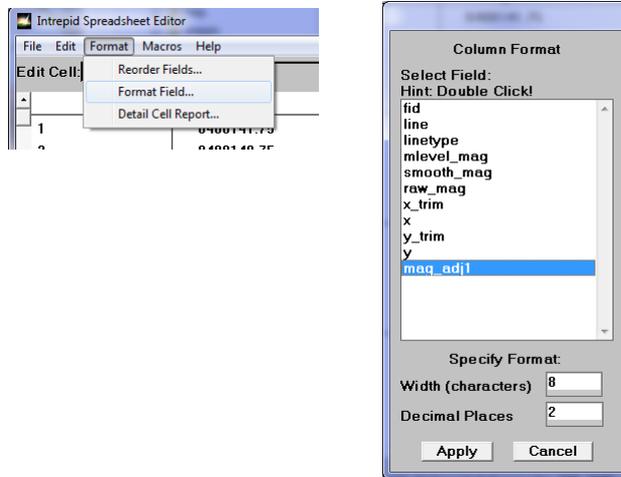

New column contains nulls at first.

*Set decimal
places for
display*

6   *Set the number of decimal places for the field to 2*

From the **Format** menu choose **Format Column**. INTREPID displays the **Format Columns** dialog box. Select (double-click) the field `mag_adj1`. INTREPID will display its default display values for width and decimal places. Enter **2** into the **Decimals** text box.

Choose **Apply**. Choose **Cancel** to dismiss the box.

*Use Replace
with an
expression to
assign values
to the new field*

7   *Assign the value of the new column (field)* `mag_adj1` *by using the Replace function to define a logical condition expression.*

From the **Edit** menu choose **Replace**. INTREPID displays the **Replace** dialog box. Enter the following into the corresponding text boxes of the dialog box.

If   `mlevel_mag > 1969`

Then   `mag_adj1 = mlevel_mag*.9994`

Else   `mag_adj1 = mlevel_mag`

Use of logical AND operator. (optional) You can use the following for the **IF** text box instead if you wish. This restricts the replacement to acquisition lines (line type 2). `&&` is the notation for logical **AND**, and `==` is the notation for 'is equal to' in a condition expression (following the C language convention).

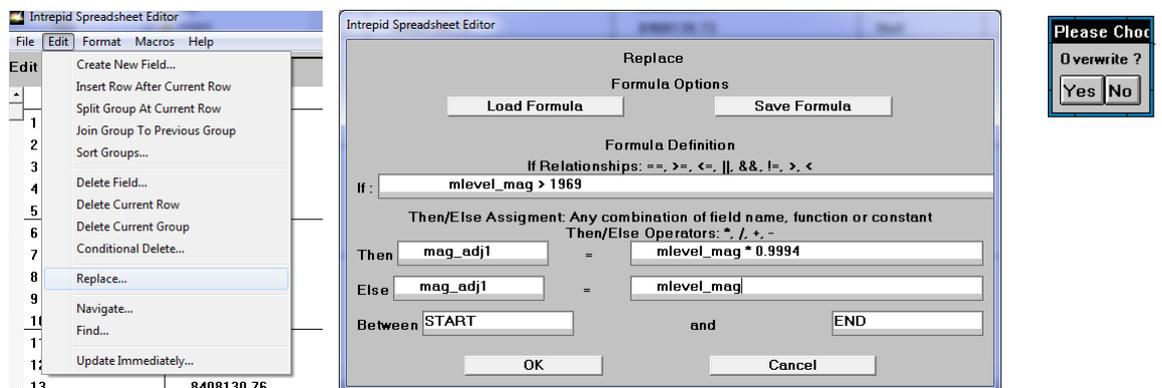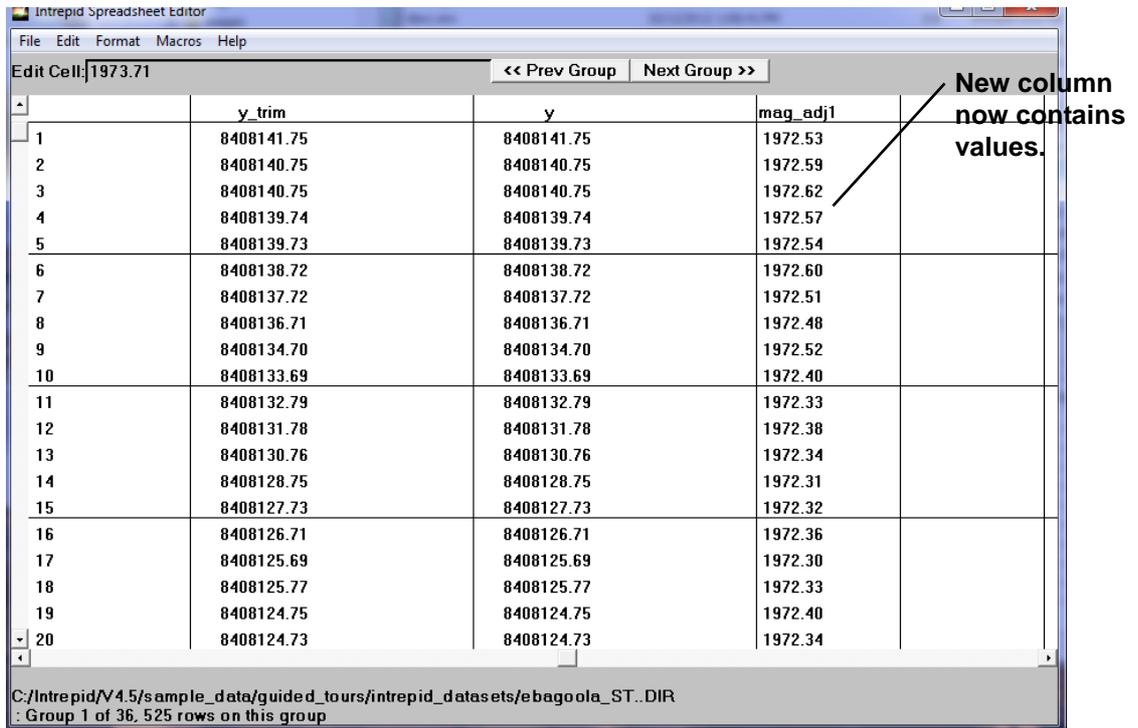**If**   `mlevel_mag > 1969 && linetype == 2`

Choose **OK**.

INTREPID displays a **Confirm Overwrite** dialog box.

Choose **Yes**.

INTREPID will calculate values for the `mag_adj1` column (field).

Note: Use the field name `mag_adj1`, when you use this guided tour not `mag_adjust1` as shown in the illustrations.

Examine the new field values

8 *Use the scroll bars and **Previous** and **Next Groups** buttons to examine the results of your search and replace operation.*

Not greater than 1969

(Group 1, Rows 476–495)

Greater than 1969

(Group 1, Rows 1–20)

Exit

9 *If someone else will be using this guided tour, restore the value changed in Step 2 and delete the field `mag_adj1` from the dataset. Exit from the Spreadsheet tool.*

Return to Row 1 of Group 1 as explained in Step 4. Reverse the process in Step 2 to restore the value to 1973.67. Choose **Delete a Field** from the **Edit** menu. INTREPID displays the **Select Field to Delete** dialog box. Select (click) `mag_adj1` and choose **OK**. INTREPID displays a confirm dialog box. Choose **Yes**. INTREPID will delete the field. Choose **Quit** from the **File** menu to exit from the Spreadsheet Editor.

Key points for this guided tour

In this guided tour of the Spreadsheet Editor you have:

- Directly edited data by erasing and retyping individual values,
- Searched for data according to a mathematical formula,
- Created a new field in a vector dataset;
- Used an 'If .. Then .. Else ..' search and replace operation to assign values in a dataset using a mathematical formula.

Note that the Spreadsheet Editor:

- Has a wide range of arithmetic, statistical and geophysical functions in a flexible formula format,
- Supports ALL INTREPID data formats—vector (line, point, polygon) grid, voxet, SEGY
- Supports geophysical fields using appropriate algebra and graphical representations
- Converts to/from scalar components to tensor/vector/quaternion etc.
- Supports user written macro code.

Frequently Asked Questions

Q : You say a wide range of operators is supported. What are they?

A : The INTREPID Acalc@ class is available to a number of tools (including Spreadsheet, Subsection and Levelling). See INTREPID expressions and functions (R12) for a complete list. The list includes:

- Arithmetic expressions
- Trigonometric functions
- Logical expressions
- Statistical functions
- Tensor conversions

Q : I wish to use my own secret high performance filter. Can I use it with INTREPID without having to reveal it outside my organisation?

A : Yes. You can write code for your filter / macros using our very simple published database Application Programmer Interface. You can then call your code and pass parameters to it like any other Spreadsheet function. If you require assistance with this process contact our technical support service.

Q : Can I edit grids?

A : Yes. The INTREPID Spreadsheet Editor supports grids. You can perform simple and effective grid operations using arithmetic operations.

Q : Can I load multiple grids and compare them?

A : Yes. The Spreadsheet Editor supports activities such as grid arithmetic between grids.

Q : Can you delete and split groups and rows?

A : Yes. You can automate the process using conditional operators.

INTREPID expressions and functions (R12)

Q : Can I edit tensor data?

A : Yes, a Mohr circle diagram is used to visualise the tensor relationships.