Grid Stitch—combining two grids (T23)

We have created the INTREPID Grid Stitch tool mainly for appending a grid to another geographically adjacent grid. It has facilities for smoothing the join between the grids so that it does not appear as a discontinuity during further visualisation and geophysical analysis. You can also use Grid Stitch facilities for general viewing of data profiles along any path traced through the grid.

Using the Grid Stitch tool you can:

· View a grid or a pair of geographically adjacent grids showing their respective borders and overlap areas and/or data gaps, using pseudocolour or sun angle.

· Trace a path through the grids and view a graph showing:

  · The data values for each grid separately.

  · The differences between the data values of the two grids.

· Adjust one of the grids along the junction with the other grid so that the grids can be joined smoothly.

· Save either the adjusted grid or the new stitched grid.
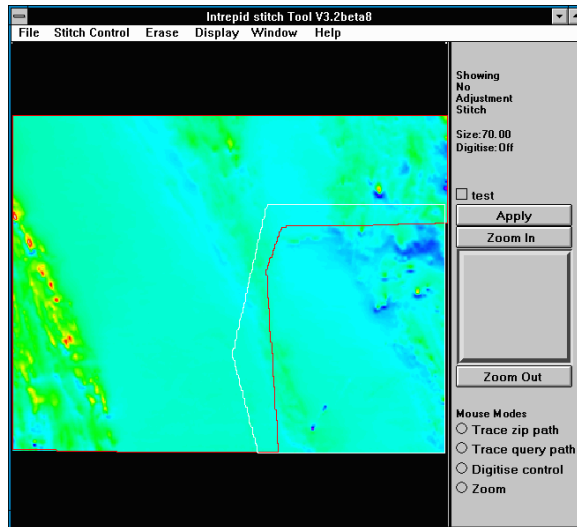
The Grid Stitch tool

>> *To use Grid Stitch with the INTREPID graphic user interface*

1   If required, prepare your grids for minimal resampling using the Grid Operations tool. See Preparing grids to avoid resampling for instructions.

2   Choose **Old GridStitch** from the **Betas** menu in the *Java* Project Manager, or use the command **stitch.exe**. INTREPID displays the Grid Stitch Main window.
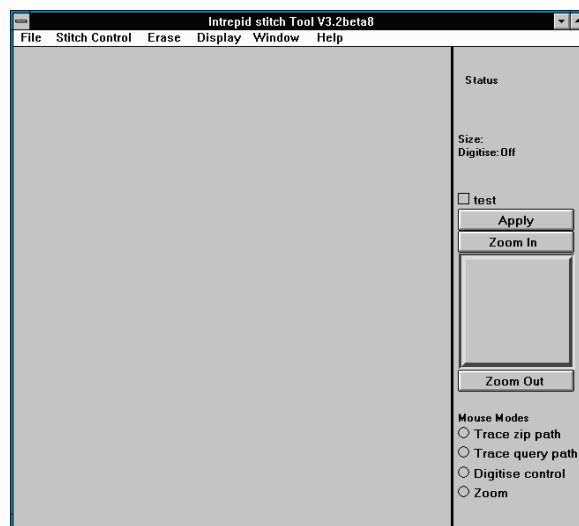
3   If you have previously prepared file specifications and parameter settings for Grid Stitch, load the corresponding task specification file using **Load Options** from the **File** menu. (See Specifying input and output files for detailed instructions.) If all of the specifications are correct in this file, go to step 8. If you wish to modify any settings, carry out the following steps as required.

4   Specify two grid datasets to be viewed or stitched. Use **Load Grids** from the **File** menu. (See Specifying input and output files for detailed instructions.) After loading the grids, INTREPID displays the **Stitch Control** dialog box.

5   Select the options in this box according to your requirements and choose **OK**. See Selecting the grid for each stage of the stitching process for instructions.

While preparing for the Grid Stitch process, or afterwards, there are several options for viewing the grids. See the end of this section for a summary of the viewing options.

6   Specify the filename(s) for the grid(s) be created during this process. From the **File** menu, choose **Specify Output Stitched Grid** to save the new combined grid after stitching the grids. (See Specifying input and output files for detailed instructions.)

7   **Optional** - From the **File** menu, choose **Save Adjusted Grid As** to save the grid to be adjusted.

8   Specify:

•   The type(s) of adjustment to be performed on the grids before stitching (level or scale adjustment, feathering, etc.,), and the parameters for the adjustments

•   The method of selecting sample points for optimising the adjustment.

See Preparing for the grid stitching process for details.

9   When you have made specifications and settings according to your requirements, choose **Apply**. INTREPID will perform the Grid Stitch process.

10 If you wish to record the specifications for this process in a task specification (`.job`) file in order to repeat a similar task later or for some other reason, use **Save Options** from the **File** menu. (See Specifying input and output files for detailed instructions.)

11 If you wish to repeat the process, repeat steps 3–8, varying the parameters and/or data files as required.

12 To exit from Grid Stitch, choose **Quit** from the **File** menu.

Notes:

While preparing for the Grid Stitch process, or afterwards, you can

- Zoom (enlarge an area of the display) and pan (examine different regions while enlarged) (See Zooming and panning the display for details).

- Choose whether to view the grid display in pseudocolour or using the sun angle effect (See Selecting pseudocolour or sun angle display).

- If you are viewing the grid in pseudocolour, spread the set of display colours over a data value range set by you (See Pseudocolour display).

- If you are viewing the grid using the sun angle effect, specify vertical exaggeration and sun inclination/declination (See Sun Angle display).

- Examine a graph of the differences between data values from the two grids along any path traced using the mouse (See Querying the dataset—viewing profile and difference graphs).

    You can view Help information by choosing options from the **Help** menu (See Help).

    You can execute Grid Stitch as a batch task using a task specification (`.job`) file that you have previously prepared. See Displaying options and using task specification files for details.

    Note: If you are executing Grid Stitch as a batch task, you cannot save an adjusted grid (See Specifying input and output files for details.

Preparing grids to avoid resampling

In some situations you may wish to combine a pair of grids with minimal Grid Stitch resampling. Using the Grid Operations tool you can specify an origin and cell size for the resampled grid so it fits neatly with the grid to which you intend to stitch it. This will reduce or eliminate the need for resampling during the Grid Stitch process.

See "Preparing grids to avoid Grid Merge or Stitch tool resampling" in Grid Operations (T25) for instructions.

Specifying input and output files

To use Grid Stitch, you will need to specify:

- The input grid datasets for the grid stitch operation
- The name for the adjusted grid (optional)
- The name for the output stitched (combined) grid

Choose the options as required from the **File** menu.
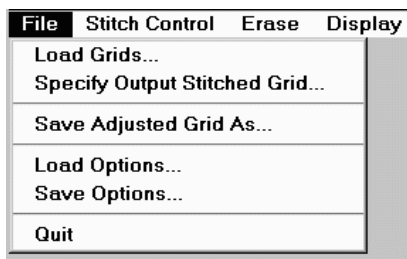
In each case INTREPID displays an **Open** or **Save As** dialog box. Use the directory and file selector to locate the file you require. (See "Specifying input and output files" in Introduction to INTREPID (R02) for information about specifying files).

Load Grids Use this option to specify the grid datasets for the stitch process. INTREPID displays an **Open dialog** box for each one. INTREPID will load the first band (band 1) of multiband grids.

After you have specified the grids, INTREPID displays the **Stitch Control** dialog box. Select the options in this box according to your requirements and choose **OK**. See Selecting the grid for each stage of the stitching process for instructions.

Specify Output Stitched Grid If you are stitching grids, use this option to specify the dataset name for the new combined grid you are creating with this process.

If this is an existing grid dataset,

· The output grid must have the same projection as the grids being stitched;

· INTREPID will only output data within the geographical extent of the existing output grid (i.e., the output grid defines the extent of the output);

· INTREPID will output data with the same mesh (cell) size as the existing output grid (i.e., the output grid defines the mesh size of the output).

After you specify the grid name INTREPID displays the **Band Selection** dialog box. Specify the band numbers and choose **OK**. See Output grid bands specification for details.

After you specify the bands, if you are creating a new output dataset, INTREPID displays the **Output Mesh Size** dialog box. Specify the mesh (cell) size and choose **OK**. See Displaying options and using task specification files for details.

Save Adjusted Grid As If you wish to save the adjusted grid, use this option to specify its name. This option is not available in batch mode.

Load Options If you wish to use an existing task specification file to specify the Grid Stitch process, use this option to specify the task specification file required. INTREPID will load the file and use its contents to set all of the parameters for the Grid Stitch process. (See Displaying options and using task specification files for more information).

Save Options If you wish to save the current Grid Stitch file specifications and parameter settings as an task specification file, use this option to specify the filename and save the file. (See Displaying options and using task specification files for more information).

Output grid bands specification

The Grid Stitch tool can output to any band of a multiband grid dataset.

When you specify an output grid file name INTREPID displays the Band Selection dialog box.
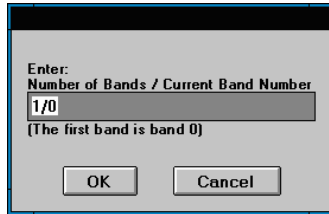

Use this dialog box to specify the number of bands for the grid, and which band you intend to process (the current band). The band information consists of two numbers separated by /. The first number is number of bands in the grid. The second number is the band number for the current grid. Before INTREPID v3.7 the grid bands were numbered starting from 0. For INTREPID v3.7 the band numbering starts from 1. The default number of bands is 1, and the default current band is 1.

After you have specified the band numbers, choose **OK**. See "Multiband grid datasets" in INTREPID database, file and data structures (R05) for more information about multiband grids.

In the current version of INTREPID, Grid Stitch will only load and process band 1 of an input grid. You can still save the results of the process to any band of another grid.

Mesh size of output grid

If you have specified a new output grid dataset, you can choose the cell size for this grid. After you choose **Specify Output Stitched Grid** from the **File** menu, INTREPID displays the **Output Mesh Size** dialog box.
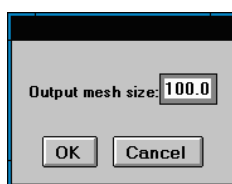

Specify the cell size in distance units (normally metres)[11] and choose **OK**. The default cell size is that of the input grid providing data in the overlap area. See Selecting the grid for each stage of the stitching process for more information.

1.[1] If your dataset is geodetic (latitude and longitude) you need to specify the Grid Cell Size in degrees.

Mouse mode summary

Grid Stitch has a variety of mouse operations, determined by the mouse mode options located at the bottom of the Main window Command area.
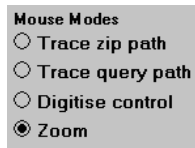
>> *To select a mouse mode*

Select the corresponding Mouse mode option button.

Zoom Using this mode you can define rectangular regions for zooming the data display. See Zooming and panning the display for details.

Trace query path Using this mode you can trace a path through the display for viewing profile graphs of the data along the path. See Querying the dataset— viewing profile and difference graphs for details.

Trace zip path There are several ways to select sample data for optimising the grid adjustment. Using this mode you can trace a path to specify the data in the overlap area to be used for this purpose. See Tracing a path for the overlap sample data (Zip path) for details.

Digitise control Using this mode you can mark control points in the display. See Specifying the adjustment calculation for details.

Grid Stitch display controls and options

The Grid Stitch tool has a large range of display controls. These are provided to assist you with

· Detecting problems such as line-to-line levelling differences ('busts')

· Evaluating the effectiveness of the feathering process in the join area.

Screen redrawing

If you change a display option INTREPID may not immediately redraw the screen. This is because redrawing large datasets takes some time and INTREPID can respond better if it sometimes allows you to you specify several display options before redrawing.

>> *To trigger a screen redraw*

· Click the pan/zoom indicator square in the Command area or

· Change the size of the Grid Stitch window slightly by dragging its border.

Zooming and panning the display

You can enlarge and reduce the display (zoom in and out) and view different parts of it (pan).

>> *To zoom in and out (enlarge/reduce) by steps*

To zoom in (enlarge the display) choose **Zoom In** at the right edge of the Grid Stitch Main window.   Each time you choose this button, INTREPID will enlarge the display by 25%.

To zoom out (reduce the display) choose **Zoom Out** at the right edge of the Grid Stitch Main window.   Each time you choose this button, INTREPID will reduce the display by 25%.

>> *To zoom in on a selected area of the display,*

1   Select Zoom mouse mode
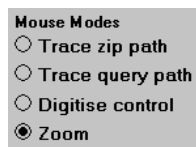
2   Hold down the left mouse button and drag diagonally (corner to corner) across the area that you wish to enlarge. INTREPID will enlarge the selected region to fill the display area of the window.

If you choose **Zoom Out**, having used this zoom in process, INTREPID will immediately zoom out to the full dataset display.

### >> *To pan the display (view different parts)*

The Pan/zoom indicator in the Command area of the Grid Stitch Main window in the centre consists of a small square within a larger square. The large square represents the whole display and the small square the part visible on the screen. When you drag the small square to a different part of the large square INTREPID shows the corresponding part of the display.
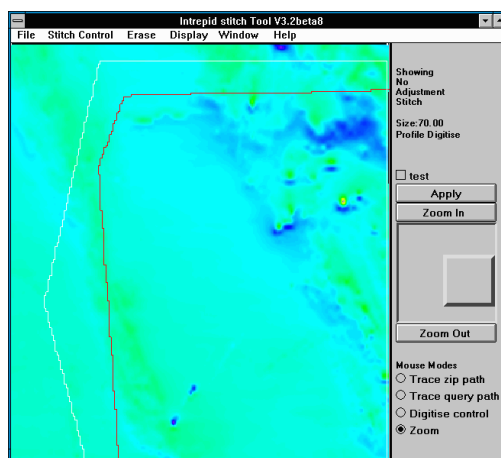
If you have zoomed out to view the whole display, the small square may occupy the whole of the large square and may therefore not be visible.

Showing grid outlines

You can choose whether to display the outlines of the grids. To turn outlines display on or off, choose the **Show Grid Outlines** option in the **Display** menu. It has a check mark against it when outline display is on.
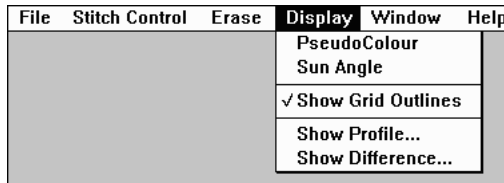
### >> *To turn outlines display on or off,*

Choose **Show Grid Outlines** from the **Display** menu. It has a check mark against it when outline display is on.

INTREPID displays the first grid outline in red and the second grid outline in white.

Selecting pseudocolour or sun angle display

You can select pseudocolour or sun angle display for the grids. INTREPID initially uses pseudocolour.

Use the Pseudocolour / Sun Angle options from the **Display** menu to specify your grid display method.
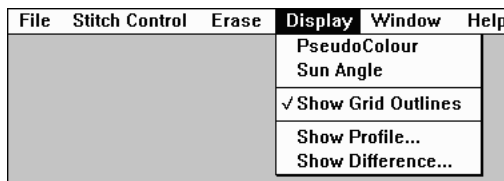
Pseudocolour display

If you choose pseudocolour display without modifying the Low Clip and High Clip parameters INTREPID will apply a fixed range pseudocolour display to your grid. This involves dividing the range of cell values in your grid into equal parts corresponding to pseudocolour values and assigning colours to the cell values accordingly. The 256 basic pseudocolour values are set out in the lookup table **pseudocolour.lut** (See "Colour Lookup Tables" in INTREPID database, file and data structures (R05) for details).
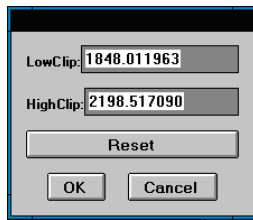
If you set Low Clip and/or High Clip values INTREPID will assign

The lowest ranking colour to all grid cells whose value is less than or equal to the Low Clip value.

• The highest ranking colour to all grid cells whose value is greater than or equal to the High Clip value.

• The other colours in the pseudocolour range to other cells in the grid on the basis described above.

>> *To specify pseudocolour display for your grids*

1 Choose **PseudoColour** from the **Display** menu. INTREPID displays the Pseudocolour Parameters dialog box.

The Low Clip and High Clip text boxes will at first contain the minimum and maximum cell values.

2 Specify or reset Low Clip and High Clip values if required.

To restore the Low Clip and High Clip values to the minimum and maximum cell values, choose **Reset**. Otherwise enter the values (in Z units) in the corresponding text boxes.

3 Choose **OK**. INTREPID displays the grids using pseudocolour. Pseudocolour display is illustrated in all of the pictures of grids so far in this section.

Sun Angle display

Sun angle display creates the illusion of the sun shining on the image from a chosen angle, creating a system of illuminated areas.

The sun angle effect enables you to visualise the image in terms of 'hills' and 'valleys'. It interprets a high measurement in a sample as a 'hill' and a low measurement as a 'valley'.

You can use sun angle this even though the measurements in the data may not actually be physical elevation. For example, if the measurements are levels of magnetism, the sun angle display allows you to visualise a 'magnetic topography' where 'hills' are areas of high magnetism, and 'valleys' are areas of low magnetism.

This display mode is useful for highlighting linear trends or breaks in the image that may be missed in pseudocolour viewing.

>> *To specify sun angle display for your grids*

1 Choose **Sun Angle** from the **Display** menu. INTREPID displays the Sun Angle Parameters dialog box.
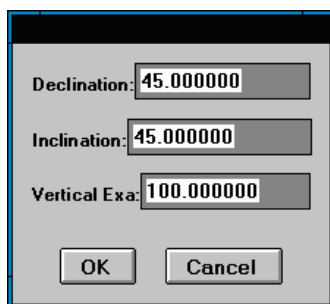
2 Specify Declination, Inclination and Vertical Exaggeration as required, then choose **OK**. INTREPID displays the grids as a sun angle display.

Declination is the 'compass' direction of the line from the overhead point to the 'sun'. A declination of 0° means that the 'sun' is North of the overhead point. A declination of 90° means that it is East of the overhead point. –90° means West and +180°or –180° means South. The default declination is 45°.

Inclination is the angle of the 'sun' between the horizon and the overhead point. An inclination of 0° means that the 'sun' is on the horizon and an inclination of 90° means that it is at the overhead point. The default inclination is 45°.

Vertical Exaggeration is the size of the contrast between high and low values. If you increase the Vertical Exaggeration, the 'hills' will appear higher and the 'valleys' deeper. The default vertical exaggeration is 100.

Here is an illustration of sun angle grid display.
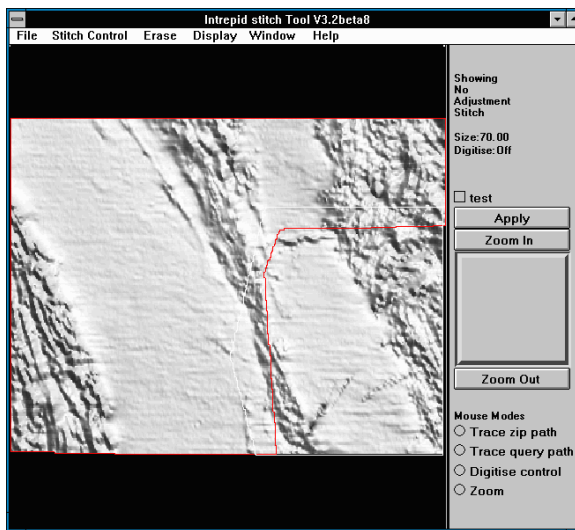
Tracing paths and point sets

The following Grid Stitch tool processes involve tracing a path or marking a point set.

· Querying the dataset—specifying the cross section of your choice for profile viewing (See Querying the dataset—viewing profile and difference graphs for details),

· Specifying the zip path for grid adjustment optimising. (See Tracing a path for the overlap sample data (Zip path) for details),

· Marking control points. See Specifying the adjustment calculation for details.

A **traced path** is a contiguous (joined) sequence of straight line segments that you digitise using the mouse. INTREPID displays the paths in black with small black markers at the vertices.

INTREPID shows control point sets using triangular markers.

>> To trace a path or mark a point set

1   Select the mouse mode corresponding to the path or point set. Mouse modes are: **Trace Query Path, Trace Zip Path, Digitise Control**.

2   Click the vertices (points) of the path with the left mouse button.

INTREPID displays the path and vertices and record them for the grid stitch process. The following illustration shows a zip path.
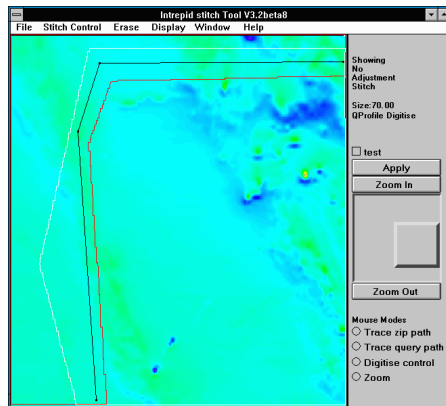
3   When you have finished, ensure that you do not accidentally click any further points.

If you do not wish to view profile graphs, one way to prevent this error is to change to **Zoom** mouse mode. If you do wish to view profile graphs, you need to select the mouse mode corresponding to the profile graph you require.

>> *To clear a path or point set from the process specification and display.*

1   Choose the option from the **Erase** menu corresponding to the path or set of points you wish to clear (i.e., the **Zip Path, Query Path, Control Points**).
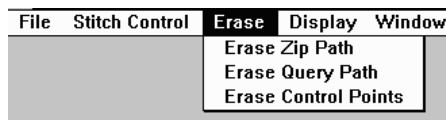

INTREPID will remove the path from the process specification and the display.
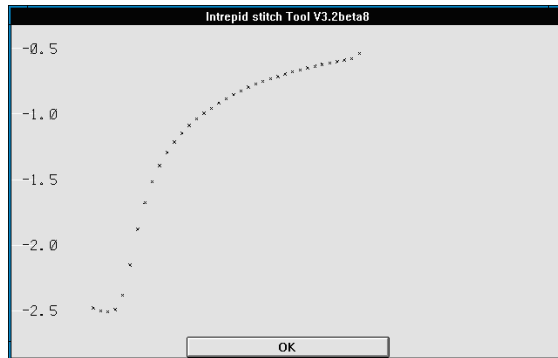
Profile and Difference graphs

You can view graphs of any cross-section of the grids displayed. The cross-section is defined by a path that you trace through the grid display using the mouse.

There are two graph types available:

- Data profiles from the two grids. INTREPID shows the **Reference** grid values as black X marks and the Other grid values as red X marks.
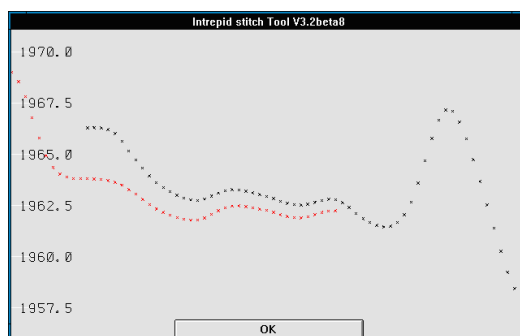
- The differences between data values from the two grids. INTREPID shows the difference values as black X marks.

You can view the graphs in connection with the following Grid Stitch processes.

- Using a query path—specifying the cross section of your choice for profile viewing (See Querying the dataset—viewing profile and difference graphs for details),

- Specifying the zip path (See Tracing a path for the overlap sample data (Zip path) for details).

Querying the dataset—viewing profile and difference graphs

You can trace a path through the display, then view profile graphs of the data along the path.

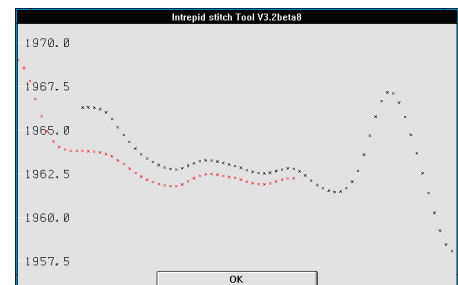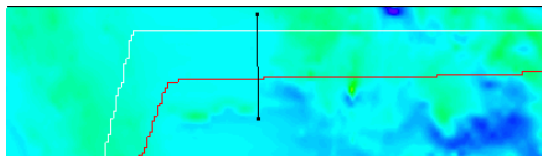**>> *To query the dataset***

1   Select **Trace Query Path** mouse mode
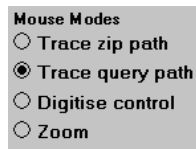
2   Trace the path you require in the overlap region. See Tracing paths and point sets for instructions on tracing and erasing paths.

3   Examine the profile and/or difference graph along the path (See Profile and Difference graphs for instructions).

Here is an illustration of a Query path and Profile graph.

Preparing for the grid stitching process

After you have loaded and examined the grids that you wish to stitch together, you must specify the grid stitching process and parameters.

Use options from the **Stitch Control** menu for stitch process specifications.

```
File  Stitch Control  Erase   Display
      Stitch Control...
      Overlap Options...
      Adjustment Options...
      Edge feathering Options...
```

>> *To prepare for the grid stitching process*

1   Select the grid to be used for each of the following processes:

·   Calculating geographic reference for the stitched grid,

·   Providing data for the stitched grid in the overlap area,

·   Having its surface adjusted to match the other grid,

·   Having its surface feathered near the join area for smoothing.

Use **Stitch Control** from the **Stitch Control** menu. See Selecting the grid for each stage of the stitching process for details.

2   Select options for the sample data used to determine the surface adjustment:

·   Which data from the overlap area to use as the sample data,

·   Whether to use screen or grid resolution in sample data calculations.

Use **Overlap Options** from the **Stitch Control** menu. See Selecting the sample data for optimising the adjustment for details.

3   Specify the adjustment calculation for the surface of the grid to be adjusted:

·   Type of calculation,

·   Whether to create parallel sample data sets (This ensures that INTREPID will use two dimensional information for calculating the optimum adjustment),

·   Whether to use control points in the calculation.

Use **Adjustment Options** from the **Stitch Control** menu. See Specifying the adjustment calculation for details.

4   Specify the edge feathering processes to be performed:

·   Convolution with an averaging kernel,

·   Minimum curvature,

·   Seam smoothing.

Use **Edge feathering Options** from the **Stitch Control** menu. See Edge feathering processes for details.

Selecting the grid for each stage of the stitching process

This section describes how to select the grid for each of the following processes:

- Calculating geographic reference for the stitched grid,
- Providing data for the stitched grid in the overlap area,
- Having its surface adjusted to match the other grid,
- Having its surface feathered near the join area for smoothing.

>> *To select the grid for each processing stage*

1 Choose **Stitch Control** from the **Stitch Control** menu OR

Load a new pair of grids to be stitched (See Specifying input and output files for detailed instructions).

INTREPID displays the **Stitch Control** dialog box.

This dialog box shows the names of the two loaded grids with option buttons so that you can select one of the grids for each stage of the process.

2 Select the options according to your requirements then choose **OK**.

Calculate Geographic Reference from Use this option to specify which grid to use for geographic reference. INTREPID will adjust the other grid's geographic reference to match. (INTREPID selects the first grid to be loaded as the default.)

In Overlap, Use Data from Use this option to specify which grid is to provide the data from the overlap area for the output grid. The grid you select here determines the grid cell size for the output grid. (INTREPID selects the first grid to be loaded as the default.)

Adjust surface of Use this option to specify which grid is to be adjusted to match the other grid. (INTREPID selects the second grid to be loaded as the default.) See Specifying the adjustment calculation for details of the calculations that INTREPID can perform.

Feather Surface of Use this option to specify which grid on which INTREPID should perform the edge feathering process. (INTREPID selects the second grid to be loaded as the default.) See Edge feathering processes for details of this process.
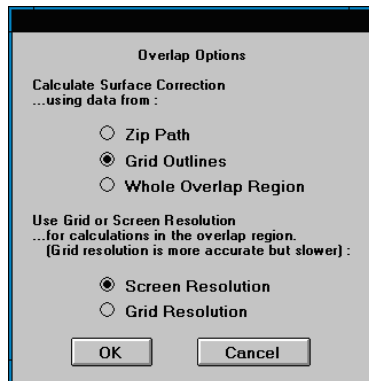
Selecting the sample data for optimising the adjustment

This section describes how to select options for the sample data used to determine the surface adjustment:

- Which data from the overlap area to use as the sample data,
- Whether to use screen or grid resolution in sample data calculations.

>> *To select options for the sample data*

1   Choose **Overlap Options** from the **Stitch Control** menu. INTREPID displays the **Overlap Options** dialog box.

2   Select the option you require from the **Calculate Surface Correction Using Data from** options. These options determine which points in the overlap area to use for optimising the grid adjustment.

Zip Path Select this option if you wish to select the sample points by tracing a path through the overlap region. See Tracing a path for the overlap sample data (Zip path) in this section for further details.

Grid Outlines Select this option if you require INTREPID to obtain the sample points from the grid outlines (i.e., the cells along perimeter of the overlap area).

Whole Overlap Region Select this option if you require INTREPID to obtain the sample points from the whole overlap region.

3   Specify **Screen Resolution** or **Grid Resolution** for selection of sample points, using the corresponding option buttons.

Grid resolution If you specify Grid Resolution, INTREPID will use all cells in the overlap region or on the overlap perimeter or zip path (depending on your selection) as the sample data.

Screen Resolution If you specify Screen Resolution, then

•   In interactive mode, INTREPID samples the data at screen resolution (1 sample per pixel[12]).

•   In batch mode, INTREPID samples from a 500x500 matrix of virtual pixels.

Tracing a path for the overlap sample data (Zip path)

You can specify the path through the overlap area for INTREPID to use as a source of sample points to record the differences between the values in the two grids. INTREPID can use this to calculate the grid adjustments.


1.[2]For calculation purposes INTREPID measures the number of pixels in the image with the whole image fitting in to the display area of the Grid Stitch Main window (i.e., fully zoomed out).

If you enlarge the Grid Stitch Main window, INTREPID will use more pixels for the image (i.e., a lower subsampling interval). This results in a more detailed display but does not affect the number of sample points.

>> *To specify the zip path*

1   Select **Trace Zip Path** mouse mode.
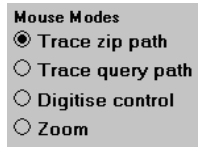
2   Trace the path you require in the overlap region. See Tracing paths and point sets for instructions on tracing and erasing paths.

Notes:

After specifying the overlap sampling trace, you can examine a profile or difference graph along the path (See Profile and Difference graphs for instructions).

Under certain circumstances INTREPID will create and use extra sampling traces parallel with your trace to ensure a better fit in both geographic dimensions. See Specifying the adjustment calculation for details.

Here is an illustration of an overlap sampling trace and the corresponding profile and difference graphs
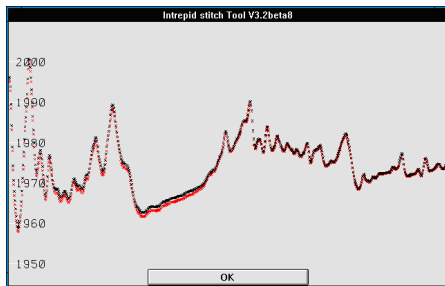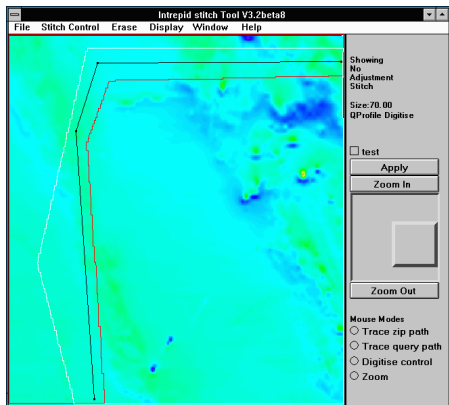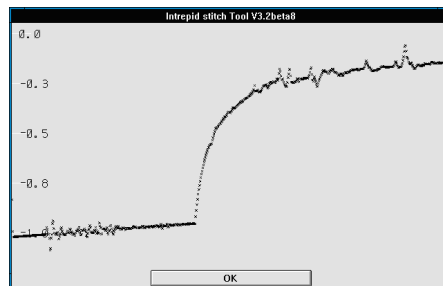
Profile Graph   **Difference graphs**

Specifying the adjustment calculation

This section describes how to specify the adjustment calculation for the surface of the grid to be adjusted. It explains how to specify the following:

- Type of calculation,
- Whether to create parallel sample data sets (This ensures that INTREPID will use two dimensional information for calculating the optimum adjustment),
- Whether to use control points in the calculation.

INTREPID can perform a levelling adjustment along the join by adding a correction to the Other grid (Level Adjustment) or by multiplying the Other grid by a scaling factor (Scale Adjustment).

You can choose between a level and scale adjustment and specify the order of the polynomial to be used in the calculation. INTREPID applies the adjustment to the entire grid to be adjusted, not just along the overlap sampling trace.

>> *To specify the adjustment method and parameters*

1   Choose **Adjustment Options** from the **Stitch Control** menu. INTREPID displays the **Adjustment Options** dialog box.
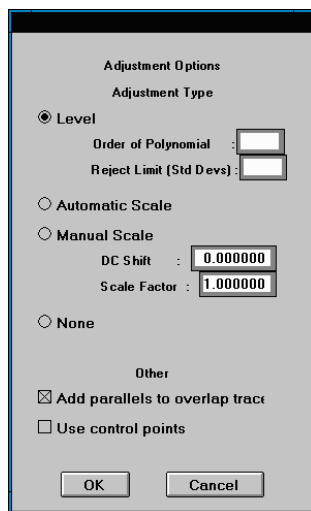
2   Select the Adjustment Type option you require.

Level INTREPID performs a least squares fit of a polynomial along the difference in overlap sample points between the grids. It will then use this polynomial to adjust the whole grid.

—Order of Polynomial Use this to specify the order of the polynomial that you require for the adjustment process. The default order is 2.

The order of the polynomial corresponds to the shape of the curve used for the data adjustment. Order 0 corresponds to simply adding a constant to values in the grid to be adjusted. Order 1 corresponds to adding more at one end than the other, the adjustment determined by a straight line through the profile. Order 2 corresponds to adjustment using a simple curve through the profile, and so on. You can use polynomial of order up to 8.

The higher order polynomials, due to their larger number of peaks and troughs, are more able to follow the shapes of anomalies along the overlap sampling trace.

—**Reject Limit (standard deviations)** Use this to exclude extreme values when calculating the polynomial. INTREPID will not use sample points with values outside the specified number of standard deviations from the mean.

—**Use control points** If you are using the Level adjustment you can mark control points which INTREPID will not change in the grid to be adjusted.

If this check box is on when you choose **Apply**, INTREPID will use the currently defined control points.

See Tracing paths and point sets for instructions on marking control points.

—**Add parallels to overlap trace** If you are using the Level adjustment, you can specify whether to use parallel sets of sample points. Use the corresponding check box.

If the zip path or grid borders are too straight (height/width of rectangle surrounding whole path > 3 or height/width < 1/3), INTREPID can create and use two extra sets of sample points parallel with the zip path to ensure a better fit in both geographic dimensions. This is an automatic internal process, and you will not be able to view the extra traces in a graph.

Automatic Scale Use this option for INTREPID to use the sample points to derive a single factor for adjusting the grid. INTREPID will multiply the all values in the grid to be adjusted by this factor.

Manual Scale Use this option to specify single adjustments for the whole grid manually.

The stitch tool will automatically compute and display manual adjustment DC Shift and Scale factor parameters that would give the best results.

—**DC Shift** Use this text box to specify a value to add to each cell in the grid to be adjusted.

—**Scale Factor** This adjustment involves multiplying the grid to be adjusted by a factor.

This is mainly intended for stitching grids of radiometric data. Radiometric surveys, particularly older ones, are commonly uncalibrated with respect to each other. Radiometric data is also very sensitive to weather conditions. The mean and the dynamic range of radiometric grids may differ markedly, even though the surveys were flown in the same area.

None Select this option if you do not require any adjustment.

3 Choose **OK**.

Edge feathering processes

This section describes how to specify the edge feathering processes:

· Convolution with an averaging kernel,

· Minimum curvature,

· Seam smoothing.

Use **Edge feathering Options** from the **Stitch Control** menu.

You can use feathering in conjunction with levelling and scaling or independently.

>> *To specify the feathering process,*

1 Choose **Edge Feathering Options** from the **Stitch Control** menu. INTREPID displays the **Edge Feathering Options** dialog box.
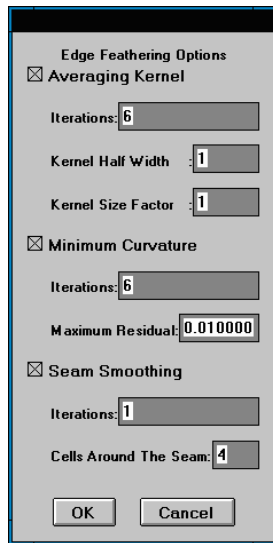
2 Turn the feathering processes on or off as required, specifying the parameters for the processes you have enabled. See below for explanation of the parameters.

3 Choose **OK** when you have finished.

Averaging Kernel

Use this option to specify the feathering convolution process. Feathering is a process of iterative local grid smoothing using a 3x3 **LaPlace** convolution kernel. The process adjusts the grid to be feathered working away from the edge of the other grid. See "LaPlace iterations" in Old Gridding (T22) for more information about LaPlace convolution.

You can specify the maximum number of smoothing iterations performed in the feathering process.

The process uses the following parameters:

Iterations You can specify the number of feathering iterations for INTREPID to perform on the grid. One iteration is one pass of the convolution process.

 Kernel Half Width This is the radius of the convolution kernel used for feathering. A width of 1 corresponds to a 3x3 kernel, 2 corresponds to a 5x5 kernel, 3 to a 7x7, etc.. The default value is 1. A larger kernel half width takes longer to process and results in more smoothing.

Kernel Size Factor If you increase the kernel size factor from 1, INTREPID expands the kernel to cover a greater area of the grid, but uses the same number of coefficients with 0 coefficients in the gaps between them. It will perform the feathering with the expanded kernel, then reduce its half width by one step and repeat the process. INTREPID will continue to reduce the half width and repeat the process until the half width is equal to the half width specified in the Kernel Half Width text box. A larger kernel size factor takes longer to process and results in more smoothing.

The reduction in half width in each step is equal to the specified kernel half width. For example if the specified kernel half width is 2 (5x5) and the kernel size factor is 3, INTREPID will commence with a kernel of half width 2 x 3 = 6 (13x13) (but still with only 5x5 coefficients), then repeat the process with a kernel of half width 4 (9x9), then with a kernel of half width 2 (5x5).

Minimum Curvature

Use this option to specify a minimum curvature process for smoothing the seam area. See "Minimum Curvature" in Old Gridding (T22) for details.

Iterations, Maximum Residual, Relaxation factor See "Minimum Curvature" in Old Gridding (T22) for details of these parameters.

(Relaxation factor) You can change the value of the relaxation factor if you are using a task specification (`.job`) file for your Grid Stitch process. Edit the `.job` file, changing the value in the `Relaxation_Factor =` line according to your requirements, e.g., `Relaxation_Factor = 1.35`. See Displaying options and using task specification files for information about batch mode.

Seam Smoothing

This is an edge-hiding convolution filter. Overuse of this can lead to flat spots in the data.

Iterations We recommend a maximum of 2 iterations for this process.

Cells around the seams Use this to specify the size of the seam smoothing kernel. The default size is 4.

Apply

When you choose **Apply**, INTREPID performs the Grid Stitch process as specified by you, saving the stitched grid

· When finished for a small grid or

· As it proceeds for a large grid where it is using the tiling process (See Optimising processing performance for large grids for details about small and large grids and tiling).

Optimising processing performance for large grids

For large grids, INTREPID uses a tiling system. This involves processing the grid a section at a time. You can optimise the performance of your computer by adjusting the value of the INTREPID_MEMORY system parameter.

Apart from this optimising adjustment, the tiling process and the decision to use it is automatic. See "INTREPID Memory limits and tiling" in Configuring and using INTREPID (R04) for information about INTREPID_MEMORY.

Help

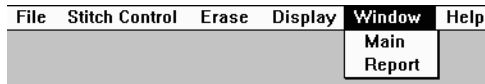You can use the **Help** menu to display help text on the topics shown in the menu illustration below.
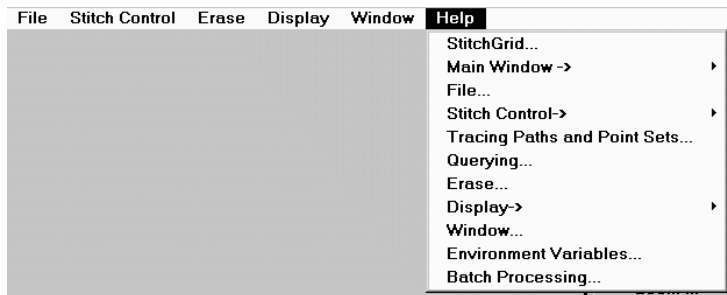
Exit

To exit from Grid Stitch choose **Quit** from the **File** menu.

Displaying options and using task specification files

Displaying options

To display the current file specifications and parameter settings, choose **Report** from the **Window** menu.

INTREPID displays the Grid Stitch Report window.

Using task specification files

You can store sets of file specifications and parameter settings for Grid Stitch in task specification (**.job**) files.

>> *To create a task specification file with the Grid Stitch tool*

1   Specify all files and parameters.

2   If possible, execute the task (choose **Apply**) to ensure that it will work.

3   Choose **Save Options** from the **File** menu. Specify a task specification file (INTREPID will add the extension **.job**) INTREPID will create the file with the current parameters.

For full instructions on creating and editing task specification files see INTREPID task specification (.job) files (R06) .

>> *To use a task specification file in an interactive Grid Stitch session*

Load the task specification (**.job**) file (**File menu, Load Options**), modify any settings as required, then choose **Apply**.

>> *To use a task specification file for a batch mode Grid Stitch task*

Type the command **stitch.exe** with the switch **–batch** followed by the name of the task specification file.

For example, if you had a task specification file called **surv329.job** in the current directory you would use the command

```
stitch.exe –batch surv329.job
```

Grid stitch task specification file example

```
Process Begin
    Name = stitch
    GridA = /disk1/survey/stitch_a
    GridB = /disk1/survey/stitch_b
    OutputStitch = /disk1/survey/stitched1
    Parameters Begin
        CurrentBand = 0
        NumberOfBands = 1
        Output_Grid_Size = 100.0
        AlignTo = GridA
        Precedence = GridA
        PolyAdjust = GridB
        FeatherInto = GridB
        Feather Begin
            AverageKernel = Yes
            KernelWidth = 1
            KernelSizeFactor = 1
            AverageIterations = 6
            Relaxation = 1.2
            MinimumCurvature = Yes
            Minq_iterations = 6
            Minq_Max_Res = 0.01
            SeamSmoothing = Yes
            SeamIterations = 1
            EdgeWidth = 4
        Feather End
        Adjust Begin
            ControlWeight= 1
            AddParallels= Yes
            RejectLimit= 2.0
            Degree= 1
            AdjustType= Add
            ManualDCShift= 0.0
            ManualScaleFactor= 1.0
            ModelFromTraverse Begin
                UseOutline= Yes
                UseGridResolution= No
                UseWholeOverlap= No
            ModelFromTraverse End
        Adjust End
    Parameters End
Process End
```

Notes

You can modify the relaxation factor for the minimum curvature process (See Minimum Curvature for details). Change the value in the **Relaxation_Factor =** line according to your requirements, e.g., **Relaxation_Factor = 1.325**.