

Loading charts in Seaclear II

The SeaClear program itself does not contain any charts (apart from one greenish very basic world chart). The location of the new charts must be allocated to the program through the “Autoload list” This allocation must be done by using the tandem program “Mapcal”. The “MapCal” utility can be found in the same directory as SeaClear.

You must differentiate between BSB raster charts which have already been geo-referenced by the publisher, (cont at 1.1.) and scanned charts (straight from the scanner) that have not yet been geo-referenced. (cont at 1.3)

1.1 Loading BSB raster charts step by step.

1. Copy the cruising region folder(s) from the DVD to the hard disk or create chart folders (directories) using Windows Explorer (or another file manager program such as My Computer) and then copy the chart files into the folders.
2. SeaClear works best if you copy the appropriate chart file(s) from the DVD to the folder C:\Program Files\SeaClear\charts, but other file locations can also be used. Make a logical directory structure.
3. Start the tandem utility “Mapcal” by double clicking on its icon
4. Select: “Tools > Set Directories” (Set Directories is used for setting all file paths used by MapCal and SeaClear.)
5. In the Chart Directories window, enter the path to the chart folders you created earlier, or click the Browse for Folder button [<<] box to the right of the Chart Directories window to navigate to your chart folders.
6. Select the chart folder you would like to add and click OK. If you have copied the charts to multiple directories for different regions, click the requested directories one by one and OK each one.
7. Click OK in the Set Directories window to close the window.

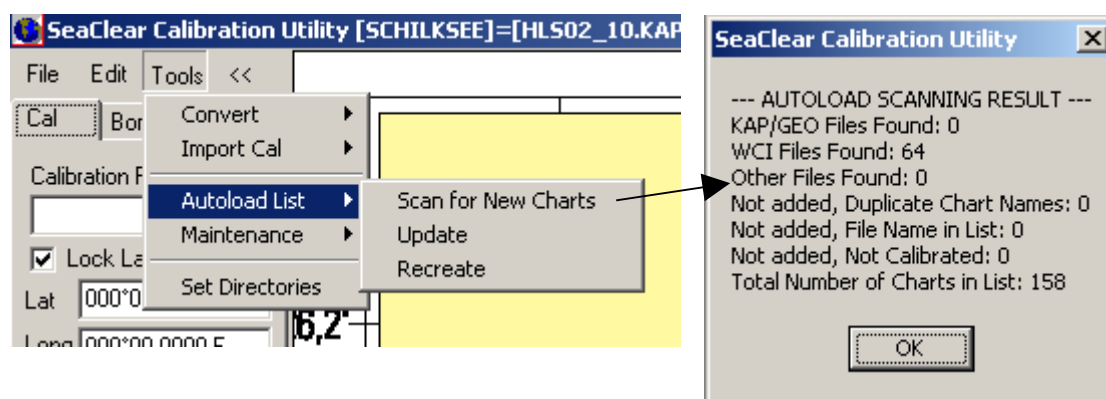
1.2 Making the Autoload List (identical procedure for BSB or WCI charts)

The “Autoload list” is the database in which all charts are listed that can be used by Seaclear. Before the Autoload list is made, it is important that all calibrated chart files are located in the right directories. (see above) This should be done using standard Windows tools, like Explorer or Commander.

NB: Non-calibrated charts must be filed in other directories, an cannot be used for navigation

The in the Mapcal utility clicking on “Tools > Set Directories” will bring up a list of directories in which the charts can be found. Click and OK all required directories one by one.

If all directories have been entered correctly, the charts are now ready to be included in the Autoload list. Click “Tools > Autoload list > Scan for new charts”
Mapcal now starts scanning all listed directories, this can take a few minutes so be patient.. Finally a scan report appears, showing the number of KAP/GEO (=BSB) charts found, the number of WCI charts found and some other relevant information.



With this function only new found charts are added to the Autoload list. It is usually better (for instance when the new season starts) to clear the “Autoload list” completely and start again from scratch by clicking on “Tools > Autoload list > Recreate”. Everytime SeaclearII is started, it will look in the Autoload list, for charts that are available for navigation. If a chart is **not included** in the list, it will **not** be used for navigation.

In SeaclearII the contents of the Autoload list can always be checked, by clicking on “File > Charts > List All”

1.3 Geo referencing (calibrating) of scanned charts

Scanned charts must be “Geo- referenced” or “Calibrated” also using the tandem program Mapcal. This is achieved by adding a Lat-Lon grid to the chart and defining the chart borders. The GPS orients itself on this grid and the chart itself “underlays” this grid.

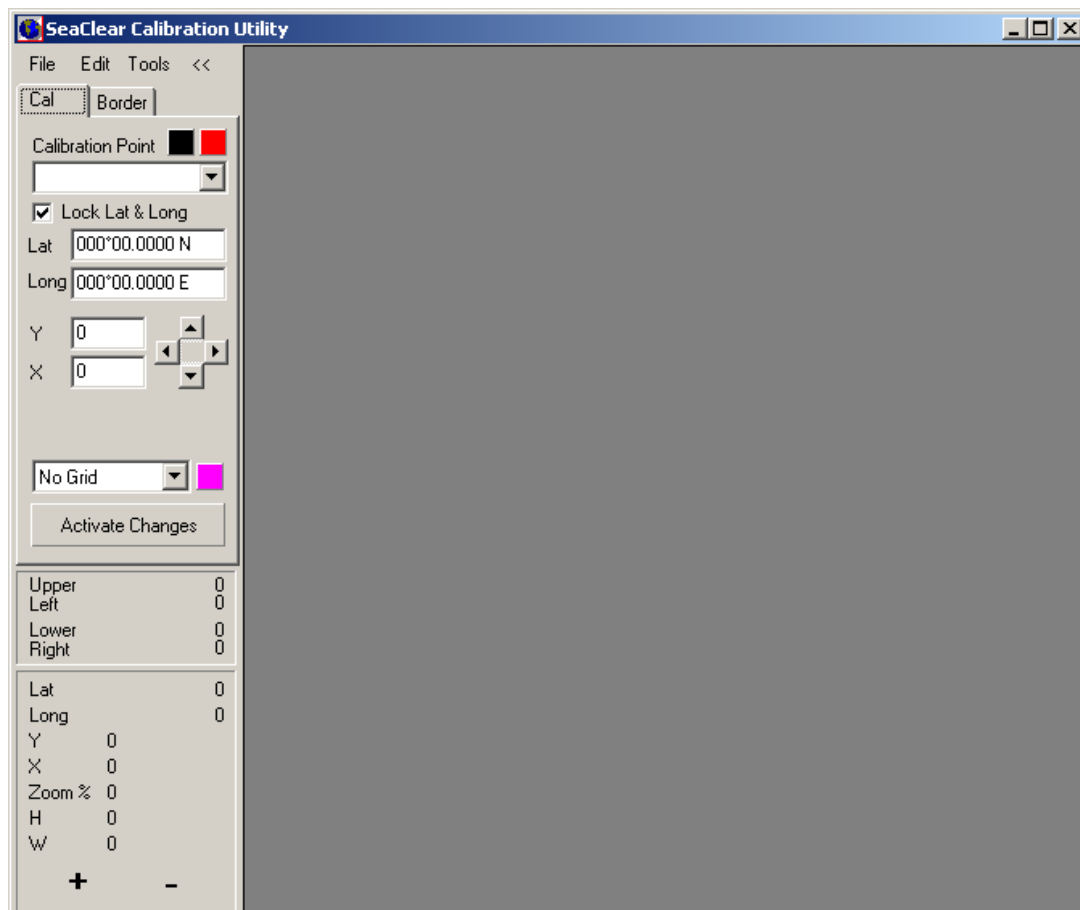
The grid itself can be fixed to the chart by defining at least 2 Lat-Lon points of which the exact coordinates are known. Usually these points are the crossings of printed gridlines. In practice you should use at least 4 points close to the four corners of the chart.

In order to check the correct geo-referencing a pink grid can be projected over the chart. All lines of the grid should match the coordinates as printed on the chart edges as accurately as possible. Thereafter the chart edge (border) must be defined. Both data are stored within the chart file on saving the calibration.

BSB charts have already been geo-referenced, calibration points are visible but cannot be changed by the user.

The procedure is as follows:

When Mapcal is started the following screen appears:



1.4 Loading a chart file

All TIFF, BMP and PNG files can be loaded, but loading BMP files works best.

However it is recommended to first convert all available scanned files into the WCI format using the “Tools > Convert > Images in directory” command. The WCI format is proprietary to Seaclear and can only be read by Seaclear. It is a highly compressed file format (factor 10 – 20 reduction in file size).

WCI files can always be converted back to the more universal BMP format.

If all available files are converted into WCI format, they are ready for calibration and can be loaded one by one. Use the “File > Open chart” command.

When uncalibrated charts are loaded for the first time, a “Chart Information” pop-up screen is shown first. See section 1.9

NB: If the chart info box does not appear, the chart has probably already been calibrated.

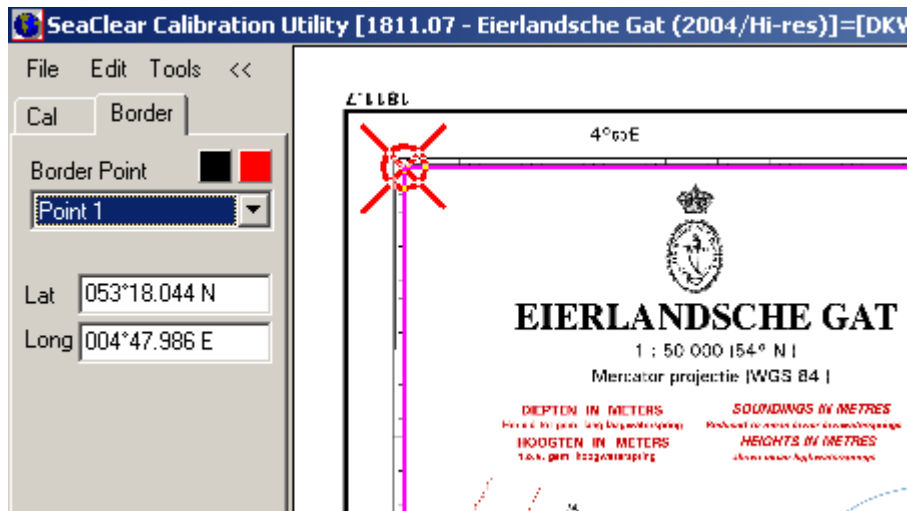
1.5 Geo- referencing (calibrating) a chart

Load a WCI chart and place the cursor on a point with known coordinates. Usually a crossing between a meridian line and latitude line can be used, and then round numbers can be filled in. However it is still possible to use any other position on the chart as a geo-reference point, as long as the coordinates are accurately known. The best is to use four positions on the chart wide apart, preferably near the four corners. Addition calibration points can be added near critical navigation area’s such as Capes, Harbours or narrow entrances.

Place the cursor on a calibration point, click right and click “Add New Cal. Point”

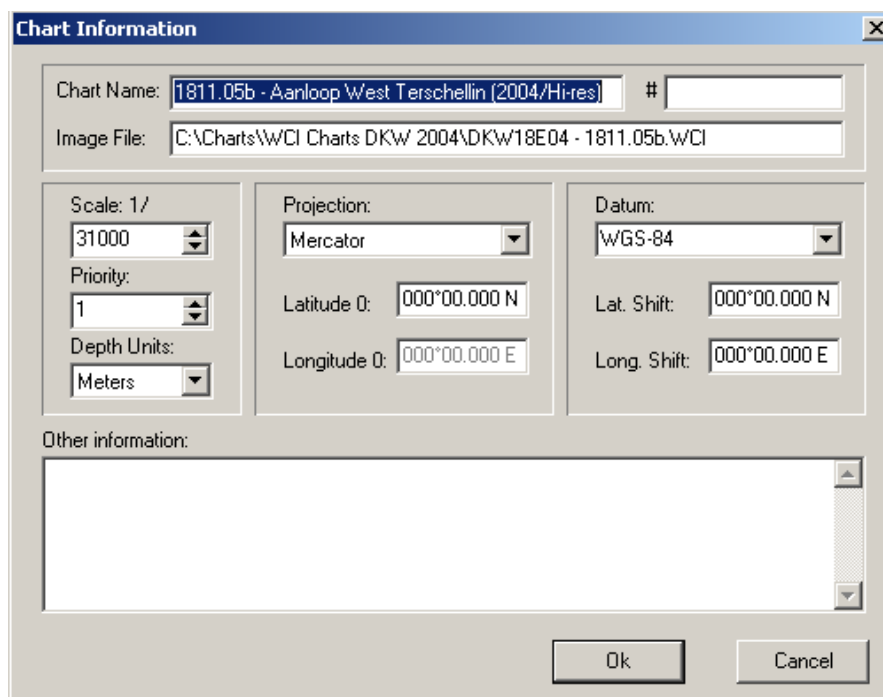
1.8 Chart Borders

The borders of the chart must be indicated so that Seaclear knows where the chart begins and ends. New charts can be loaded by Seaclear when needed, if we are likely to sail over the chart edge. To enter the chart border data, first select the “border” tab and place four border points on the chart borders, using the same procedure as for the calibration points. Borders should be placed on or near to the Lat-Lon scale edges of the chart and preferably not on the bold black line surrounding the chart. This will prevent sailing over non charted area’s prior to loading the next chart. In case of non rectangular charts, additional border points can be placed as needed.



1.9 Entering additional chart information

Select: “Edit > Chart information” and the following window appears:



Most fields are self explanatory, but they all should be filled in.

Projection

It is important to enter the correct projection otherwise large calibration errors will result. Never leave this box to “unknown”. Nowadays most nautical charts will have Mercator projection. Mercator charts have a variable vertical scale according to latitude, so Mercator should be selected from the drop down list. Other projections are less common. If in doubt use Mercator.

Chart Datum

The “chart datum” is always printed on the chart and should be selected from the drop down list. Filling in the wrong chart datum could result in position errors of a few hundred feet. Recent charts all have WGS 84 as chart datum, but older charts show sometimes Transverse Mercator, Polyconic or Gauss. If in doubt use WGS84.

Scale and Priority

Filling in scale and priority are related. Filling in the scale of the chart is necessary to get the right chart on the screen depending on your position. Do not leave the scale at the default 200.000, but fill in the actual scale. If priority is left at 1, Seaclear will search for the smallest available (most detailed) chart in the database. Higher numbers mean lower priority. So if you have older or less relevant charts in your database, give them a higher number.

Depth

Should be filled in but has no influence on the navigation. Older BA charts are grey-white and depths are in Fathoms. More recent charts are in yellow-blue-green white and are in meters.

Other information

All information relevant to that particular chart can be listed here such as digitising date or other special remarks for that particular navigation area

Summary for geo-referencing (calibrating) scanned charts

1. Place all scans in the selected chart directory. Scans preferably to be filed as BMP.
2. Convert all scanned charts to WCI format using “Tools > Convert > Images in directory”
3. Open the “Mapcal” utility and load WCI chart file from the list by selecting “File > Open Image”
4. Open the "Edit > Chart Information" window (if it has not already been opened).
5. Enter the correct scale of the chart, and chose a priority (higher number = lower priority)
6. Select “Chart projection” from the drop down list. If unknown use Mercator.
7. Select “Chart Datum” from the drop down list. If unknown use WGS84.
8. Fill in Lat-Lon shift (very seldom used and prone to serious errors. (if in doubt leave at 000.00.00)
9. Click OK. That will close the chart information window.
10. Add at least 2 separate calibration points in the chart (better is 4) together with their positions. Right-click and select “Add new cal. Point” for each new point.
11. Click on “Normal grid” and then on “Activate changes”, so the pink grid becomes visible
12. Check grid over chart with Lat-Lon scales on the sides of the chart, correct where needed
13. Check correct calibration in the centre of the chart and near critical navigation area’s

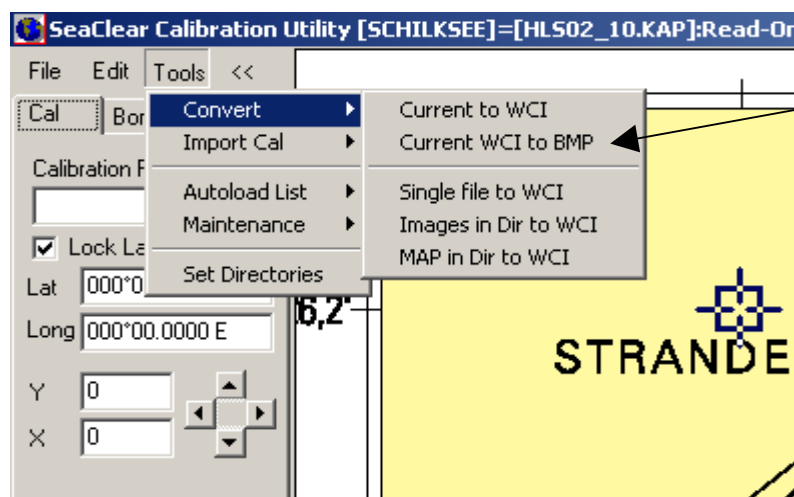
14. If necessary add additional cal. Points and “stretch” the grid to match the chart.
15. Select “Border” and enter at least 4 border points. Can also be done quickly by “Set border to image”
16. Click on "Save Calibration". The Chart is now ready for navigation in Seaclear.

1.10 Handling WCI, BMP, TIFF or JPEG files

The data in the “Chart Information” window can always be changed, but then the file should then be saved again. The WCI chart file can at any time be converted back into a .BMP file. This can be very useful if small sections of the main chart contain other small scale charts that need to be cut out from the main chart and to be calibrated separately. BMP files can be converted in TIFF or JPEG files. A nice and fast program for handling large graphic BMP or TIFF files is “Irfanview”

These file formats can best be converted back to WCI format using the Mapcal batch file conversion utility “Tools > Convert > Images in directory”

PDF files cannot be handled by Mapcal unless they are first converted to BMP or TIFF. JPEG files should be avoided since in combination with WCI conversion they will show a very “rough” texture or unsatisfactory graphics.



1.11 Converting back to BMP