

Marxan/C-Plan Integration Manual Draft 2

This manual describes the steps to run the Marxan from within C-Plan. It is divided into the following sections.

- 1. Building a Marxan dataset**
- 2. Running Marxan**
- 3. Displaying the Marxan output**
- 4. Using the Marxan output**
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1. Building a Marxan dataset

On the marxan form, click "Build Dataset" and the marxan dataset will be built in the WORKINGDIR\marxan\input subdirectory. WORKINGDIR is the current C-Plan working directory.

In order to incorporate Marxan site and feature fields, they must be included in the C-Plan site and feature tables. If any or all of these fields are not included, they are not passed in by C-Plan, and Marxan will use its defaults for these fields. The site fields you can add are COST, XLOC and YLOC. The feature fields you can add are SPF, TARGET2, SEPDIST, SEPNUM and TARGETOCC. C-Plan automatically includes the Site Fields ID and STATUS, and the Feature fields ID, TYPE and TARGET.

SPF is the Species Penalty Factor. Consult the Marxan Developers and the Marxan user guide for more information about these fields and their meaning in Marxan.

Marxan web site : <http://www.ecology.uq.edu.au/marxan.htm>

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2. Running Marxan

All the controls for Marxan are on the C-Plan form, "Marxan prototype interface".

C-Plan acts as a graphical front end to Marxan. When sites are selected or feature targets adjusted in C-Plan, the Marxan dataset is updated to correspond to these conditions.

Click "Execute Marxan" to run Marxan. When Marxan is finished running, press ENTER to terminate its interface, then Click "Retrieve Marxan Result" for C-Plan to read the Marxan output values. A future version of C-Plan will automatically terminate Marxan and fetch its output when Marxan execution has finished.

Marxan output is created in the WORKINGDIR\marxan\output subdirectory (WORKINGDIR is the current C-Plan working directory).

Each time C-Plan starts a new Marxan run, it deletes all the output files from the previous Marxan run. You can back up these files each time C-Plan starts a Marxan run by checking the check box on the Marxan form "" (warning: THIS FEATURE IS NOT YET IMPLEMENTED, so you must back up your own files to prevent them being overwritten). This will create a number of sequentially named subdirectories in the Marxan subdirectory.

3. Displaying the Marxan output

You can view all the site results returned from Marxan by clicking "View Site Results". You can view all the feature results returned from Marxan by clicking "View Feature Results". You can view the Marxan summary by clicking "View Summary".

Only the first 100 scenarios generated by Marxan are fetched by C-Plan. Scenarios greater than scenario 100 are ignored by C-Plan.

4. Using the Marxan output

Once the Marxan output has been retrieved, it can be used in the following ways:

- 1 - Select the Marxan Best solution to a C-Plan reserve class.
Click "Select Solution".
On the form that comes up "Select Marxan solution to C-Plan Reserve Class", select the Marxan Best solution from the dropdown listbox, then select the C-Plan reserve class to add the sites to. Finally, click "Select Sites".
- 2 - Select another Marxan solution to a C-Plan reserve class.
Click "Select Solution".
On the form that comes up "Select Marxan solution to C-Plan Reserve Class", select the Marxan solution required from the dropdown listbox, then select the C-Plan reserve class to add the sites to. Finally, click "Select Sites".
- 3 - Map the Best solution, or other solution to the GIS.
Click "Map Result".
On the form that comes up "Map Marxan Solution", select the Marxan solution you want to map from the dropdown listbox.
- 4 - Display the site values in the GIS (Summed Soln, etc).
Click "Map Result".
On the form that comes up "Map Marxan Solution", select the Marxan solution you want to map from the dropdown listbox.
- 5 - Use the site values in an SQL query (in combination with C-Plan site values) to select sites to a C-Plan reserve class.
Exit from the Marxan form by clicking "Close".
Use the Search Menu items in C-Plan as described in the C-Plan user manual to formulate and execute a query, selecting the resulting sites to a C-Plan reserve class, or other C-Plan function (Map, Lookup). The Marxan site values will appear as additional fields that can be selected and added to a query.
- 6 - Use the site values as a rule in a C-Plan minset algorithm
Exit from the Marxan form by clicking "Close".
Use the Minset Menu items in C-Plan as described in the C-Plan user manual to formulate and execute C-Plan minset algorithms. The marxan site values will appear as additional fields that can be selected and added to an algorithm. Resulting sites can be selected to a C-Plan reserve class, or other C-Plan function (Map, Lookup).

You can set what you want the default behaviour to be (ie. 1..5 above) automatically engaged when results are fetched from Marxan.

5. Key for Marxan Site Values

MBEST	Site is in MARXAN Best Solution.
MSUMMED	Site value for MARXAN Summed Solution.
MSOLN1	Site is in MARXAN Solution 1.
MSOLNN	Site is in MARXAN Solution N.