The SADIEShell Manual

SADIE Red-Blue Analysis

For 32-bit Windows®

Operating Systems

by

Kelvin F. Conrad & Joe N. Perry

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What is SADIEShell?

SADIEShell is a Graphical User Interface (GUI) to manage the input and output files and perform Prof. Joe Perry's SADIE "Red-Blue" method of estimating spatial pattern.

The program takes input from a simple ASCII (text) data file outputs text data files with fixed, pre-determined filenames to a "project folder" determined within the program.

SADIEShell makes management of these data files easier.

You are strongly advised to read the introductory material on red-blue analysis before proceeding with SADIEShell.

What's New?

Previous versions of SADIEShell were actually *Shells*. That is, they were a graphical interface to the command-line program rbrelv13.exe. The shell manipulated and collected the data and even instructed rbrelv13.exe when to run, but all the analysis was performed in a command-line process by rbrelv13.exe.

In the present version, the analysis is handled by a dynamic link library (dll) called SadCore.dll, so the analysis is really part of SADIEShell itself. SADIEShell is, therefore, no longer a shell, but a full-fledged Windows® application.

What does that all mean?

- A file called RBni5.dat is no longer necessary. The input data can be named any valid filename and can be stored in any valid Windows® folder. The input data file is not copied to the project folder and renamed RBni5.dat, as it was in earlier versions.
- A file called RBni8.dat is no longer used. In previous versions, RBni8.dat contained the simulation parameters and had to be present in the project folder. These simulation parameters are now handled completely within SADIEShell.
- rbrelv13.exe is no longer copied to the project folder and deleted after execution.
- The application is more stable and greater feedback is provided on errors.

What's different but similar?

- Output is still to 5 text files in the designated project folder. The contents of RBno7.dat, RBno9.dat, RBno10.dat and Cluster.dat remains identical in structure, except some stricter formatting of number of decimal places and removal of some of the blank lines between sections of output.
- RBno6.dat has an expanded role as recorder of program execution. The first line of RBno6.dat is now the full path name of the input file (which formerly would have been just 'RBni5.dat') and the final lines of the file include any error messages detected, or indeed, if the analysis completed successfully.

What's completely different?

- *SADIEShell no longer performs association analysis.* Another dedicated program is available for this.
- The Input Data Pane (visible when the program is started), now consists of a simple text window and a Simulation Control status bar, rather than the spreadsheet-like grid and simulation control panel of earlier versions.
- Input of simulation parameters is now through the Create New Project dialog.
- Input data can be edited and manipulated in the input pane's text window as in any simple text editing program (e.g. Windows® Notepad).
- Analysis must be conducted by using the Launch button on the Create New Project dialog.

Introduction to red-blue analysis

SADIEShell analyzes the spatial pattern of data that are in the form of spatially-referenced counts.

These are counts taken at specified spatial locations, for example numbers of moths in light-traps or numbers of plants in selected quadrats, where the two-dimensional location of the traps and the quadrats are known.

SADIE red-blue analysis measures and detects the degree of clustering in the data, in the form of patches and gaps. The term cluster means a region of either relatively large counts close to one another in two-dimensional space (i.e. a patch), or of relatively small counts (i.e. a gap).

The software uses methods termed 'red-blue techniques', as described in Perry et al. (1999)

SADIEShell also produces output that may be used in various graphics or statistical packages, such as Surfer® or Genstat®, to produce coloured graphical displays and maps of the clustering in the data.

In order to understand the output from the program it is essential to read Perry et al. (1999).

In addition, indices and randomization tests based on previous work are included, specifically those based on the distance to regularity and the distance to crowding, as described in Perry (1998).

Overview of program execution

SADIEShell uses, for input, a single ASCII (text) data file containing raw counts, together with their spatial co-ordinates.

The program provides significance testing of the analysis results using a form of randomization test. The user enters parameters controlling the randomizations within SADIEShell.

An example of a valid input file accompanies the software.

SADIEShell produces five files of output, each in plain ASCII (text) format.

- The file RBno6.dat contains a copy of the raw data, the parameter values selected, plus some basic summary statistics of the data.
- The file RBno7.dat contains the minimal output required for an analysis.
- The file RBno9.dat contains output for further graphical analyses that must then input to some other package.
- The file RBno10.dat contains the briefest summary of the most important of those indices and probabilities output on channel 7.
- The file Cluster.dat contains ordered cluster indices in column 3 and corresponding x and y values in columns 1 and 2; you can ignore column 4; this file can be read straight into the SURFER® mapping program for mapping and interpolation of the clustering indices.

The core of SADCORE.DLL is the transportation algorithm for determining the moves to regularity (this was adapted from code kindly supplied by Dr Les Proll of the University of Leeds); the output from this is unnecessary for reporting analyses and its action is made transparent to the user.

Please note:

If the files rbno6.dat, rbno7.dat, rbno9.dat, rbno10.dat or cluster.dat are present when the program is run, they will be overwritten with new files of the same names. The user is warned if these files are found in the Project Folder and provided with the opportunity to delete or rename these files.

The input file

The input file for SADIEShell is a simple ASCII (text) file, such as may be exported from a spreadsheet or word processor, or even created by hand using Windows Notepad, or in the input panel itself.

This is the structure of the input files:

First, put the n records of your data into a file in the following form:

```
x co-ordinate 1<tab>y co-ordinate 1<tab>count 1
x co-ordinate 2<tab>y co-ordinate 2<tab>count 2
x co-ordinate 3<tab>y co-ordinate 3<tab>count 3
..............<tab>..............<tab>.......
..............<tab>..............<tab>.......
..............<tab>..............<tab>.......
x co-ordinate n<tab>y co-ordinate n<tab>count n
```

where the x & y co-ordinates for each pair, (x_k, y_k), k=1,…,n, should be read in as real numbers and the count, c_k, k=1,…,n, should be read in, on the same line, as an integer, with no decimal point.

Note that there are no headers or column titles in the data file.

No more than 2000 records can be analyzed in the version supplied.

If you enter data directly into the Input Panel, remember to save the data file before attempting an analysis since the data are read from a file, not the input screen.

A brief section of a real data file follows as an example:

```
5132        2135        0
4650        1645        11
1823        2052        7
6076        2332        6
5132        2128        1
5309        2710        1
2595        7563        0
5680        2205        2
6063        1196        124
5134        2134        2
2578        3720        1
4275        5505        0
3894        4672        0
4803        1428        1
3341        7299        0
3055        7630        0
2366        8092        0
1385        8267        18
3433        3143        15
```

Program output

RBno6.dat

The file output file, RBno6.dat, is a small file. The first line gives the full path file name of the input data file. It then records the number of records, n, that were input and shows the data entered, giving each a unique reference number. Then the values of the iseed, and k5psim parameters used are output, together with nsims, the number of randomizations done.

Next, some basic summary spatial statistics of the data are printed.

1. The *x* and *y* coordinates of the centroid of the sample units [the 'middle' of the sample, defined as location *P*, with coordinates (x_p, y_p), where $x_p = \Sigma_k x_k / n$, and $y_p = \Sigma_k y_k / n$].
2. The *x* and *y* co-ordinates of the centroid of the counts [the spatial equivalent of the arithmetic mean, defined as location *C*, with coordinates (x_c, y_c), where $x_c = \Sigma_k c_k x_k / \Sigma_k c_k$, and $y_c = \Sigma_k c_k y_k / \Sigma_k c_k$].

3. The distance, referred to as δ, between these two centroids, i.e. the distance between *P* and *C*. (See Perry et al. (1996) and Perry (1998) for further discussion of the importance of the distance δ.)
4. For comparison, the maximum distance between any two sample units is given. Next, some basic numerical summary statistics of the data are given: the sample mean, sample variance, the index of dispersion $(n\text{-}1)\ s^2 / m$, and the total number of individuals in the entire sample.

Finally, at the bottom of the file, any errors that were caught during the analysis are reported, as is a statement if the analysis completed successfully

If you have chosen to use the 'Non-Parametric Method' for your analysis, *RBno6.dat* will also include a table of the *x* and *y* coordinates, the raw counts and their ranked values.

Rbno7.dat

The file *RBno7.dat*, created by the program, is a medium-sized file that contains all the important results from the analysis of clustering and spatial pattern.

It first gives the sample mean of the n counts.

Next come some results from the analysis based on the distance to regularity.

D, the value for the observed data.

The value of P_a, the probability that the observed counts are arranged randomly among the given sample units.

The mean distance to regularity over the randomizations, i.e. the quantity denoted as E_a in Perry (1998).

The index, I_a, computed from $I_a = D / E_a$.

Next comes a longer section, devoted to the measurement and detection of clustering.

Several values are given for each unit, with notation that follows that in Perry *et al*. (1999). There is a row for each unit, ordered by the observed average flow distance, with inflow units, Υ_j, given above and outflow units, Υ_i, given below. The most important value is the standardized clustering index, ν_i or ν_j, given in column five. (An ordered copy of this information is given in the output file *Cluster.dat*. Other columns are annotated and should be self-explanatory).

The mean of these clustering indices over inflows and over outflows, $\overline{\nu}i$ and $\overline{\nu}j$, respectively, mentioned in the discussion of Perry *et al.* (1999) are given, together with the equivalent value for all values.

The results of the formal randomization tests of these mean clustering indices are given, also mentioned in the discussion of Perry *et al.* (1999), and again done separately for inflows, outflows and all flows.

Results are given relating to the distribution of clustering indices under the null hypothesis of a random distribution of the observed counts amongst the sample units, i.e. the clustering indices produced by the randomizations.

Percentiles are given of the entire set of (*nsims* x number of counts in observed data) randomized clustering indices, so that the observed indices may be assessed against objective criteria.

Percentiles are given for the distribution of the maximum clustering index (both for inflows and outflows), where the distribution is formed from the single value found for each randomization.

Finally, following a caveat that should be taken seriously, some results are given from the analysis based on the distance to crowding, if they are required, in similar format to that for regularity, described above.

Rbno9.dat

The file RBno9.dat, created by the program, is a large file that contains various statistics and results to enable further graphical output.

The file begins with the data required to graph the so-called 'initial-and-final' plot (Perry (1998), Perry et al. (1999).

1. All the flows are given in a single block, in arbitrary order, with the total number of flows at the end; then the flows are given again, but now on a unit by unit basis. Note that the flows referred to in these two sections of output have been almost always been scaled to achieve integer values - to get back to the actual values on the original scale of the counts just divide the scaled flows by *n*, the number of sample units.
2. Information is given, unit by unit, to allow the drawing of the so-called 'vector flow' plot in Fig. 6 of Perry *et al*. (1999). Again the flows are scaled as above. The important information is given in the final two columns, which give the *x*- and *y*-components of the vector for each unit, respectively.
3. Information is given concerning the observed distance to regularity, *D*, and the corresponding value for each of the nsims randomizations, as they were generated.
4. The next block of values in three columns facilitates the drawing of the most important contour map of clustering, such as that in Fig. 3 of Perry *et al*. (1999). The information is essentially the same as that given in file *RBno7.dat*, i.e. the standardized clustering indices, ν_i or ν_j, given as column three, together with the corresponding *x* and *y* co-ordinates of each unit in the first two columns of the block.

The next block of values gives information to draw the E.D.F. plots given as Figs. 4 & 5 of Perry et al. (1999). These plots are, however, probably less useful than those formal probability tests given in file *RBno7.dat*, that used the means of the clustering indices.

The next block repeats those same observed mean clustering indices, given in file *RBno7.dat*, and, immediately underneath, gives the equivalent values from each of the *nsims* randomizations. These are the raw values used in the comparison between observed and randomized values that was summarized in the formal randomization tests of clustering given in file *RBno7.dat*.

Finally, information is given concerning the observed distance to crowding, and the corresponding value for each of the nsims randomizations, as they were generated.

Rbno10.dat

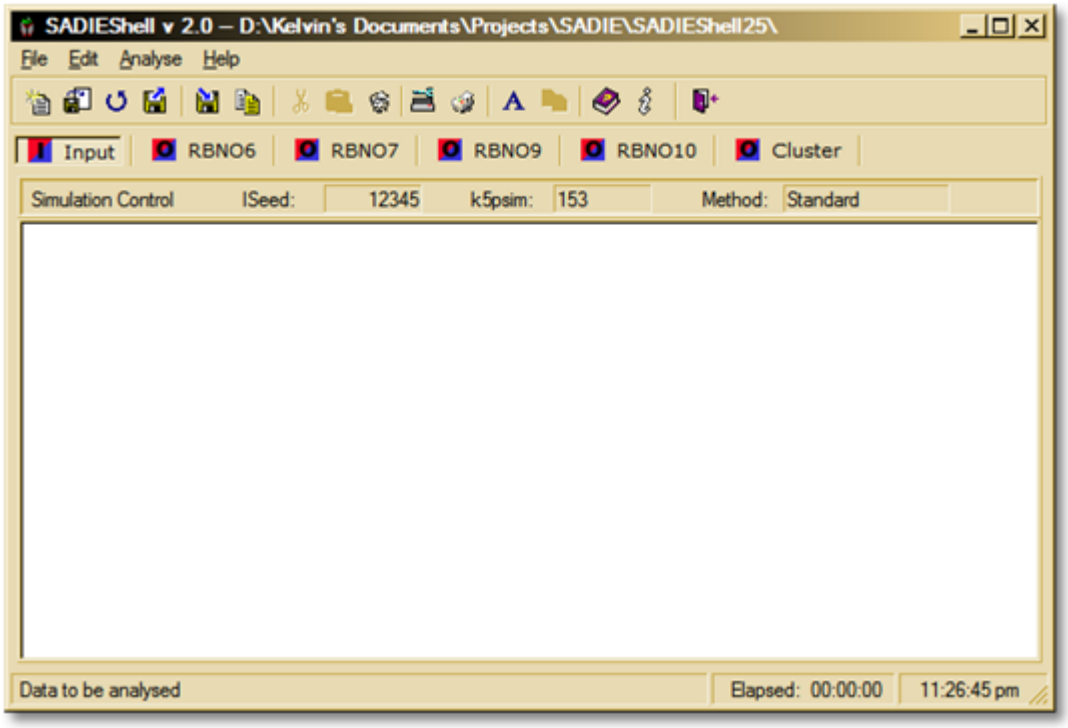
The file *RBno10.dat*, created by the program, is a very small file that contains the three most important indices and their probabilities under the null hypothesis of a random distribution of the observed counts amongst the sample units.

Cluster.dat

The file *Cluster.dat* contains ordered cluster indices in column 3 and corresponding x and y values in columns 1 and 2; you can ignore column 4; this file can be read straight into the SURFER® mapping program for mapping and interpolation of the clustering indices.

Overview of SADIEShell

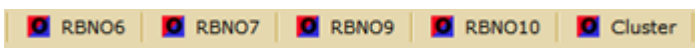
SADIEShell is a single-windowed Windows 9x/XP program containing a "Tabbed Notebook" with six tabs.



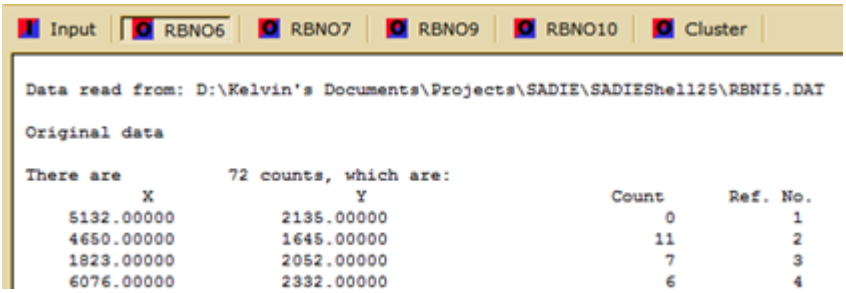
SADIEShell operation is based on the concept of Project Folders.

To begin an analysis, you select or create a Project Folder.

The remaining tabs each correspond to the output files which are created in the Project Folder when the analysis is run.



Each of these remaining tabs may be clicked to display each of the output files in turn.

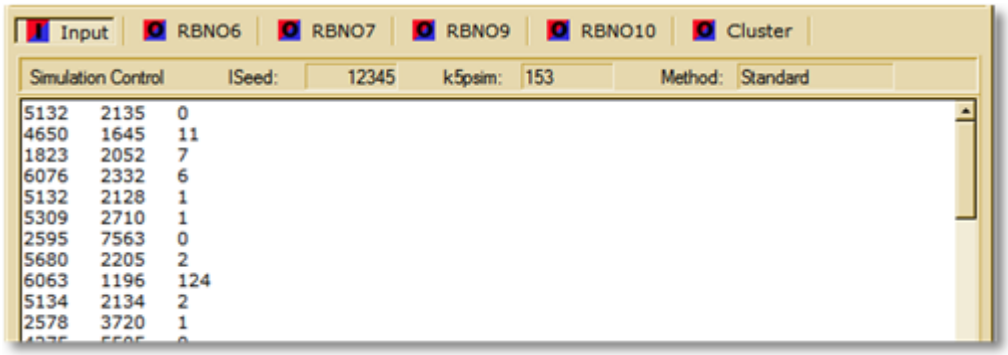


After SADIEShell has completed an analysis from the Create New Project dialog, the program switches to the RBno6.dat tabbed page and all of the output pages are updated to reflect current output.

The input data pane

The first tab in the SADIEShell window, called "Input" 

pertains (not surprisingly) to the file input for analysis, but also displays the current simulation parameters in a status bar, marked 'Simulation Control' at the top of the text window. The simulation parameters may be changed only on the Create New Project dialog.



Data appearing in the text area may be edited as they could in any text editor such as Windows® Notepad. Manipulation of the input file may be accomplished using the buttons on the toolbar above the text window, or by using the corresponding menu items on the File and Edit menus.

The actions performed by the buttons are as follows, in their order on the toolbar:

1. Open, 2. Save, 3. Save As, 4. Copy, 5. Cut, 6. Paste, 7. Choose font, 8. Printer setup, 9. Print, and 10. Delete.

Open an input file: This button allows you to open any file from any location, and, providing it is in valid format, it will be opened and displayed in the text area. If you choose then to create a new project, the full file path name will be entered in the Select Input File area of the Create New Project dialog.

Save input file: Use this button to save any changes to the input file. Note that if you have entered your data directly into the input data text area, you must first save the file before you can analyse the data.

Save As: This button allows you to save the currently displayed file to a new file name. The input file or the output files may be saved using this button.

Copy: Copies the selected text to the clipboard.

Cut: Cuts the selected text and copies it to the clipboard.

Paste: Pastes text on the clipboard to the current cursor location.

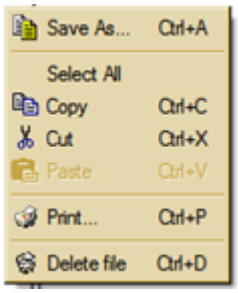
Choose Font: Selects a display font for all of the input and output data panes.

Printer Setup: Opens the printer configuration dialog.

Print: Prints the contents of the currently selected data pane.

Delete: Deletes the file corresponding to the currently selected data pane from disk and clears the contents of the data pane.

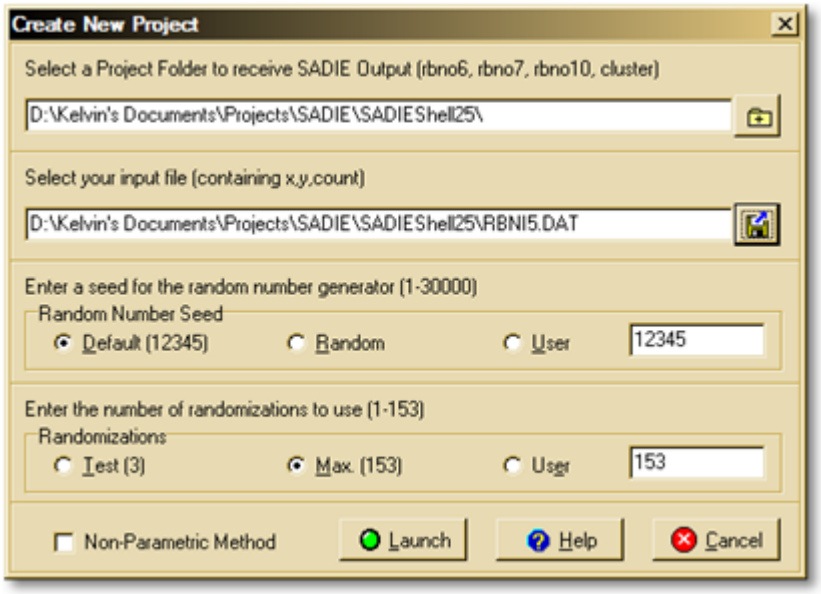
Several of the commands will also appear if you right-click in the text area of any of the data panes.



Running an analysis

To run an analysis in SADIEShell select the New Project button  (or File/New Project menu item). Or if you have already loaded the results of a previous project with the Reload Project button  , you can use the Re-run project button  (or the Analyse/Re-run current project menu item).

The Create New Project dialog will be displayed:



This dialog is in four sections, corresponding to the four steps to running a new SADIE analysis.

First select a project folder by typing in a path name or clicking the open folder button  . The select project dialog will appear.

Use the folder tree on the left to select an appropriate folder, or create a new folder using the New Folder button. Click OK to continue or Cancel to return to the Create New Project dialog.

Note that the file list on the right of this dialog is not selectable. The files appear as an aid to finding the correct project folder.

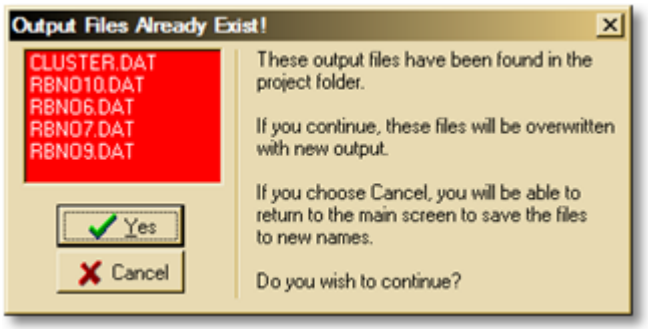
Second, select an input file by typing a full or relative path and filename in the second panel, or by clicking the File Open button  . The Open Input data file dialog will appear.

This is a standard Windows® File Open dialog. Select the file to use for Input, and click Open to return to the Create New Project dialog. If you have already opened an input file on the Input Data Pane its name will appear in this edit box automatically

In the next two panels you may select or enter the simulation parameters.

Click launch  to start the analysis you have specified.

If any pre-existing output files are found in the Project Folder, you will be given the opportunity to either stop execution and rename them, or delete them automatically.

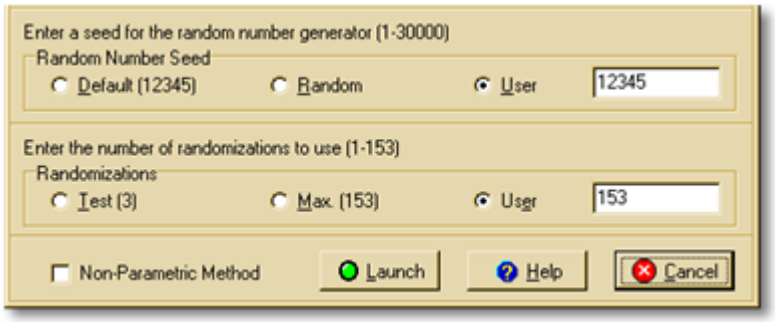


When the analysis is complete (successful or not), SADIEShell updates the displays of all output files and switches to the RBno6.dat tabbed output page.

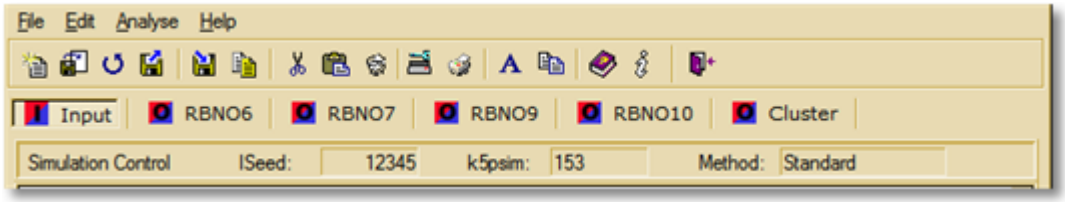
If you are re-running previously existing project, SADIEShell fills in the Create New Project dialog with information extracted from the existing *RBNO6.dat* file. Simply verify the settings and click Launch.

Simulation Parameters

The simulation parameters are chosen or edited on the Create New Project dialog.



The parameters, once chosen, are also displayed on the Simulation Control status bar of the main program window.



There are three control parameters: *iseed, k5psim* and the choice of the 'Standard' or 'Non-Parametric' method of red-blue analysis.

In earlier versions of SADIEShell, *iseed* and *k5psim* were stored in an ascii text file called *RBni8.dat.* The terminology is retained here, but an *RBni8.dat* file is no longer used.

iseed, must be an integer between 1 and 30,000, which acts as the initial seed for SADIEShell's internal pseudo-random number generator. Specifying the same seed in successive runs of the program will generate identical randomizations; specifying a different value will result in different randomizations.

You may select a radio button to use the default value (12345), have SADIEShell generate a random number to use as *iseed*, or select *User* to specify your own value of *iseed*.

Note: The random *iseed* is not produced by the random number generator used in simulations and is merely a shortcut to picking a new *iseed*.

k5psim, must be an integer between 1 and 153 that will determine the number of randomizations done. Within the program, the value of *k5psim* is multiplied by 39 to give the total number of randomizations performed; the result is denoted *nsims* in the output.

Again, you may use the radio buttons to select a *k5psim* of 3, or the maximum of 153.

k5psim=3 useful for testing new datasets for errors, but if you have the time and a reasonably modern computer, there is no reason not to use largest value of *k5psim* possible, 153, which is the default.

Finally, you may tick the checkbox at the bottom of the dialog to select the 'Non-Parametric' method of Red-Blue Analysis.

The 'Non-Parametric' Method

SADIE is, by definition, a non-parametric method

There is no statistical model underlying SADIE, so the method is always non-parametric. But the term as used here applies to the set of data, not the method.

Why is a non-parametric version of SADIE needed?

When a set of counts is very skew, with a variance much greater than its mean, there may be relatively very few counts greater than the mean. For example, in the set of counts {0,0,1,2,4,9,16,63,904}, the mean is 111, so eight of the nine counts are less than the mean and only one, 904, is greater than the mean. The variance, 88832, greatly exceeds the mean. In the SADIE system, for this set of data, only one sample unit, the one with count 904, is a 'donor' unit and could possibly be assessed as being within a (red) patch. All the eight other units are 'receiver' units and are therefore potential (blue) gap units. This clearly limits the ability of the method to discriminate spatial pattern if it exists.

What is the idea behind the non-parametric approach?

To yield greater discrimination, consider replacing the actual counts with their non-parametric ranks, and, for technical reasons, first multiply each rank by 2. The above set would then be transformed to: {3,3,6,8,10,12,14,16,18}. Now, this set is the non-parametric equivalent of the original. The mean is now 10, and there are four units with count smaller than this and four units with count larger. This new set of counts may be used as input to SADIE, exactly as the original counts would have been. With the new set, there are thus four potential patch units and four potential gap units and the ability of the new data to discriminate spatial pattern is therefore enhanced. Note that the arrangement of the original set, defined by the coordinates of its sample units is retained; it is just the counts that are different.

Hence, if the original data had coordinates:

x	y	count
1.0	1.0	0
2.0	2.0	0
1.0	2.0	1
2.0	1.0	2
2.0	2.0	4
.	.	.
.	.	.

5.0	6.0	904

the new, transformed, equivalent non-parametric data would have the same coordinates, but ranks replace the counts:

x	y	count
1.0	1.0	3
2.0	2.0	3
1.0	2.0	6
2.0	1.0	8
2.0	2.0	10
.	.	.
.	.	.
5.0	6.0	18

In summary, the non-parametric approach addresses the problem, for very skew data, that there may be relatively few counts greater than the mean, and therefore an inherent difficulty for the method to detect clustering in the form of patchiness. It does this by “centering” the data about the median. The median of the (old) parametric data becomes the mean of the (new) non-prarametric equivalent data, so, by definition, there are as many values greater than the new mean than there are less than it. However, crucially, in transforming the data it retains the information in the arrangement of the counts relative to one another.

When should the non-parametric version of SADIE be used?

If you believe that the order or rank of the counts relative to one another are as, or more important, as their actual magnitude. This is especially useful with data that is highly skew and for which the variance far exceeds the mean.

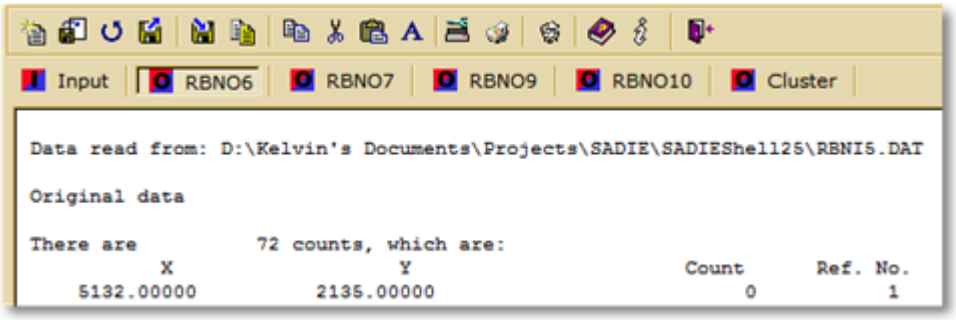
Note that if you choose the non-parametric option there is no need for you to do anything to your data prior to input; the program generates the transformation to the non-parametric version of your data automatically. The output in *RBno6.dat* will be slightly different and will explain how the data have been transformed.

How do the results differ when I run a non-parametric analysis?

In general, if the count data are skewed, the mean count will be larger than the median count. Values between the median and mean count will switch from being “receiver” (potential gap) units to being “donor” (potential patch) units. So, if the red-blue plot for the parametric analysis shows moderate gaps and few patches, then the non-parametric analysis will display moderate gaps and moderate patches. These are qualitative changes. They occur in addition to the purely quantitative numerical changes in the data brought about by the transformation. It is important to realise that, for a non-parametric analysis, the data change, and therefore the results must also change.

Viewing output

Each output tabbed page consists of a scrollable text area with the corresponding edit toolbar.



As with the Input Data Pane the actions performed by the buttons are as follows, in their order on the toolbar:

1. Save As, 2. Copy, 3. Cut, 4. Paste, 5. Choose font, 6. Printer setup, 7. Print, and 8. Delete.

Save As: This button allows you to save the currently displayed file to a new file name. The input file or the output files may be saved using this button.

Copy: Copies the selected text to the clipboard.

Cut: Cuts the selected text and copies it to the clipboard.

Paste: Pastes text on the clipboard to the current cursor location.

Choose Font: Selects a display font for all of the input and output data panes.

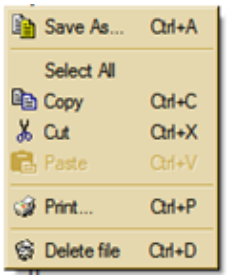
Printer Setup: Opens the printer configuration dialog.

Print: Print immediately prints the contents of the currently selected data pane. The following steps are suggested for printing output:

1. Select a font by using the Choose Font button or Edit/Font menu item. Note that the font selected applies to all output tabbed pages and printout.
2. Select the default printer by using either the Printer Setup button or the File/Printer Setup menu item.
3. Select the Print button.

Delete: Deletes the file corresponding to the currently selected data pane from disk and clears the contents of the data pane.

Several of the commands will also appear if you right-click in the text area of any of the data panes.



FAQ

Frequently Asked Questions

What is all this RBni and RBno stuff?

The original red-blue analysis software was written in Fortran 77, with bits and pieces of Fortran IV and Fortran 90 code. It provided no user interface and read input directly from Fortran file units 5 and 8 and wrote output directly to file units 6, 7, 9, 10, and 11. Consequently the input files were named with 'RB' (Red-Blue), 'i' for input and the file unit: *RBni5.dat* and *RBni8.dat*. The original program ran only if these input files were present

Similarly, the output file names contained an 'o' for output and the file unit number: *RBno6.dat*, *RBno7.dat*, *RBno9.dat* and *RBno10.dat*. Cluster.dat is an excerpt from RBno7.dat containing the local cluster scores to simplify transferring the data to graphics packages and other analyses. The original program worked only when these output files were absent (existing versions couldn't be overwritten and the program crashed)

Why is there so much output?

The original Red-Blue analysis program was written as much to study the mathematical properties of Red-Blue analysis as it was to provide a means of analyzing data. The output was made very detailed to show how the analysis performed on different data sets and understand how the results reflected properties of the data. This meant, however, that the results that were important to ecological researchers were difficult to extract, so specific output to *RBno10.dat* and *Cluster.dat* was added.

Researchers have now created tools, macros and protocols to deal with the extensive output and extract the crucial portions. Tradition now dictates continued production of the extensive output, or these tools may be broken.

In any case, minimal output is satisfactory when an analysis goes well, but the extensive output is still essential to understanding unusual patterns in the data.

Why do I need a project folder? Why can't I pick the names and folders of the output files?

SadCore.dll still outputs the four traditional *RBno* output files plus *Cluster.dat*. While it would not be difficult to allow the user to choose a name for each of these files, running multiple SADIE analyses and selecting six separate file names each time would become very tedious. It would also be possible to write all of the output to a single file, but this file would be unwieldy. The simplest solution is to write all five files to a project folder and organize output from multiple analyses according to project folder names, rather than individual output file names.

What is the smallest sample size I can analyze?

There has been no rigorous testing of minimum sample sizes for a SADIE analysis. Extensive experience with small data sets suggests something in the range of 25-30 rows of data is the practical minimum for reliable analysis. Certain spatial configurations in small data sets can also mean that the transportation algorithm at the heart of the SADIE red-blue method cannot find a unique solution and the analysis will fail, often after displaying seemingly bizarre results.

If you do use small data sets, make use of the extensive output and study the results carefully.

What is the largest sample size I can analyze?

The current version of SadCore.dll is designed to analyse up to 2000 rows of data. However, it is worth noting that if you plan to use the output (i.e. Cluster.dat) as input for SADIE Association Analysis, the software for Association Analysis supports only 1000 rows of data.

When using large (>800?) data sets, it is also worth checking the bottom of RBno6.dat for error messages regarding 'arcs', which may indicate SadCore.dll is not capable of handling the particular combination of sample size and spatial pattern.

My data are not integers (counts). Can I still use SADIE analysis?

If you can get your head around the philosophical issues of having clusters of continuous measures, such as, say, pH, rather than counts, then all you need to do is transform your data from real numbers to integers and proceed as usual. In fact, this can be a useful way to detect spatial association between counts of a species and physical measuremtents. The variable entered in the Count column of the input file does not need to be a count, but it does need to be an integer.

I 'misplaced' my original input file. Can I re-run an analysis from the project folder?

All of the information necessary to re-run a particular Red-Blue analysis is stored in the *RBno6.dat* file. The easiest thing to do is to cut and paste the contents of the 'X, Y, Count, Ref. No'. table to a spreadsheet, delete the 'Ref. No.' column and save the file as a Tab-Separated or Comma-Separated text file to serve as your new input file.

The values of *iseed* and *k5psim* can also be obtained from *RBno6.dat*.

I've analyzed four 25-row data sets (n = 25) and although the I_a are all different, the *P*-values for significance are all identical. Is there something wrong?

When you run analyses on similar, small, identically-sized data sets, all with the same iseed, *P*-values may indeed be identical across several analyses. This is a valid outcome of the randomization tests used, but is suspicious-looking. In this case, use a differnet *iseed* to run each data set and the *P*-values should then differ just slightly from each other.

I don't have/ can't afford/ don't want Golden Software's Surfer® Software. Can I do Red-Blue analysis without it? And do you guys get a commission from Golden Software?

One of the most important features of SADIE analysis is the availability of local clustering indices – a bit like a patch or gap membership score for each sampling point. Surfer® provides a relatively simple means to interpolate, grid and contour map local clustering indices, along with statistics to validate the interpolation method. The result is the nicely coloured, contoured "Red-Blue" plot to visualize clustering in a data set. There are many other statistical and GIS packages that can perform interpolation and contour plotting. Also, if visualization of the local clustering indices is your primary concern, these can be plotted in many different programs with a little creative thinking. For example, plotting the absolute value of the indices as two series (one for patches and one for gaps) of a 'Bubble Plot' in Excel® will often illustrate patch and gap sampling points very well.

Although we like Surfer very much, we are not affiliated with Golden Software in any way. No fat brown envelopes stuffed with cash ever appear in our mailboxes as a result of our admiration of Surfer and we even have to pay full price for it just like everyone else.

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SADIEShell

SADIEShell is a Graphical User Interface (GUI) to manage the input and output files and perform Prof. Joe Perry's SADIE "Red-Blue" method of estimating spatial pattern.

You may contact Kelvin Conrad, the author of SADIEShell via e-mail at:

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