

# Use Functions in a Thematic Expression

By Sam Berg, Atlas GIS Product Specialist

Atlas GIS users may already know that dBASE compatible expressions can be used in the Expression Builder dialog box. This dialog box pops up when the Expression button is clicked in the Select by Value, Layers & Themes, or Sort dialog boxes. The available options—scroll boxes for columns, functions, and operators, and a verify button—help create valid expressions that can be used to perform selections.

## Selecting with Expression

Expressions can be used to label features instead of applying ID or NAME fields. For example, to select all the states that begin with “New,” such as “New Mexico,” the following expression can be used in the Select By Value dialog:

```
WILD ( _NAME , "New*" )
```

After executing a selection based on an expression, the selected features can be copied to a new layer, combined as a single feature, or exported out of Atlas GIS as a text file.


## Select Features with a Theme Map

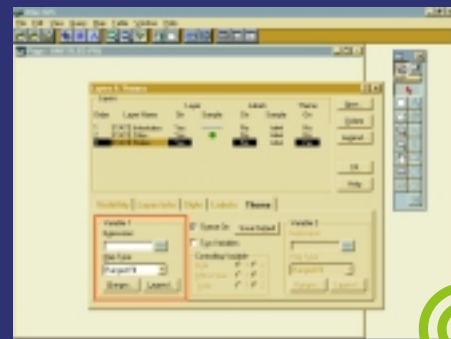
Another method to present selected features

involves creating a theme map for the layer from which the features were selected. This method means the selection for the theme can be expanded from a simple attribute, such as a field containing population or area values, to a logical expression. By embedding a wildcard expression in the if...then logic, a theme map can be set up that will highlight the features that satisfy the equation. This example will create a theme map of the states that have names that begin with “New.”

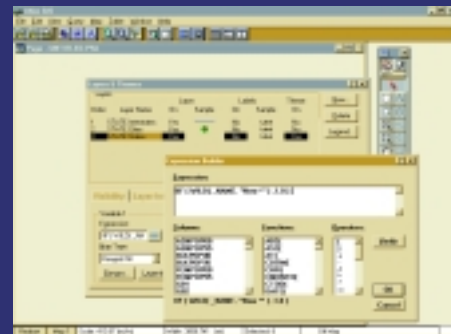
1. Choose Layers & Themes from the Map menu or right click anywhere in the map frame to invoke the Layers & Themes dialog box.
2. With the theme that features will be selected from active, select the Theme tab.
3. In the Theme dialog, under the Variable 1 section, click on the Expression Builder button.
4. In the Expression Builder dialog, create the following equation:  
IIF (WILD ( \_NAME , "New\*" ) , 1 , 0)
5. Exit the Expression Builder dialog.
6. In the Layer & Themes dialog, still in the Variable 1 section, make sure Ranged Fill is in the drop-down box and click on the Ranges button.
7. In the Ranged Fill dialog box, select Discontinuous as the Method and 2 as the Number of Ranges.
8. Set the minimum and maximum for the first range to 0-0 with no color selected.
9. Set the minimum and maximum for the second range to 1-1 and choose blue as the color.
10. Exit the Ranged Fill and Layers & Themes dialog boxes by choosing OK.

IIF is an If...Then logical function that encompasses the evaluation of the wildcard. If the expression is TRUE for a feature, the function returns 1, otherwise it will return 0. This expression defines two ranges for this theme. Setting up two discontinuous ranges, 0-0 and 1-1, and assigning a color to the desired selection will create a theme map displaying all the features with names that begin with “New” in blue.

Though a basic query function can be used to highlight features that satisfy a particular criteria, using a theme map to do the same job has advantages. A theme map will not be affected by additional queries or manual selections to the layer, so the original criteria is preserved in the theme expression. In addition, features that are updated with new attributes that satisfy the theme expression will be displayed on the map. 



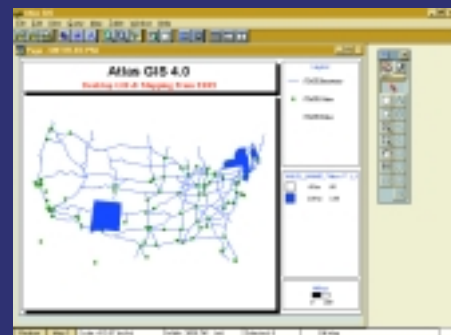
In the Layers & Themes dialog select the Expression ... button in the Variable 1 section.



Use the Expression Builder dialog to create an equation to make the desired selection.



After returning to the Layers & Themes dialog, click the Ranges button and select the fill properties for the ranges.



This expression defines two ranges for the States theme and displays all the states with names beginning with “New” in blue.