DRAINAGE / LINEAMENTS / ROADS DENSITY ANALYST EXTENSION (Ver. 1.0)

Drainage / lineaments / roads (DLR) density Analyst Extension (1.0) will provide the Arc View 3.2 users with the ability to perform line density analysis using an user defined grid (vector grid).

DLR Density Analyst Extension basically calculates the total length present in each cell of the user defined vector grid. Once user defined grid is created, it intersects with line theme (this theme may be drainage network, geological lineaments, roads etc.) and joins two tables using same id and finally stores in 'SUM_LENGTH' field of grid Ftab.

Applications

The DLR Density Analyst Extension is a generic tool and may be applied to calculate line density at user-defined grid. Such density maps e.g. Drainage Density, Lineament Density are having direct bearings in groundwater exploration, recharge and landslides hazard zonation studies. The Road Density maps may be employed to identify accident-prone areas, polluted areas (both air and noise) etc.

Release Information and basis of development

This is the first release of DLR Density Analyst Extension and may have some errors, however improvements are being made which would be included in the next version. DLR Density Analyst Extension has been developed with Arc View 3.2 on a Pentium-450Mhz machine having Windows 95 OS. If you come across any problems / suggestions please report to me to improve further. The development of this extension started in February, 2000 when we noticed an email from Mr. Miles E. Gabriel (milesgabriel@usa.net) requesting in ARC-LIST that "I need to perform a line density function for geological lineaments…...". After noticing this, we started working on this extension. A step-by-step approach (not an extension) was sent to Mr. Miles. Which he appreciated very much and provided some suggestions to me towards the development of this extension. I very much appreciate his comments / suggestions in this regard.

Dependencies: Arc View 3.1 or higher.

Installations:

In order to run DLR Density Analyst Extension you require this extension should be present in $AVHOME\Ext32 directory.
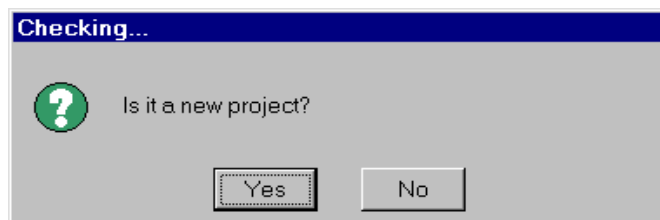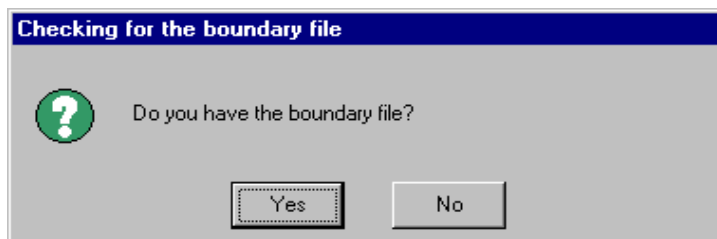
Once DLR Density Extension loaded into Arc View, it will add this button into GUI.

Using DLR Density Analyst Extension:

In order to use DLR Density Analyst Extension you need to have a active line theme in the view. First DLR Density Analyst Extension will add length field into Ftab of your line theme by asking the following information:

Calculate

(?) Update Length?

[Yes]   [No]
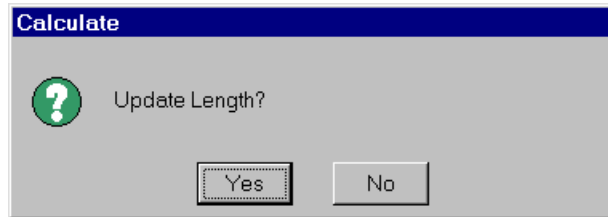
Once pressed the 'Yes' button, the existence of a boundary file for theme extent is checked. If the user has the boundary shapefile he should press 'Yes'. If 'No' button is pressed, this extension automatically displays the 'Checking' Messagebox to check the information regarding whether this project is new or not. The purpose here is to get information about the extent of the line theme for which DLR density analysis would be performed.

Checking for the boundary file

(?) Do you have the boundary file?

[Yes]   [No]

Checking...

(?) Is it a new project?

[Yes]   [No]

If the boundary shapefile is already present in the view, the user should opt for 'Yes' in the following Messagebox. If 'No' button is pressed in the following Messagebox, an option for adding the boundary theme is provided.

Checking for the boundary file in the present view

(?) Does the boundary theme exists in this view?

[Yes]   [No]
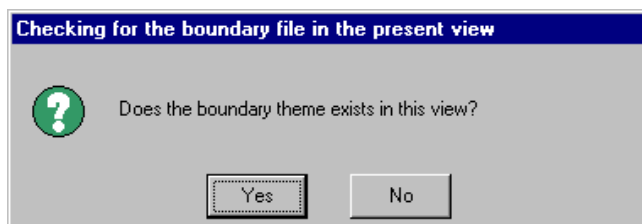
Once opted for 'Yes' in the previous Messagebox, the user is asked to select the concerned boundary theme from the list of themes in the active view.
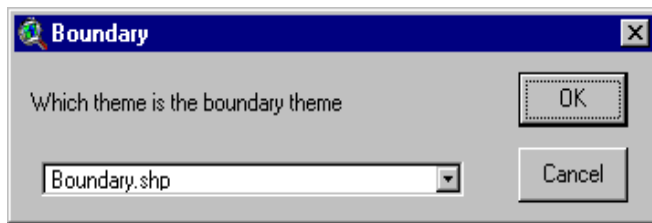
Once the boundary theme is selected, it checks for the presence of theme extent co-ordinates as fields in the Ftab. If the end points are found, the 'Enter in parameters' Dialog Box opens up with automatically filled in Latitude and Longitude values. The user has to provide only the Offset values (in degrees).
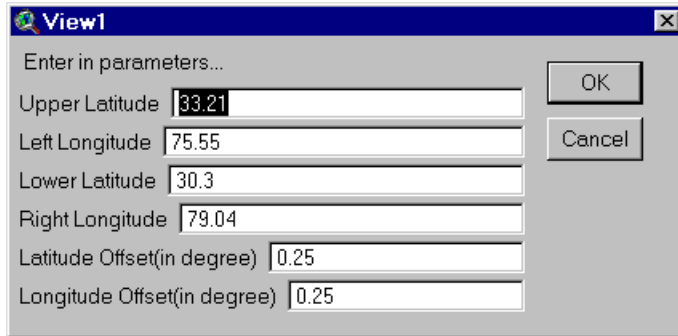

If the project is new that means the user would require to feed theme extent values. If project is not new then extent values of the theme would come as default, which makes whole processes very easy.

Once opted for 'Yes' in the 'Checking' Messagebox the following information is required to be filled:

If the project is not new then user gets earlier values as default values, e.g. as the following:
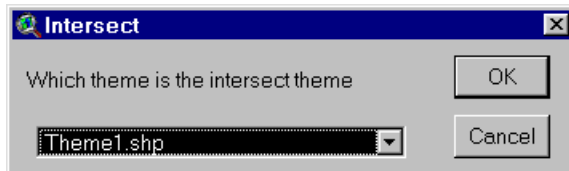
Here, it is important to note that the last two options (values) should be kept same, otherwise you will end up with unequal cell sized grid and hence your interpretation of DLR density analysis map would be very difficult. In these last two options smaller the value you choose smaller would be the size of the grid cell and hence output map would look better. However, if very small values are opted then computer may take considerable time to prepare DLR density analysis map.

After this user is ask to provide the name and place of grid file (vector file) to be stored. This grid file is later used to create intersect theme. In this connection name of intersect theme would be asked. Generally you have to provide the name of line theme for which density analysis is being performed.
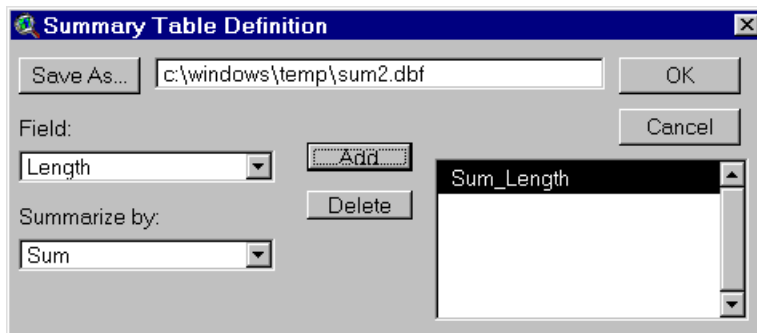

Further, question would be asked to add shape file to view. Press 'Yes' if you want to continue. Your intersect theme would be added in the view and then user is asked to provide information about sum, which can be filled as follows:
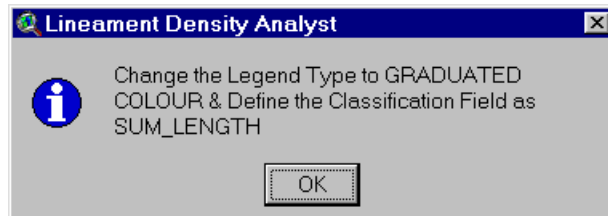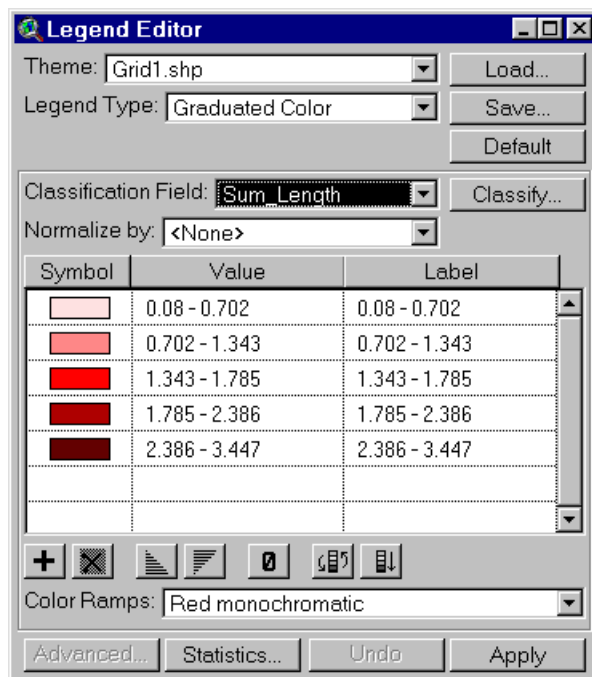

Once pressed 'OK' button, user is requested to select theme to make active. Here choose grid theme which you have made earlier, e.g. Grid1.shp.

Theme Activate

Select theme you want to make active

Grid1.shp

OK

Cancel
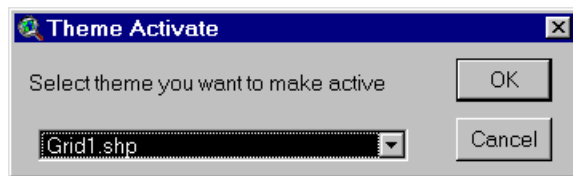
Once pressed 'OK' the user is requested to do the following:

Lineament Density Analyst

Change the Legend Type to GRADUATED COLOUR & Define the Classification Field as SUM_LENGTH

OK

Once pressed 'OK' then user is requested as given above that change the Legend Type to Graduated Colour and define the Classification Field as SUM_LENGTH as shown below:

Legend Editor

Theme: Grid1.shp   Load...

Legend Type: Graduated Color   Save...

Default

Classification Field: Sum_Length   Classify...

Normalize by: <None>

Symbol	Value	Label
	0.08 - 0.702	0.08 - 0.702
	0.702 - 1.343	0.702 - 1.343
	1.343 - 1.785	1.343 - 1.785
	1.785 - 2.386	1.785 - 2.386
	2.386 - 3.447	2.386 - 3.447

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Color Ramps: Red monochromatic

Advanced...   Statistics...   Undo   Apply

Press 'Apply' and your DLR density analysis map is ready for interpretation.