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APPLICATION OF GIS SOFTWARE FOR THE ANALYSIS OF TOPOGRAPHY

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ABSTRACT:

The application of GIS software for imagery analysis is now an important factor for evidential proof in the field of analysis. The major software is ERDAS, Arc GIS, Geomatica, QGIS, and Global Mapper. For spectral analysis, once it was a leading software. Prior to the introduction of other topologically improved software, this one was common. The scanning ability is highly improvised. Vector, Raster & their combinations are very effective in the case of DDE, CORBA & DLG. . The basic works in the academic field are based on light spectral based. In other professional world use of Microwave, Doppler, and Leaser technology introduced.

KEYWORDS : *imagery analysis , spectral analysis, light spectral based.*

INTRODUCTION:

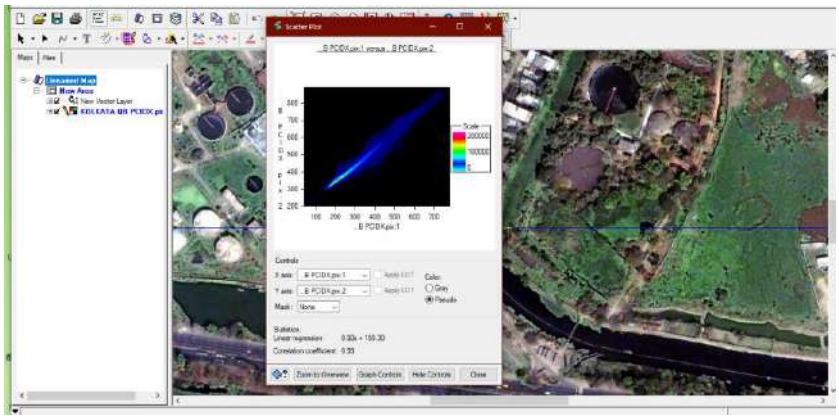
In course of the study application of aforesaid software are common. The source of satellite imagery now become an important factor. The land sat, LISS, Spot is widely used all over the world. In the present situation China, South Korea, and Japan also launched their earth viewing resources, Key wards ASCII- American Standard format interchange. GIS- Geographical information system. RS- Remote sensing. DBMS- Data-based management system. DEM- Digital elevation model. DTM- Digital terrain model. DLG- Digital line graph. SRTM- Shuttle radar topography system. GPS- Global positioning system. DDE- Dynamic data exchange, HSV- Hue & saturation value. HTML- Hypertext markup language'.

OBJECTIVE OF STUDY:--

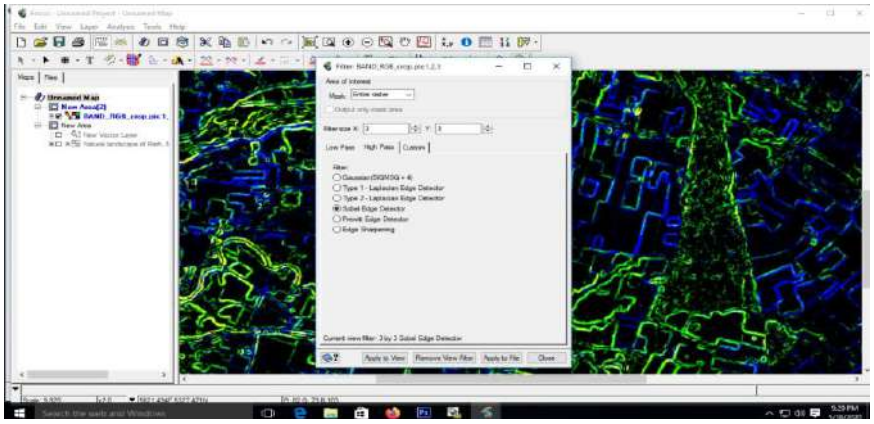
- To improve the earth viewing system
- To produce full-proof documents
- To improve location identification
- To improve resource management
- To save from folding by simulated imagery

Application arena analyzed by the GIS softwares, supported by stastical data sours , on the basis of Spatial & temporal analysis, with strong graphisc programmed by JAVA & Python, & other languages .The scatter plotter in Geomatica is a ststistical based exe file, wher the light fulx & rate of illumination installed inthe file to calculate the rate.

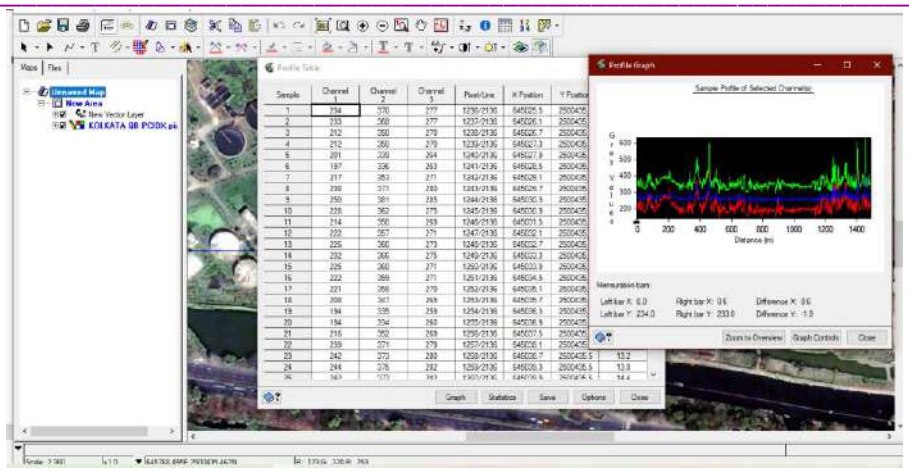
For the analysis of scatter plots values of imagery scatter plotted with the inbuilt systems of Geomatica. In most of the situation in various EXE files are prepered to interpret DLG, DDE, HTML, TIGER, CORBA are controlled by inbuilt programmings. For the modeling GIS software mainly, VisualBasic, NT, UNIX, Java, Python are generally used .



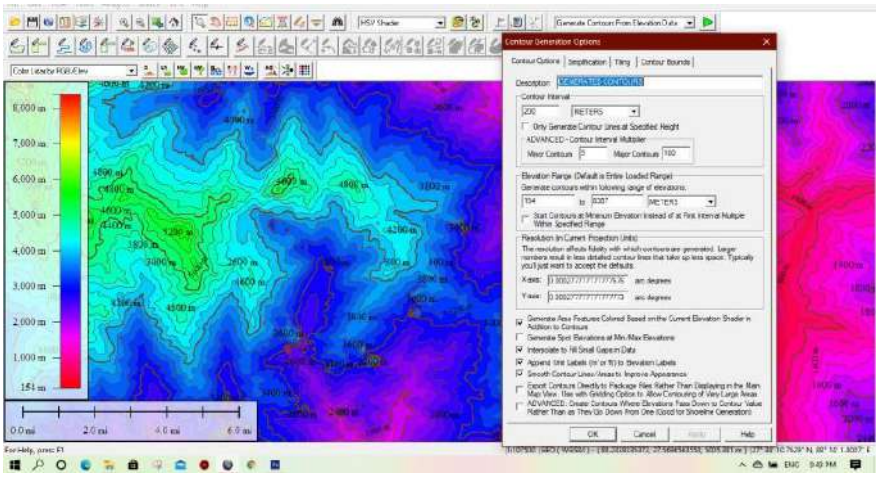
In application of filters on the basis of stastical interpritation many inbuilt provitions has provided , the important options of DBMS, FAQ, TIGER, are important . For edge detection , many options are provided .



According to data size buffering may be created vide. input output display. If required RGB may be converted to PTC to required algorithm. In situation new substantive color model may be created according to need of customization . The scanning rate in this imagery are 266 . Each line of scanning provided by RGB values. For customization these may be manipulated.

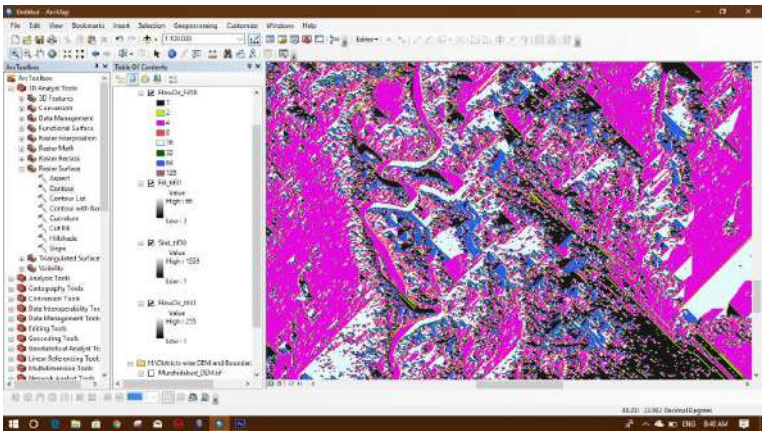


The quality of imagery & the software able to scan imagery according to quality of resolution of the specific imagery. Quality depends on sensor and API between software and imagery . Here representing the single line for analysis where RGB layout provided according to scale . In the imagery, software Global maper builed the contour lines with combination of both vector & raster data sourse. Applications may be customized according to need.

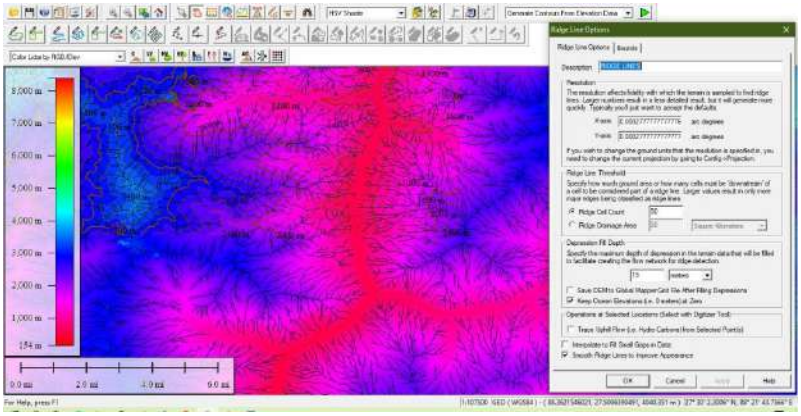


according to the file formats images can be analyzed here common JPGE format used to determine the Band, spectral quality of a Note cam image in MS system of operation. It is helpful for GPS location & related satellite position & accuracy.

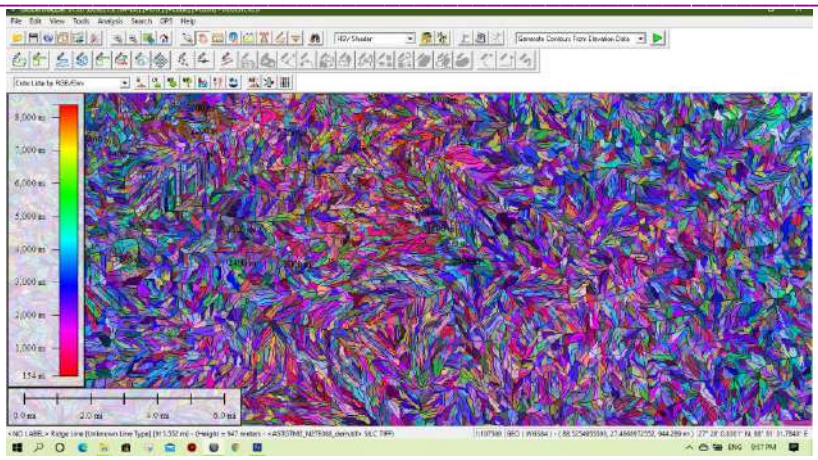
Application of filters for various statistical analysis many methods are used on the basia of specrtical data base provided in the imagery. The software analyse the imagery as per commands directed by the users requirements. In this imagery flow direction of water provived in scale & also the ammount of pixels providing the volume of water.

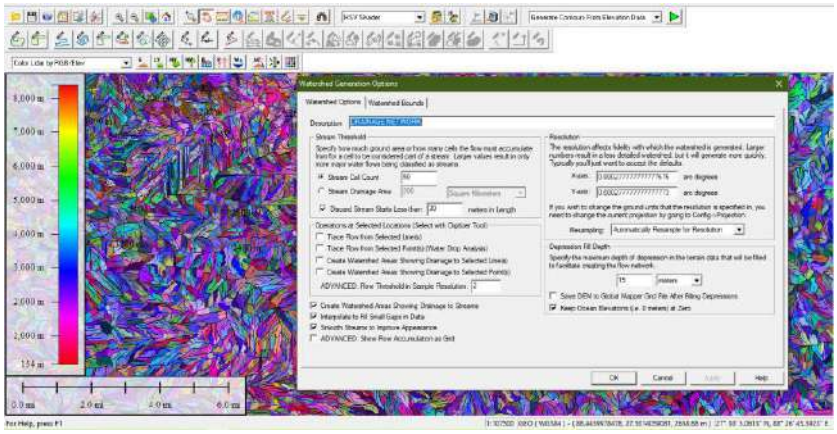


From the MS images color bands are used for the required values. The spectral management by the RGB manipulation we detect the required subjects from the imagery. To assess the contour values on XY basis edge raster can be measured by CORBA, DDE, & DRG options as provided in imagery.In this assessment contour & ridge lines are processed . Ridge iines are the vital data source on streams, It's analysis depends on API, DDE, DTM, & DLG. Othe options are come in force of action according to requirments.



To assess the watershade management, linls among the streams are simulated system of operation provided in the software. In this type of analysis DEM imagery is the mane source, Where all the values ihas been provided by various processings of data in imagery. In this image shown the watershade processing. It may be custamized according to need. The XY scaling & ridge cell counts to be applied according to requirement. All scaling options are





CONCLUSION :-

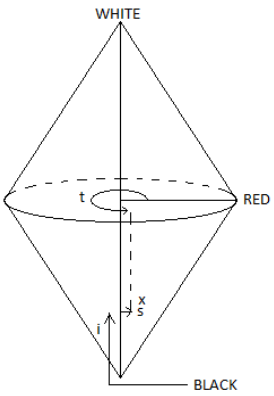
The RGB space:

This is the most often met colorimetric space, used in the particular in television and computer screens, of so-called "additive synthesis," opposed to the subtractive synthesis. Its definition rests on the choice of three primary colors; red, green and blue.

Considering data processing the RGB space is represented as a discredited cube of 255 units of sides. All feasible colors for computer applications are represented therefore by a triplet (RGB) of the discrete space.

The HSV space:

The Hue, the saturation and intensity value that constitute the three components of this system are relatively intuitive notions that allow a better description of the experience of the color.



The intensity can be presented as a linear measure of the light power emitted by the object that produces the color. It allows the dark colors to be distinguished naturally from the bright ones.

The hue is defined by CIE (Commission International de I'Ectairage) as the attribute of the visual perception according to which a zone appears to be similar to a color among red, yellow and green and the blue or to a combination of two of them. It is a way of comparing known colors on then it is easy to agree.

The saturation allows the purity of a color to be determined. It is while making the saturation varies from null hue color, and that one will move from the pure red (most saturated), that can be placed on the circumference of the hue circle, towards the natural grey in the centre while passing all pink tones

along the radius of the disk. From the physical point of view – if the dominant wavelength of a spectrum of power distribution defines the hue of the color, then the more this spectrum will be centered on this wavelength, the more the color will be saturated.

Distance in the HSV space:

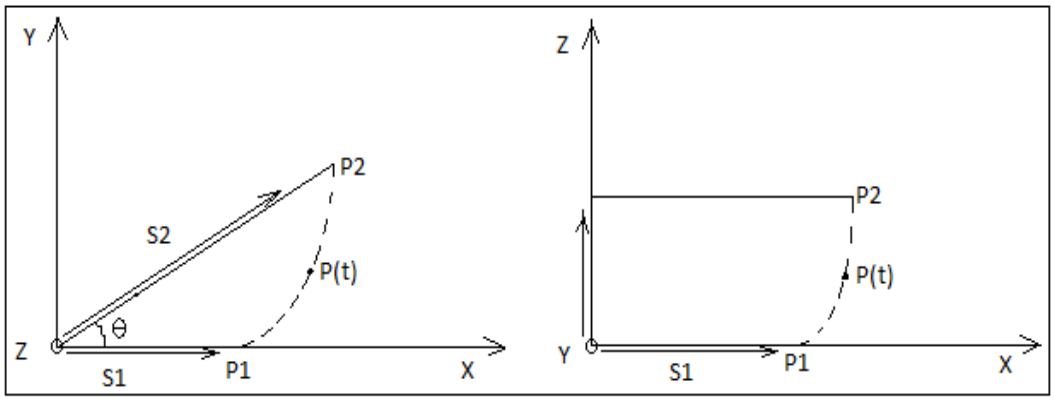
To be able to exploit this space for process application it is necessary to define distance. Naturally, the Euclidian distance does not have any sense here, the obvious non-linearity of its cylindrical topology and in particular the discontinuities met in the neighborhood of the axis of intensity and the passages of the null hue are unacceptable. One has thus agreed to consider as distance between two points in this duplicate cone the length of the smallest bow of a regular helix that it is possible to draw between them.

Basically hue is one of the three variables of the Munsell code used as reference for color coding. It indicates the respective quantities of red, blue, yellow etc, of which the color is composed. In normal system if we increased the color value we can be able to identify specific color, if we then increase the saturation value the depth of color will be increased. The range of color value extended from 0 to 255. From the midpoint of the HSV space if we move up the effect of white will be mixed with the basic color. In case of the lower down of the value from the midpoint of the HSV space the black will be increased with the basic color.

Let us consider two points of the HSV space therefore, P_1 (I_1, T_1, S_1) and P_2 (I_2, T_2, S_2). One stands in an orthogonal Euclidian reference frame whose vertical axis of intensities, and the first axis (X) is directed by the vector of hue of the point whose intensity is smallest (suppose that it is P_1). One notes ΔI the positive difference of intensity between the two points (in our case $\Delta I = I_2 - I_1$), ΔS the difference of saturation ($\Delta S = S_2 - S_1$) and Θ the smallest angular sector defined by the two angles of hues.

We are then in the situation illustrated by figure 1.3.4 showing the bow of helix for which we need to calculate the length precisely. In these conditions we propose the following parametric representation of this bow:

$$P(t) = , \quad X(t) = (S_1 + t\Delta S)\cos(t\theta)$$
$$Y(t) = (S_1 + t\Delta S)\sin(t\theta)$$
$$Z(t) = t\Delta I$$



PORTION OF HELIX TO COMPUTE DISTANCES IN THE HSV COLORIMETRIC SYSTEM

The length of the bow is then given by the calculation of the curvilinear integral –

$$D_h = \int_0^1 \left\| \frac{\partial P(t)}{\partial t} \right\| dt$$

That provides the following result:

$$D_h = \frac{1}{2\Delta S}\left[\left(S_2\sqrt{(\Delta S^2 + \Delta I^2 + S_2\theta^2)} - S_1\sqrt{(\Delta S^2 + \Delta I^2 + S_1\theta^2)}\right) + \frac{\Delta S^2 + \Delta I^2}{\theta}\left(argsh\left(\frac{S_2\theta}{\sqrt{(\Delta S^2 + \Delta I^2)}}\right) - argsh\left(\frac{S_1\theta}{\sqrt{(\Delta S^2 + \Delta I^2)}}\right)\right)\right]$$

Technical way of use of the HSV space:

There does not exist a unique HSV space strictly speaking, rather numerous definitions or derivative specifications, indeed several quantities deduced for example from the R, G and B values of a specified color in the RGB space can correspond to very subjective definitions of hue, intensity and saturation that have been given. Conceptually all these spaces are very much the same in the sense that they all allow one to easily specify a sensation of color in terms of hue, intensity and saturation, or if need be neighbors and equivalent notions.

The most often used definition is that found for example in Gonzales and Woods (1993): the calculation takes place on the r, v and b values between 0 and 1 (it is about the R, V and B initial values divided by 255). If r = v = b, the considered color is a nuance of grey, and one imposes by convention: t = s = o; it does not affect the reversible character of the transformation.

$$i = \frac{r+v+b}{3},$$

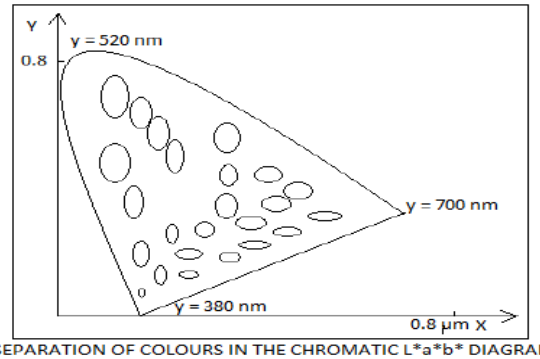
$$t = arc\cos\left(\frac{(r-v)+(r-b)}{2\sqrt{(r^2+v^2+b^2-rv-vb-br)}}\right), if\ v \geq b\ /$$

$$t = 2\pi - arc\cos\left(\frac{(r-v)+(r-b)}{2\sqrt{(r^2+v^2+b^2-rv-vb-br)}}\right), if\ b \geq v;$$

$$s = 1 - \frac{min\{r,\ v,\ b\}}{i}.$$

The L*a*b* space:

L*a*b*, defined by the CIE in 1976, has the goal of providing a space of work in which the Euclidian distance has a true sense: it develops a space uniform to the perception, that is to say in which two greens and two blues separated by the same distance would lead to the same sensation of difference for the human eye, which will not be for example the case in the RGB system basis as we have a better capability to differentiate in the blues than in the greens. His affirmation has been verified by the experience of the chromatic matching of Wyszecki (Wyszecki and Stiles, 1982) whose results are presented on the chromatic diagram. Ellipses that are drawn there (whose size has been exaggerated nevertheless) represent, according to the position in the diagram, zones whose colors cannot be discerned by observers.



SEPARATION OF COLOURS IN THE CHROMATIC L*a*b* DIAGRAM

The transformation toward L*a*b* will distort the space so that these ellipses become circle of constant radius on the whole of the diagram. It is this important property of linearity of perception that forms its essential interest; if one works in a metrics that replicates mechanisms of the human vision,

one can expect that the result of segmentations obtained be relatively satisfactory, in the sense that it will correspond more to the delimitation that a human operator could have drawn by hand while seeing the picture.

L* channel carries the lightness information that contains the main tonal detail about the image. The a* channel values represent green when negative and magenta when positive, the b* represent blue when negative, yellow when positive. The L channel individually and manipulate it with levels or curves without effecting color balance.

Application of RS-GIS changed the field of work both in case of natural & cultural landscape. To provide eveidence there is no alternative other than GIS techonology. Appart from the softwares , now various programmeing introduced for custamized requirements. More over various other scopes are now introduced on Biometric analysis & interpritation. In the field of all supjects proof from GIS now become almost mandatory.

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