Hello friends I'm doctor Sanjay Gaikwad, Assistant Professor from the Department of Geography and research center, Parvatibai Chowgule College of Arts and Science, (Autonomous) Margao, welcome you to the module of geospatial technologies in geography.

Model for today's discussion is photogrammetric instruments, that is Parallax Bar and stereo plotters.

In this presentation will be checking the application of stereo vision, stereo plotter, parallax bar, parallax bar along with the Stereoscopes and what are the uses of it.

At the end of this module you will be able to understand the concept and applications of these instruments.

You will also know the parts and function of the stereo plotter and parallax bar.

You will be able to handle this photogrammetric instruments and take a planimetric readings and will be able to do the analysis of length, height, depth, and aerial extension of various superficial phenomenons. This will enhance your interpretation ability of their images.

The two important things are there? That I have discussed in one of my presentations is depth perception and paralytic angle. So unless you have the normal state scopic vision ability, you will not be able to see the depth observed or the height of the objects. So one has to use stereoscopes like mirror Stereoscopes or the pocket area scopes to four super normal vision to be splitted and then later stereoscope we will be able to guess the elevation differences.

The depth differences, as well as the special arrangement, and then the ability will be increased to distinguish between the various look like features.

The stereoscopic vision is basically the mind effect. The strength of three dimensional effect is the result of all data pursued by your mind. If you have some information in mind, then only will be able to see if you're seeing the mountains.

In reality, mountains in the pictures, photographs and then only will be able to understand Yes, that is Mount and he was in the house is how they look from the top. Then only you will be able to correlate and understand. Yes, this is a particular feature otherwise one has to be trained to read this particular image or the photographs you might have studied. The elements of photo image interpretation, that is, tone, texture, size, shape shadow, pattern and association. These are the some keys that will enable you to read the photographs. So when we have this 3 dimensional effect. It gives us a stereoscopic vision. This stereoscopic image depends upon having two viewpoints that are our eyes.

Roughly, it is around 6 centimeter apart in the head, and this means it is the distance that we know as a high base.

So stereoscopic vision will have the lens stereoscopes, mirror scopes, so in one of the presentations were discussed, the functions in the applications of military scopes in Pakistan scopes, so from that I'm taking here the only the ministry school, because once we understand this ministry scoop then you will be able to understand the stereoscope key in detail.

As we know the , mirror stereoscope, split supervision and these are the parts of military scopes and we know the functionality of this, so sorry.

Must also be used along with the parallax bar.

Parallax Bar is expected to be focused or kept exactly on their photograph where there are similar images seen in both the photographs left photograph and write photograph. So what we can do is in the parallax bar, if you see in detail, it is like this sign (+ - 0) is a reading mark. There are other provisions given to do the adjustments in the reading and there is a one small glass piece where there is across DOT and circle these three. Symbols are shown, the right set top image you can see that has three markings on it and it has both arms with the fixed glass like that with the three similar kinds of markings. So once you focus on these three marks, one of them at the base or both the images in the left and right photographs, then you will get a reading on the bar, this body is functioning like a screw Caliper, so we have the. Things in millimeters. So zero 10, 20. 30, 40 are given on the main bar and at the side there is a screw.

and their twenty points will be taken on the side screw. so that we can put the measurements of the parallax.

Parallax is what is the shift of the image base image top from the base so that is parallax for example If you hold a chalk or two pins in a one line over the two fingers, and you're looking through that straight away, and then if you shift your eye basements, or you close your one eye, then definitely the one finger is likely to be dis aligned so it appears it's like moved away, that is what is a parallax, so it is the same actual through the two different photographs and we're trying to fuse it together under the stereoscope. So parallax buddies, one added instrument to know how much a shift is taking place in this cas on both glasses, the point will be fixed at the bottom and then again the point will be fixed around the top. OK, so taking these two different readings will be able to understand the parallax, so we have a parallax measurement methodology.

So there are two types of parallax.

One is the differential parallax and the other is absolute parallax, absolute parallax and differential parallax is measured using various methods. Here is 1 method I'm setting out to measure the height using stereoscopic parallax.

So it is based on the differential parallax.

DP = P1-P2 and the base is also identified using B + D.

PB stands for the total average of B1 and B2.

If you see at the sketch the difference of N1-N2 is considered to be one and N1 and N2 in the other. The photograph is considered to be two OK, so this difference between B1 from the first photograph and veto from the second photograph will be considered the average of that will be the base and the differential of parallaxes.

The division of the particular image object image that is the arrow shown in the top of the photographs tilting toward the corner. So that difference between the bottom and top reading difference will be the differential parallax. So that will give you the idea about what is the height of this object, so that will be proportional to the flying that.

So equation says the height of object is equal to in bracket flying height into differential parallax divided by the base of the photograph.

The stereo plotter is also working in the similar functions, where the views are separated and various inputs are given and it is more advanced to render the earlier photographs, and the parallax projections stereo plotter that you just light Rays.

So you have the photographs kept and then light is coming from different angles and then again the region is splitted analog stereo plotter. You just the anaglyph 3D. That example will show an analytical plotter, presently used as a computer that is A2000 is the example of this project. Should be a plotter request the photographs with at least 60% of overlapping.

And then, uh, this transferring photographs are protected with a light source, and that means, like other, the films that are projected on the screen and then the image will be administered and a 3D model will be developed, so this is an example of the analog photo plotter, so you can see the source of light.

Then the photographs are placed on the top and then at the bottom on the white part we can see the image, this works on the optics of the stereo plotter principles, so sometimes it is also using the sign or blue filters and red filters to split the vision Usually like earlier days the theaters who used to see the three dimensional Movies, so this is an Analytical Studio plotter. It incorporates the computers which works for you as a versioning system.

In conclusion,

We can say that the Stereoscope and the parallax bar are used as additional tools to have give you the better understanding of the surface, and it makes the measurement of various objects on the surface more clear. It also gives you the quantification and stereoscope is used for the planimetric corrections. And view of Pictures of the earth. The steady platter serves an important need of allowing aerial photographs to become the base four contours and elevation Maps. OK, so controls and elevation Maps will again be used in the various software is also further modeling. Parallax bodies used for the measurement of radial displacement and radial displacement are best used when we're doing the photographic corrections, so this way both the instruments are very important for the planning metric measurements.

These are the references. Here We have links for references and further readings.

Thank you.