Analysis - Map overlay
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Normally we call it as a thematic maps, thematic map means that particular map or information sheet contains only one thing. if it is going to be a soil map, so it will have only the soil information or soil variations within the thing, within the map area. if it is going to be a forest map then only the forest will be available rest of the things will not be shown there. so this is what this thematic map and different thematic maps. so you can just physically join or physically lay one over the other like soils slopes and vegetation cover and land ownerships so these are all the things which you can always overlay, overlay means superimpose one over the other and create a composite map that will tell you about what is the village natural resources.

So second thing is the tracing of – is see, previously the tracing of the geographical information is taken then it is digitized then we have got into the mode of creating a data sets. now the satellite images what happens is that satellite images are used since it is coming in a different mode then a different format they can be superimposed as a single layer itself. now there are as you say there are lot of layers, thematic layers and combination is possible combination is that there is one layer, A layer is here and B layer is here then when you want to have A and B together then there will be – A also will be there B also will be there and there will be A, B also will be there in the derivative map. This type of map overlay is possible in the geological or geographical information system. So now what we have seen is we have seen what is the different input modes which are available that is a rester and vector modes and how these modes, this is for the data points whereas then another thing is we have a scale. Scale is nothing; what is the distance on a map and what is the distance on the ground that is what we call it as a scale and the projections are nothing but when you go there from the equator towards the north and towards the poles what is happening is some of the; because of the global condition there will be, there will not be a straight lines and it will be bent towards each other that curvature need to be understood that is what we have seen it in the lecture three.

So now, what are all the different topological different methods which we have got for a manipulation or analysis purposes. Normally our interest is what it is adjoining what; so when I buy a house I want to know who are all my neighbours. So and what do they do, how they behave. We want to do it beforehand. So that is possible from this type of thing and what encloses; containment is inside the boundary, what it is available then another thing which we try to normally use it – proximity, how far I am from the particular place like a school is there, how far the school is from my place?

So this type of analysis are possible in the GIS. Similarly in agriculture practices what we could do is how far is my agriculture plot from the river or a drainage line. So that I will be able to get water. Second thing is how if there is going to be a soil serene areas in the nearby areas. How far is my field from the salinity affected areas. So these type of proximity analysis is possible and so that we will be able to control and manage and mitigate properly. So now in another ways, another thing is about the networking analysis. Networking is nothing but

how do I reach a particular place whether faster or a slower; what is the distance between from one section to another section is one query and that query will take you to that different routes this is one possibility that is another possibility that type of approximate networking analysis can be done which is normally done for transportation.

Transportation is one thing which how fast I will be able to reach the railway station or how fast I am able to reach the airport. Second thing is they are used in the hydrological thing; what is the shortest distance water can be transported from one area to another thing and also other infrastructure like canal alignments. It could be made use of it. Now, having said about all those things; now let us see some of the practical applications which we have done it. So you have two images over here. So what I have got is, I have got a boundary of this particular area. Now second thing is I have got that these are all what these are all the village boundaries, the black ones are village boundaries. These boundaries are taken from the census information or village information which is available then another information layer which you might notice is the coloration which I have given these are all the Mandal or it is a Tahsil. Tahsil areas in this particular zone; all these layers they were all combined together or overlaid together and this map is prepared.

So this will be for an administrative units and also labelling when you see that labelling; labelling is also go done over there. So this, if you are interested only these things to be shown it as a result. So it is possible; now the second thing is which you see it here, what you are able to see is – this is the river basin boundary, what you see the bluish colour is the river. So what are the different colours which you are able to see smaller ones which you are able to see this those are all the small streams or we call it as a drainage networks and the filled one blue one; these are all the Cherus or a tank positions where tanks are there, natural tanks are there to store water and for usage purposes.

So now when you see that. So, if I am interested in how many tanks are there in a particular area now what I would do is; I will try to take it from a different sources then I will try to group them based on the area-wise. Each tank can be measured based on the surface area of storages. So it could be classified into bigger tanks, smaller tanks and the smallest tank that could be of some use for us in analysing how much water we can store it in the traditionally created tank portions.

So filling it, each tank has got its own – each tank is nothing but it is only a polygon. The polygon information can be stored it in the form of a periphery or it can anything; you want to give you can give and it can be colour coded. So that it can, you can show the differences between one tank to another area. This is another example which we have done, third example is the water requirements. See water requirements is a major issue now which we are talking about it. See these water requirements is based on the – it is the human water requirement that is the drinking water requirement, the drinking water requirement is based on the village level. This village level information that is the census information about that particular village that can be had from their senses, census office and also then individually then individual members one man needs about 55 litres of water that is how we try to do it up then the total water per week, per month per year that could be made use of it and it could be

colour-coded as what we have done it similarly is the livestock, livestock anything which we grow in our – which is living with us that is what the livestock is. Lifestock can be a bigger animals, smaller animals or birds of that kind of category their water requirement is something different. All those things they can be added and then if you would like to see what is; which are the areas where more water is required is these three red colour villages they need maximum water that means the water should be available either in the form of a surface water or in the ground water to feed their requirements which are the areas which have got a lesser water requirement is this type of areas. So when you want to plan an activity this village wants more water, this village wants lesser water. So that type of water planning and water release management can be done by this way.

Now third, another information which we have tried to do it; is combining all the layers and then calculating it what is the storages which are available in this area for the tanks and other activities then what is the water level in the water level in the village, village area or water level in the individual tanks everything is made available and it can be combined together then we can prepare here what integrated water management. Management practices during the drought conditions; this is how, this has been done. The another information is, if you are interested in surface water, surface water depends on the rainfall conditions. If the rainfall conditions are less then the surface flow will be less; if the flow is less then storages will be less so then that area will be demanding more water at the end of the day. For this purpose what is done is, what is the; for agriculture how much they depend on the surface water that is what is that information has been taken from the census area and then out of the – see if you have; this is the total area of, total area of the village and what we have got. So how much area is cultivated. So all those information we can get into in the form of percentages and then can be shown over here that means here also when you look at it this areas at the bottom.

At the centre; so they need more water, more surface water they need when compared to the rest of the planned areas. So now if the monsoon fails or if the rainfall is less these are all the villages which are likely to be affected by the water supply. Now the second thing is the storage system which is available under individual villages; one among the solutions which normally; we try to do is you distributed – distributed section of the individual villages if they have a lake then it will be easier to get the water stored here and then supply will be easier. So that they will be able to go to that place and then collect water and then go back. So for this purpose, this image has been overlaid from a two different; more, this has been calculated water. Demand is calculated and like tank area then surface storages caption then you have the Mandals and you have the; this is an administrative unit.

This is the tank of area unit, tank storage unit and whether it is sufficient or not those things are even over here. Now another thing which we can do is overlaying another overlaying; this is the image of that particular area and this yellowish line is the village boundary which you have created from a different sources. So you can have this image overplayed by the village boundaries and then we can understand what are all the different surface cover features which are represented by these images.

So this is a direct usage of monitoring; directly you can monitor and then get the things done over here. This image is nothing but it is a village map where you are able to see the form land boundaries and also what all the different kinds of lakes which you are having it in these places. So this is the image, this is the village map which can be joined together with the adjoining villages and it can be merged with the total area level information that is a 25,000 measurements of a scale. So those scales can be used for water resources management purposes.