**Structural Geology**
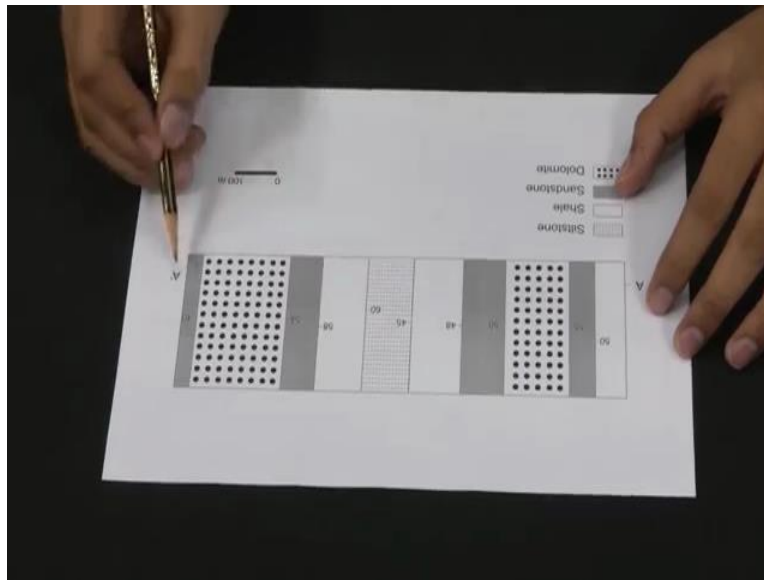**Professor Santanu Misra**
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**Indian Institute of Technology, Kanpur**
**Lab Session**
**Construction of Geological Cross-Section**
**Lecture 48**

Hello all, welcome to online NPTEL structural geology course, in this lab session we will learn how to draw a cross section from a geological map.
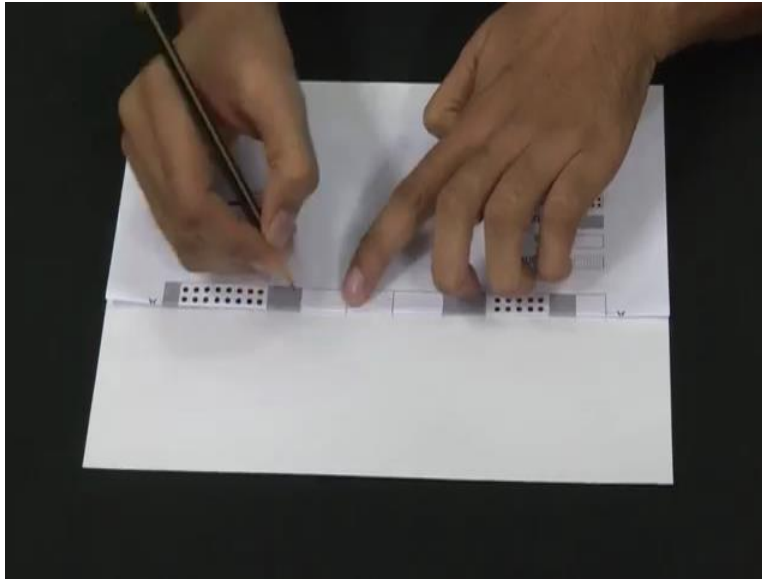
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So this a geological map in which we have four sedimentary units, silt stones, shells, sand stone and dolomite, this is silt stone, this is shell, this grey one is sand stone and this circular one is dolomite. So in this, this dip of a litho context is given and this is the true dip so this present the strip and now we will draw a cross section along A and A', perpendicular to the strike of the bed.

If we make section other than the perpendicular to the strike, then we have to calculate the apparent dip along that section. Suppose if we will want to draw a cross section diagonally suppose from this end to this end, then along this section we will, we will determine the apparent dip of each context and then draw a cross section, for this session we will construct a cross section perpendicular to this strike. So we will use the true dip for that purpose.

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So first what we will do, we will, we will turn the paper and then and then, we will take a sheet, put this map on the this sheet and mark A and A' and we will also mark the context of the either units.

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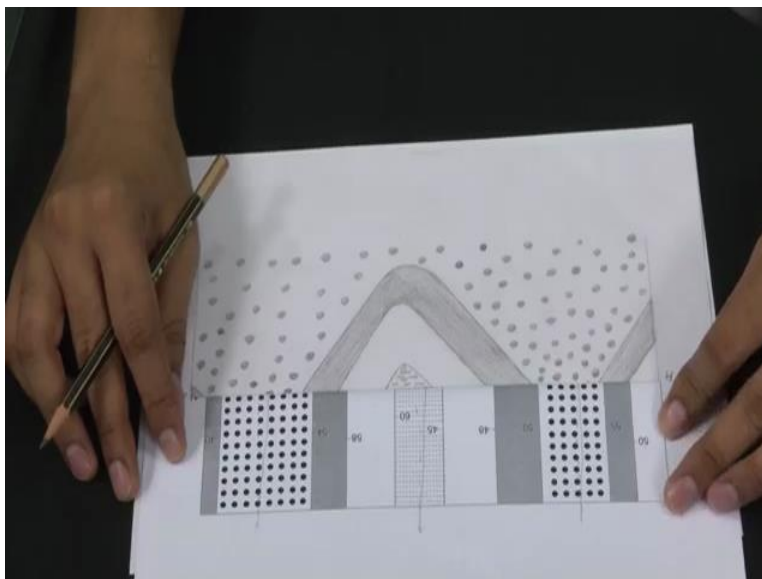


We will draw a line through this point and this end represent the A and this one will represent the A dash and we know the dip of the context, so we will use the protector and draw a dip, before that we will draw a one line, so this context represent 50 degree, so I will draw 50 degree and it is dipping towards west so I will come 50 degree, so this is 10, 20, 30, 40, this is 50.

Then I will draw a dotted line form this point. The same way I will draw the dip of each context subsequently and other one is 55, so this is 50, this is 55 and now this context, the dip of this context is 50 degree, but it is dipping to the other which we have drawn. So it is dipping towards east, so I will draw 50 degree, dip 50 degree from the east, so this is fifty degree, this is 48 degree, then 45 degree then again it is dipping to the west.

So I will take 60 degree, this is 60 degree and 58 degree, then 54 degree then 40 degree dipping towards east. So from the map what we see that some bed are dipping towards east and some beds are dipping towards west, so after constructing the dip, what we see that they are intersecting so which means that the beds are folded.

So now what we will do we will try to smooth this and make a fold, so this is dipping 60 degree and this is dipping 45 degree and the same bed when they are dipping opposite so they make same fold. So now I will construct, so this is the complete section of this map when we see along A and A', means the cross section the in-depth view of the map.

So we will try to fill it with these legends so we know that this is silt stone and this one is sand stone so this is grey in colour and this one is dolomite, so from the map we see that this one is here and this one is sand stone, so this grey one, this one is dolomite, this one, this one is again sand stone, so for this one, this and this one is shell, this one is silt stone, again this shell again sand stone and then dolomite and in the end we again see this one is sand stone.

So in then cross section it will look as it is folded and if we want to visualise this section before erosion we have to deconstruct above the section line A, A' by connecting the corresponding litho boundaries and after connecting the litho boundaries we see that the first fold nearer to A in this section line is anti firm and the fold in the middle is sin form and the fold nearer to the A' is again anti firm. And if we see the map, we can see that the litho boundaries between then dolomite and the sandstone is dipping to the west, if we move from A to A' again they contact between the dolomite and the sandstone is dipping to the east.

So these two litho boundaries is dipping away from each other which means that it represents and anti firm while the boundaries between this silt stone and shell they are dipping towards each other which means it is sin form and again this dolomite and dolomite and sandstone contact is dipping away from each other which represents it is anti firm, so the fold axis will pass through

this. So it represents this anti firm where the dolomite is exposed and here the silt stone is exposed and again the dolomite is exposed.

If we fill this sandstone grey and this dolo this dolomite with this index and then it will look like this, the complete pattern. So this is the cross section of this geological map along A and A'.