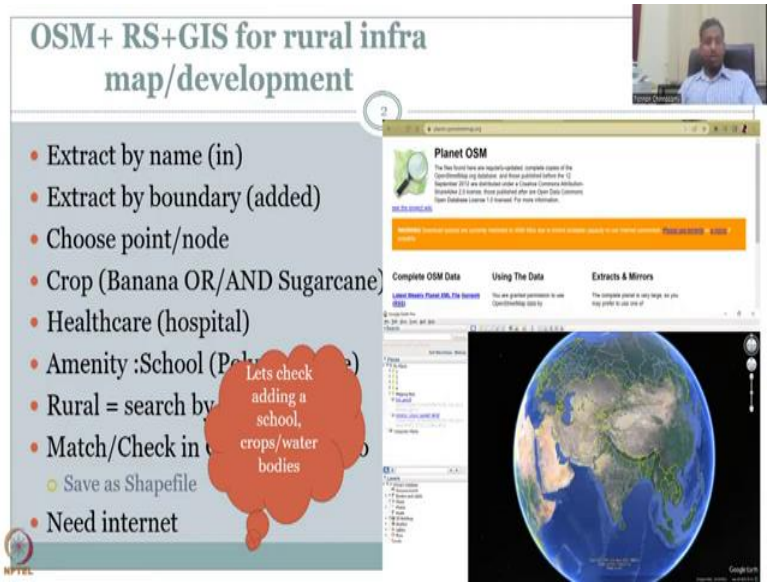
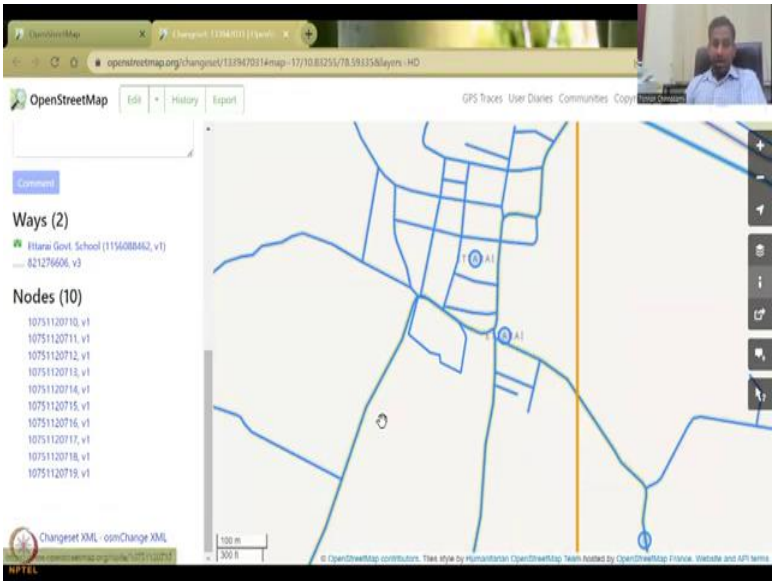
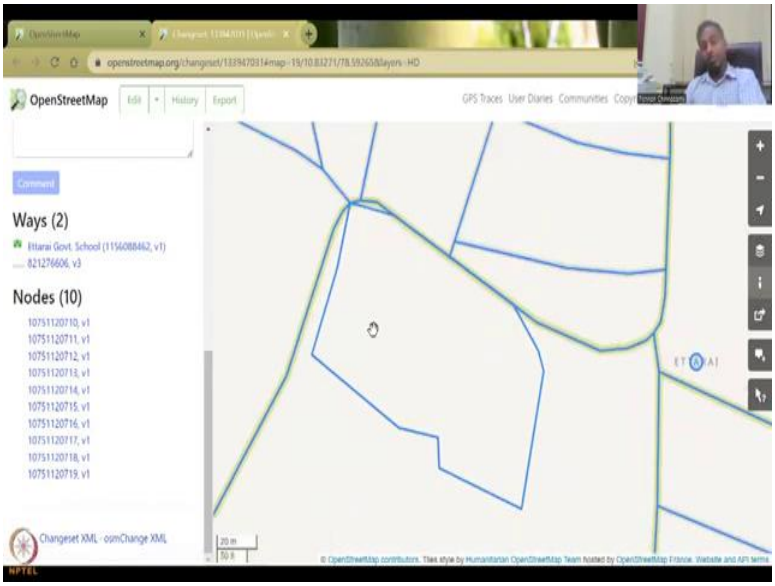
Remote Sensing and GIS for Rural Development
Professor Pennan Chinnasamy
Centre for Technology Alternatives for Rural Areas (CTARA)
Indian Institute of Technology, Bombay
Week: 11
Lecture No: 05
RS and OSM for Mapping Rural Infrastructure:
Adding Data, Crops and Water Bodies

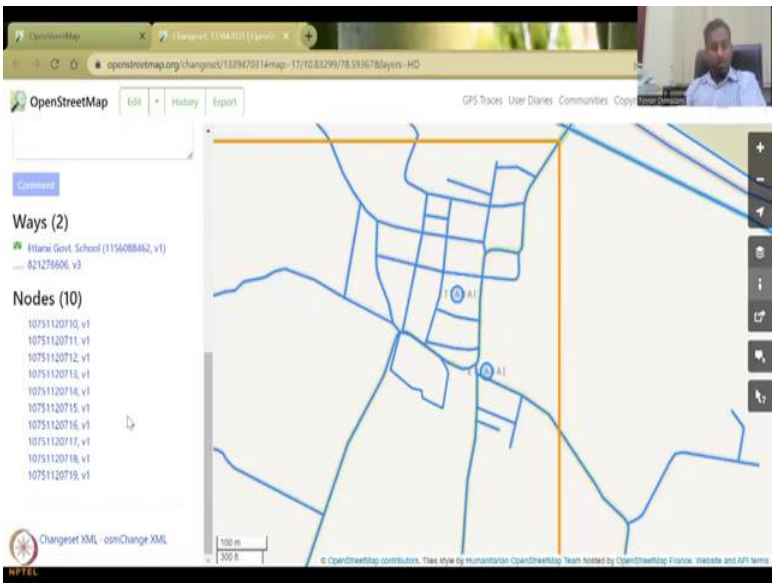
Hello, everyone welcomes to the NPTEL course on remote sensing and GIS for rural development. This is week 11 lecture 5. In this week, we have been looking at synergize mapping using crowdsourcing data, along with remote sensing and GIS platforms to check the data and update the data. More on rural infrastructure mapping, et cetera we have seen. We have also noted that using buffer as a tool helps a lot in making sure that we have an area of coverage and creating more infrastructure that is needed for rural regions and villages. As promised, we will be looking at in this week.

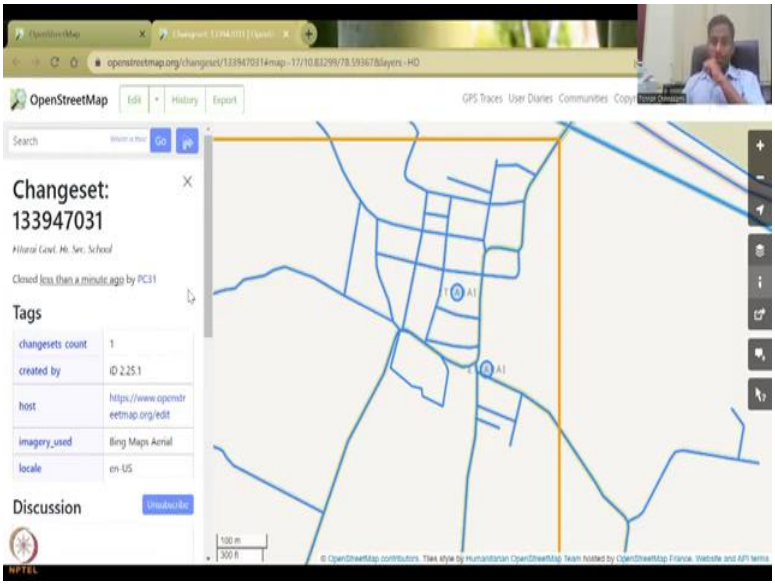
(Refer Slide Time: 1:03)

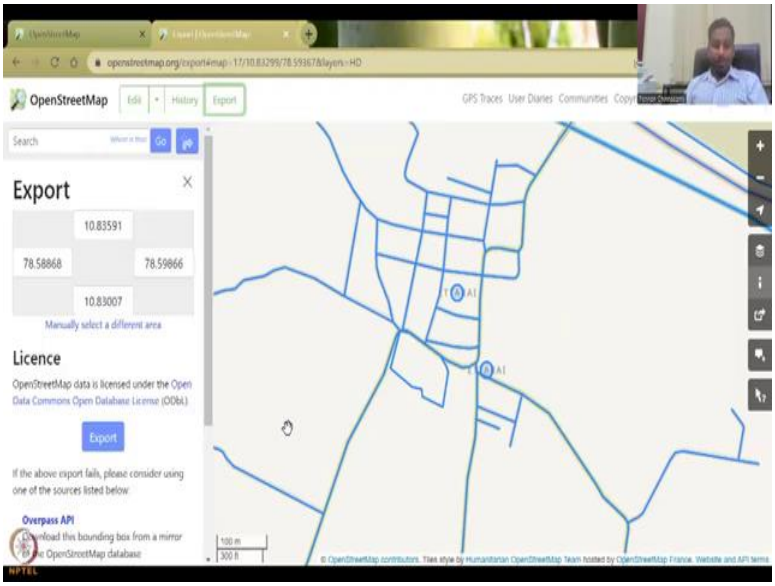


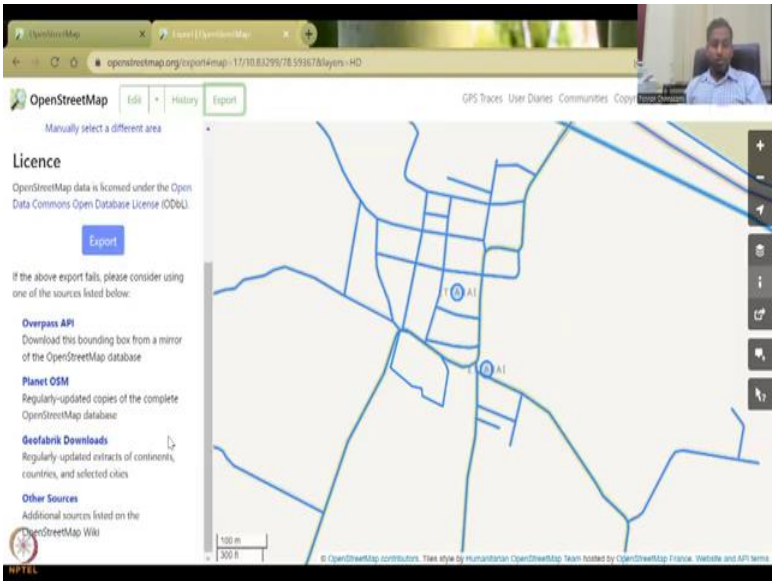

openstreetmap.org/changeset/133947031#map=17/10.83255/78.59335&layers=HD
OpenStreetMap
Edit
History
Export
GPS Traces
User Diaries
Communities
Comment
Ways (2)
Ettarai Govt. School (1156088462, v1)
821276606, v3
Nodes (10)
10751120710, v1
10751120711, v1
10751120712, v1
10751120713, v1
10751120714, v1
10751120715, v1
10751120716, v1
10751120717, v1
10751120718, v1
10751120719, v1
Changeset XML
osmChange XML
100 m
300 ft
NPTEL

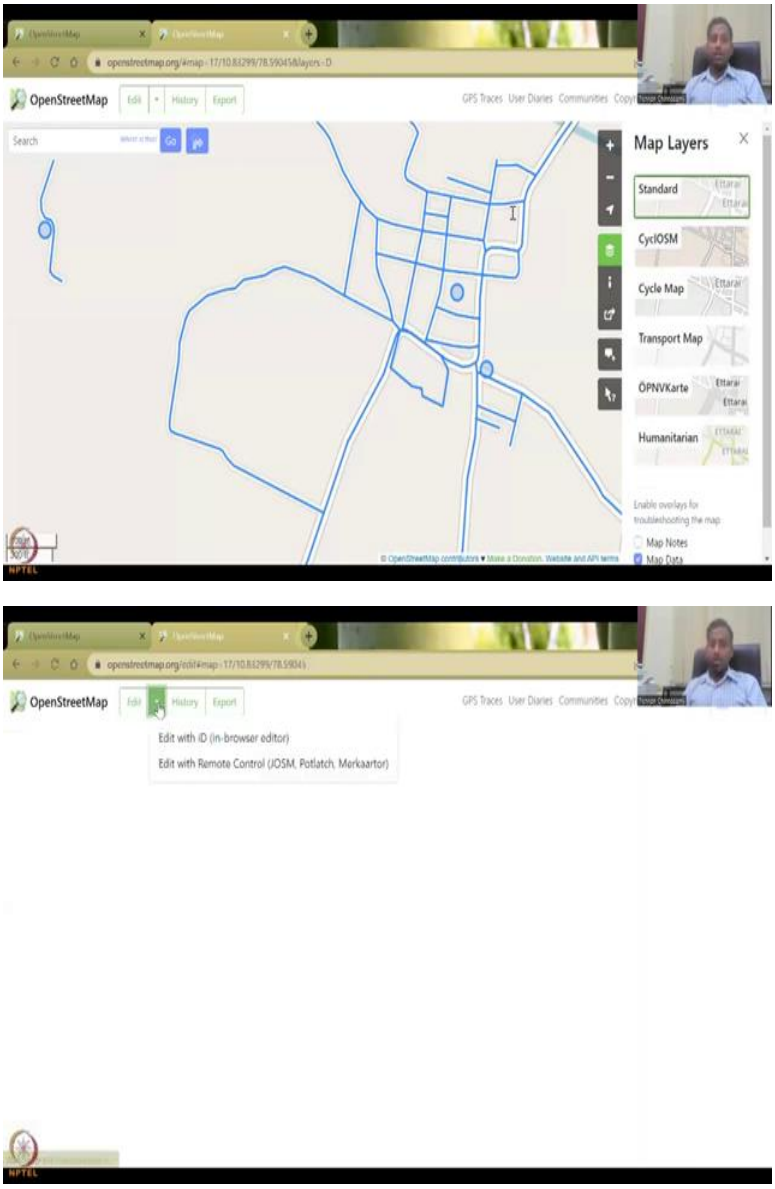

openstreetmap.org/changeset/133947031#map=19/10.83271/78.59265&layers=HD
OpenStreetMap
Edit
History
Export
GPS Traces
User Diaries
Communities
Comment
Ways (2)
Ettarai Govt. School (1156088462, v1)
821276606, v3
Nodes (10)
10751120710, v1
10751120711, v1
10751120712, v1
10751120713, v1
10751120714, v1
10751120715, v1
10751120716, v1
10751120717, v1
10751120718, v1
10751120719, v1
Changeset XML
osmChange XML
20 m
50 ft
NPTEL


openstreetmap.org/changeset/133947031#map=17/10.83299/78.59367&layers=HD
OpenStreetMap
Edit
History
Export
GPS Traces
User Diaries
Communities
Comment
Ways (2)
Ettarai Govt. School (1156088462, v1)
821276606, v3
Nodes (10)
10751120710, v1
10751120711, v1
10751120712, v1
10751120713, v1
10751120714, v1
10751120715, v1
10751120716, v1
10751120717, v1
10751120718, v1
10751120719, v1
Changeset XML
osmChange XML
100 m
300 ft
NPTEL


OpenStreetMap
Edit
History
Export
GPS Traces
User Diaries
Communities
Search
Go
Changeset:
133947031
Closed less than a minute ago by PC31
Tags
changesets count
1
created by
iD 2.25.1
host
https://www.openstreetmap.org/edit
imagery_used
Bing Maps Aerial
locale
en-US
Discussion
Unsubscribe
NPTEL


OpenStreetMap
Edit
History
Export
GPS Traces
User Diaries
Communities
Search
Go
Export
10.83591
78.58868
78.59866
10.83007
Manually select a different area
Licence
OpenStreetMap data is licensed under the Open Data Commons Open Database License (ODbL)
Export
If the above export fails, please consider using one of the sources listed below:
Overpass API
NPTEL


OpenStreetMap
Edit
History
Export
GPS Traces
User Diaries
Communities
Manually select a different area
Licence
OpenStreetMap data is licensed under the Open Data Commons Open Database License (ODbL)
Export
If the above export fails, please consider using one of the sources listed below:
Overpass API
Download this bounding box from a mirror of the OpenStreetMap database
Planet OSM
Regularly-updated copies of the complete OpenStreetMap database
Geofabrik Downloads
Regularly-updated extracts of continents, countries, and selected cities
Other Sources
Additional sources listed on the OpenStreetMap Wiki
NPTEL



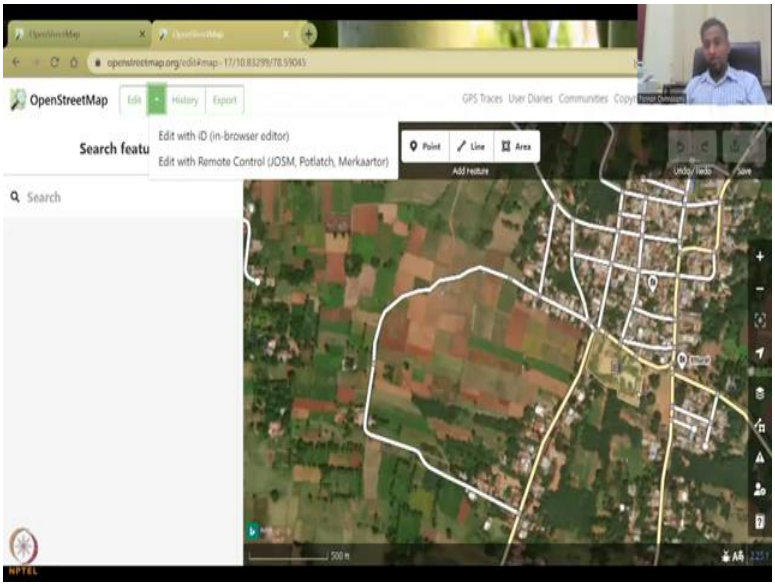
We have already seen OSM use of this week with remote sensing and GIS of the attributes, we will be looking at crops and water bodies in this today's lecture crops is very important because as we have seen an LULC mapping, we need to go there and find data for ground trothing. However, if we do not have that data, then you use unsupervised classification. So, to use supervised classification, this OSM tool can come very handy. And you can also go and put in your data and request.

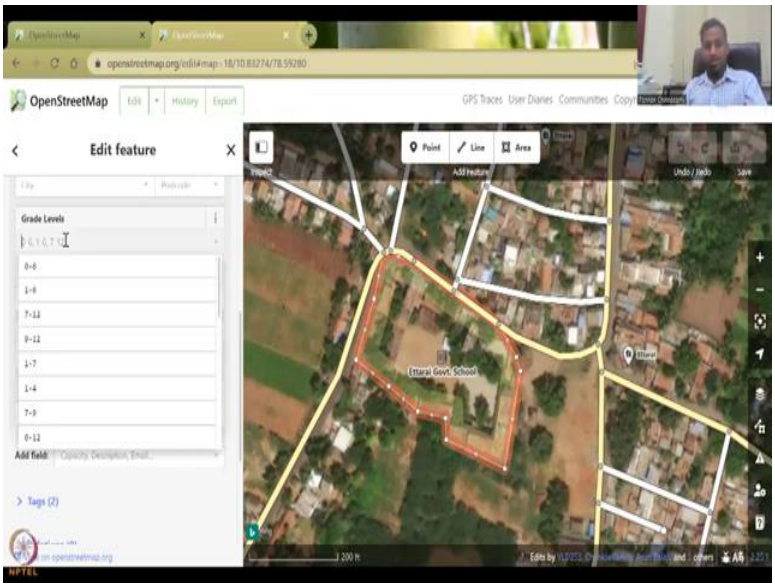
So, let us get into today's lecture on mapping of crops and water bodies. But also, I would like to add a school layer if possible. And here we are I will be sharing my screen. So, let me first share the school that I have added. We noted that this is my profile, as I have this profile. And I have added the school as government as a secondary school, you have noticed that in google earth that school was not captured prominently and OSM does not have it.

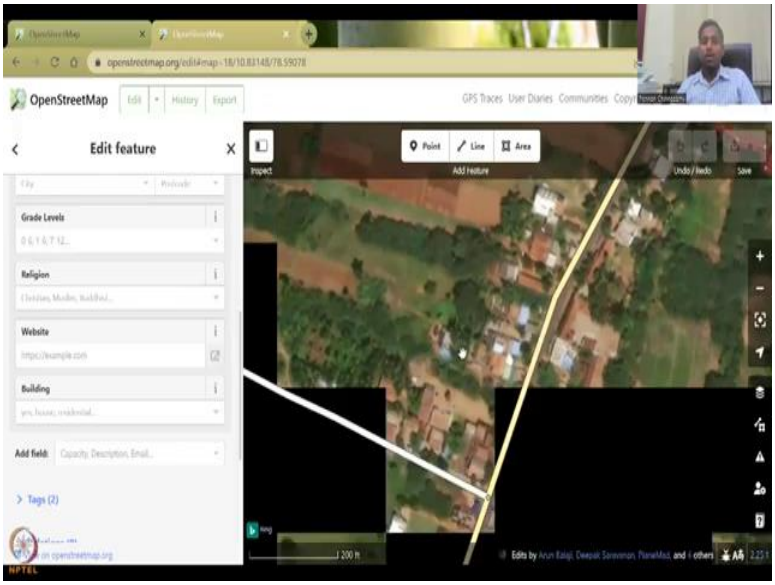
So, initially this layer was not there. And I have added that layer. So, I have added all these layers here. And now with due course of time. In OSM it will start reflecting as a school. So, these parcels have been identified. And you can anyone can you start using the OSM free of cost, and actually add, you can see here just a minute ago, I have added a school. So, here is where you could add the school, export the data if you need.

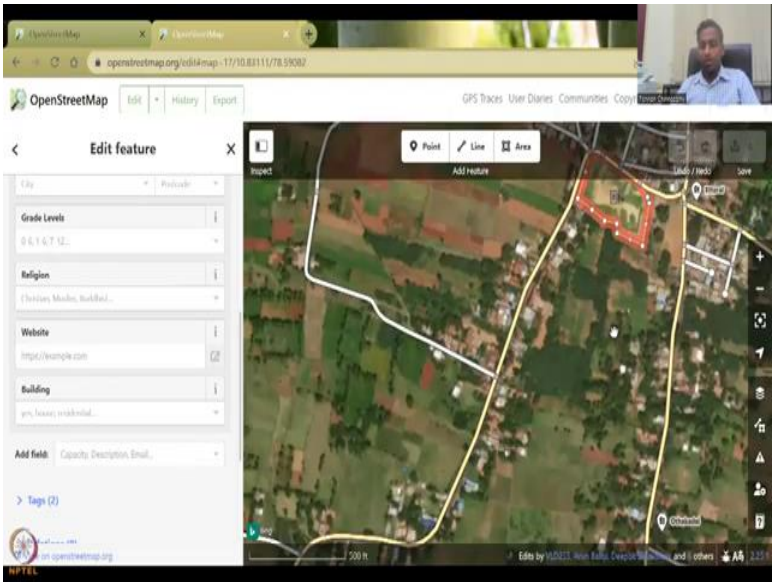
And then also look at other regions that you would like to use. So, if you look here, I have added this plot, and it does go through a checking, and then it gets updated. So, anyone who wants to use it, you can actually go through multiple layers, and then say you want to edit and add a layer, and then you can start mapping it.

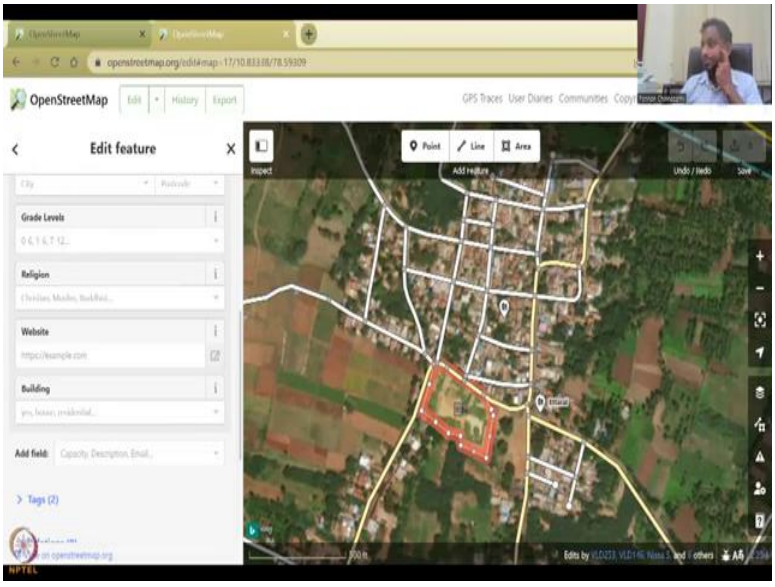
(Refer Slide Time: 3:23)






OpenStreetMap
Edit feature
Grade Levels
Religion
Website
Building
Add field
Tags (2)
Point
Line
Area
Add feature
Inspect
Undo / Redo
Save
GPS Traces
User Diaries
Communities


OpenStreetMap
Edit feature
Grade Levels
Religion
Website
Building
Add field
Tags (2)
Point
Line
Area
Add feature
Inspect
Undo / Redo
Save
GPS Traces
User Diaries
Communities

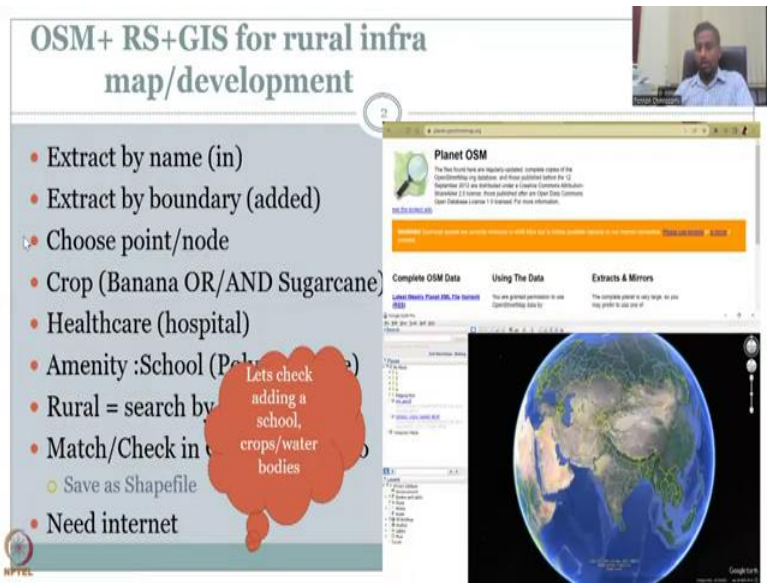

OpenStreetMap
Edit feature
Grade Levels
Religion
Website
Building
Add field
Tags (2)
Point
Line
Area
Add feature
Inspect
Undo / Redo
Save
GPS Traces
User Diaries
Communities

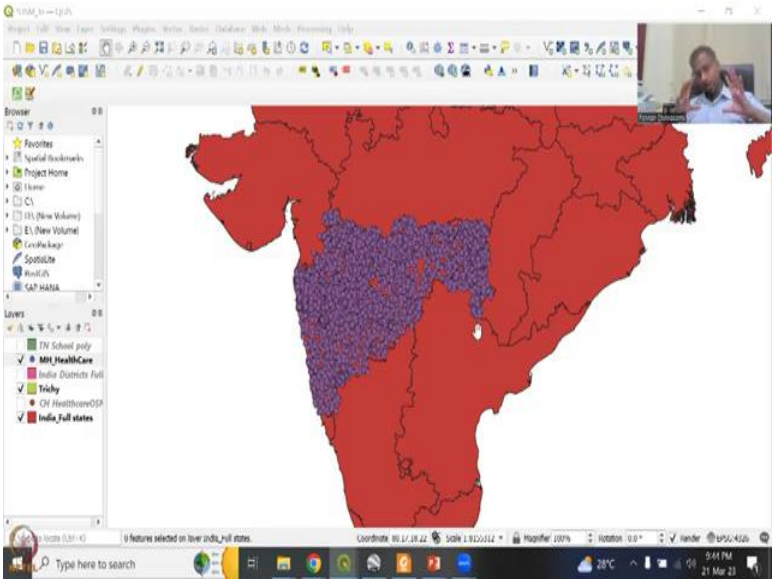
So, for example, if you just start clicking, clicking, you can add a layer. So, the here to see, this is the layer that I have added in OSM. For that school, you can edit this if needed for a different attribute, I have added this and we can edit only features I created I can edit not the other features. So, for example, this has changed name or some of the data of it has changed. We can go here definitely and edit. So I can edit it from the type that we have.

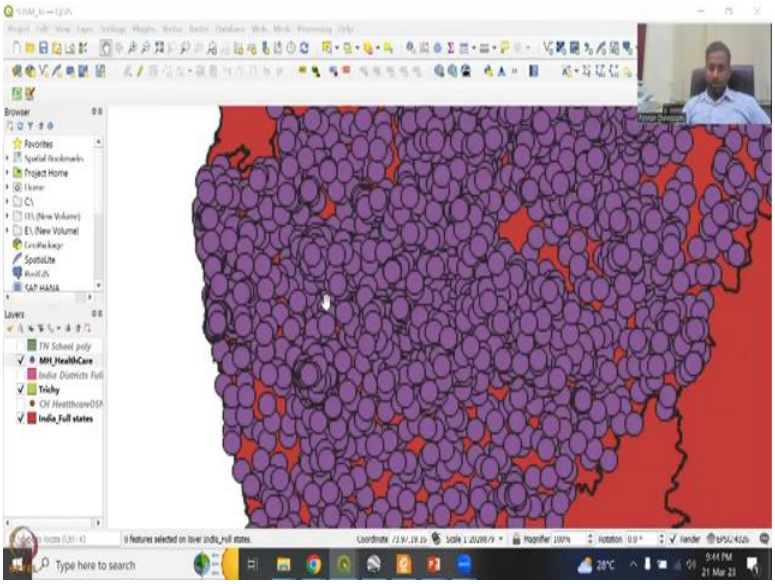
So, you can click it and here you have the type I can add the address the grades, grades is the class numbers, 0 to 6. Initially, as I said, when my father was studying it was 0 to 9. And then now it has become from 0 to 12, 0 means 1, 1 to 12. So, you can find that one, the 10 was also there and then it gets steadily updated decimal 0, because in case your kindergarten is not available in villages, you can see it is a similar village, a lot of land is employed agriculture and be happy to showcase that all of this land is in agriculture, very, very small village.

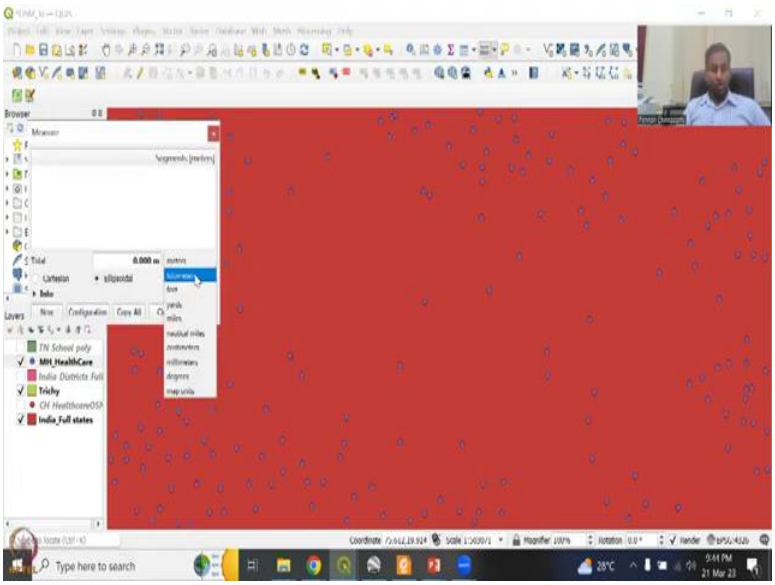
And then this part of the village has increased. So, like this, I would like you to map your own villages. And just think about how much data can be put on an open source. If a lot of people participate. The mapathon idea is also part like this. We invite you to participate. So I have added this so now it will be reflected in the OSM database. And I am now going to go to slides again.

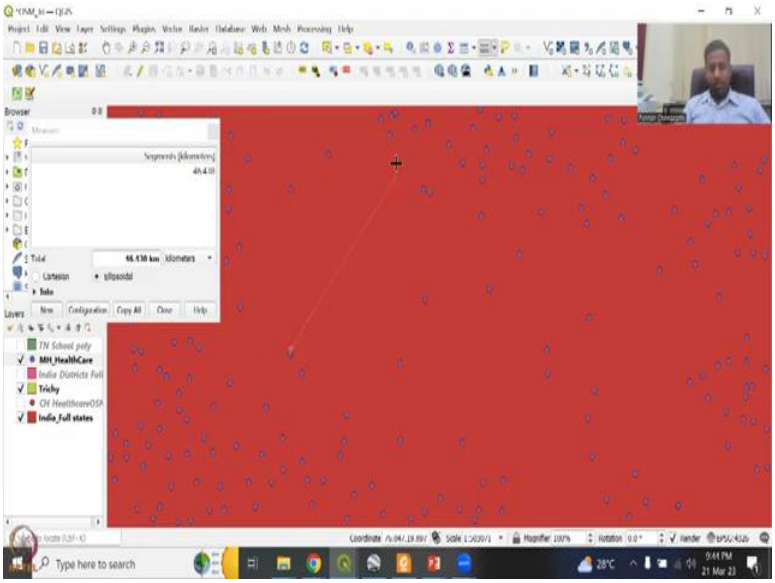
(Refer Slide Time: 5:03)

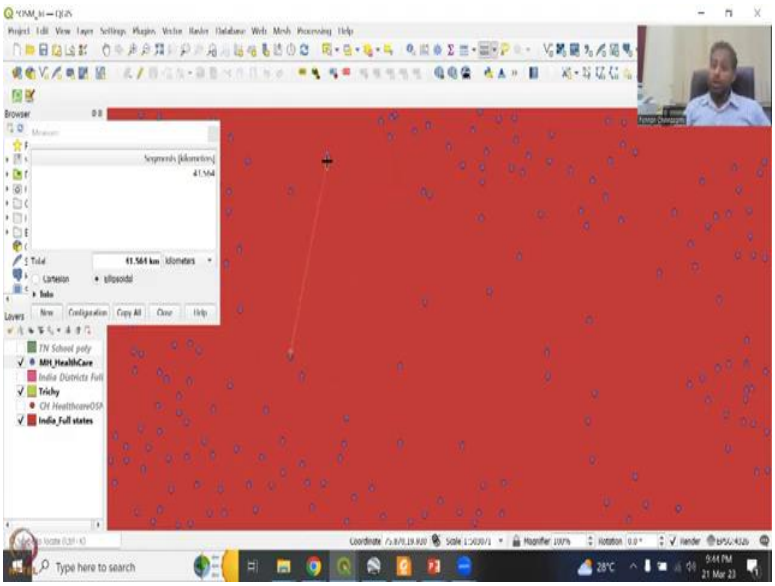



Browser
Favorites
Project Home
Layers
TN School poly
MH_HealthCare
India Districts Full
Trichy
India_Full states
Type here to search
28°C
9:44 PM
21 Mar 23


Browser
Favorites
Project Home
Layers
TN School poly
MH_HealthCare
India Districts Full
Trichy
India_Full states
Type here to search
28°C
9:44 PM
21 Mar 23


Browser
Layers
TN School poly
MH_HealthCare
India Districts Full
Trichy
India_Full states
Type here to search
28°C
9:44 PM
21 Mar 23





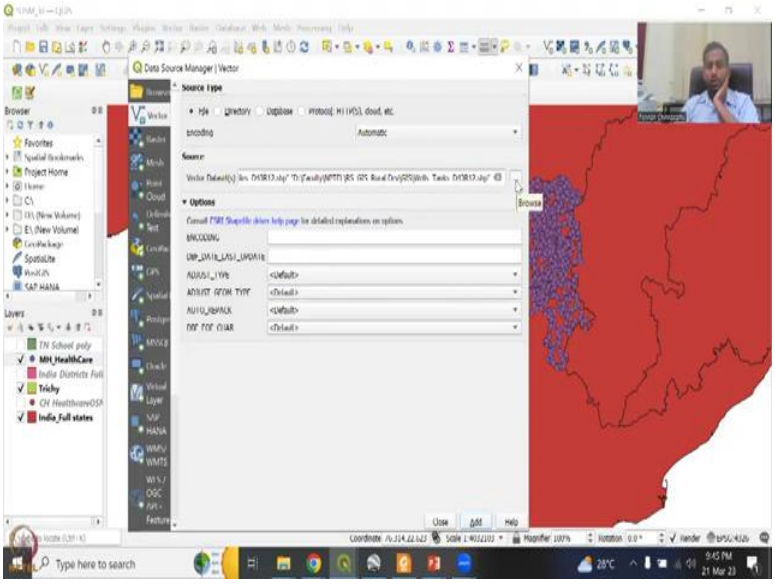
And we are going to open our QGIS screen. So, that we will be know doing, as the slide indicates we will be doing crops and water bodies. Let me share the first screen. So, before that I would like to show some exercises that I have run out of curiosity. I ran Maharashtra state healthcare system and OSM and look at the coverage, look at how many points are there beautifully covering all the places all the locations, you can see that more hospitals are in the Mumbai region, the urban regions of Pune, a, and I think that there is a big gap.

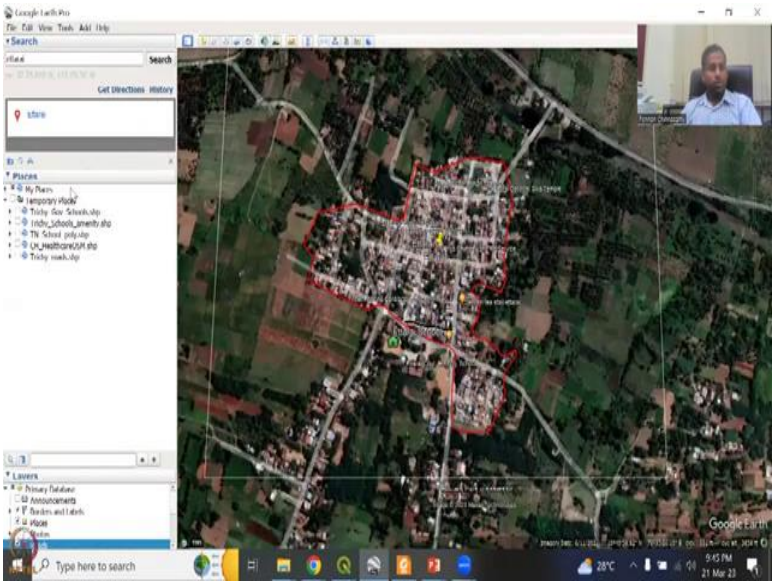
So, this is the gap we need to address. Either it is a data gap, or there is no health facilities. So, think about having people travel so far, say how far it is. Let us say if for example, if there is no hospitals in this region, then people would have to travel, let us say kilometers. And then here. So, 50 kilometers in between, there is no hospitals. So, that is a lot think about

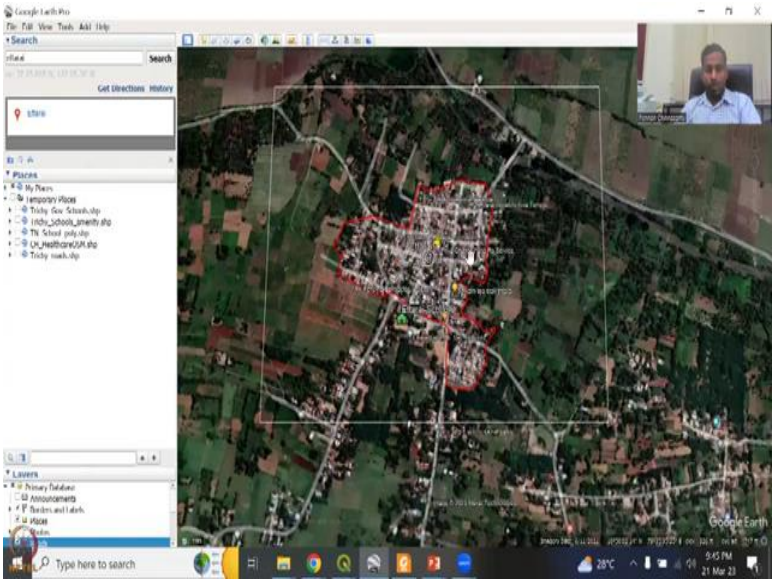
villages where snake bites system common insect bites, lead fever, all these are very, very common.

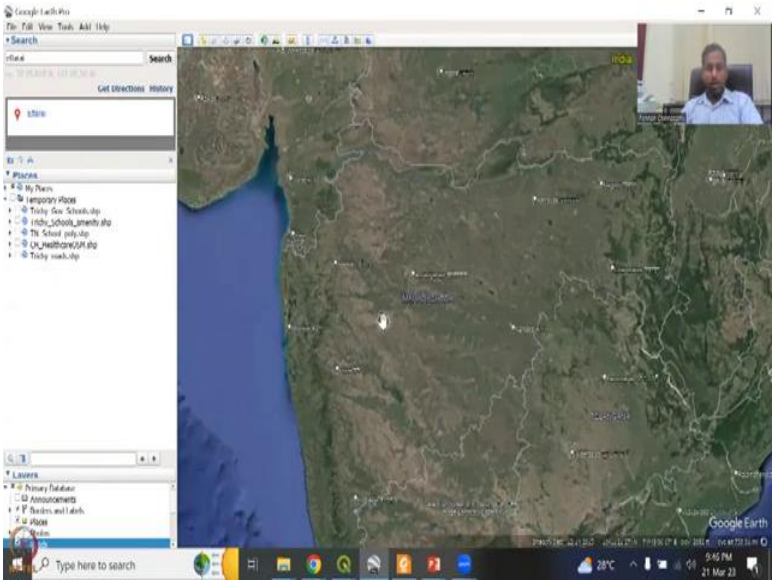
So, this whole parcel you do not have any hospitals, which is a big concern, either, as I said, either there is no data that the hospital is there, not always and so it has to be populated, or it is it is not there. So, we can quickly check. So, what I am going to do is I am going to open this layer and first let me see what district that is. So, let me add the district layer. So, when we add the district layer, we will be finding more of the districts that are in this picture. But as I said, let me first export this into our Google Earth. I am going to bring my Google Earth Pro here.

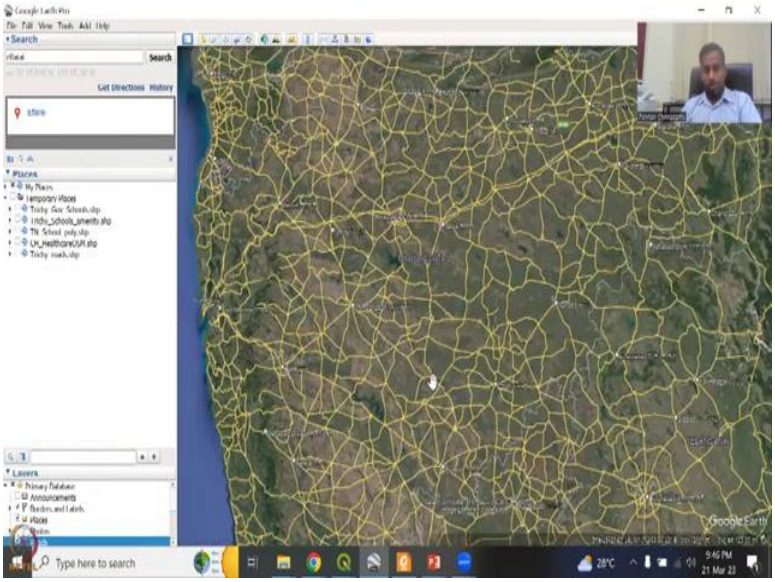
(Refer Slide Time: 7:17)

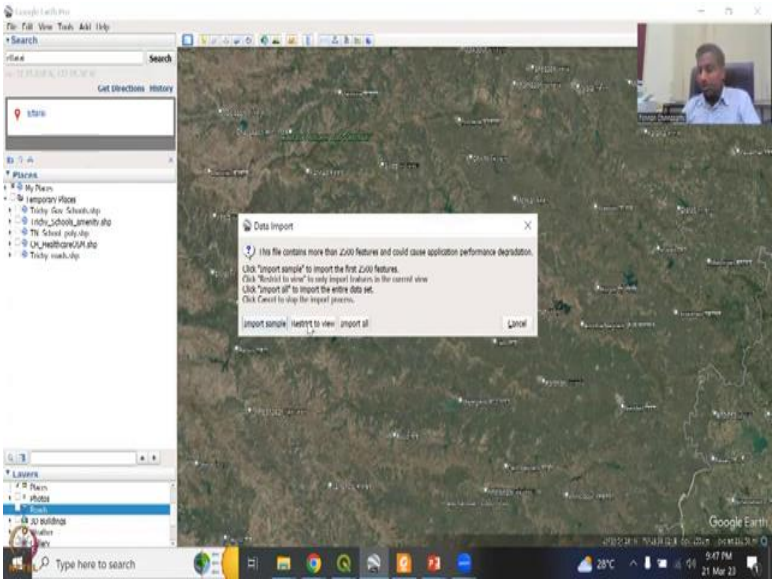


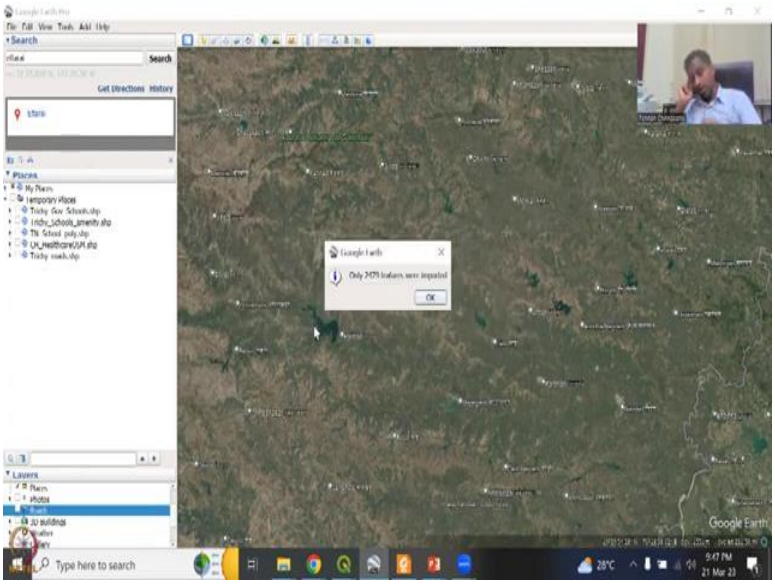


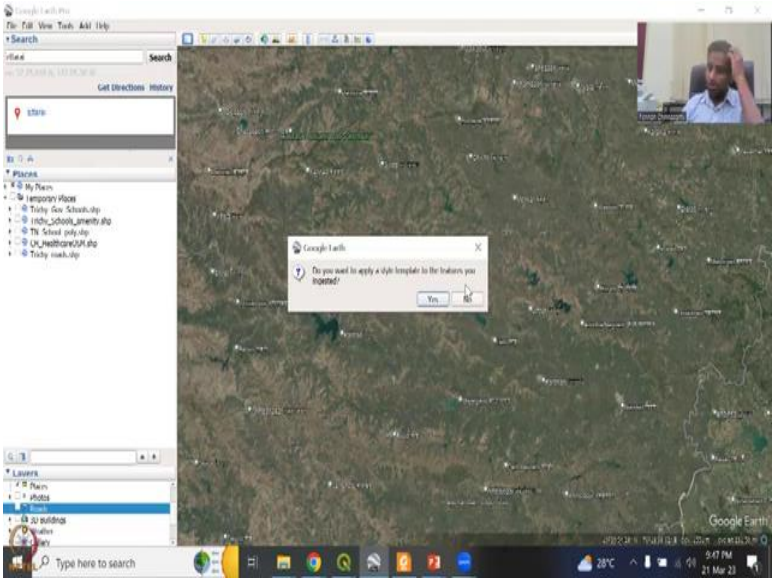


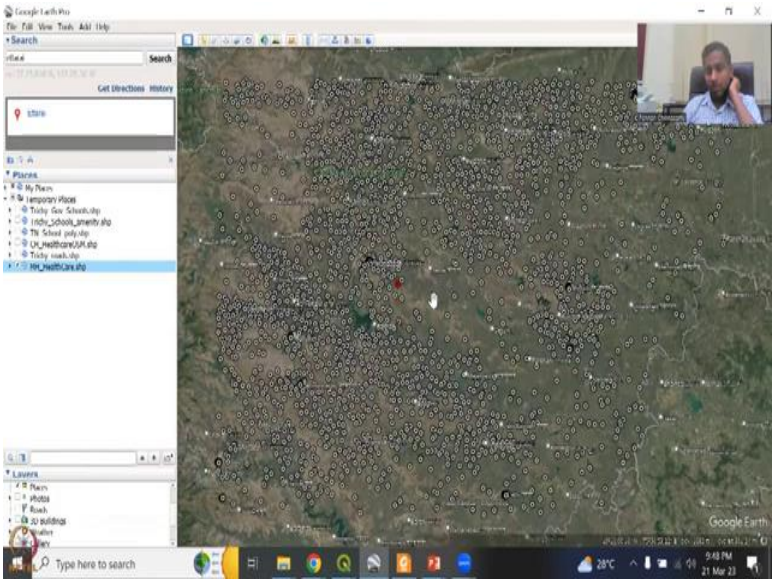


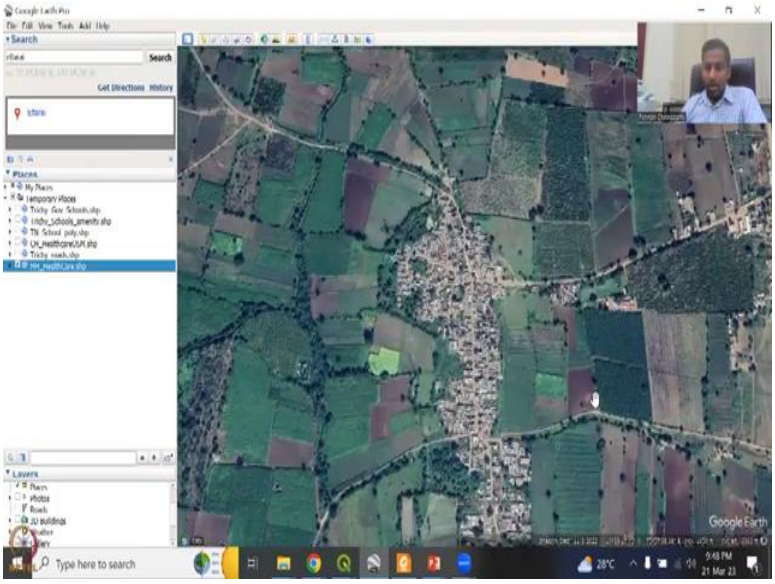


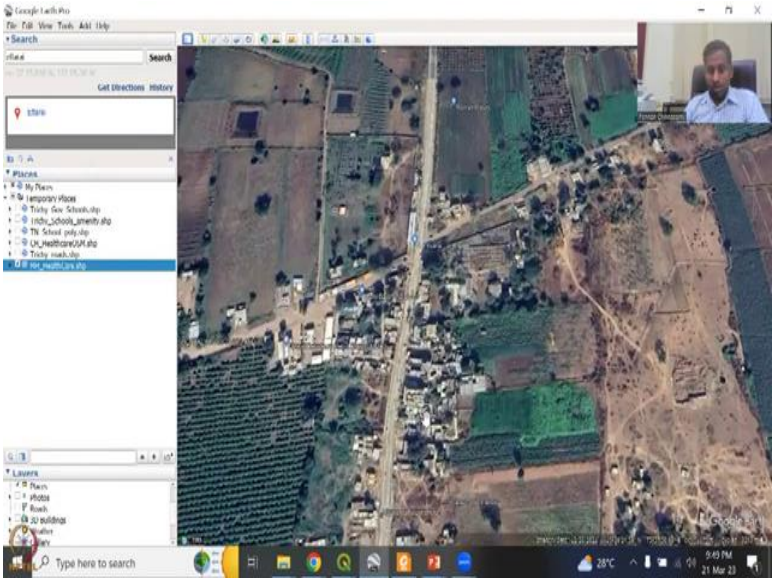

Data Import
This file contains more than 2,000 features and could cause application performance degradation.
Click "import sample" to import the first 2,000 features.
Click "Restrict to view" to only import features in the current view
Click "import all" to import the entire data set.
Click Cancel to stop the import process.
Import sample
Restrict to view
Import all
Cancel
Google Earth
Type here to search
28°C
9:47 PM
21 Mar 23

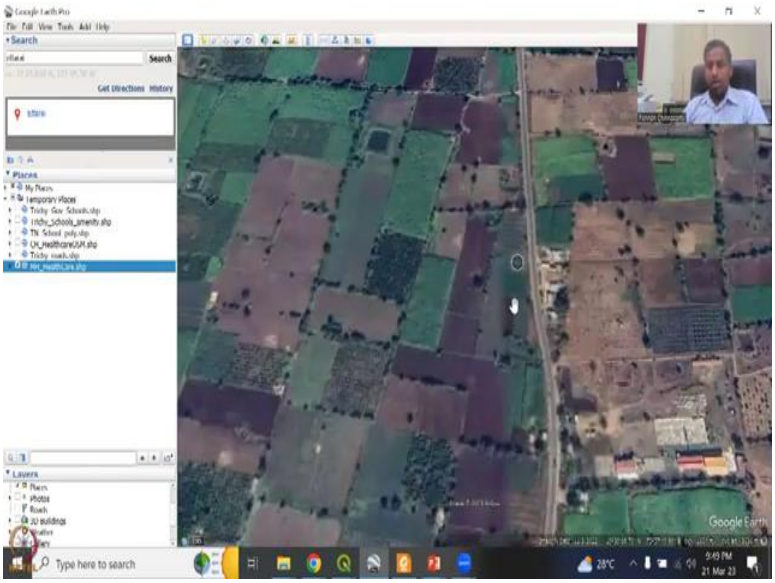

Google Earth
Only 2475 features were imported
OK
Google Earth
Type here to search
28°C
9:47 PM
21 Mar 23

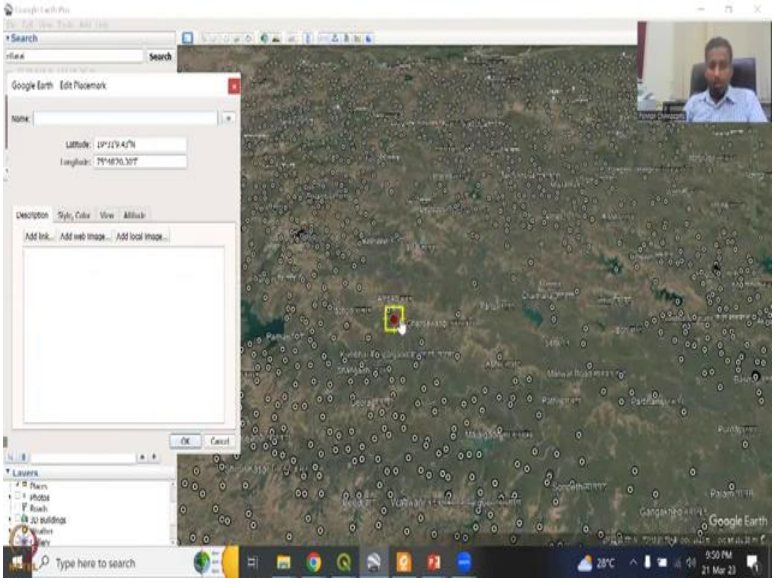

Google Earth
Do you want to apply a style template to the features you imported?
Yes
No
Google Earth
Type here to search
28°C
9:47 PM
21 Mar 23

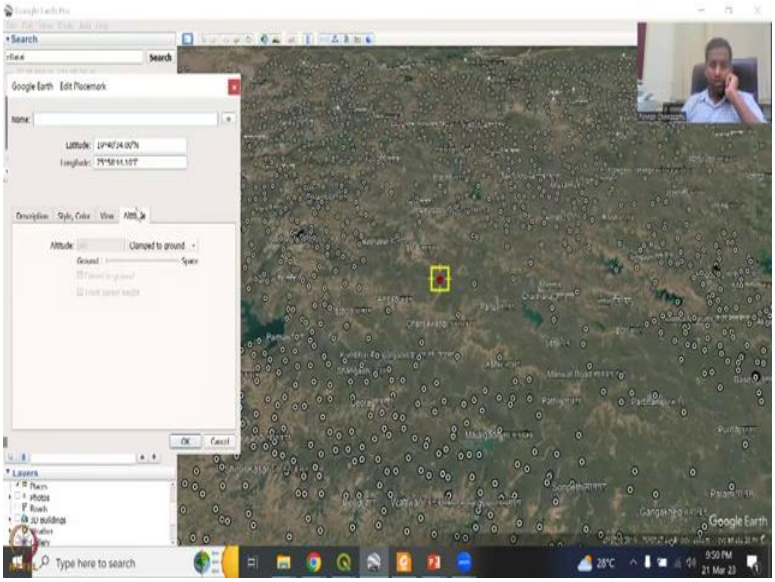

Google Earth
Type here to search

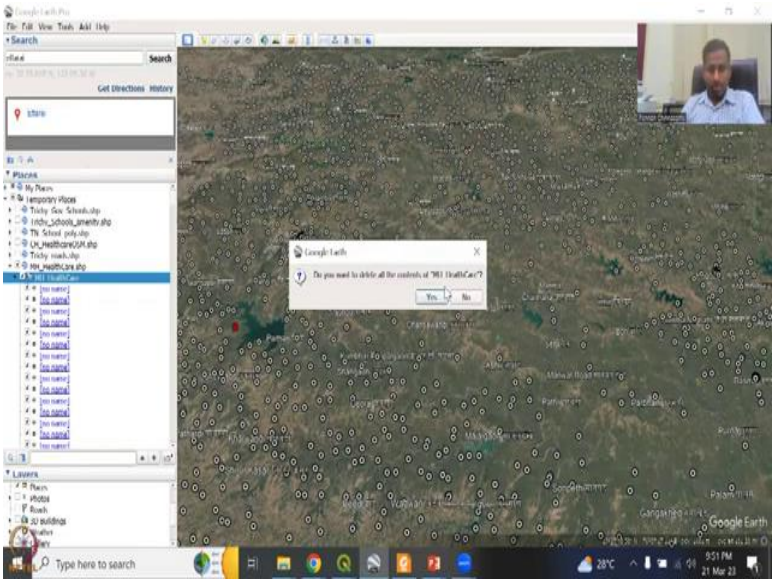

Google Earth
Type here to search

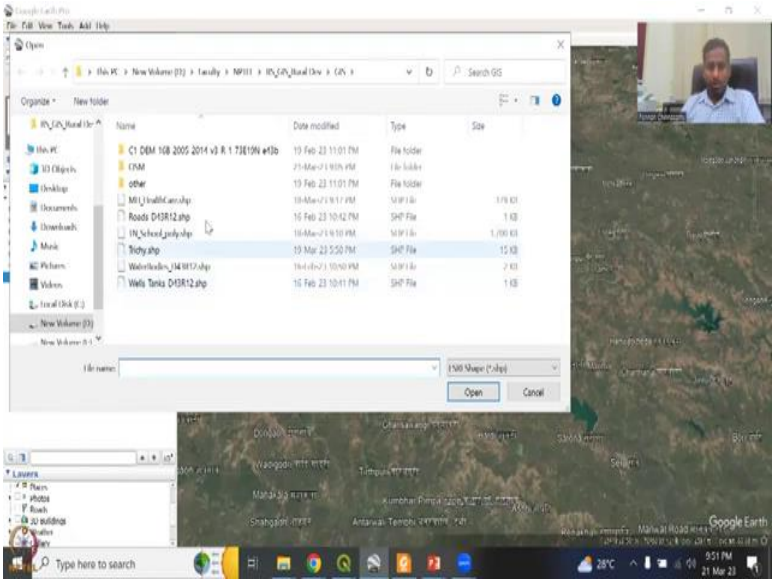

Type here to search

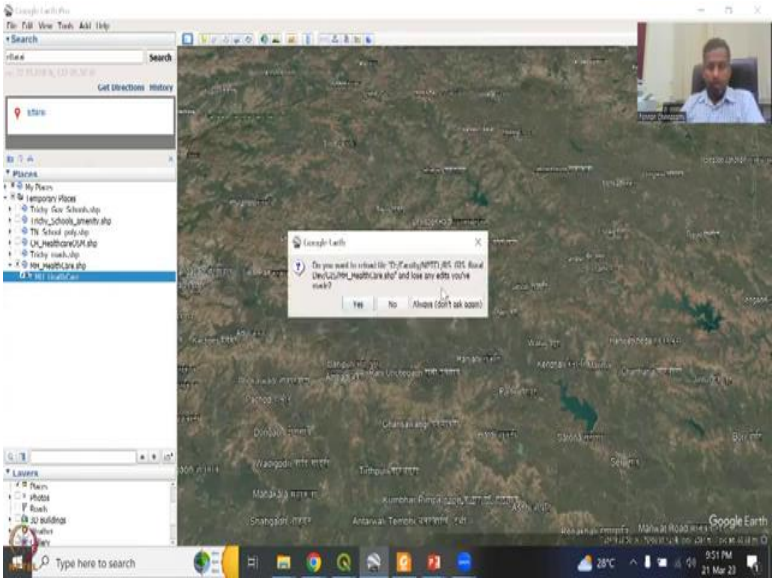

Google Earth Pro
File Edit View Tools Add Help
Search
Search
Get Directions History
Places
My Places
Temporary Places
Trichy Gov Schools.shp
trichy_schools_amenity.shp
TN School poly.shp
UK_healthcare/JUM.shp
Trichy roads.shp
Layers
Places
Photos
Roads
3D buildings
Type here to search
Google Earth

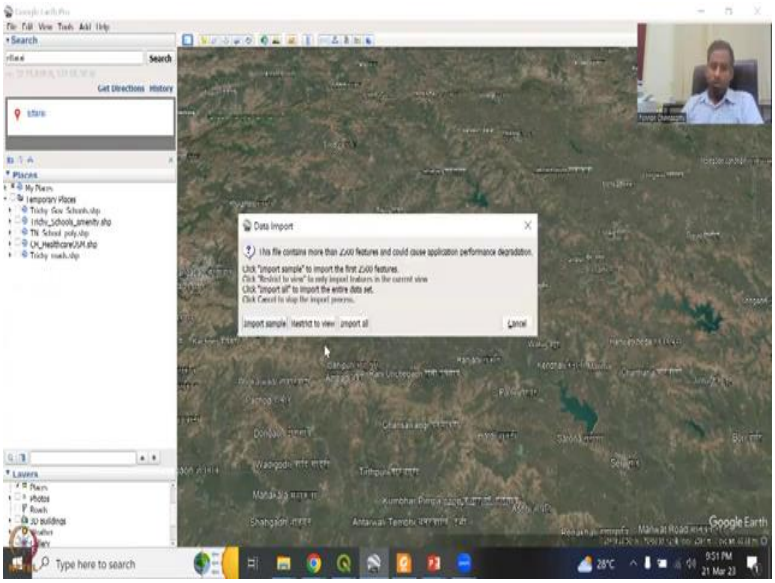

Google Earth Edit Placemark
Name:
Description Style, Color View Altitude
Add link... Add web image... Add local image...
OK Cancel
Layers
Places
Photos
Roads
3D buildings
Type here to search
Google Earth

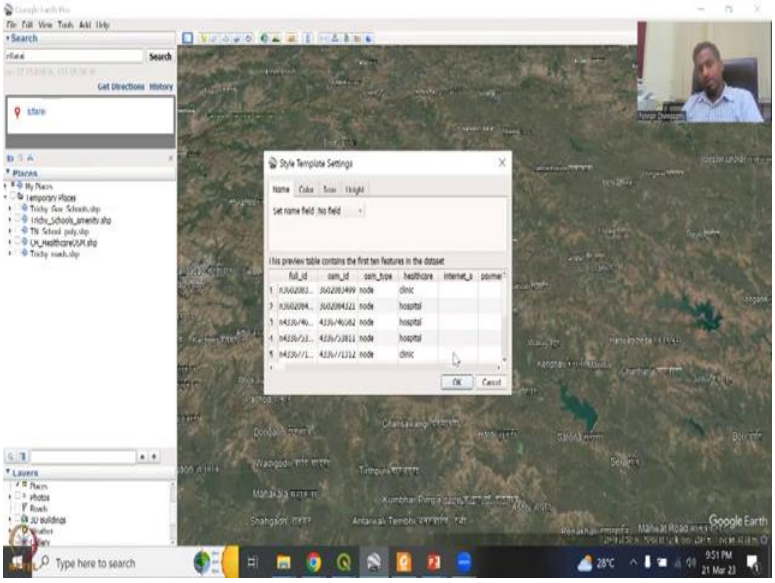

Google Earth Edit Placemark
Name:
Description Style, Color View Altitude
Altitude: Clamped to ground
Ground Space
OK Cancel
Layers
Places
Photos
Roads
3D buildings
Type here to search
Google Earth

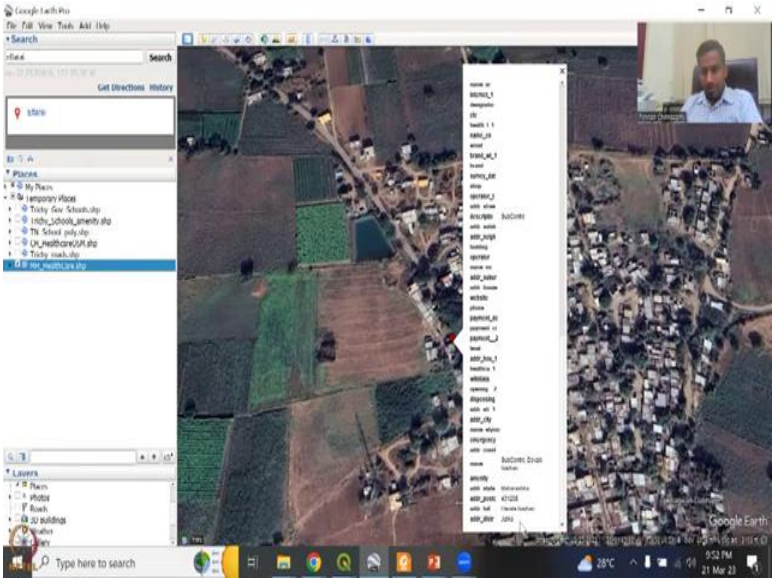

Google Earth
Do you want to delete all the contents of "MH_HealthCare"?
Yes
No
Type here to search
28°C
9:51 PM
21 Mar 23

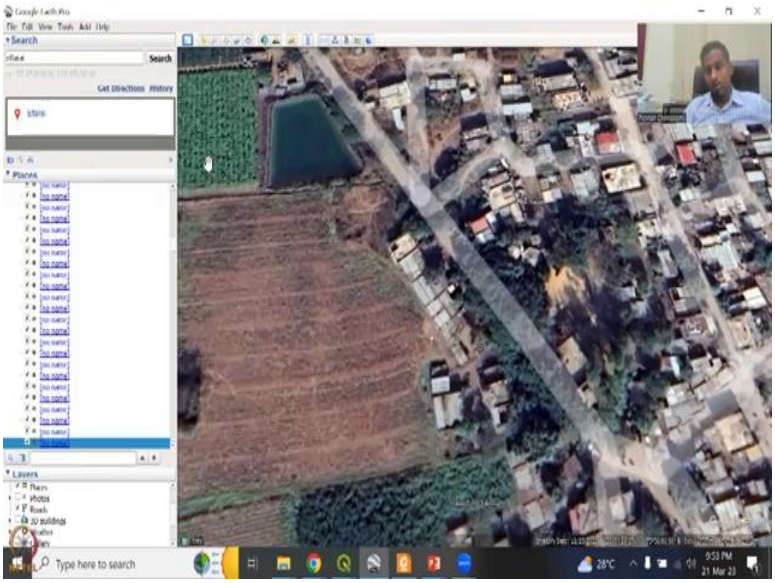

Open
Organize
New folder
Name
Date modified
Type
Size
Roads D43R12.shp
Trichy.shp
Wells Tanks D43R12.shp
Open
Cancel
Google Earth
Type here to search
28°C
9:51 PM
21 Mar 23

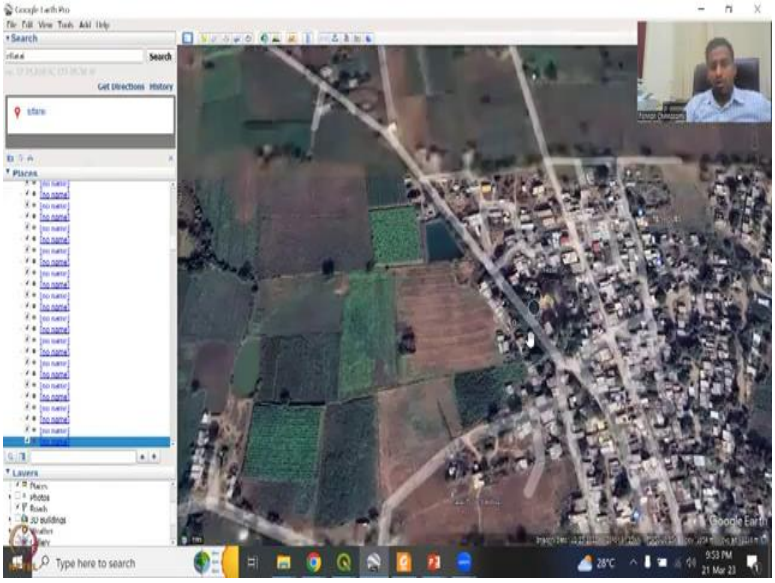

Google Earth
Yes
No
Always (don't ask again)
Google Earth
Type here to search
28°C
9:51 PM
21 Mar 23

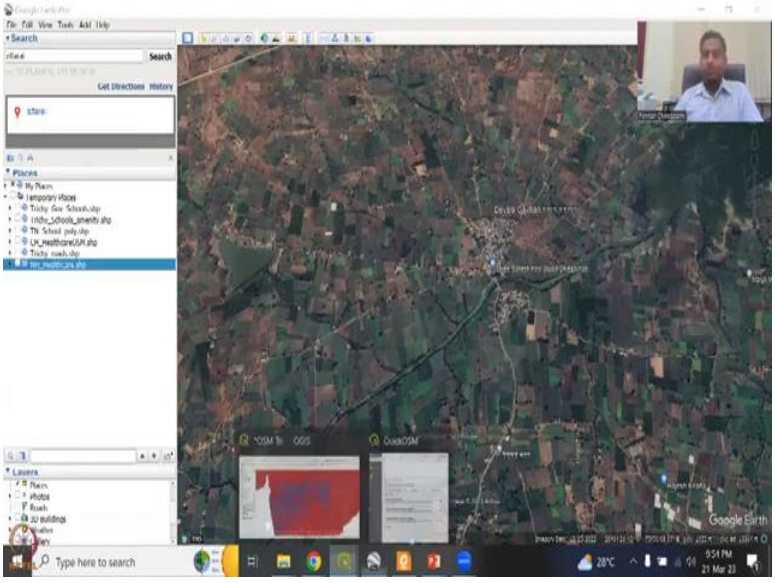

Data Import
Import sample
Import all
Cancel
Google Earth

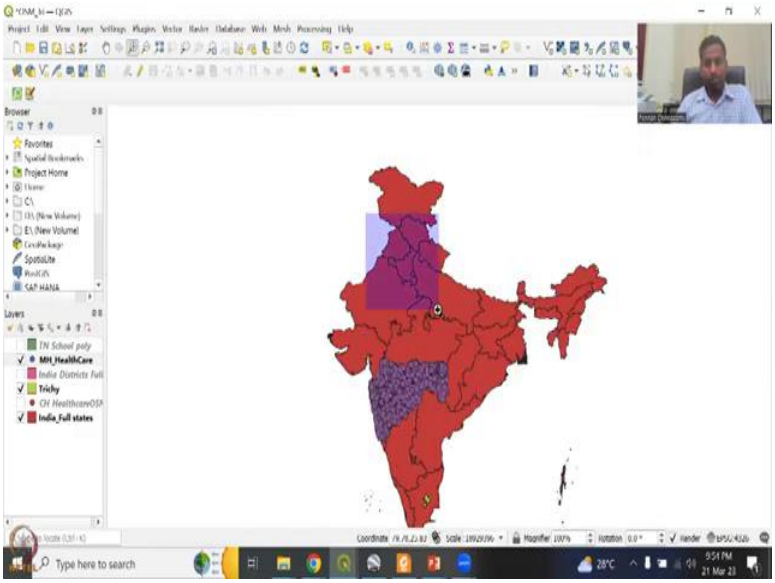

Style Template Settings
Google Earth

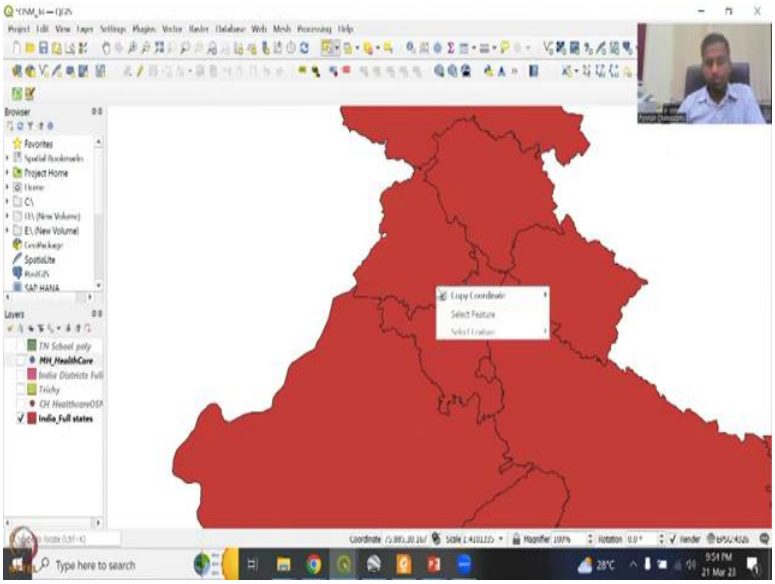

Google Earth

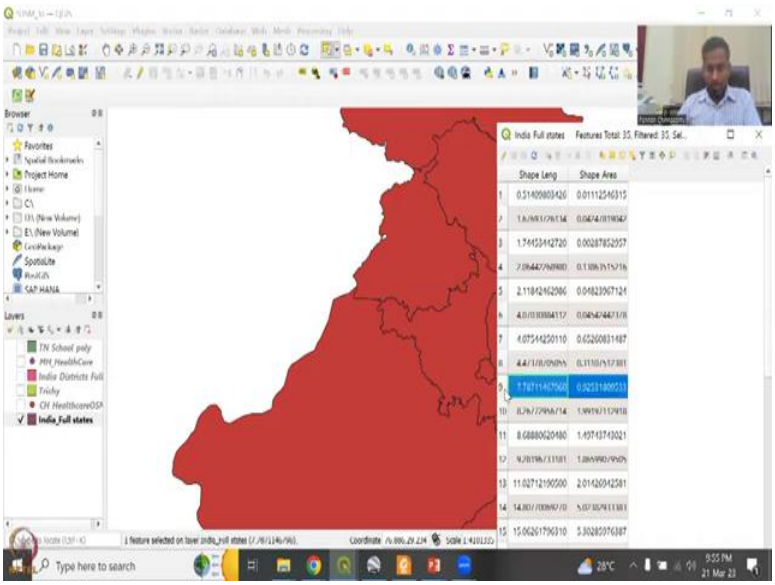

Search
Get Directions
History
Places
Layers
Type here to search
28°C
9:53 PM
21 Mar 23

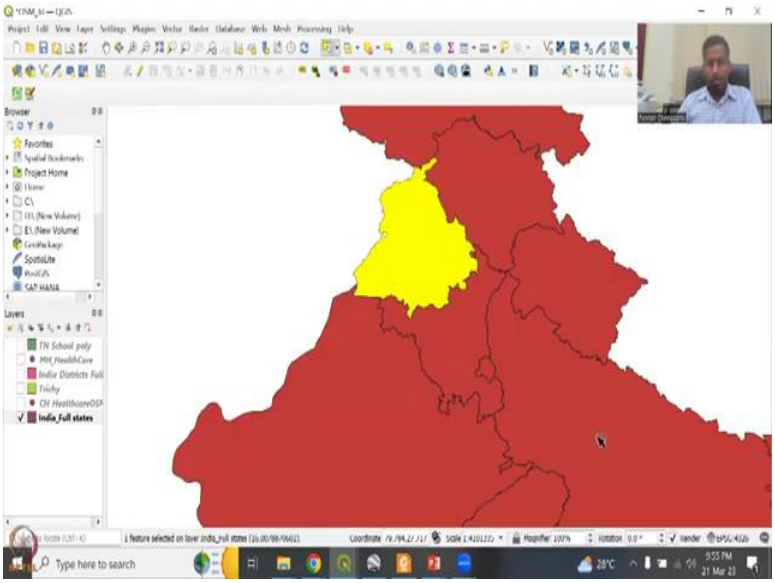

Search
Get Directions
History
Places
Layers
Type here to search
Google Earth
28°C
9:53 PM
21 Mar 23

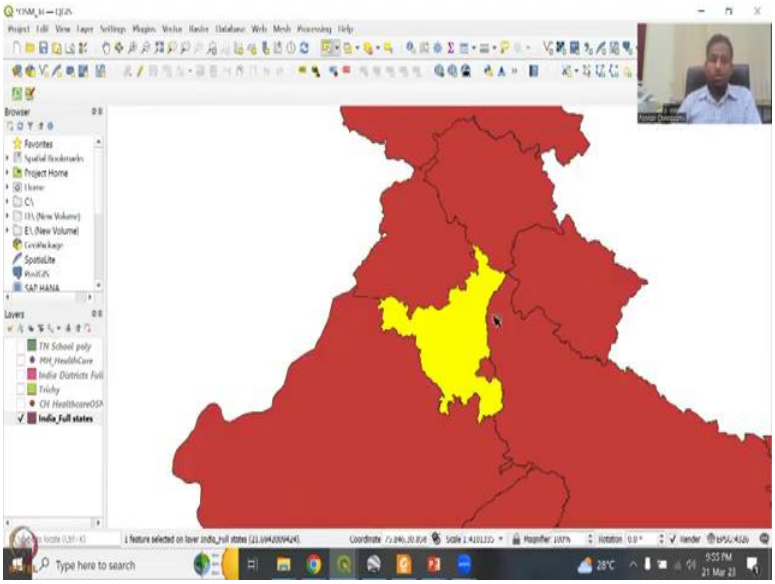

Search
Get Directions
History
Places
Layers
Type here to search
Google Earth
28°C
9:54 PM
21 Mar 23

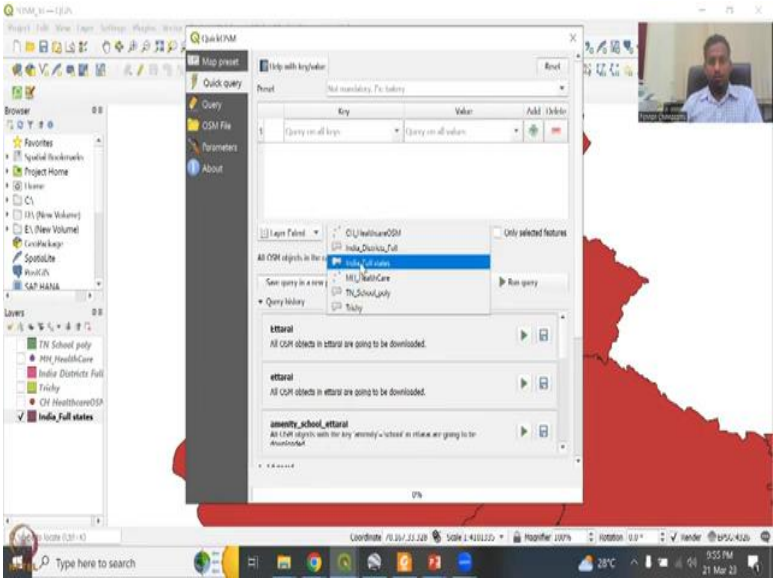












So, Google Earth Pro is now here. And first, we have to zoom out in Maharashtra before we input the data inside. So, this is the Maharashtra region. And it is going to go near and see which region Ahmad Nagar is really not having much hospitals as per this location. But if you would like to see that more of a challenge, so this region would be very, very underrepresented with a number of hospitals and wondering all the places codes are the roads.

So, this region Jana, and Ceylon region have very, very less hospitals, which we will be seeing pretty soon when we download that so I am just going to keep it as zoomed at this angle. So, because when I am going to open my Maharashtra healthcare shape file, what happens is the class there is so many points, we cannot do it has more than 2500 features, it cannot be populated. Do you want to import sample which means only to those 500 of the first the first two dozen final features will be taken and then subsequent second, so there is more than two dozen finally it has to stop? Or you can restrict to my view.

So, as I said, I do not care about Mumbai side hospital locations because those will be more accurately located all the Uber Ola everything is being mapping that location Zomato swiggy, Uber, Ola everything has because there needs transportation, but if you go to villages, there is no transportation, there is no all our car there. So what we are going to see is we do not as per se restrict view, if I say important will take a lot of time, I am just going to restrict to this view the features, it says 2000 features very important.

Do you want the style or the features to be ingested? I say no, I just want the buttons. Whatever default size is. And as I said, we are going to do a reset and this location so this location has very, very limited number of hospitals. So, I Ambar to Parture was very, very less number of hospitals. And if you zoom in, you will definitely see either locations of houses. All these are agricultural land.

Because a lot of agricultural land. And you can see there is a dairy and stores, there is a small village kind of thing. There is no hospital, no hospital located as per the OSM data set. But for sure, there is no hospital here in terms of number of houses and stuff. But if you can search for it and map it, then you are creating better access to rural health and stuff. So, it says like this, if there is no mapping of hospitals.

If there is no proper mapping done, then how do you know how much people are being catered to this hospital and especially during COVID, how many vaccines to be transported?

If we do not know the location, we do not know the distance, we do not know how many people are around, for example, there is a hospital here are a primary health care center phc, we call them and that the 40 houses that depend on so this is what is needed, the houses look big. So, maybe it is a progressive area.

But still it needs health care center, a doctor somewhere nearby. So, these are smaller, these are, again, kind of bigger villages. But if you go here, we have very, very small houses, number of houses. And there is a hotel, I think it is a small restaurant not a place to stay and the sensor is also long. So, this is where we could get some help from the we are going to double click. So, we can see the all the points here and only part of the points has been added.

Because it is actually taking the view that is restricted restricting to the view, and then in the mode of the properties to understand where the location is, as I said, if you can move now, so for example, the data is here, but it is accidentally placed like in the schools and other database, you can move it and then and then this can be used as a updated shape file in a GIS for making connections for making raster out of it interpolations.

And also most importantly, for making access maps, one of the built in Maps risk maps, which are very, very important for the rural entities, you will not see the name injector because we said we do not want the style to be injected. But I will do that also for this location, just as a case study. So, when you say state just goes out, it does not bother putting down the equation. I am just going to remove this for now deleting contents.

And then let us let us zoom in. And then we add the layer but only that particular layer we want to add. And the do you want to reload the file and lose any edits you made? Yes, I will say I want to leave the restrict to view and I want the 1000, I want the ingestion styles. So, that this this appeals can come and say and then you want to store it, I do not want to store it, I do not want to say what we need to say.

So, now we have all these files. Again, the same files are there, you can change the colors, styles, everything here, some part of it not all. And then sometimes the names also do not get populated if it is not there. So, now if you click the properties, all the names have been ingested. And as I said, it is even the name Dinah district. And you can see that it is in the chain and district. So, let us see how the Hospital is located.

This also looks like a village, a small village with very, very small coverage. And then let us see what it is it is a health center. And health center says of center TV 81, which is good. So,

we now can map it. So, just to showcase that you also have roads and labels in Google Earth Pro, right. But these are more like roads based on the color of the image. So, automatically, you can see that they are extracting because I am saying this is there is no name, there is no name for the road.

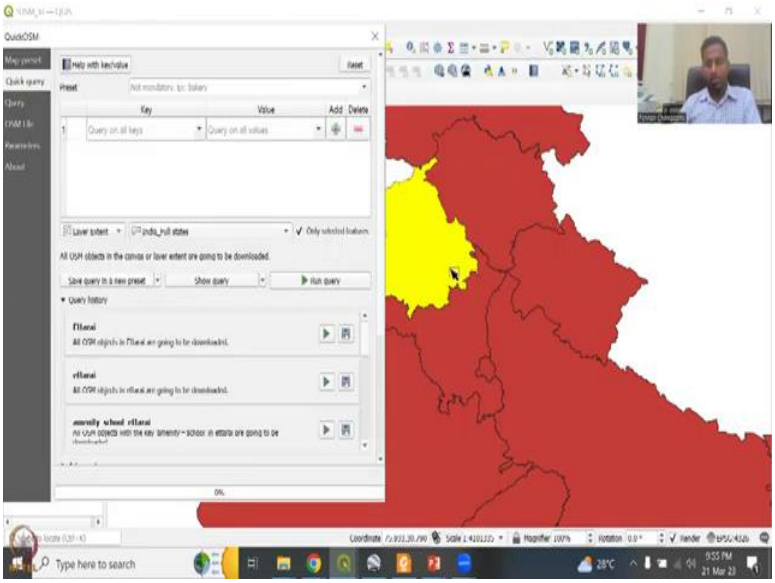
And the road cuts through some of the road goes here. So, all these are very important to give access. But more importantly, the hospital is missing. So, there is a positive in using OSM plus Google Earth Pro remote sensing data plus your GIS data. So, for example, this is the hospital but it is placed here you all you have to do is go to Properties, just clicks. The name is already there in the properties. You just move it here and say and now if I click again, you will see all the data but now in a mode building.

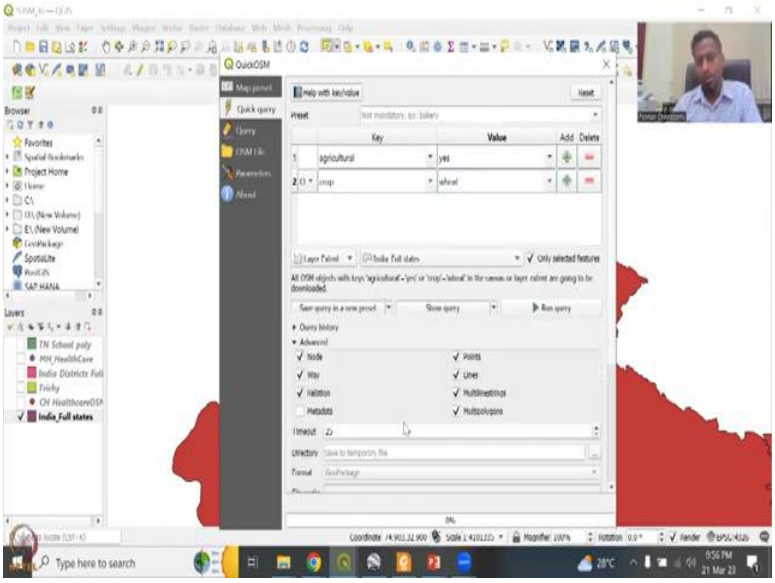
Because I have moved it from here to there. So, you can just move again by saying properties. And looking back this place normally, if you go to health centers, you will see a tree around people, for people to sit and rest. And that is part and parcel of the networks, then so we do have a good understanding now of how to use it in a big state, zoom in to the location, you want only that location takeout, because we do too much in Google Earth also it will suffocate and will drag a lot of your memory and internet speed.

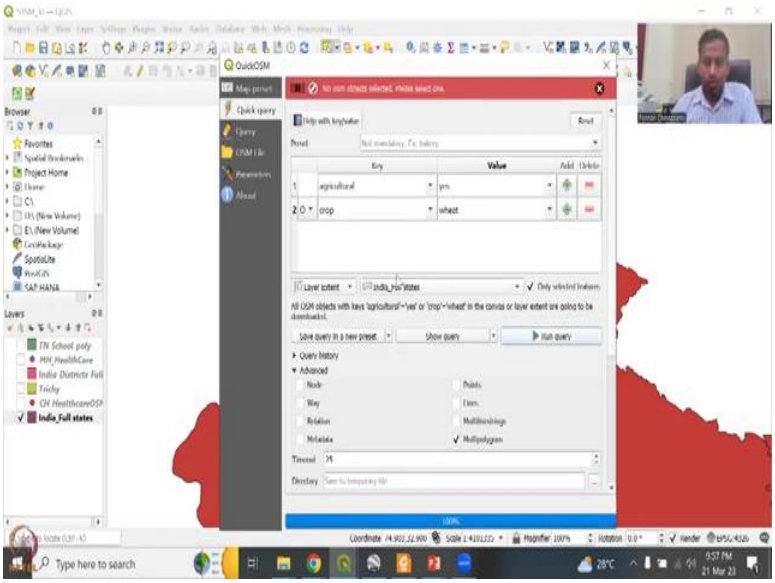
So, make sure you do that. Google Chrome also needs internet. So, just make sure you just use one just truncate your work to, what you want? So, good we have stopped here for the health care centers and stuff. Now will go to crops and agriculture fields in general Tamil Nadu or Maharashtra, Maharashtra is too big. So, let us go down back to the area. So, Punjab is being using a lot of Haryana Punjab has been using a lot of groundwater and we can actually see what crops they are growing by subtracting that.

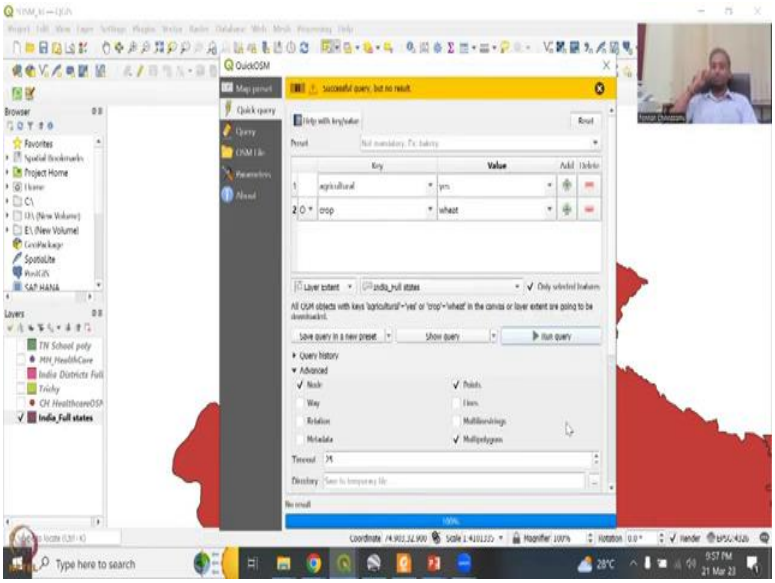
So, let us do that we will have this one selected as usual it does let us select one let us see and go to properties and then open attribute table you can select one and select all. Now it will allow you to select for some reason in the spine. So, let us say this this part is where the groundwater is typically a strategy will do will do this one and then I am going to extract now on the India full states we always send for cops.

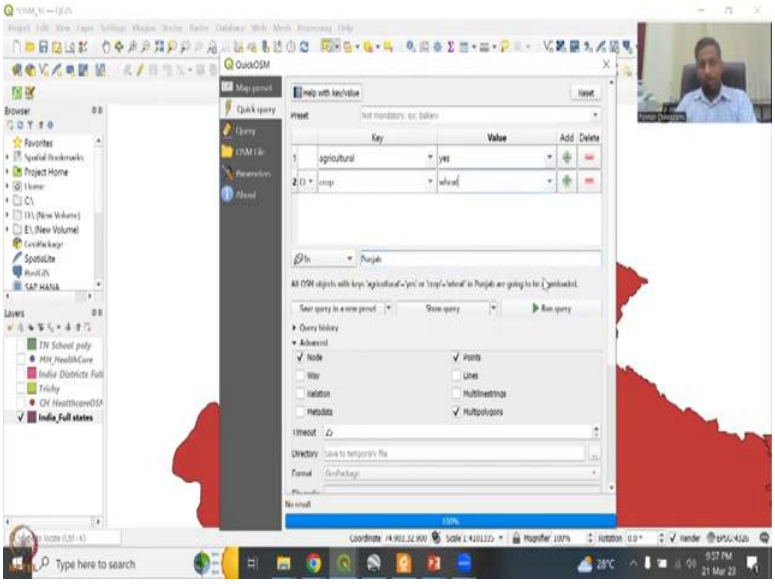
(Refer Slide Time: 17:07)

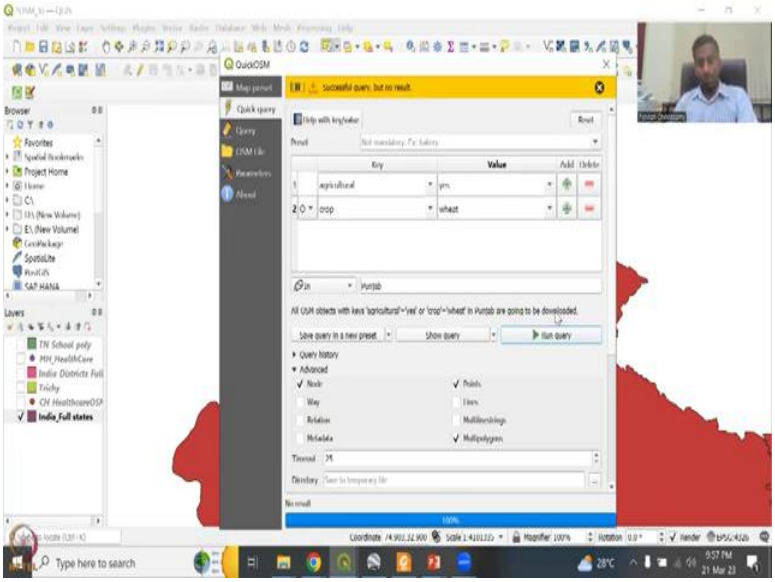


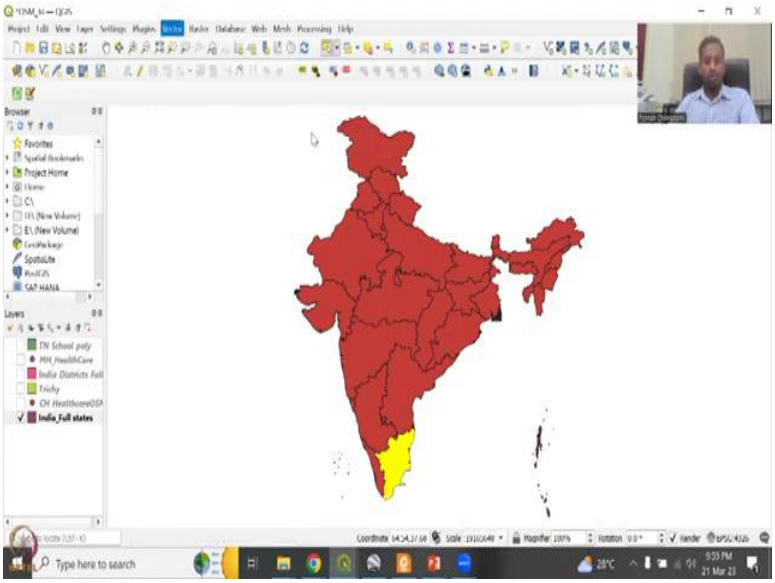


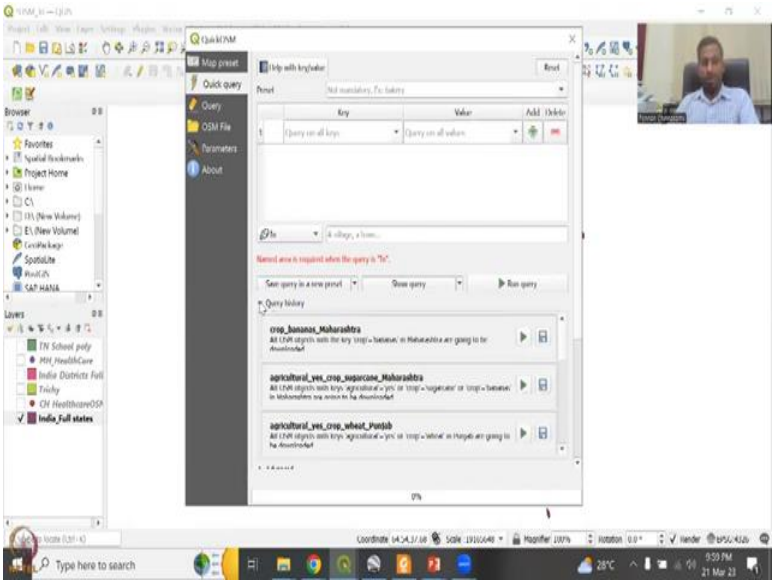


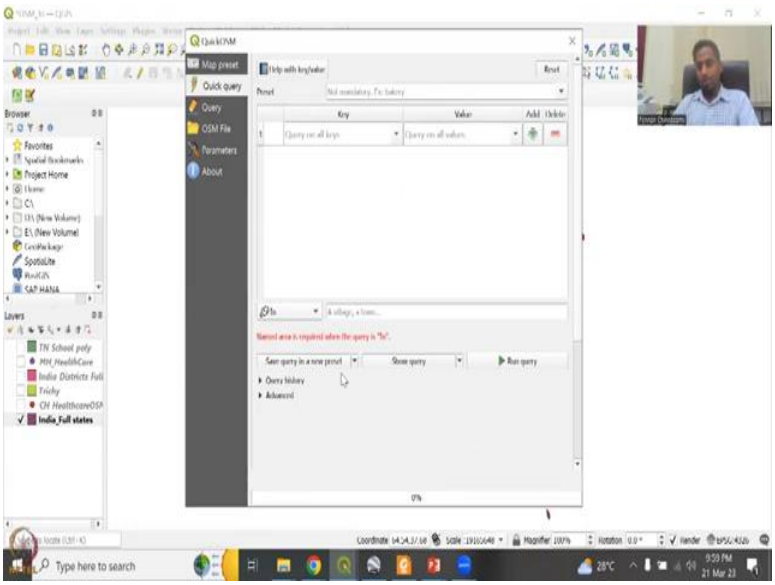

QuickOSM
Successful query, but no result.
Help with key/value
Reset
Key
Value
Add
Delete
agricultural
yes
crop
wheat
Layer extent
India_full states
Save query in a new preset
Show query
Run query
Query history
Advanced
Node
Points
Way
Lines
Relation
Multilinestrings
Metadata
Multipolygons
Timeout
Directory
No result
Type here to search

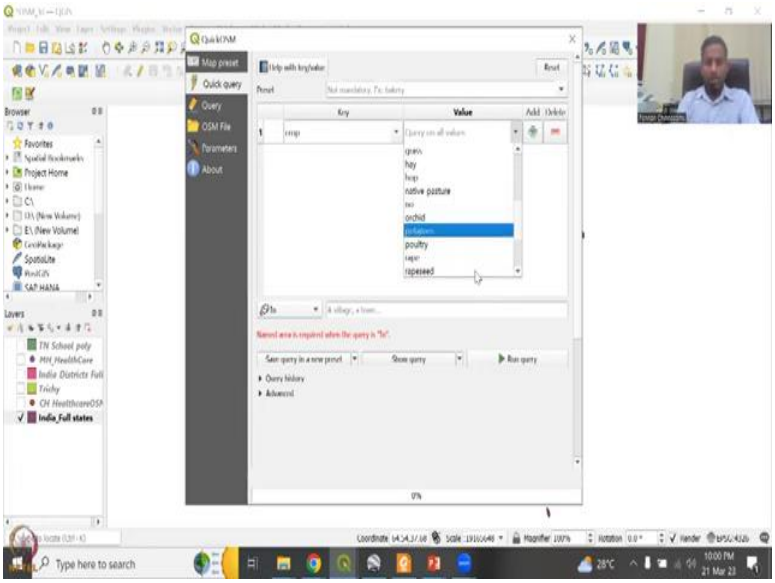

QuickOSM
Help with key/value
Reset
Key
Value
Add
Delete
agricultural
yes
crop
wheat
Punjab
Save query in a new preset
Show query
Run query
Query history
Advanced
Node
Points
Way
Lines
Relation
Multilinestrings
Metadata
Multipolygons
Timeout
Directory
Format
No result
Type here to search

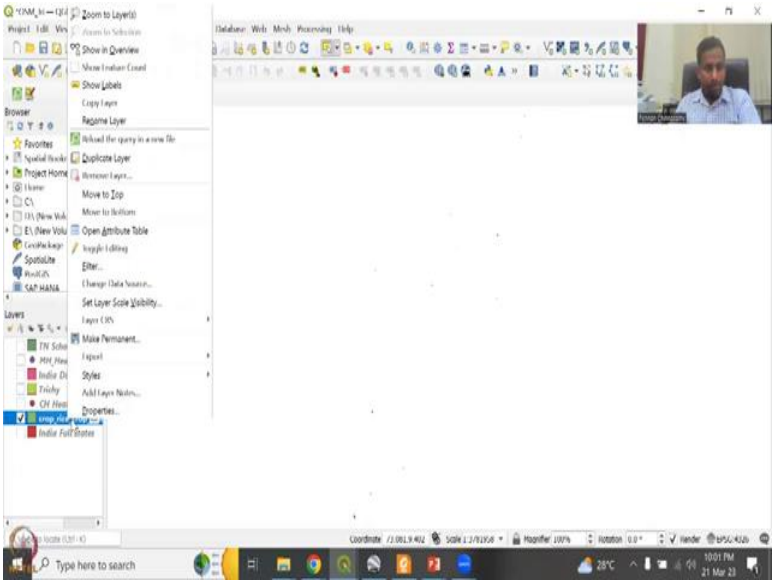

QuickOSM
Successful query, but no result.
Help with key/value
Reset
Key
Value
Add
Delete
agricultural
yes
crop
wheat
Punjab
Save query in a new preset
Show query
Run query
Query history
Advanced
Node
Points
Way
Lines
Relation
Multilinestrings
Metadata
Multipolygons
Timeout
Directory
No result
Type here to search

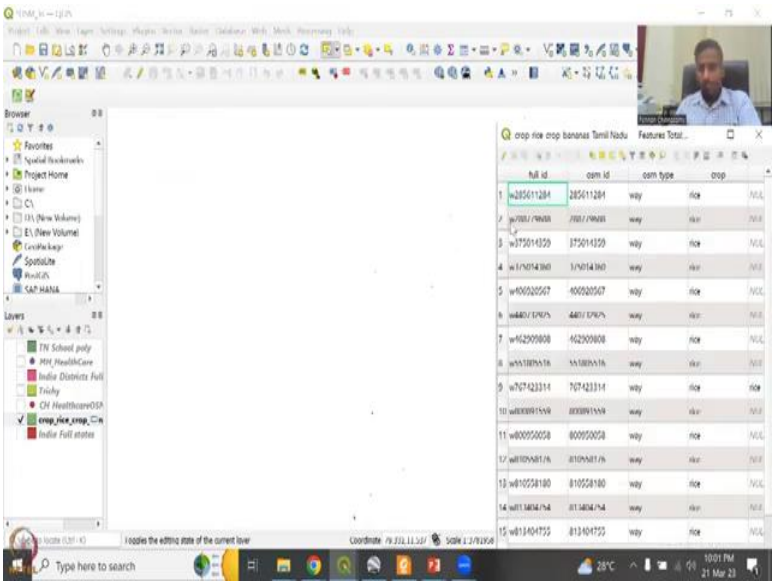


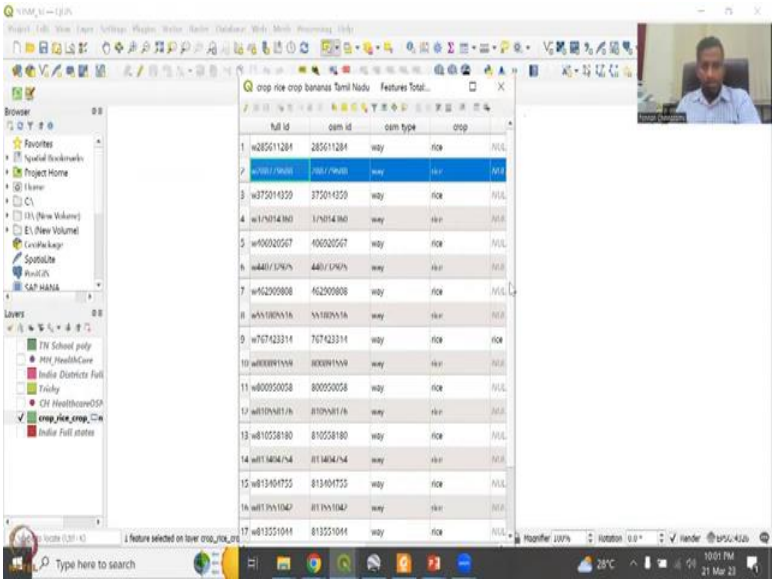

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Reset
Key
Value
crop_bananas_Maharashtra
agricultural_yes_crop_sugarcane_Maharashtra
agricultural_yes_crop_wheat_Punjab

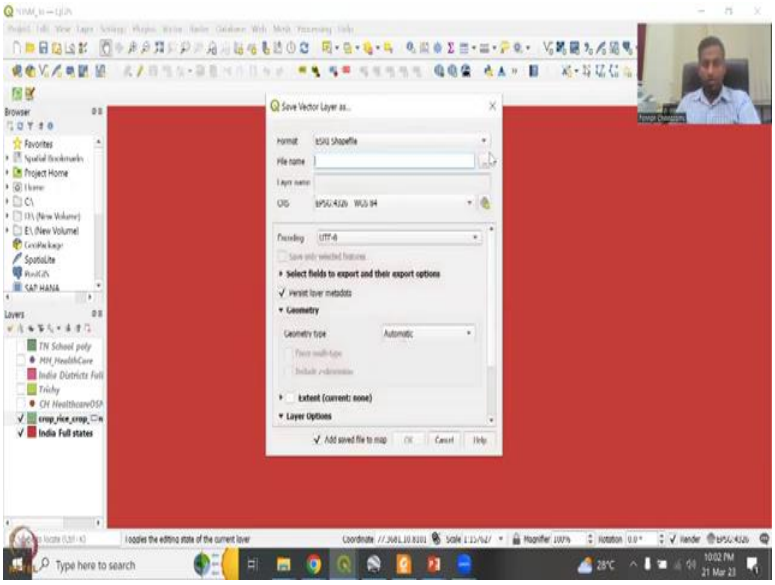

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Reset
Key
Value

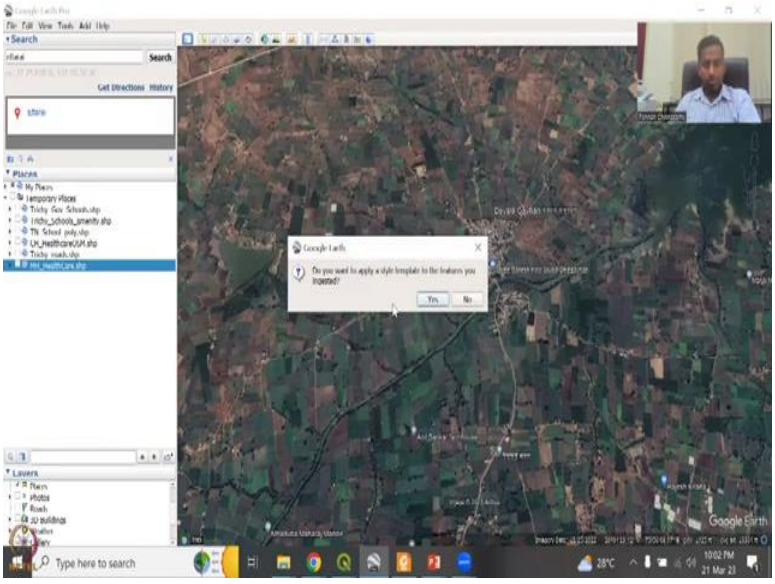

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Help with key/value
Reset
Preset
Key
Value
Add
Delete
crop
Query on all values
grass
hay
hop
native pasture
no
orchid
pollution
poultry
rape
rapeseed
Save query in a new preset
Show query
Run query
Query history
Advanced
Browser
Favorites
Project Home
Layers
TN School poly
India Districts Full
Trichy
India_Full states
Type here to search

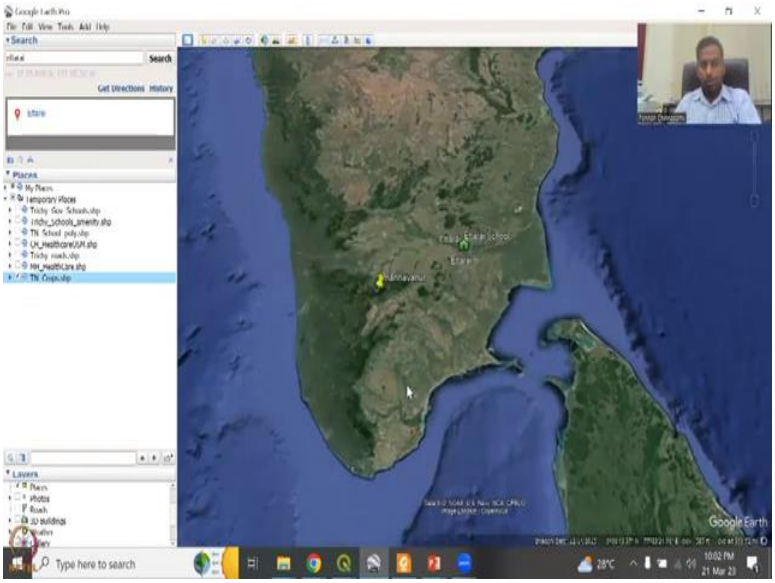

Zoom to Layer(s)
Show in Overview
Show Labels
Copy Layer
Rename Layer
Reload the query in a new file
Duplicate Layer
Remove Layer...
Move to Top
Move to Bottom
Open Attribute Table
Toggle Editing
Filter...
Change Data Source...
Set Layer Scale Visibility...
Layer CRS
Make Permanent...
Export
Styles
Add Layer Notes...
Properties...
Database
Web
Mesh
Processing
Help
Browser
Favorites
Project Home
Layers
Type here to search

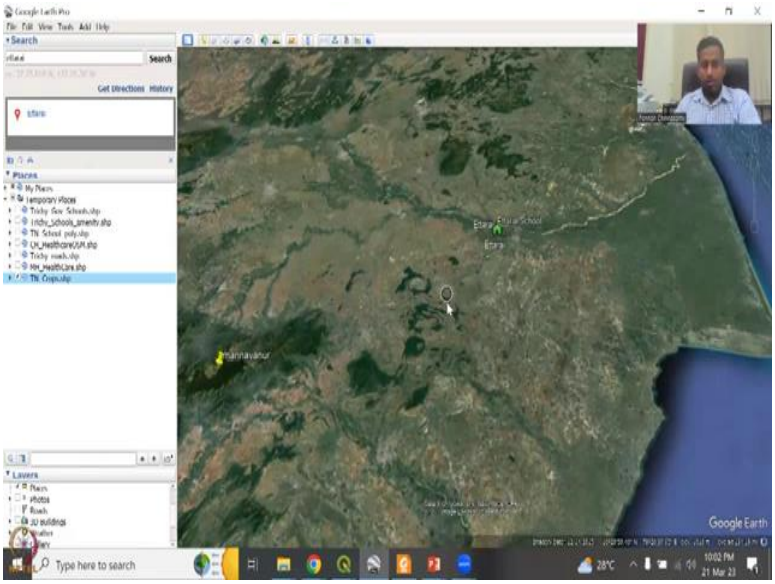

crop rice crop bananas Tamil Nadu
Features Total...
full id
osm id
osm type
crop
Browser
Favorites
Project Home
Layers
TN School poly
India Districts Full
Trichy
India Full states
Type here to search

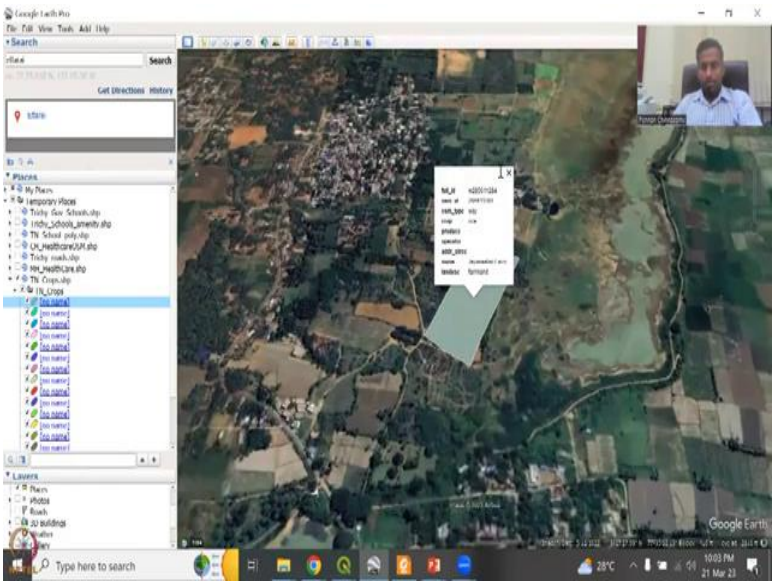

crop rice crop bananas Tamil Nadu Features Total...
full id
osm id
osm type
crop
Browser
Layers
Type here to search

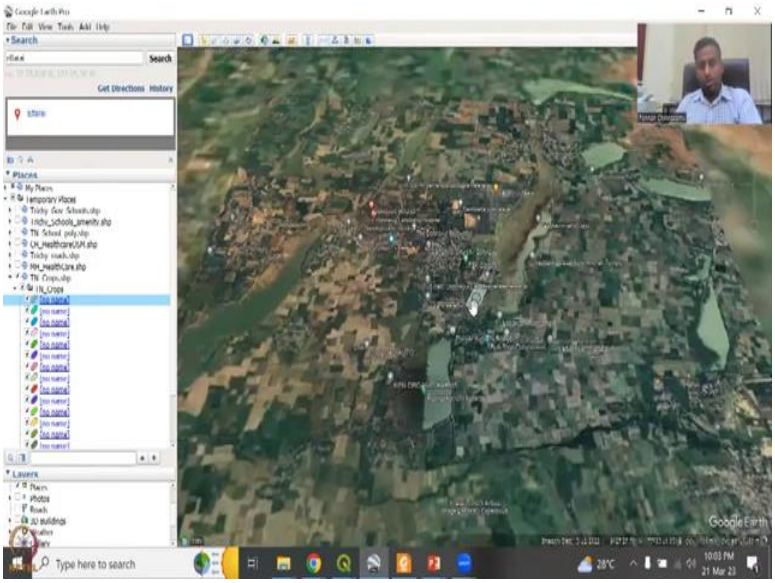

Save Vector Layer as...
Format
File name
Layer name
CRS
Encoding
Select fields to export and their export options
Persist layer metadata
Geometry
Geometry type
Automatic
Extent (current: none)
Layer Options
Add saved file to map
OK
Cancel
Help
Browser
Layers
Type here to search

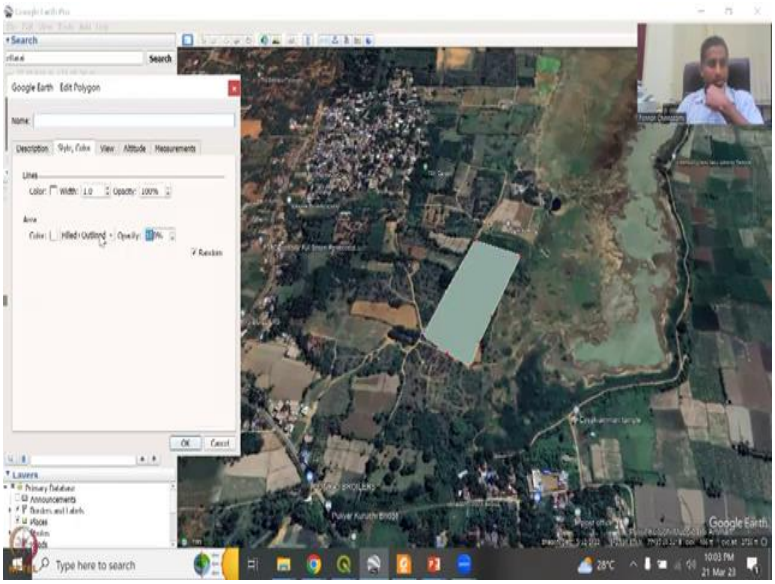

Search
Get Directions
History
Places
Layers
Google Earth
Type here to search

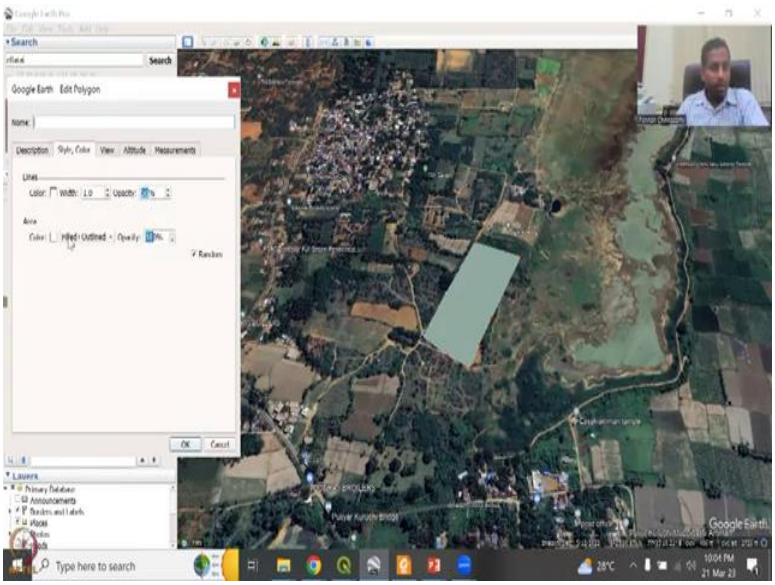

Google Earth
Type here to search

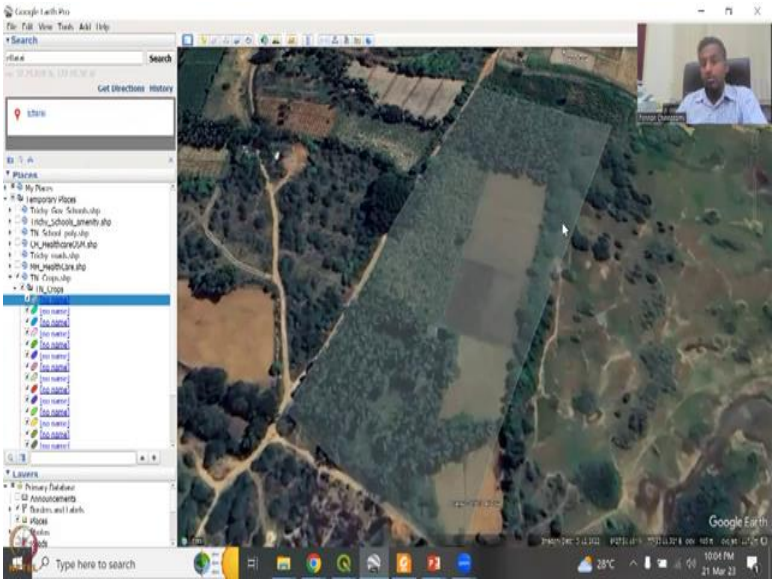

Google Earth
Type here to search

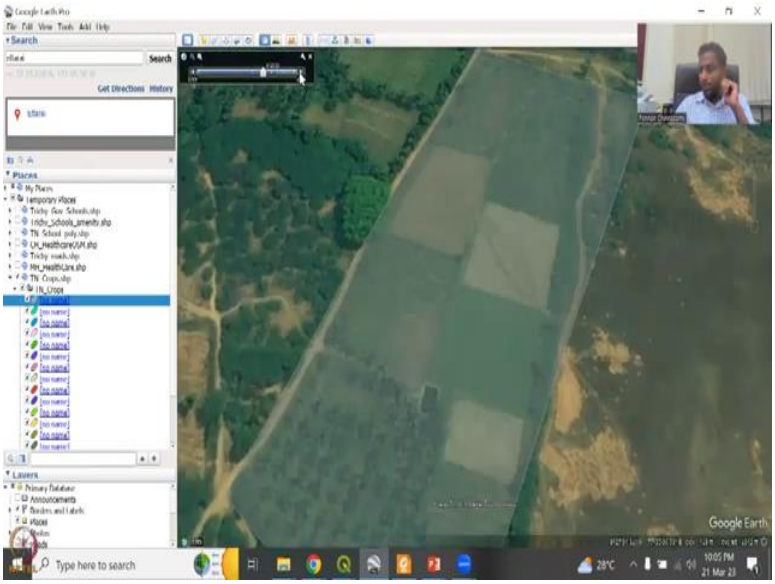

Google Earth
Type here to search




Google Earth Edit Polygon


Google Earth Edit Polygon





So, I am going to first put inject my layer so I am going to say layer India full states and only the selected layers only this layer will come up because I have selected it and then now I will say agriculture I like to actually use this data rather than the preset.

So, let me go back here and say agree and you will see in the agricultural key. How many are there is designated non designated et cetera will just use everything, I got to go so yes no designated, public self, Private official we just say yes. So, that will add it and then are then we can say crops this is a beauty now we can actually map the different types of crops. So, if you want to take out the agricultural land or just for poultry, chicken feed chicken farms etcetera you can do but I am just going to say in there we have wheat and yes, we have to map the wheat data and then let us see how much of these returns.

So, see how interesting it could be just to make questions out of this we can have advanced we can have nodes polylines we can have polygons also calling us run query know some object is selected. So, we just say nodes and points polygons. So, always knows has to be selected. In this now successor will carry but no reset. So, for some reason, the data has not been mapped.

And these are the regions where there are tons of data that are needed to be mapped. So, if that is the case, if it does not go by the area, I will show you the other way around in and around Punjab. We do know Punjab has a lot of agriculture and crops. And then we can see it now done the same way again, if we are lucky, will find a lot of crop area. So, it says again, which means that not much data has been given for that reason, which is fine. We can use Let me double check this one.

And what will do now is we will clear this aspect and then we will now we will now go to Tamil Nadu to take crop data. So, let us first zoom in to this layer. And then we can take Tamil Nadu as a selected area, and then will go to earthquake or Assam we would like to see what data they have and then I will also add an already some crops for Maharashtra I will show you how different they are.

So, this is where we could use this data for cross checking the data for Maharashtra and a Tamil Nadu for grown to thing etcetera So, we can say are the culture you have crafts and agriculture has presets you can say crops there is no preset for crops. So, the best way is to put it here scrub data and then in this you can say that, what do you want in terms of Tamil Nadu I know they grow rice a lot paddy so there is no paddy. There is rice here and let me add it and say or you cannot have Paddy and both barley and rice and banana because it grows in different seasons.

So, we can say canvas layer extent or we can say Tamil Nadu , I am just going to say Tamil Nadu here just to see if we can have a different in aspects and this is going to run everything so that if we have polygons also we will get it so the query is running now for rice and bananas, we know that especially in some regions, there is a lot of rice growing there and bananas especially the chips that they make grow there are a lot of export is being done to other places.

And you could see that mostly it is a polygon that has been exported beautifully the data has come off as polygons and we will just minimize this and close this and then go back here

remove the selections just see zoom to layer and you will see that small particles are there but we will not see it until and unless we zoom in to this part in terms of properties it is very small. So, what we do is also type is way as a path.

So, sometimes we do have you can zoom in to a particular region and then see if for example this region may or may not have crops into the data set. But first let us export this as a save feature as PN prompts and then say save the file and then we go here say open en in stops say we do not want the style for now. So, for some so you can see that you could select a particular crop out and then keep it in crops and banana as we have said, the only issue here is being the boundaries the same? We can establish that by first double clicking here and then will say borders on the bottom.

So, it is it is you cannot see it that small in GIS that is why we exported as a shape file and then created a link. So, let me see. For example, they have a particular crop and it says rice can see this and then I am going to open the properties make it opaque style color go to opacity is 100 percent is going to add 50 percent so that we can see the land history is not reasonable. Style color is 50 percent Area color can be 50 percent also.

So, now you can see that they claim they claim that all of this is rice, but technically it is coconut and some other things are so here's where the data issue happens. But in some regions like a pink belt of crops, like in Maharashtra, the sugar cane etcetera. We are able to see a good link between the datasets. So, first, let us do look at this. And maybe it was when the data was taken it was a rice, we do not know.

So, that is what we are going to see here in 2006. Yes, so all of this has been rights. So, this is a very, very important finding we have here, I will tell you why. So, rice requires a lot of human time, in terms of management, water, irrigation, and harvesting, there is a lot of labor that is needed. Not always you can have a tractor that can come in because look at the small roles, it is very, very hard to bring a tractor into these fields for changing the landscape and study.

So, what normally happens is slowly, slowly, like look here within 4 years, so I am looking at 2006, where everything is the same plan there is no there is no bifurcations. But then after that, what happens is there is a bifurcation in the land, and you have some growing coconuts, and other things. So, coconut does not require that much management like rice, there is no

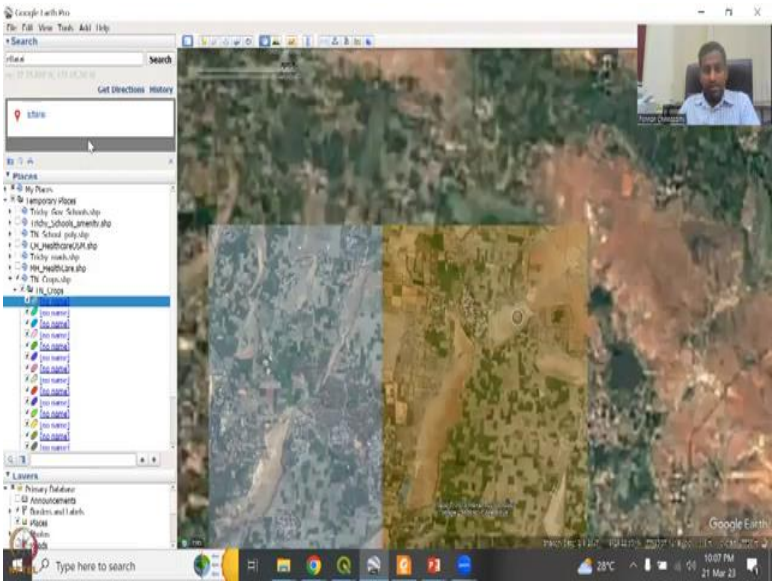
every year till like every year fertilizer application and intense labor for sewing and stuff, only one time you would so for that.

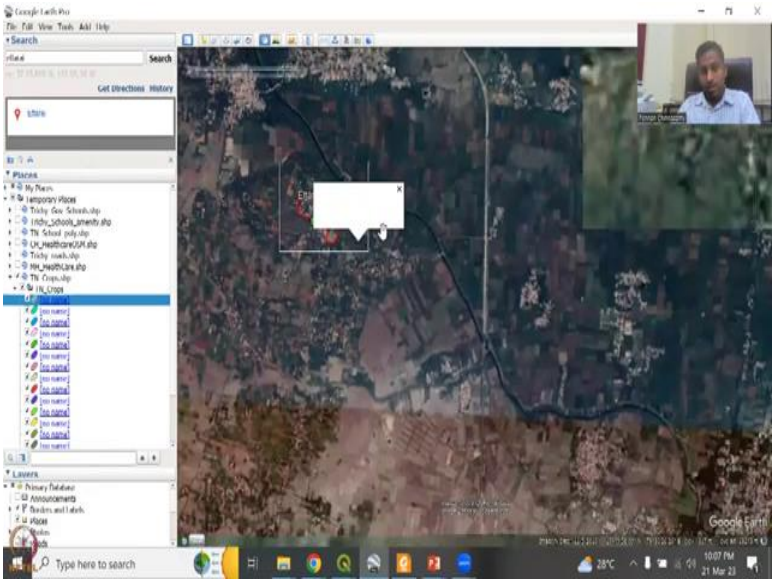
So, look at this, they have divided the land now. And slowly some part has been done for party culture, these are like fruits or vegetables, or flowers, and then you have coconut and then you have other aspects. So, everything is beautifully done here. And then this, this is how the power of remote sensing and satellites is, with ground sourced data, you can actually map and take the data out for your particular area of interest.

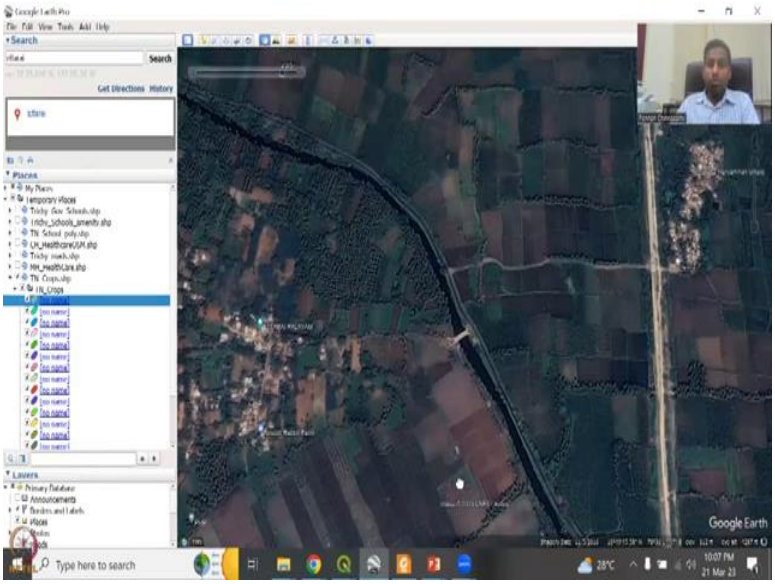
So, in QGIS, as I said, you could not see it very, very small. Because the size is very small. But if you go to the attribute table, you did not notice that. No, it is it is small, but the area is there. So, for example, here, just filling form, just want to click it. And then we can click it on to this map, and then say zoom to layer, zoom to selection, there, you can see that see the person, so the person was not visible in the huge frame, when terminado entire seminar was shown, you see is very, very small, very, very small.

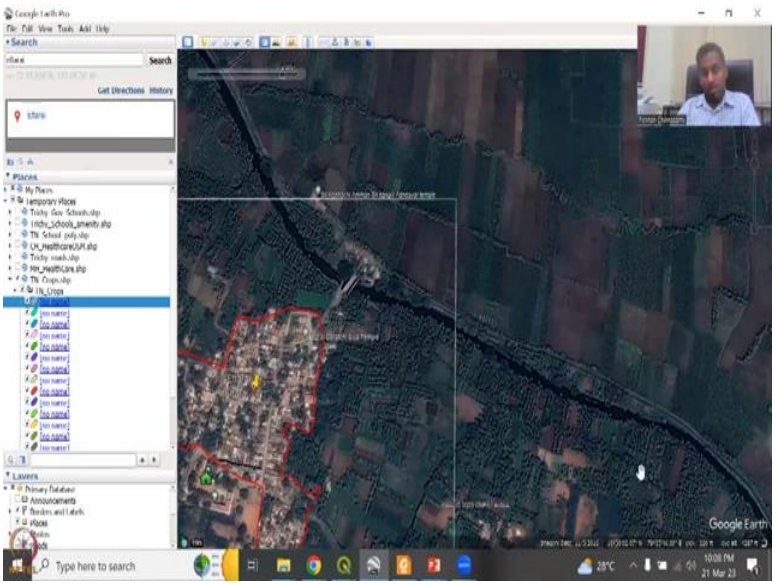
But still, there is a lot of attributes like this. So, the best way to see maybe the coloring also can help. And then you can see all of them to be zoomed out right. So, here is a big farm here, there is a small farm there. And around the T my area where a lot of rice is grown, we know that there is a lot of rice. So I am just going to close this part, go back to Google Earth, and then show that this is a quick way of assessing.

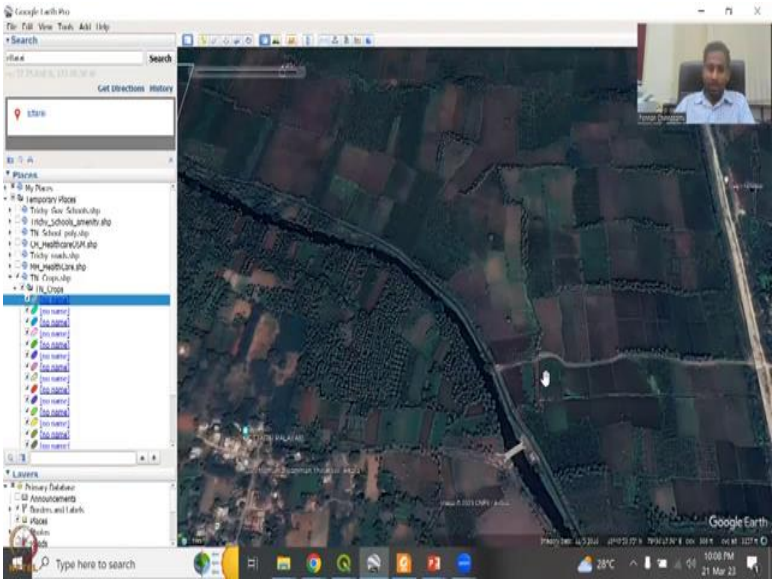
(Refer Slide Time: 27:49)

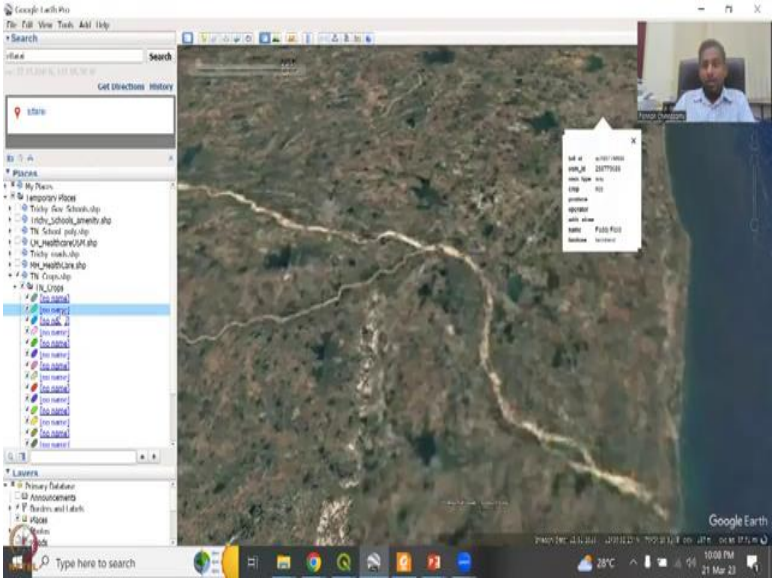


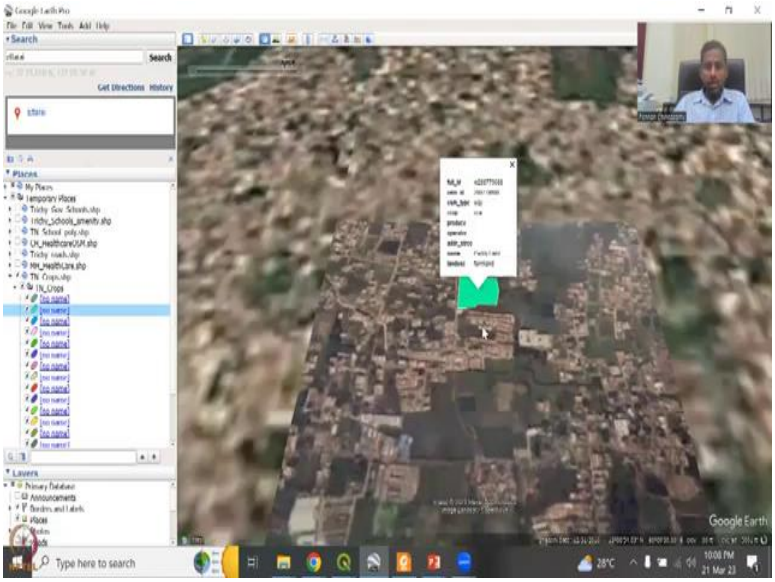

Google Earth
Type here to search

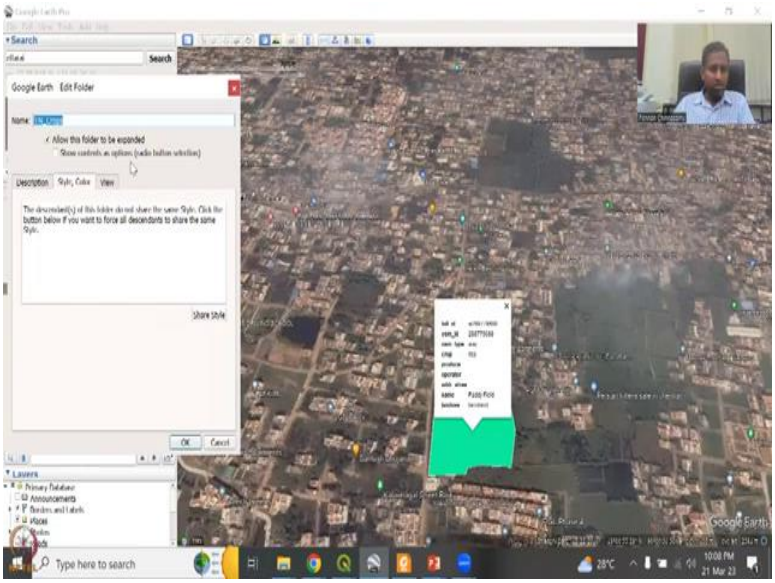

Google Earth
Type here to search

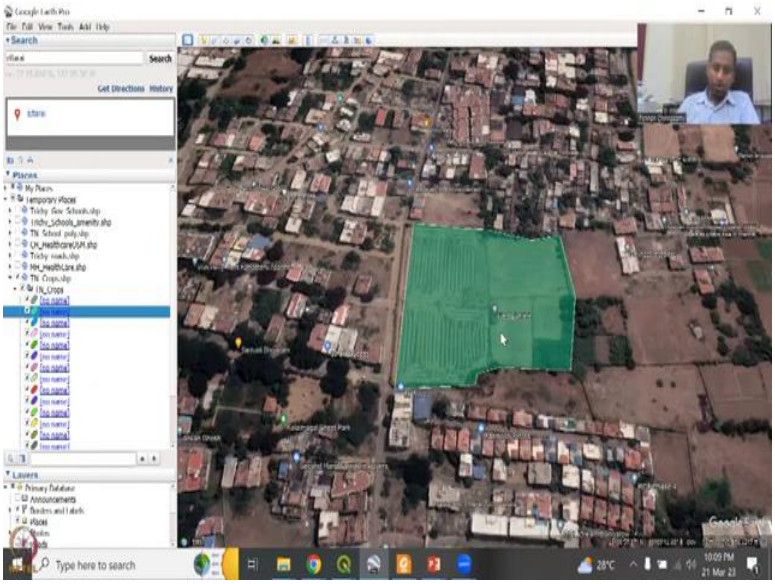

Google Earth
Type here to search

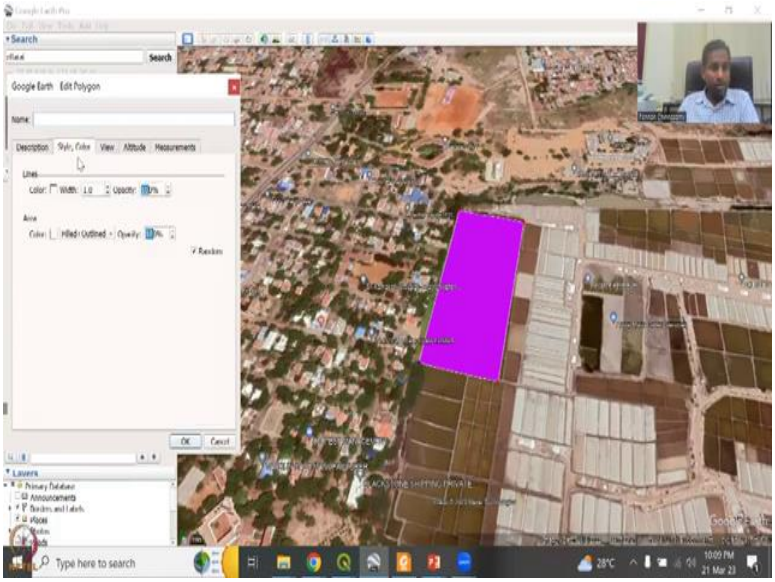

Google Earth
Type here to search

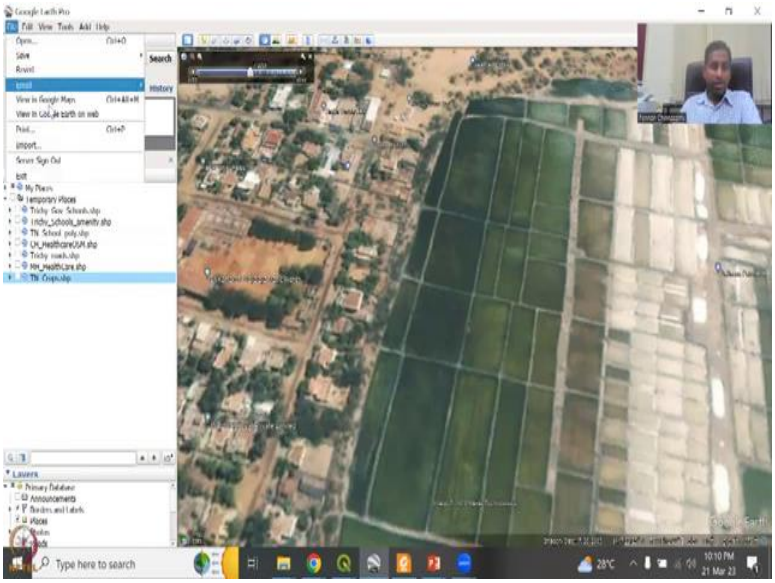

Google Earth
Type here to search

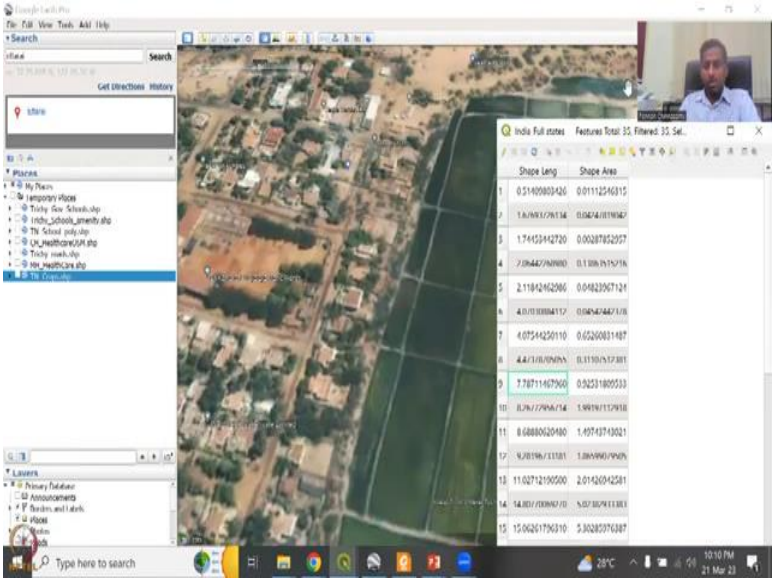

Google Earth
Type here to search

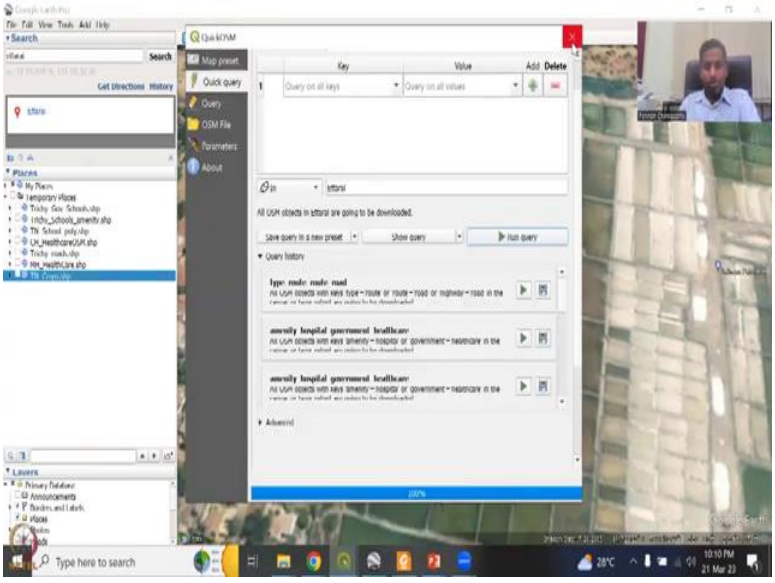

Google Earth Edit Folder
Allow this folder to be expanded
Share Style
OK
Cancel
Layers
Type here to search

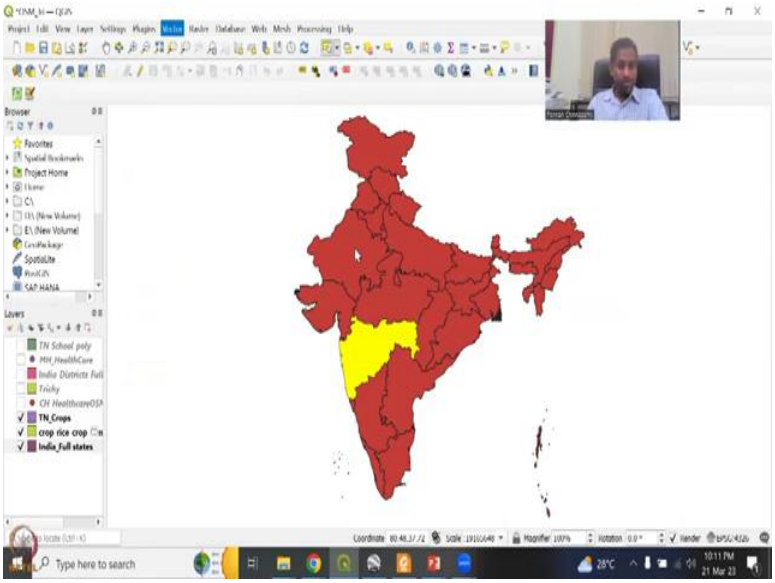

Get Directions
History
Places
Layers
Type here to search

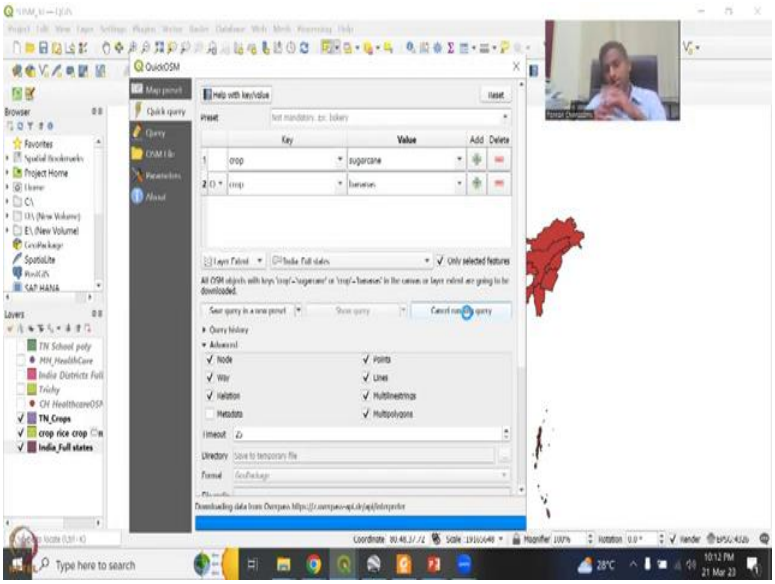

Google Earth Edit Polygon
Name:
Description
Style, Color
View
Altitude
Measurements
OK
Cancel
Layers
Type here to search

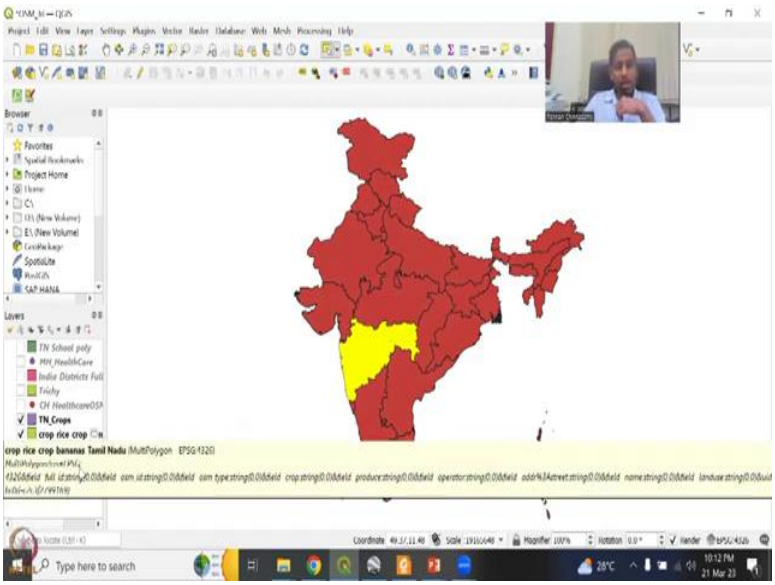


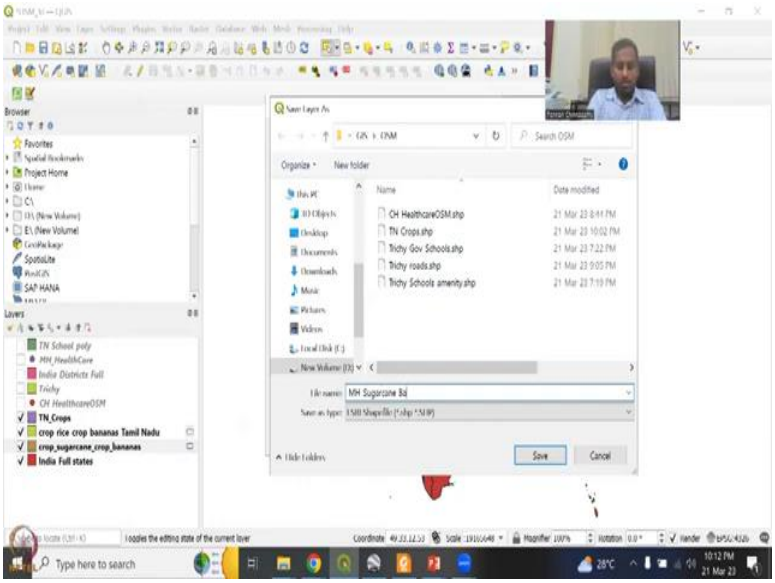


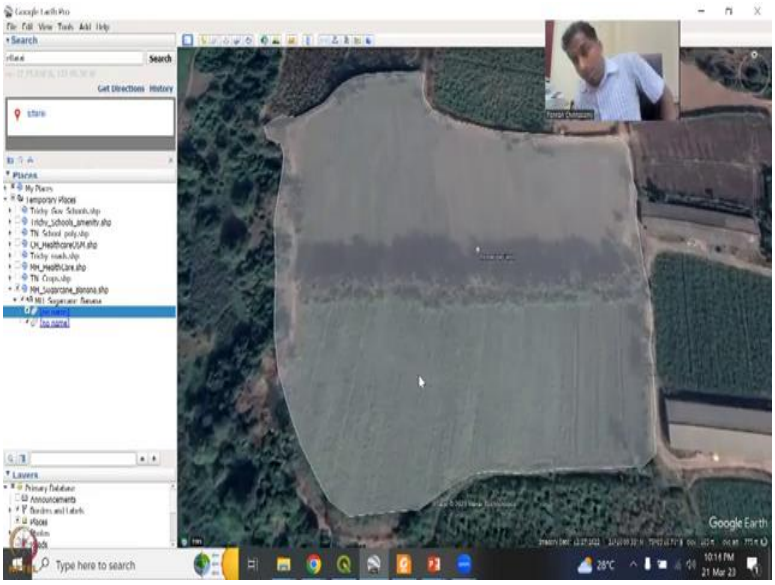



Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Project Home
Layers
TN School poly
India Districts Full
Trichy
TN_Crops
crop rice crop
India_Full states
Type here to search


QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Help with key/value
Reset
Key
Value
Add
Delete
crop
sugarcane
crop
bananas
Only selected features
Query history
Advanced
Node
Points
Way
Lines
Relation
Multilinestrings
Metadata
Multipolygons
Timeout
Directory
Format
Type here to search


Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Browser
Favorites
Project Home
Layers
TN School poly
India Districts Full
Trichy
TN_Crops
crop rice crop
crop rice crop bananas Tamil Nadu (MultiPolygon EPSG:4326)
Type here to search





So, as I said, if you go back to this village at right, on the banks of the Kaveri water allocations, you will see so these are these are this is the waterway, as I said a lot of agriculture that happens around it, like all these water, agriculture's and very, very fertile land, rice, plantations, bananas, etcetera, very, very highly grown. However, when there is less water, and because this is basically the Cauvery Water release also, is being shared. And if this water does not come, all these lands are dry.

So, there is groundwater being explored export. And that is one of the reasons why these regions have migrated from rice to coconuts, and plantations, which are short grown, they do not have to put as much as effort and time as rice. So for some reason, we do not have much data here. And so which is the need of the hour, they have to have data. Let us look at another area. So, entire terminado has been taken, I did not take this to chi, another area for rice is

here, right in the city area, it looks like again, we can have this properties, we can see style and colors and everything is individual.

So, we cannot we have to go every style and then look at it. So, we have clicked on this one, right. So, we can just go to the properties and then there is one more will do or time will just make it 50 percent and then there you can see right in our village area and a seed area you can have a lot of agriculture still happening will do the same access for Bangalore, you will get a lot more data that is very, very accurate.

Why I chose Tamil Nadu is because of my fieldwork experience. I for sure know that some areas I can relate from my field experience and remote sensing and where some data if it makes sense or not. So, this has been claimed as rice, which may or may not be true. But then as I said, it depends on which season which timeframe we are looking at this also rice, it says, again, initially, maybe it was rice. And this does look like a large piece of land where there has been rice cultivation, because of the sizes, let us say 50 percent 9 percent, yes

So, this is, is that I can remove this part, and then put a timeframe on it to, to show you that it has always been under agriculture, this is this can be really, really big rice field. One thing, you can definitely check us we check an agricultural university, you will see a lot of these cropping's and patterns and they use. So, this is about your crops. I would also like to show case, the Maharashtra one that I have truncated, it is a big data set, so I will just truncate part of it, and then show for the class, which crops that we could use.

But again, as I said, it does, it does rely more on the use of the data in terms of if you want to do cropping for sugarcane, etcetera. So, since we know that sugarcane is a very important subject, let us quickly do one for sugarcane in the Maharashtra region, because that is where a lot of water has been consumed. So, we will go back here and go to the state's zoom layer. And this is where we want. So, will try to see if it selects indoor select this time. So, me times your QGIS does have some issues.

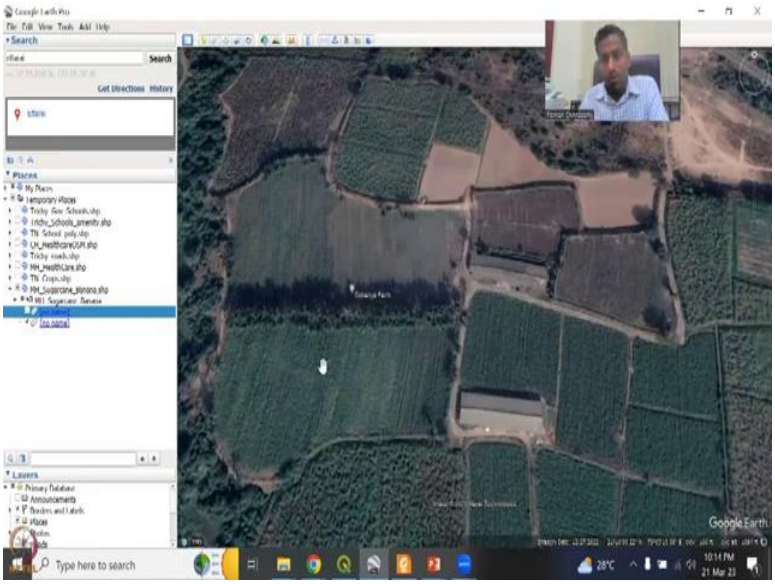
And you can see here, your props, props, and I know for sure that pain, plus banana not held or bananas. And I am just going to say later extent, Maharashtra or India full state only the select features. And then I am just going to close this back, and then keep all of them on all of them on just for sake of continuity. Because the updated version sometimes does not run for specific calls. It does require it always if you do more ways and stuff, what happens is it does neglect some data.

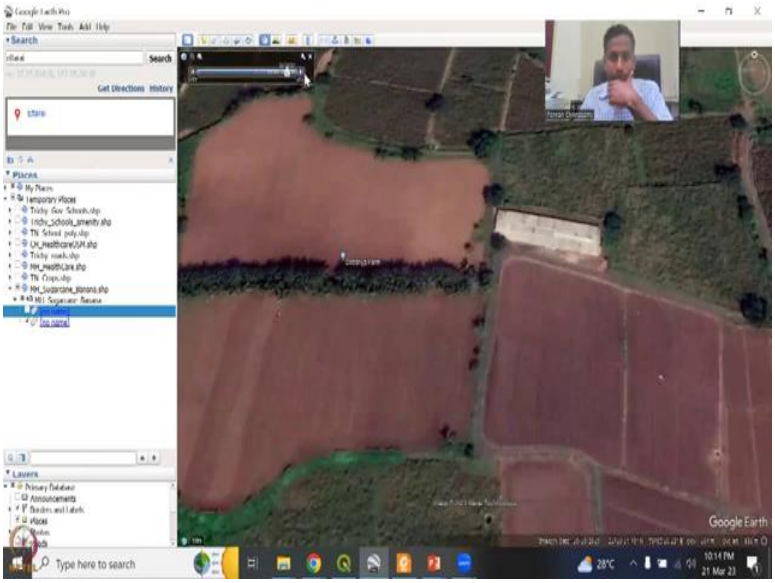
So, initially, when we ran it did not run the whole thing, but now it has run it and you see that crops sugarcane and rice, which we ran, are now sugarcane and bananas, if I can just say says crop sugarcane crop bananas, in Tamil Nadu it was crop rice, sugar cane and bananas. So, now I am going to export this as a save picture as and then let us put it in the image. What sugar cane sugar cane plus banana? This is very interesting. Find why because I will show you that normally, you do not have again, the step is first do it in QGIS, then go to open file and then open the shape file in.

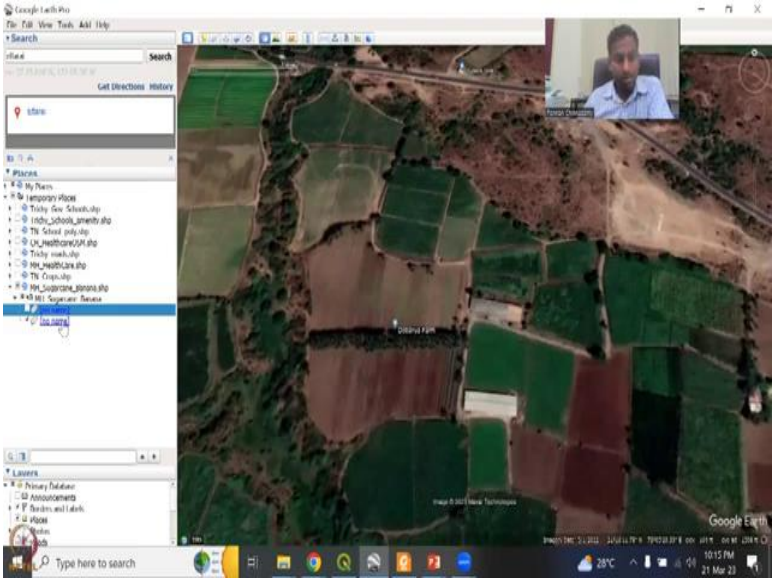
They want the same files in India said yes, we need the data, you can say, do not need to save it. Only when you like it, you can save do not need to save all the data sets. And apparently, it is very, very less compared to the number of data sets that are there. So, the double click very, very less number of monitoring. Only 2 for a state that transaction working. So, which is interesting, but it is good. At least we have a style and color. Let us say we have 50 percent and this is properties, you can see all the properties.

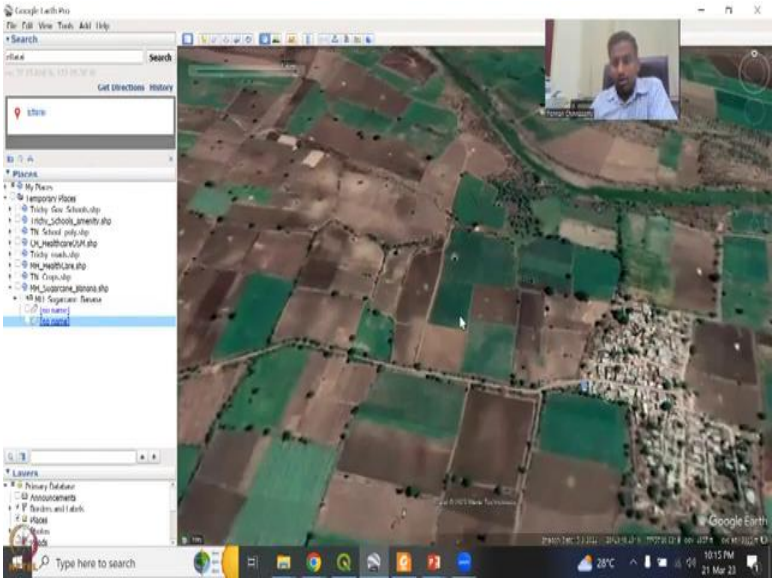
Sugar cane it says. So, if you go close this is a sugar cane plot. And in timeframe, we can also see that yes, it is a lot of sugarcane, some Wind rose have been created by a lot of sugarcane. So, now this this plot this plot it we use in the LULC classification, we have data from OSM that this is a sugarcane. So, I am going to show you how this could be useful. So, if I were if I want to take this out, and I know that this is sugarcane from a ground truth entity, then all the pixels and all the colors that I take from here will reflect sugarcane in my supervised classification.

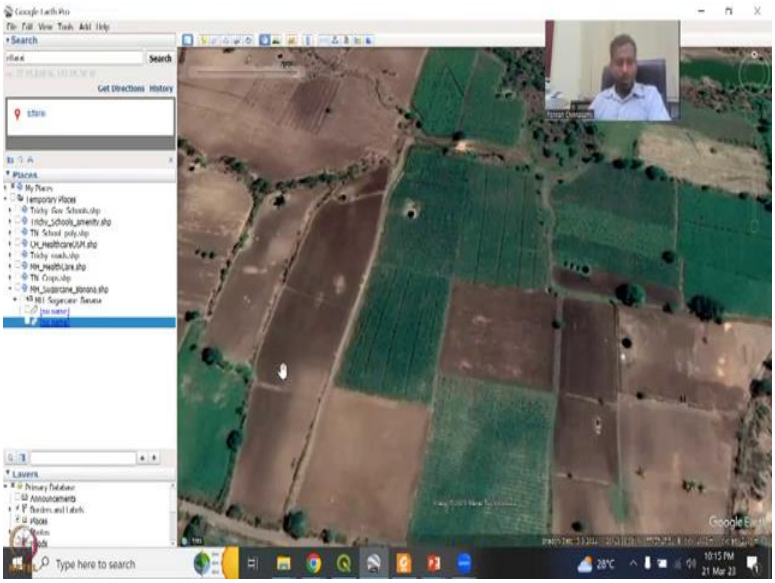
(Refer Slide Time: 34:47)

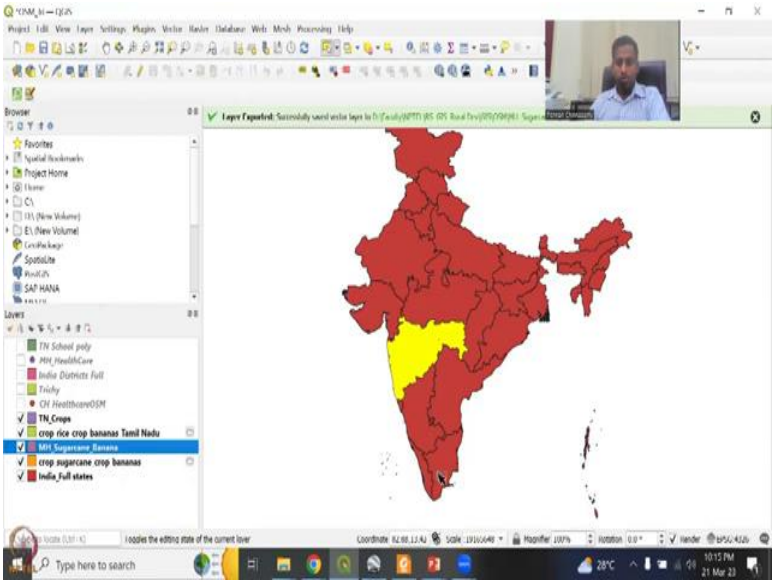


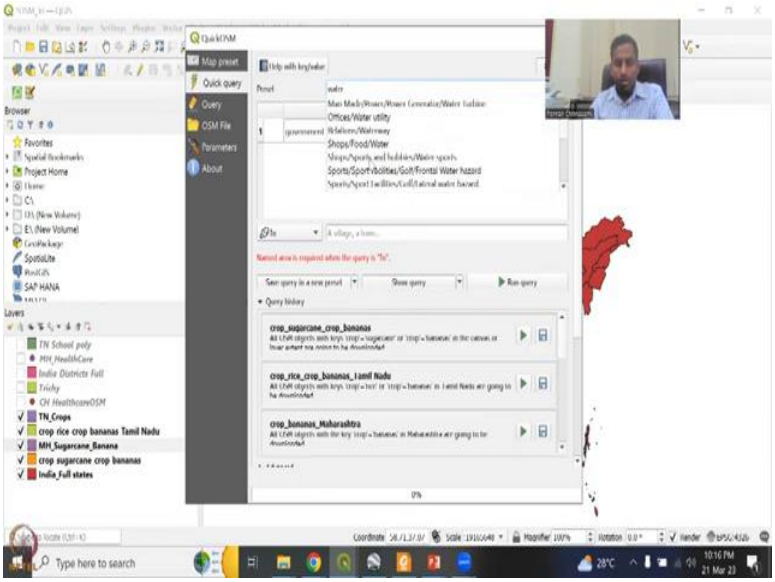

Google Earth
Type here to search

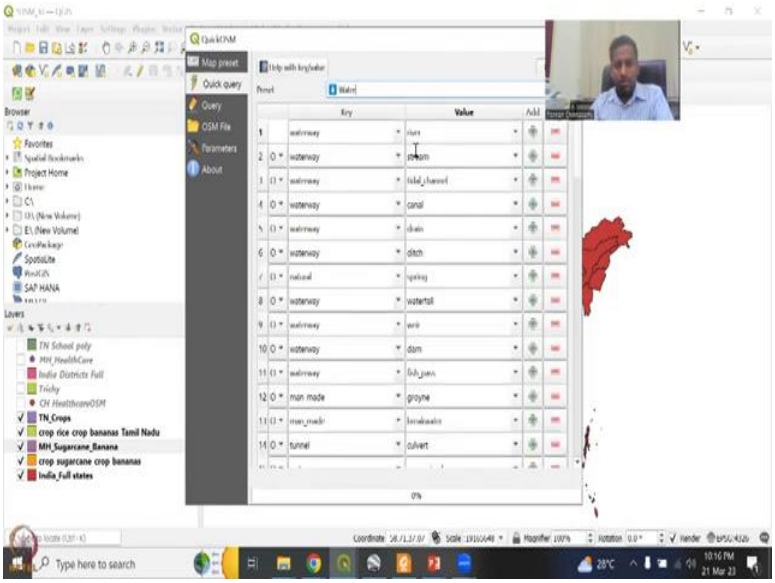

Google Earth
Type here to search

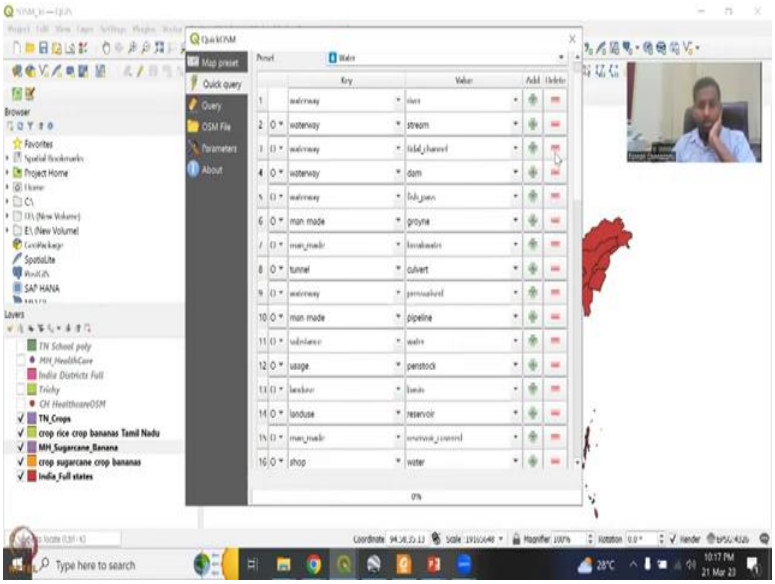

Google Earth
Type here to search

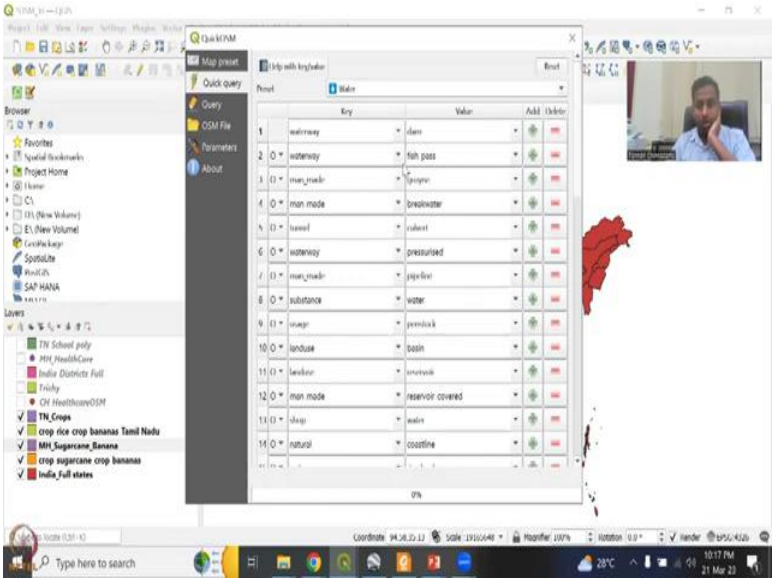


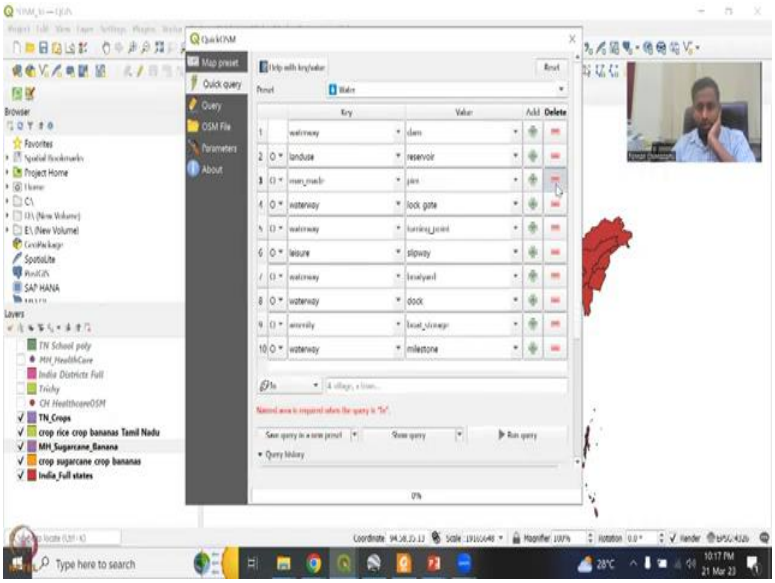


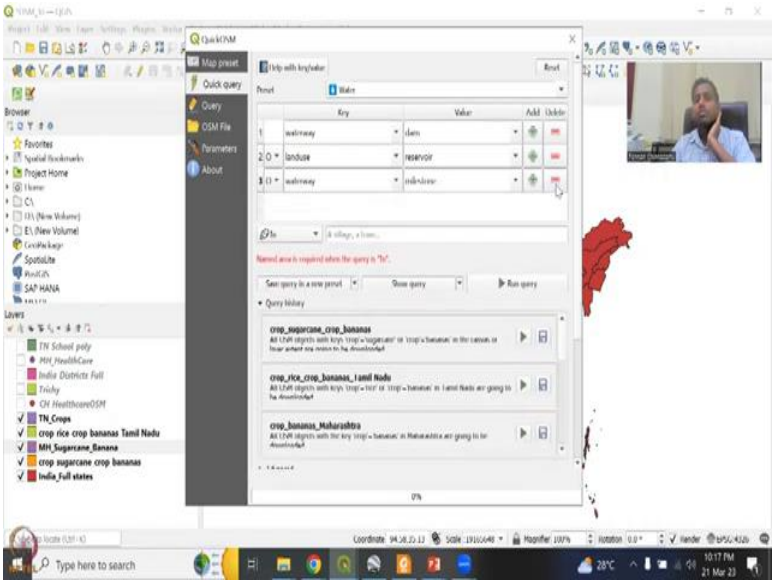


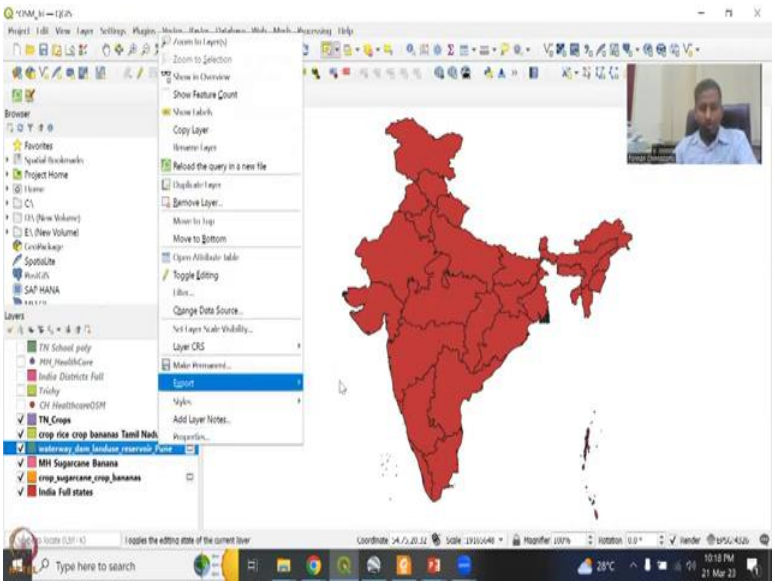

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Browser
Favorites
Project Home
Layers
TN School poly
MH_HealthCare
India Districts Full
Trichy
CH HealthcareOSM
TN_Crops
crop rice crop bananas Tamil Nadu
MH_Sugarcane_Banana
crop sugarcane crop bananas
India_Full states
Key
Value
waterway
stream
canal
drain
ditch
natural
spring
waterfall
dam
fish_pass
man made
groyne
tunnel
culvert
Type here to search

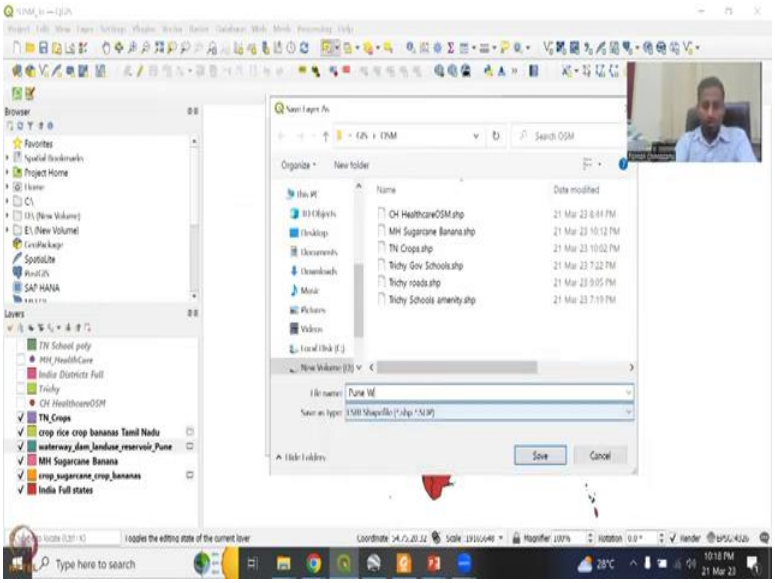

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Browser
Favorites
Project Home
Layers
TN School poly
MH_HealthCare
India Districts Full
Trichy
CH HealthcareOSM
TN_Crops
crop rice crop bananas Tamil Nadu
MH_Sugarcane_Banana
crop sugarcane crop bananas
India_Full states
Key
Value
waterway
stream
dam
fish_pass
man made
groyne
tunnel
culvert
pressurised
pipeline
usage
penstock
landuse
reservoir
shop
water
Type here to search

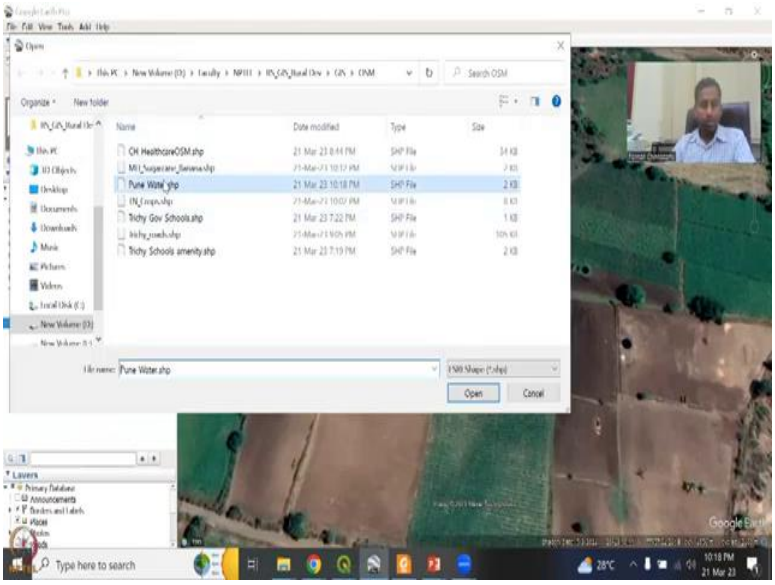

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Browser
Favorites
Project Home
Layers
TN School poly
MH_HealthCare
India Districts Full
Trichy
CH HealthcareOSM
TN_Crops
crop rice crop bananas Tamil Nadu
MH_Sugarcane_Banana
crop sugarcane crop bananas
India_Full states
Key
Value
waterway
fish pass
man made
breakwater
pressurised
substance
water
landuse
basin
reservoir covered
natural
coastline
Type here to search

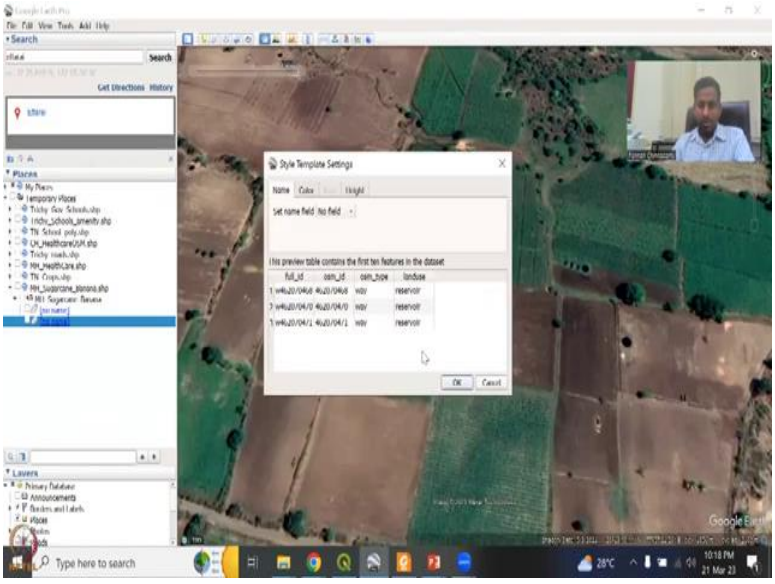

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Reset
Preset
Key
Value
Add
Delete
waterway
dam
landuse
reservoir
waterway
lock gate
leisure
slipway
waterway
dock
waterway
milestone
Run query
TN_Crops
crop rice crop bananas Tamil Nadu
MH_Sugarcane_Banana
crop sugarcane crop bananas
India_Full states
Type here to search
28°C
10:17 PM
21 Mar 23

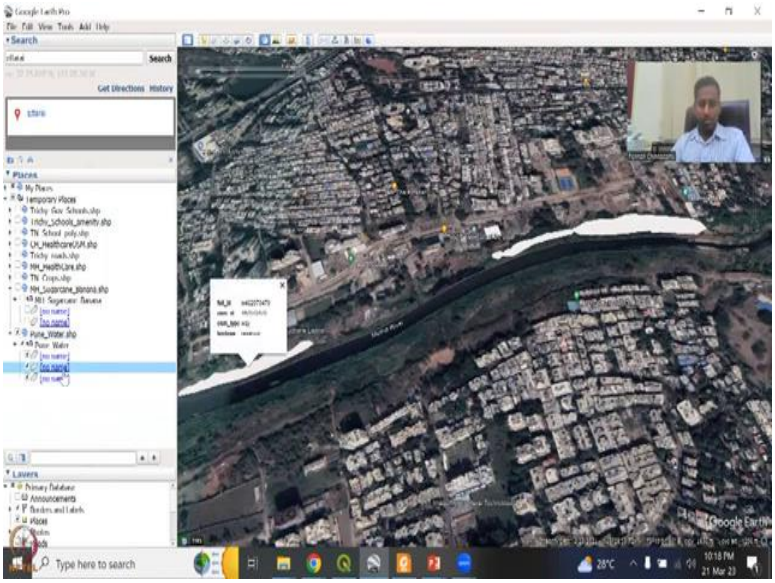

QuickOSM
Map preset
Quick query
Query
OSM File
Parameters
About
Reset
Preset
Key
Value
Add
Delete
waterway
dam
landuse
reservoir
waterway
Run query
crop_sugarcane_crop_bananas
crop_rice_crop_bananas_tamil Nadu
crop_bananas_Maharashtra
TN_Crops
crop rice crop bananas Tamil Nadu
MH_Sugarcane_Banana
crop sugarcane crop bananas
India_Full states
Type here to search
28°C
10:17 PM
21 Mar 23

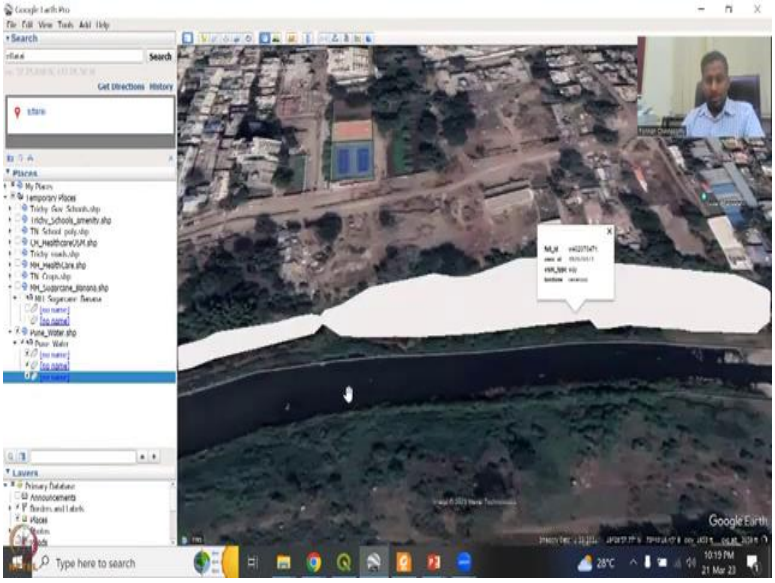

Zoom to Layer(s)
Zoom to Selection
Show in Overview
Show Feature Count
Show Labels
Copy Layer
Rename Layer
Reload the query in a new file
Duplicate Layer
Remove Layer...
Move to Top
Move to Bottom
Open Attribute table
Toggle Editing
Filter...
Change Data Source...
Set Layer Scale Visibility...
Layer CRS
Make Permanent...
Export
Styles
Add Layer Notes...
Properties...
TN_Crops
crop rice crop bananas Tamil Nadu
waterway_dam_landuse_reservoir_Pune
MH Sugarcane Banana
crop_sugarcane_crop_bananas
India Full states
Type here to search
28°C
10:18 PM
21 Mar 23

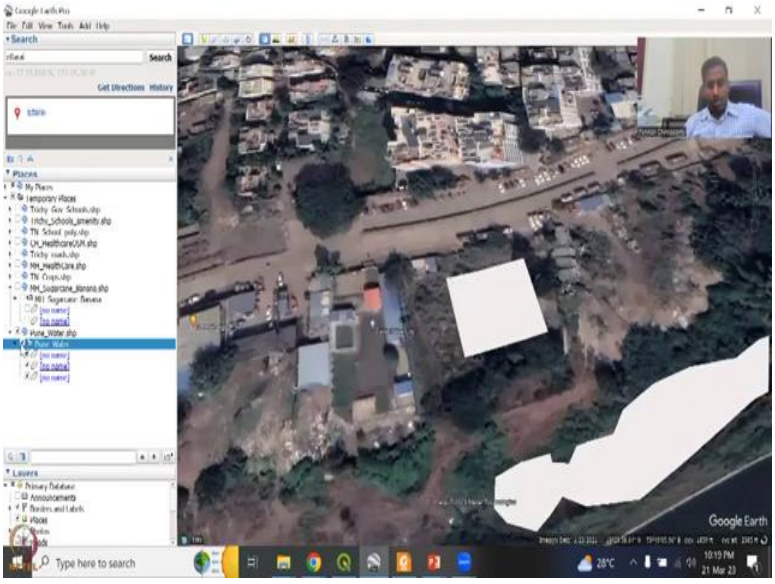

Save Layer As
Organize
New folder
Name
Date modified
CH HealthcareOSM.shp
MH Sugarcane Banana.shp
TN Crops.shp
Trichy Gov Schools.shp
Trichy roads.shp
Trichy Schools amenity.shp
File name: Pune WI
Save as type: ESRI Shapefile (*.shp *.SHP)
Hide Folders
Save
Cancel
Browser
Favorites
Spatial Bookmarks
Project Home
Home
C:\
D:\ (New Volume)
E:\ (New Volume)
GeoPackage
SpatiaLite
PostGIS
SAP HANA
Layers
TN School poly
MH_HealthCare
India Districts Full
Trichy
CH HealthcareOSM
TN_Crops
crop rice crop bananas Tamil Nadu
waterway_dam_landuse_reservoir_Pune
MH Sugarcane Banana
crop_sugarcane_crop_bananas
India Full states
Toggles the editing state of the current layer
Type here to search
28°C
10:18 PM
21 Mar 23

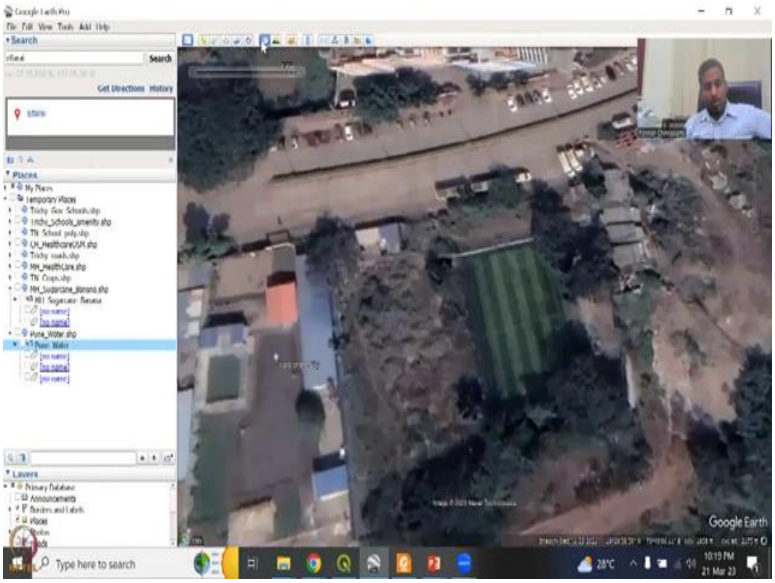

Open
Organize
New folder
Name
Date modified
Type
Size
CH HealthcareOSM.shp
Pune Water.shp
TN_Crops.shp
Trichy Gov Schools.shp
Trichy roads.shp
Trichy Schools amenity.shp
21 Mar 23 8:44 PM
21 Mar 23 10:18 PM
21 Mar 23 7:22 PM
21 Mar 23 7:19 PM
File name: Pune Water.shp
ESRI Shape (*.shp)
Open
Cancel
Layers
Primary Database
Annotations
Borders and Labels
Places
Roads
Google Earth
Type here to search
28°C
10:18 PM
21 Mar 23

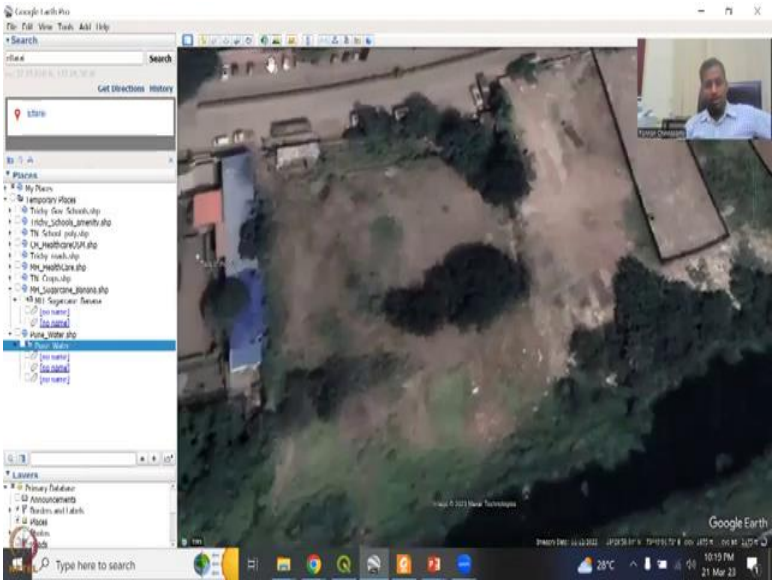

Search
Get Directions
History
Store
Places
My Places
Temporary Places
Trichy Gov Schools.shp
Trichy_Schools_amenity.shp
TN School poly.shp
CH_HealthcareOSM.shp
Trichy roads.shp
MH_HealthCare.shp
TN Crops.shp
MH_Sugarcane_Banana.shp
Style Template Settings
Name
Color
Height
Set name field: No field
This preview table contains the first ten features in the dataset
full_id
osm_id
osm_type
landuse
reservoir
OK
Cancel
Layers
Primary Database
Annotations
Borders and Labels
Places
Roads
Google Earth
Type here to search
28°C
10:18 PM
21 Mar 23

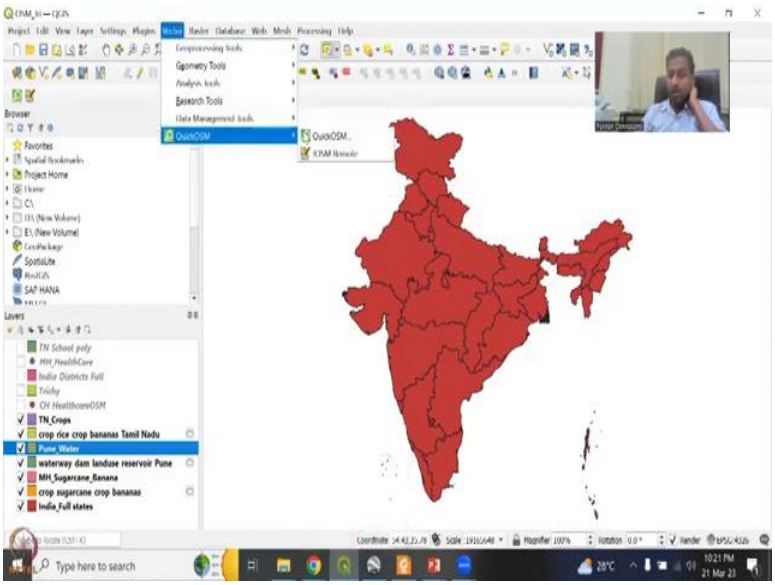

Google Earth Pro
Search
Get Directions
History
Places
Layers
Type here to search
Google Earth

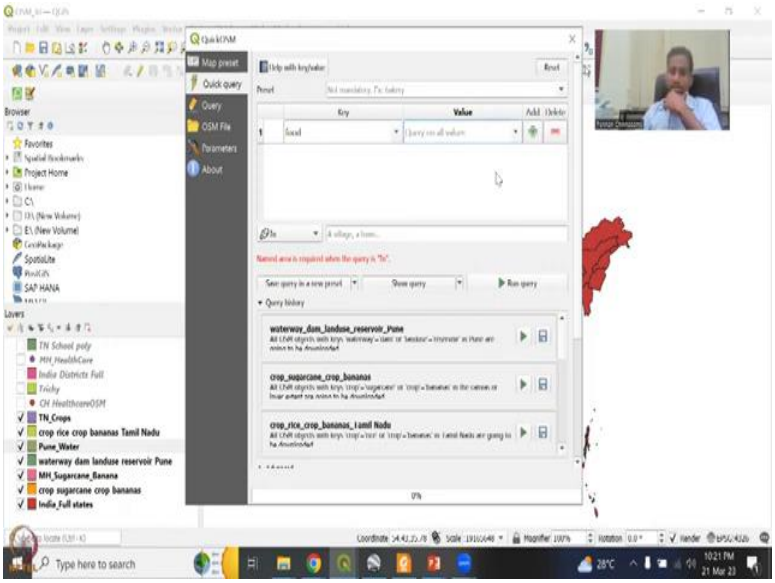

Google Earth Pro
Search
Get Directions
History
Places
Layers
Type here to search
Google Earth

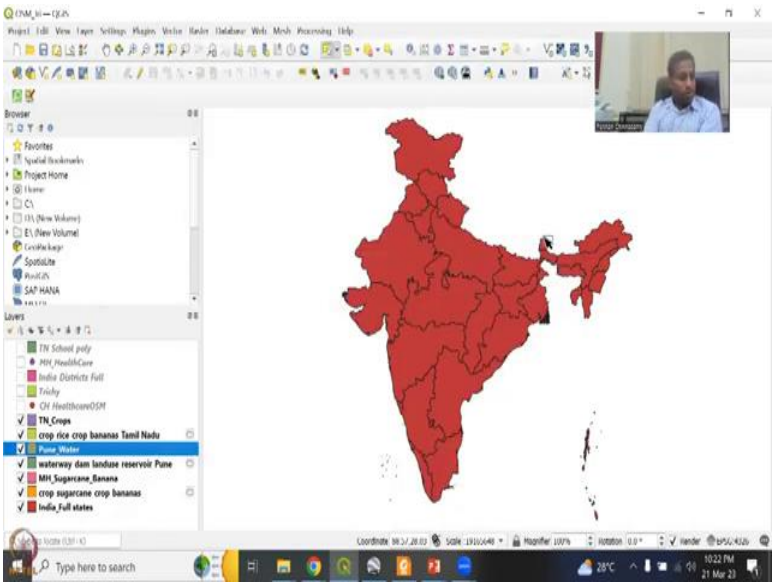

Google Earth Pro
Search
Get Directions
History
Places
Layers
Type here to search
Google Earth


Google Earth
Type here to search


Google Earth
Type here to search


QuickOSM...
TN School poly
MH_HealthCare
India Districts Full
Trichy
CH HealthcareOSM
TN_Crops
crop rice crop bananas Tamil Nadu
Pune_Water
waterway dam landuse reservoir Pune
MH_Sugarcane_Banana
crop sugarcane crop bananas
India_Full states
Type here to search





So, we did supervise classification, we are going to see all these green color and the growing trend. I am going to show you how the leaves change color during the sugarcane period. So, you can see here, slowly, the big, big leaves are coming up in terms of the sugar cane growth. See, the rows are being planted, and now sugar cane comes up. And then within 2 months, another 6 months, the crops are growing along the side, also, they will grow the same things. So, almost every region will have the same cultivation, maybe 1 or 2 farms will grow slower or later, depending on the budgets they have. But approximately all of them grow the same thing yes.

So, this is how you could take a dataset for sugarcane and other things. And then let us see this one, I am just gonna go zoom in. This is also saying sugarcane, there is no banana. So, there is a conversion of bananas of the area to bananas. And you can see here all this is

sugarcane, as per the dataset, and I am going to zoom in and zoom out to see how they grow. And now I have a spectral signature from a particular area, which says it is growing sugarcane.

So, all these sugarcane aspects so this I am going to stop here for the crop part will quickly do again Tamil Nadu will just clear the selections and then see Tamil Nadu can be selected again or we can say water bodies right so will do the water bodies in the vector with OSM and then say water, water way is there. We do not want that. We can say agriculture and then water so to find this use you can have different ways there is no water amenity you can say amenity and then water basket disposal transfer water point watering is there.

And then the government there is no water for government. The same water we have facilities animal watering drinking water, water park, man made water towers, water tap and then utilities, sharps water let us say just water. There is a lot of water so there is or so now I just click water as a preset. Do I need a river stream title or waterfall dam? Let us do a dam in a particular waterfall. I do not need spring I do not need it depends on, where you are.

If you are in the Himalayan region yes, there is a lot of need for that part fish pass no, breakwater pressurized pipeline water basin reservoir is good. We can keep that covered waterpark coastline, the wetland, all these are not important for us for now. Let us keep these 2 and then let us do it for a particular state Pune. Pune is known for a lot of waterways, when I am just going to like it depends on in the data set.

I know for sure point has a lot of dams. But we need to see if the data is there. So, it has mapped. It has a map as waterways and reservoirs in Pune. What I am going to do is, again, will export this as a feature, go here, put it in my folder as Pune a water say what Google Earth Pro open on a waterway open, you would not apply the same style, you are saying yes, all the ways fine. When it starts, it was empty.

So, just see that it goes to the space, but it is empty. So, do not get scared, why it is not showing up, just click this button. And that is it. So, you will have all the waterways. In Pune three bodies only that has been mapped very, very less that has been mapped, which is a concern also 1 2 and 3. So, all within the same region, maybe they will be mark Pune into it, which is fine. So, you can see here that I am just going to remove this and say that this is the water body, but for some reason they cannot map it in terms of that.

So, there is a small reservoir type of thing on the side that is what has been mapped which is good and the main water is there and this has also been mapped. So, you can see here, how a water body can also be mapped and that spectral signature can be used later for making maps on water bodies and access to water bodies. So, this has been also made. And you also have this one which says it is a water body, we can quickly see if it is a water body.

Remove the timeframe, it is not a water body, but it has been accidentally marked maybe the converted the land, from a water body to thing, the sea in 1985. We do not have data much data in 2004. Now, it is always being a land. So, maybe a land associated with that has been created, which is fine. So, here also rivers and streams are there. But I do not expect rivers and streams to be mapped that easily because you need to go through this and do a path.

It is not like a road you can go through a drive thru cycle and then take a point and then put it in OSM. How do you do that for river, it is not going to be easy. So, it is good that we have this exercise of picking and choosing data. Sometimes it could query does not work, do not get disheartened. Just make sure that you try different combinations that we did initially when we also did I also wanted to show that it is getting stuck.

So, that how do you come out of it and still get data for a particular region is by using different query systems. And Punjab and Haryana the crop mapping was not there. But definitely you can use other query sessions for it. Same thing sugarcane belts in Maharashtra we can do but more importantly, leaving the agriculture because we have NTBI a lot of remote sensing satellite data that we could use more than that we were very successful in targeting rural infrastructures, such as roads, schools, health care.

Now just take other things that can be done for rural things like ration shops, and how they call it may be different because they will have a different naming scheme. But just you can you can update your data on it. And then say if the ration system is there, so there is different rationing systems here but it is all shops, homes, and are different aspects. But you can just definitely say government, it all depends on how the store relation is registered, they will store it as registration, but it is not there.

So, just keep on searching food this there. And then ration shop is not there, I do not know what info what are the subclasses will be there, there is only less subclasses, so pool could be a restaurant for the ration shop, preprocessed food etcetera. So, this, I think I have given some

good indications of how to use this formatting your infrastructures when there is no data, creating your own database for rural development, which is very, very important.

Now, I will conclude week 11 and look forward to week 12 which is the last week of this course, as you are most excited to see how your examples and then in the week will show a lot of applications which will make you think on using these remote sensing data for greater lens. With this I would like to conclude here and thank you.