Laboratory Practices in Earth Sciences: Landscape Mapping
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Welcome back. So, in the last lecture, we were talking about the download and the purchase data from the NRSC. For that you have to first browse the Bhooni the NRSC website and you have to create an account. To purchase the data, you have to verify your login ID and password from the NRSC and then only you can purchase the data from the Bhooni the. To download to get the freely available data, you do not need to verify your user ID and password from the NRSC, you can directly login and download the data. So, to create an account, here you can see the sign up option and you have to give some basic information and when you will submit your form.

So, one activation link you will receive and through this activation link, you can generate your login ID and password. So, once you login your Bhooni account, you will see some of the basic information here. This is only for the serving purpose. So, you can click any of this option and you can submit this form and here you can see your login to this web portal.

So, once you login to this web portal, now to get the data there are a few options given. First are the search criteria. In the search criteria, you can select your area of interest by giving the location name or selecting the polygon by entering the latitude and longitude and if you have the shapefile of your area of interest in the shp format that you can directly upload here and you can get the data for your area of interest and if you know the map map number, so that also you can put here and you can get the data for your area of interest. For our purpose, we will just give the name of the location and you can give the area. So, here you can see I have chosen my area of interest and for this area of interest, I want to get the data.

So, there is the date range for which date you want to get your data. Suppose, I want to get the Cartosat data, so Cartosat was launched in 2005. So, you will get data only after 2005 and that mission was commissioned in 2005 and up to 2019. So, you will get the data from 2005 to 2019. So, in case you want to get data for a particular time period that also you can select from here.

So, I will just choose the date for which I want to get the data. So, if I choose the 1st of June 2005, so here you can see the open data for the last 3 months can be downloaded

immediately while older data may be served with a delay. So, here you can see we have chosen a date range for 5 years and for this 5-year, whichever data I want to get, I will use that data for this time range only. So, in the filter option, you can see there are two options, one is open data and another is price data. So, as I already said that this platform is for both, if you want to get the data on the payment basis, that data also you can get from here or some of the data is freely available that   also you can get from here.

 So, for the priced one, you suppose you want to get the price one data, price one means those data which have the high resolution, so that data you will only get after the, you have to purchase the data from the NRSC. So, here you can see the resolution, you can set the resolution for which resolution you want to get the data. Suppose I want to get the Cartosat-1 data that is 2.5 meter is a special resolution, so I will I have to filter the resolution from 1 to 5 meter and the satellite you have to choose the Cartosat-1 and the sensor type there is two option, one is pen and another is pen afterward plus pen forward. Pen panchromatic data means those data which have been acquired in the visible   range only.

 So, I want to get the data, I want to get the stereo paid data that means your satellite have the two sensor, one is forward and another is afterward and that forward and afterward sensors have acquired the data for the same reason, but in a two different angle and that data you can use to generate the 3D perspective of the reason. So, that data is called the stereo paid data, so I want to get this stereo paid data for that I have to choose the forward and afterward option. So, now you can see in the priced option stereo Cartosat-1, pen afterwards plus Cartosat-1 pen forward. Now, you can submit your criteria here you can see for the chosen area of interest, now you can see these are the overlap scenes which are available for this reason and in the left side of your screen you can see the information regarding this data. So, this is the forward image and this one is the afterward image and this one is your forward image and you can also see the date on which this data is acquired.

  For example, the first data this one was acquired on 14th November 2008 and this 537 to 63 this is the path number and row number for this specific reason. So, on clicking on this option you can see your data. This is a raw representation of your afterward image and this is the raw representation of your forward image and there are few other options that are given the metadata. So, you can see all the information regarding this data is available here in the form of metadata that you can check it out and you can see which data you can see over here that you can see by clicking this option and the same is for your forward image. You can see the metadata information and you can also change the brightness value brightness and contrast value for your representation map. Here you can see that byte patches are basically the cloud coverage and try to avoid this cloud coverage because for the same reason you will get the data for different times for different times.

So, you try to choose those data which are cloud live cloud free because when you use this data for the landform mapping. So, at that time you will have difficulty if your data has cloud coverage. So, try to avoid those data which have cloud coverage. So, these are all the scenes which are available for this reason. So, whichever data you want to choose you can directly add to your card for example, I want to just get this data on the 14 November 2008.

So, I will add it to the card. So, this I added to the card and the other suppose I want to get this data here you can see this one is the this one is my data. So, I will add this data to the card likewise you have to just choose your data according to your interest and you prepare a database which data you want to download or you want to purchase from the NRC. So, that you just put it in the card and from the card you can generate your pro forma invoice and after generating the pro forma invoice you have to make the payment and after after payment payment when payment is done you will get your data. So, from the NRC.

So, suppose I will just add a little bit of data in the card. So, I will show you how you can generate the pro forma invoice. So, suppose I want to get this much data and once you select your data. So, I added all this data to the card. So, you just go to the card option and here you can see there are two options one is open data and another is price data.

So, we have selected data for the priced one. So, you have to go there and you can see that these are the data which I have chosen to purchase. So, here you can see one order ID has been generated and now you can go to the select product specification. Here you can see some of the basic information and you can see the amount for this data. So, you can see the final   price   is   25,771.

So, this much is the amount you have to pay if you want to get this data. So, this will happen when you click the add product specification. So, here you can see a little information will come. So, you can see your final cost which you have to pay to the NRC. In dispatch mode you get two options one is FTP in which you will get the soft copy of your data and another mode is courier or speed post in which you will get DVD through the   speed   post   from   the   NRC.

So, once you confirm yours you have to give a user reference. So, suppose I am just giving the user reference and you can generate your pro forma invoice. So, that pro forma invoice has been saved to PI action here you can see the PI action and now in your card is empty you cannot see any of the data available in your card because I have generated that card data into the pro forma invoice. So, when you go to the pro forma invoice here you can see this is your pro forma invoice and here you can see the footprints which data you have selected   for   to   purchase.

So, these are the data. So, likewise based on your area of interest you can choose your data and you can purchase those data from the NRC. So, these options are only for those data which you want to purchase from the NRC through this Boonidhi portal you can download data which are freely available. So, in the search criteria in filter option first you have to choose the location suppose I just choose the same location. So, this is my area of interest and in the filter option in the first step we have chosen the priced one and now I will choose the open data. So, this open data means those data which are freely available.

So, here you can see the freely available data is a kind of course resolution. So, the fine resolution if you want to get the fine resolution data that you will get only after that you have to purchase the data from the NRC and the course resolution data that is freely available and you can download from this portal. So, suppose I choose this resolution from 5 meter to 25 meter and so, which type of data you want to download: microwave non-imaging or optical. Suppose I choose the optical data satellite which you want to get. So, here you can see the IRS 1C, 1D resource set to 1 2 2A. So, these are the satellite which are launched by the ISRO only and the Sentinel 2A and 2V this data is these satellites are launched by the European Space Agency, but you can see this data you can get from the Bhunidhi portal that portal is managed and run by the NRSC ISRO.

So, suppose I want to get the data from a resource set. So, in this resource set you have to choose the sensor type LIS 3 and LIS 4. These two are the sensors for the resource set. So, this suppose I choose the one of the sensor LOSES 4 and now you can click the open data. So, LIS 4 mono and MX 23.

Now, you submit. So, when you choose all these filter options and your date range and you finally submit your information then you will see these are the paths for the resource set data which are available for your chosen area of interest. So, you can download your data accordingly. To download your data you have to just put this data in your card as we did in our last steps. So, suppose I choose this data. So, I just put this data in my card. So, from the card option here you can, so in the card option there are two options: one is direct download and another is on order.

So, this resource set is a kind of medium resolution data from 5 to 10 meters. So, that data you have to get freely, but then you have to first order this data and then you will get a download link and from the download link you can get the data and few course data are also available in this website that data you can directly download from here. So, you have to just order this data, select product specification and here you can see the add specification and you have to give the user reference as we did in our last steps. So, here you can see for the carto set one data you have here you have given the all the payment details, but in for the resource set data you can see there is no amount is mentioned over

there you have to just only generate order and here you can see the product dispatch information will be sent to your given email address. So, generate order so you will get your order generated and this is your order ID.

So, you will get an email from the NRSC and on this email you will get a download link and from that link you can download or you can get your data. So, now we will move to another website that is managed by the European Space Agency that is Alaska and from this website you can download the ALOS Palsar data or the Sentinel-1 data. So, ALOS Palsar data is this was launched by the Japanese Space Agency in 2005 and you can get the digital elevation model DEM data for 12.5 meter. So, I have opened this website and in this website when you will get go to the get data option here you can see this ASF vertex open in new tab option and when you will click this option you will direct it to the another website and this website will look like this here you can see the world map you can drag this world map through the your mouse and in the search criteria you have to give certain information to according to your area of interest.

So, you have to first log in to this website because when you want to download your data you have to first log in and then you can download your data. So, first I will sign in to the website. So, here you can see I have logged into this website and now I will give some information according to my area of interest. So, here you have to just choose the geographic and which data set you want to download. So, here you can see some of the data sets are mentioned over their Sentinel-1, S1-VAST, Opera S1, Allos Pulsar.

So, I want to just get the Allos Pulsar data. So, I will choose this option and here the area of interest you can search your location. So, I want to get data for the same location for which I have got the data for SRTM and Cartosat data. So, you can see this will direct you to your area of interest and which date range you want to get data. So, this Allos Pulsar was launched in 2006 and the data is available for up to 2011.

So, I will choose one of the dates of 2006 and I will choose the upper age, upper I will choose the upper date that would be 21st of April 2011. And in the filter option you can give some additional information to narrow down your search. So, I will just write in the file type you can because I want to get the high-resolution DEM. So, I will enable the high-resolution terrain corrected option and this will filter my search. So, I will just click on the update option and you can see these two scenes are available for my given area of interest and these are the information for this when you click on this scene.

So, this you can see an overview of this data here you can see these are some of the information in the form of metadata. So, and then you can also see the scenes if you click on the scene you can see how your data will look like. So, another one is this one. So, you

can also see this one how your data looks. So, this is also a digital elevation model and the special resolution of this data is 12.

5. So, this is one of the high-resolution data which is fairly available. So, to download this data you have to just click on the high-resolution terrain corrected option and here you can see the download file. So, when you click it, your file will download. So, here you can see your file will download. So, similarly you can download multiple data for that you have to just add those data in your card and you can download all this data by through your card option.

So, here you can see this card option is available. You have to just add this data in your card and from there you can download your data. So, so far, we have seen how we can download the different digital elevation data which was launched over the time by different space agencies. For example, the SRTM data which was you can download from the USGS Earth Explorer and the data was managed by the NASA or USGS and the the Cartosat data which was launched by the ISRO and data was data is managed by the NRSC ISRO and your ALOS Palsar data you can download from the Alaska website and if you want to get the copper nickels if you want to get the data of this the radar data set that is the Sentinel data Sentinel 1, 2 or 3. Although some of this data is you can download from the your Alaska website or you can download from the Boonwadi option but the official website which is from where you can get all the Sentinel data is the copper nickels that is managed by the European Space Agency and from that website you can you can download all the radar data set that is Sentinel 1, Sentinel 2 or Sentinel 3. So, you can just explore this website and the website is mentioned over here and you can explore the website or you can get the data if you want according to your area of interest.

You have to just choose your area of interest and then you have to just give certain information regarding your data and then you will be able to download your data. So, we will stop here and in the next lecture we will explore one of the popular freely available GIS platforms that is the QGIS and with the help of this QGIS we will see how we can edit, manage or we can view our data on the QGIS platform. So, the data which we have downloaded from this website. So, we will we will analyze this data on the GIS platform and we will see and we will explore the GIS the QGIS we will also we will also show you that how we can install that QGIS software in your PC and how it how you can use this GIS platform to manage your satellite data or you to get the information from your data that we will see in next lecture. Thank you.